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-Ihamo 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

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reconnaissance survey (G4 stage).

The committee recommended the proposal for approval by EC for Reconnaissance survey (G4) for REE mineralization in Maniram-Bhajyang area (70.42 sq. km), District: South Sikkim, Sikkim with an estimated cost of Rs. 173.09 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- 3A & 3B.

40.1.3. Reconnaissance survey (G4) for Gold, Nickel, Cobalt and Chromium in Shurok Samdo block (61.80 sq. km), District: Leh, Union Territory of Ladakh.

a) It has been conveyed that the proposed block is located above Chilling Tso Lake and is geologically represented by Recent Alluvium, Scree, moraine etc. chert and jasper band, Nidar member of Nindam Formation, Liyan Formation - Boulder conglomerate purple & grey, phyllites, shale limestone and sands, Purple and green vesicular basalt, lava, Layered sequence of dunite, pyroxenite and diorite, Meta volcanic and Peridotite.

b) The proposed block consists of Nidar Ophiolite Complex (NOC) of rock. The known geological setup for primary platinum group of metals, nickel, and chromium deposits occurs mostly in mafic to ultramafic host rock. Gold occurs mostly in auriferous rock.

c) The proposal was sent to GSI for their considered comments. In response to this, GSI has conveyed that nearly 80% area of the proposed block of MECL is overlapping with the already explored block (G4 stage), FS 2019-20, of GSI. It has been conveyed that the gold and cobalt values are not promising.

d) The committee observed that the most of the proposed block area has been explored by GSI for reconnaissance survey (G4 stage) and there may not be further scope of similar exploration (G4 stage) in the area. The findings of the block are also not much encouraging. In view of this committee suggested not to take up the project.

The committee suggested not to take up the Reconnaissance survey (G4) for Gold, Nickel, Cobalt and Chromium in Shurok Samdo block (61.80 sq. km), District: Leh, Union Territory of Ladakh to avoid duplication of efforts.

40.1.4. Reconnaissance survey (G4) for Diamond in Tikamgarh Cluster- comprising of four sub blocks- A to D (total area of Cluster- 109.68 sq. km), District: Tikamgarh, Madhya Pradesh.

a) The proposed proposal was sent to GSI for their considered comments. In response to this GSI has conveyed that the Tikamgarh-A block overlaps with GSI explored blocks for diamond for various stages like Dhaurra-Urdaurra block for G4 and G3 Stage, Urdaurra block for G3 stage and Dhaukan block for G2 stage. Whereas there is no overlap in the remaining Tikamgarh-B, C & D block and Tarichar Khurd Block.

b) The block area forms the southern part of the Bundelkhand Granitoid Complex (BGC) which is overlain by Paleo-Proterozoic Bijawars in southeast, Vindhyan supergroup in the south and west, and Quaternary Ganga/ Yamuna plains in the north.

c) During GSI Field Season: 1986-88, Gravity and magnetic survey was carried out by GSI for locating Kimberlite pipes in the granitic terrain around Ajaigarh area district Panna and Harkanpura area district Tikamgarh. As an outcome of the geophysical work, GSI had recommended to carry out drilling in the Harkanpura area at the anomaly centers (lat 24°55'00"E Longs. 80°16'35" and Lat 25°14'30": Longs. 79°00'38").

d) It has been submitted that the NMDC had conducted sampling in 1000 sq. km area and demarcated five (5) potential blocks for further prospecting to identify kimberlitic/ lamproitic bodies. Now, the same blocks have been proposed by MECL for G4 stage of exploration in the present project proposal.

e) Based on detailed deliberations the committee opined that the GSI and NMDC have sufficiently explored the area for the reconnaissance survey (G4 stage), hence it may be appropriate to take up the project for Preliminary exploration (G3 stage) in the area by incorporating all geological information available with GSI and NMDC to avoid duplication.

f) The entire project will be implemented in two phases. In first phase, geological mapping, ground evaluation of aeromagnetic data (available with RSAS, GSI, Bangalore) and sample collection will be done. Based on review of the findings of the first phase of work, the decision on geophysical survey, drilling, and analyses of follow-up samples will be taken up.

g) The project will be reviewed after six months and ten months.

The committee recommended the proposal for approval by EC for Preliminary exploration (G3) for Diamond in Tikamgarh Cluster- comprising of four sub-blocks- A to D (total area of Cluster- 109.68 sq. km), District: Tikamgarh, Madhya Pradesh with an estimated cost of Rs. 289.78 Lakhs including GST in the time schedule of 15 months for carrying out the proposed work and submission of the report as per annexure- 4A & 4B.

40.1.5. General exploration (G2) for Gold in Sindauri-Ghanshyampur block (0.37 sq. km), District: Ranchi, Jharkhand

a) The project proposal "General exploration (G2) for Gold in Sindauri-East block" was discussed in 31st TCC meeting held in July 2021, wherein the committee observed that the proposed drilling area of MECL (approx. 3.0 sq. km) is overlapping with the block area where GSI has completed G2 stage exploration in past. Committee felt that there may be duplication of work, hence may not be taken for exploration through NMET funding.

b) Further, the proposal was resubmitted in 35th TCC meeting, wherein the committee opined that MECL should collect all the exploration data of the Sindauri block from GSI and a separate block for G2 exploration in further east of Sindauri East block with a different block name, which deserves G2 stage exploration, may be proposed by MECL.

c) Now, MECL has proposed to take up the G2 stage exploration in Sindauri-Ghanshyampur block (0.37 sq. km).

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d) The proposal was discussed in detail and it has been observed that there is an overlapping of about 40% area from the earlier explored (FS: 2015-16) Sindauri East block (G2 stage) of GSI.

e) DGM, Jharkhand conveyed that the geological report of Sindauri East Block (G2 stage) of GSI is yet to be received from GSI. The Committee suggested to collect the geological report of Sindauri East Block (G2 stage), FS: 2015-16 from GSI, Jharkhand for further course of action.

Keeping the above in view, the Committee suggested revisiting the area and demarcating the earlier explored blocks of GSI and proposed block of MECL on a topographic map to avoid any overlapping. A revised proposal without any overlapping may be submitted by MECL, if required.

40.2. Review of the ongoing projects

40.2.1. Review of geological report "General exploration (G2) for Iron ore in BRH Iron Ore Mines, NEB Range M/s RMMPL, ML No. 2010, District: Ballari, Karnataka".

a) The project was approved in 6th EC meeting with an estimated cost of Rs. 1004.16 Lakh with a time schedule for 13 months subject to the forest clearance. The timeline for the completion of the project was 09.09.2021.

b) EC in its 22nd meeting approved timeline extension till 31st January 2022 and pre-closure of project 'General exploration (G2) for Iron ore in BRH Iron ore Mines, NEB Range M/s RMMPL, ML No. 2010, District: Ballari, Karnataka" and submit the geological report of G3 exploration. Now, MECL has conveyed that the geological report has been submitted to the NMET Secretariat after peer review.

c) It is pertinent to mention that during 15th EC meeting held on 28th November, 2019, the EC had directed that the geological reports of the completed projects should be circulated only after approval of TCC.

d) Keeping this in view the Committee suggested that after the peer review of the geological report by external peer reviwer, EAs needs to incorporate the suggestion/ comments of reviewer and submit the final geological reoprt to TCC for review and approval.

The Committee suggested that all the EAs need to submit the geological reports of the completed project to TCC for review and approval after incorporating the suggestions and comments of peer reviewer.

40.2.2. Review of geological work carried out "Reconnaissance survey (G4) for copper in Mincheri Block (81.615 sq. km), District: Ballari, Karnataka".

a) The project was recommended in 29th TCC meeting held on 11th and 12th March, 2022 with estimated cost of Rs. 203.48 Lakh in time schedule of 12 months and approved in 20th EC meeting held on 24th June, 2021.

b) MECL informed that the geological mapping has been done at 1:12,500 scale over 81.615 sq. km and 100 nos. of bedrock samples has been collected. The sample no. BR-10 has shown Cu value of 4767ppm while sample no. BR-11 is showing the values of 780ppm Cu. Bedrock samples are showing maximum Pb+Zn value of 150ppm (BR-66) and Ni value of 280ppm (BR-15) while maximum value of Cr is reported at 786ppm (BR-34).

c) Besides this, total 100 nos. of soil samples were also collected from the area. The analytical results shows the maximum Cu value of 325ppm (SO-90), maximum Pb+Zn value of 1603ppm (SO-74), maximum Ni value of 515ppm (SO-05) and maximum value of Cr of 2125ppm (SO-05).

d) In addition to above, 100 nos. of stream sediment samples has been collected. The analytical results of stream sediment samples are showing maximum Cu value of 123ppm (SR-28), maximum Pb+Zn value of 131ppm (SR-88), maximum Ni value of 317ppm (SR-33) and maximum Cr value of 1280ppm (SR-09).

The Committee noted the outcome of the project and suggested to submit the geological report after completion of exploration work.

40.3. Time extension of the approved projects

40.3.1. Veeranam Block-IV, Neyveli Lignite field, District-Cuddalore, Tamil Nadu.

a) The exploration for lignite in Veeranam block was approved in 4th EC meeting held on 21st February, 2017 at the cost of ₹6763.44 Lakhs (excluding tax). The work commenced on 22nd February, 2017 with a time schedule of 36 months i.e. to be completed by 21st February, 2020.

b) TCC in its 6th meeting held on 2nd and 3rd December 2016 suggested that the block should be divided in 4 sub-blocks and initially the work should be taken up in two sub-blocks with cost revision. On the recommendation of 6th TCC meeting, the EC in its 5th meeting held on 6th October, 2017 accorded in-principle approval for entire block.

c) In 22nd TCC meeting held on 13th and 14th November 2019, the revised cost estimates of ₹67.43 Cr and timeline for each sub-block was recommended and approved in 15th EC meeting held on 28th November 2019. The details are given below-

Sub-blocks	Cost (₹ In Crores)	Timeline
Sub-block-I	₹17.89 Crores	31st March 2020
Sub-block-II	₹16.38 Crores	31st July 2020
Sub-block-III	₹9.91 Crores	31st July 2021
Sub-block-IV	₹23.25 Crores	30th April 2022
Total	**₹67.43 Crores**	

d) MECL has informed that the exploration work in sub-block-I, II and III have been completed and geological reports have been submitted to the NMET Secretariat.

e) The exploitation work in sub-block-IV is in progress. Till April 2022, a total of 18,542m drilling in 71 borehole has been completed and further 17,938m drilling required to be completed in 71 boreholes in sub-block-IV. MECL requested for timeline extension of 11 months for completion of remaining target by March, 2023.

The committee noted the outcome of the project and suggested to divert some more drilling machines to achieve the set targets. The Committee recommended for approval by EC for time extension up to 31st March, 2023 for completion of work and submition of the geological report.

40.3.2. General exploration (G2) for phosphate deposit in Sonrai block, District: Lalitpur, Uttar Pradesh. [MECL]

a) The project was approved in 6th EC meeting held on 11th January, 2018 with estimated cost of Rs. 473.50 Lakh and timeline of eight months. The project was delayed for want of forest clearance. The drilling was started after forest clarance on 1st March, 2021.

b) The project was discussed in 34th TCC meeting, wherein the Committee suggested to complete the beneficiation study before approaching for timeline extension. The Committee had opined that after completion of ore beneficiation studies, the time extension will be given accordingly.

c) Now MECL has conveyed that the beneficiation studies have been completed by IBM and geological report has been submitted to State Government for auction of block and requested for timeline extension upto 31st January, 2022.

The Committee recommended for approval of EC for **timeline extension upto 31st January, 2022 for submission of geological report and settlement of bills.**

40.3.3. Reconnaissance Survey (G4) for Magnetite and Ni-Co-Cr in Mollen-Jopi-Ziphu and adjoining area, Naga Hills Ophiolite, District: Phek, Nagaland. [DGM, Nagaland]

And

40.3.4. Preliminary Exploration (G3) for Limestone in Salumi block, District: Kiphire, Nagaland. [DGM, Nagaland]

a) In reference to the above two projects [40.3.3 and 40.3.4]; the DGM, Nagaland has conveyed that geological report of Salumi Limestone block (G3) and Mollen-Jopi-Ziphu Magnetite (G4) was completed as per the approved timeline i.e. January 2021. However, the full payment for pending bills against the projects could not been made due to lapses in postal communication for both geological reports and previous Utilisation Certificate during the COVID pandemic period.

b) Keeping this in view, the DGM, Nagaland has requested for timeline extension of one month i.e. February 2021 to complete the payment.

The Committee recommended for approval by EC for timeline extension upto 28th February, 2021 for submission of geological report and bills payments.

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40.4. Additional cost approval

40.4.1. General exploration (G2) for copper in Tonda block, Eastern Khetri Copper Belt, District: Jhunjhunu, Rajasthan.

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

b) The approved cost for ore benefication studies through IBM was ₹3,35,034/- however the TCC recommended the cost as per actual. The actual cost paid to IBM is ₹3,54,000/- by MECL for ore beneficiation studies. The additional cost of ₹18,967/- is required.

The Committee approved the additional cost of ₹18,967/- for the ore beneficiation studies.

40.4.2. General exploration (G2) for Copper in Naila Ki Dhani Copper Block, Eastern Khetri Copper Belt, District- Jhunjhunu, Rajasthan.

a) The project was recommended in 24th TCC meeting held on 07th, 08th and 09th October, 2020 with estimated cost of Rs. 807.59 Lakh & timeline of 16 months and approved in 17th EC meeting held on 05th November, 2020.

b) The approved cost for ore benefication studies through IBM was ₹3,35,034/- however the TCC recommended the cost as per actual. The actual cost paid to IBM is ₹3,54,000/- by MECL for ore beneficiation studies. The additional cost of ₹18,967/- is required.

The Committee approved the additional cost of ₹18,967/- for the ore beneficiation studies.

40.4.3. General exploration (G2) for Copper in Mundadevta-Darkhuli-South Jharia Copper Block District: East Singbhum, Jharkhand.

a) The project was recommended in 27th TCC meeting held on 07th and 08th January, 2021 with estimated cost of Rs. 967.70 Lakh & with timeline of 18 months and approved in 18th EC meeting held on 17th February, 2021.

b) The approved cost for ore benefication studies through IBM was ₹3,35,034/- however the TCC recommended the cost as per actual. The actual cost paid to IBM is ₹3,54,000/- by MECL for ore beneficiation studies. The additional cost of ₹18,967/- is required.

The Committee approved the additional cost of ₹18,967/- for the ore beneficiation studies.

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40.5 Addition Agenda

a) The MECL has submitted that the project Preliminary exploration (G3) for Potash in Lakhasar East block, Lakhasar-Sub Basin, North Western Part of Rajasthan, District: Bikaner, Rajasthan was recommended for approval of EC in 39th TCC meeting.

b) The committee had suggested to carry out dual-density and neutron logging for five boreholes (3500m), however, the decision on gamma-ray logging was not recorded in the minutes. MECL has requested to include the decision on gamma-ray logging.

Keeping this in view, the Committee suggested that the gamma-ray logging for the entire boreholes logs (3500m) will be carried out by AMD. Accordingly, MECL will inform the AMD for carrying out gamma-ray logging after completion of each bore hole drilling.

40.6. The meeting ended with concluding remarks of the chairman and vote of thanks by the Director and member secretary, TCC, NMET.

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List of TCC members attended 40th Technical-cum-Cost Committee (TCC) meeting of NMET held on 27th and 28th April, 2022 through videoconferencing

S. No.	Name/Designation	Status	Remarks
1	Shri Janardan Prasad, Addl. Director General & HoD, GSI	Chairman, TCC, NMET	Attended via videoconference
2	Shri Ranjan Kumar Sinha, Controller General (Retd.), Indian Bureau of Mines	TCC Member	Attended via videoconference
3	Shri Naeem Ahmad, General Manager-Exploration (Retd.), CMPDI Ltd.	TCC Member	Attended via videoconference
4	Dr. Anjani Kumar, Dy. General Manager (Exploration) &HoD-Planning (Retd.), MECL	TCC Member	Attended via videoconference
5	Shri B. Saravanan, Additional Director, Atomic Minerals Directorate for Exploration and Research	TCC Member	Attended via videoconference
6	Shri Hemraj Suryavanshi, Deputy Director General and NMH-II, GSI	TCC Member	Attended via videoconference on 28th April, 2022
7	Shri Manoj Kumar Patel, Deputy Director General and RMH-II, GSI	TCC Member	Attended via videoconference
8	Shri Santosh Kumar Adhikari, Chief Mining Geologist, IBM	TCC Member	Attended via videoconference
9	Shri Vivek Kumar Sharma, Director, NMET, Ministry of Mines	TCC Member	Not Attended
10	Shri Suresh Chander, Director, GSI	Member Secretary, TCC, NMET	Attended via videoconference
11	Shri Ravi Kumar Gupta, Deputy General Manager (Finance), HCL	TCC Member	Attended via videoconference
12	Shri P. K. Maharana, Dy. General Manager (Finance), NALCO	TCC Member	Attended via videoconference
13	Shri Vinay Pal, Assistant Cost Account Officer (Finance), GSI	TCC Member	Attended via videoconference

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Annexure-1

List of participants attended 40th Technical-cum-Cost Committee (TCC) meeting of NMET held on 27th and 28th April, 2022 through videoconferencing

S. No.	Name/Designation	Email ID	Contact No	Organisation
1	Shri Janardan Prasad, ADG & HoD, GSI	janardan.prasad@gsi.gov.in	7763800788	Chairman, TCC
2	Shri Ranjan Kumar Sinha, Controller General (Retd.) IBM	sinhark57@rediffmail.com	9421777637	Member, TCC
3	Shri Naeem Ahmed, EM (Retd.), CMPDI	ahmadnaeem17@yahoo.co.in	8588092153	Member, TCC
4	Dr. Anjani Kumar, DGM (Retd.), MECL	anjanikumar1957.ak@gmail.com	9975350576	Member, TCC
5	Shri B. Saravanan, AMD, Hyderabad	addldir-op1.amd@gov.in	8987571606	Member, TCC
6	Shri Hemraj Suryavanshi, DDG and NMH-II, GSI	hem.raj@gsi.gov.in	7477042176	Member, TCC
7	Shri Manoj Kumar Patel, DDG and RMH-II, GSI	m.patel1@gsi.gov.in	9040011231	Member, TCC
8	Shri Santosh Kumar Adhikari, Chief Mining Geologist, IBM	skadhikari@ibm.gov.in	7588690545	Member, TCC
9	Shri Suresh Chander, Director, GSI	suresh.chander@gsi.gov.in	9493860963	Member Secretary, TCC
10	Shri P. K. Maharana, DGM (F), NALCO	pmaharana@rediffmail.com	8500669500	Member, TCC
11	Shri Vinay Pal ACAO, (Finance), GSI	vinay.pal@gsi.gov.in	8527368161	Member, TCC
12	Dr. Deshraj Trivedi, Senior Geologist	nmet-tcc@gov.in	9419244294	NMET
13	Shri Subhash Kumar, Senior Geologist	nmet-mines@gov.in	9868302624	NMET
14	Shri P. Ravindran, DGM (Exploration)	gm-exploration@mecl.co.in	7907649392	MECL, Nagpur
15	DGM representative	dir-geology@jharkhandmail.gov.in		DGM, Jharkhand

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Annexure-2A

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

[Total block area- 101.00 sq. km; Schedule timeline- 12 months]

S. No.	Item of Work	Unit	Rates as per NMET SoC		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Total Amount (Rs.)	
A	**GEOLOGICAL WORK**						
a	Charges for Geologist per day at HQ for monitoring, data processing etc.	day	1.3	9,000	30	2,70,000	
b	Charges for Geologist per day at field for mapping, channel sampling and logging	day	1.3	11,000	140	15,40,000	
c	Labour (2 Nos)Charges [associated with Geologist (Field)]; Base rate - Rs.437/-	day	5.7	437	280	1,22,360	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
d	Charges for Sampler per day for geochemical, channel and core samples	one sampler per day	1.5.2	5,100	25	1,27,500	
e	Labours (4 Nos) Charges (associated with Sampler); Base rate - Rs. 437/-	day	5.7	437	100	43,700	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	**21,03,560**	
B	**PITTING AND TRENCHING$**						
1	Trenching	Cu m	2.1.1	3,300	150	4,95,000	
					Sub Total- B	**4,95,000**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
I	**Primary & Check Samples from Surface outcrop and steam sediments (BRS/Channel samples/Stream Sediments)**						
i)	**Primary samples**						
	a. For 34 elements (Cu, Pb, Zn,	Nos	4.1.14	7,731	100	7,73,100	

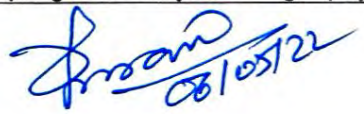
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	Cd, As, Sb, Bi, Co, Ni, Mo, U, As, Fe, Mn, Si, Al, Ca, Mg, S, Nb, Ta) by ICP-Ms						
	b. For Au & Ag by fire assay	Nos	4.1.5a	4,760	5	23,800	
ii)	**Internal check samples (5%)**						
	a. For 34 elements (Cu, Pb, Zn, Cd, As, Sb, Bi, Co, Ni, Mo, U, As, Fe, Mn, Si, Al, Ca, Mg, S, Nb, Ta)	Nos	4.1.14	7,731	5	38,655	
	b. For Au & Ag by fire assay	Nos	4.1.5a	4,760	1	4,760	
ii)	**External check samples (10%)**						
	a. For 34 elements (Cu, Pb, Zn, Cd, As, Sb, Bi, Co, Ni, Mo, U, As, Fe, Mn, Si, Al, Ca, Mg, S, Nb, Ta)	Nos	4.1.14	7,731	10	77,310	
	b. For Au & Ag by fire assay	Nos	4.1.5a	4,760	1	4,760	
II	**Primary & Check Samples from Trench**						
i)	**Primary samples**						
	a. For Cu, Pb, Zn	Nos	4.1.7a	2,506	75	1,87,950	
	b. For Au & Ag by fire assay	Nos	4.1.5a	4,760	5	23,800	
ii)	**Internal check samples (5%)**						
	a. For Cu, Pb, Zn	Nos	4.1.7a	2,506	4	10,024	
	b. For Au & Ag by fire assay	Nos	4.1.5a	4,760	1	4,760	
iii)	**External check samples (10%)**						
	a. For Cu, Pb, Zn	Nos	4.1.7a	2,506	8	20,048	
	b. For Au by fire assay	Nos	4.1.5a	4,760	1	2,380	
2	**Physical & Petrological Stusies**						
i)	Preparation of thin section	Nos	4.3.1	2,353	10	23,530	
ii)	Complete petrographic study report	Nos	4.3.4	4,232	10	42,320	
iii)	Preparation of polish section	Nos	4.3.2	1,549	10	15,490	
iv)	Complete mineragraphic study report	Nos	4.3.4	4,232	10	42,320	
v)	Digital Photographs	Nos	4.3.7	280	20	5,600	
					Sub Total- C	**13,00,607**	
D					**Total A to C**	**38,99,167**	

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E	**Geological Report Preparation**	5 Hard copies with a soft copy	5.2	For the projects having cost less than Rs. 50 lakhs - A minimum of Rs. 1.5 lakhs or 5% of the value of work whichever is more		**1,94,958**	EA has to submit the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
F	**Peer review Charges**		As per EC decision			**10,000**	
G	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	5 Hard copies with a soft copy	5.1	2% of the Cost or Rs. 3.8 Lakhs whichever is lower		**77,983**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
H	**Total Estimated Cost without GST**					**41,82,109**	
I	**Provision for GST (18% of J)**					**7,52,780**	GST will be reimburse as per actual and as per notified prescribed rate
J	**Total Estimated Cost with GST**					**49,34,888**	***or Say Rs. 49.35 Lakh***
Notes-							
	If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.						
$	Trenching/Pitting dimensions are tentative may vary depending upon the geology and field conditions						
#	2nd level of work shall be carried out after review of 1st level work *i.e.* Geological mapping, geochemical sampling and analysis and geophysical survey						





Annexure-2B

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

			1	2	3	4	5	6	Review	7	8	9	10	11	12
1	Camp Setting	Month													
2	Geological Mapping & Sampling	days													
3	Pitting and Trenching	Cu M													
4	Geologst Man days	Party days													
5	Sampler Man days	Party days													
6	Camp Winding	Months													
7	Laboratory Studies	Nos.													
8	Report Writing with Peer Review	Months													

Note: 1. Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.

2. Time loss on account of monsoon/agricultural activity/forest clearance/local law & order problem may be additional to above time line.

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Annexure-3A

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

[Total block area- 70.42 sq. km; Schedule timeline- 12 months]

S. No.	Item of Work	Unit	Rates as per NMET SoC		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Total Amount (Rs)	
A	**GEOLOGICAL WORK**						
a	Charges for Geologist at field for mapping, channel sampling and Pitting	day	1.3	11,000	180	19,80,000	
b	Labour Charges for Geologist (Filed); Base rate - Rs. 437/ per day	day	5.7	437	360	1,57,320	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
c	Charges for Sampler for geochemical, channel samples	one sampler per day	1.5.2	5,100	40	2,04,000	
d	Labour Charges for Sampling Work; Base rate - Rs. 437/ per day	day	5.7	437	160	69,920	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	**24,11,240**	
B	**PITTING AND TRENCHING$**						
a	PITTING	Cu m	2.1.1	3,300	200	6,60,000	
					Sub Total- B	**6,60,000**	
C					**Sub Total- A to B**	**30,71,240**	
D	**Additional Rate for exploration work in remote and inaccessible terrain in North Eastern States and Hilly Terrain of Himalaya**		para 5 of SoC	3.35 times higher than the normal SoC (3.35 times of Sub-Total A &B)		**1,02,88,654**	Certification that area falls in remote and inaccessible terrain in North Eastern State and/or Hilly Terrain of Himalya region is required

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E	**Charges for Geologist at HQrs for data processing**	**day**	**1.3**	**9,000**	**60**	**5,40,000**	
F	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
I	**Primary & Check Samples from Surface outcrop and steam sediments**						
i)	**Primary samples**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	100	7,73,100	
ii)	**Internal check samples (5%)**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	5	38,655	
iii)	**External check samples (10%)**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	10	77,310	
II	**Primary & Check Samples from Pit**						
i)	**Primary samples**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	200	15,46,200	
ii)	**Internal check samples (5%)**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	10	77,310	
iii)	**External check samples (10%)**						
	a. 34 Elecments REE and Sr, Rb, Be, Zr, Nb, Ta, Th and U by ICPMS	Nos	4.1.14	7,731	20	1,54,620	
2	**Physical & Petrological Stusies**						
i)	Preparation of thin section	Nos	4.3.1	2,353	10	23,530	
ii)	Complete petrographic study report	Nos	4.3.4	4,232	10	42,320	
iii)	Preparation of polish section	Nos	4.3.2	1,549	10	15,490	
iv)	Complete mineragraphic study report	Nos	4.3.4	4,232	10	42,320	
v)	Digital Photographs	Nos	4.3.7	280	15	4,200	
vi)	Whole Rock Analysis	Nos	4.1.15a	7,568	10	75,680	
					Sub Total- F	**28,70,735**	
G					**Sub Total- D + E + F**	**1,36,99,389**	

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H	**Geological Report Preparation**	5 Hard copies with a soft copy	5.2	For the projects having cost exceding Rs 50 Lakh but less than 150 Lakh: A minimum of Rs 2.5 Lakh or 5% of the work whichever more and Rs 3000/- per each additional copy		**6,84,969**	EA has to submit the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
I	**Peer review Charges**		As per EC decision			**10,000**	
J	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	5 Hard copies with a soft copy	5.1	2% of the Cost or Rs. 3.8 Lakhs whichever is lower		**2,73,988**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
K	**Total Estimated Cost without GST**					**1,46,68,346**	
L	**Provision for GST (18% of L)**					**26,40,302**	GST will be reimburse as per actual and as per notified prescribed rate
M	**Total Estimated Cost with GST**					**1,73,08,649**	***or Say Rs. 173.09 Lakh***
Note:							
	If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.						
$	Trenching/Pitting dimensions are tentative may vary depending upon the geology and field conditions						
#	2nd level of work shall be carried out after review of 1st level work i.e. Geological mapping, geochemical sampling and analysis						

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Annexure-3B

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

		Months	1	2	3	4	5	6	REVIEW	7	8	9	10	11	12
1	Remote Sensing studies														
2	Camp Setting	Month													
3	Geological Mapping	Month													
4	Pitting /Trenching	Cu.m													
5	Geologist days	days													
6	Sampling days	days													
7	Camp Winding	Month													
8	Laboratory Studies	Month													
9	Geologist Party days, HQ	days													
10	Report Writing with Peer Review	Month													
	* Commencement of project will be reckoned from the day the exploration acreage is available along with all statutory clearances.														
	*Time loss on account of monsoon/agricultural activity/forest clearance/local law and order problems will be addition to above time line.														

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Annexure-4A

Estimated cost for Preliminary exploration (G3) for Diamond in Tikamgarh Cluster- comprising of four sub-blocks- A to D (total area of Cluster- 109.68 sq. km), District: Tikamgarh, Madhya Pradesh.

[Total block area- 109.68 sq. km; Nos. of Borehole- 5; Borehole depth range- 100m avarage; Schedule timeline- 15 months]

S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC- Item- S. No.	Rates as per SoC	Qty.	Total Amount (Rs)	
1	**Geological, Sampling & Survey Days**						
	Large scale (LSM) Geological mapping/ Detailed Mapping/Trenching/ Drilling						
1.1	Geologist man days for Field work	days	1.2	11,000	180	19,80,000	
1.2	Labour Charges for Geology work (field) Base rate - Rs. 437/ per day	per worker	5.7	437	360	1,57,320	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. - whichever is higher
1.3	Geologist man days (HQ)	days	1.3	9,000	90	8,10,000	(Geologist mandays inclusive of mineral identification work)
1.4	Sampling Charges (Geochemical /Trenching/Pitting/Drilling)	day	1.5.2	5,100	60	3,06,000	
1.5	Labour Charges for Sampling Work Base rate - Rs. 437/ per day	day	5.7	437	240	1,04,880	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. - whichever is higher
					Sub Total- 1	**33,58,200**	
2	**Geophysical Surveys**						
2.1	Magnetic Surveys (10-30 line km)	per station	3.2a	1,800	1000	18,00,000	Modification will be done after the review of the work
2.2	Geophysicist man days for Geophysical Survey	days	3.18	11,000	60	6,60,000	Modification will be done after the review of the work
2.3	Surveyor Charges	days	1.6.1.a	8,300	60	4,98,000	Modification will be done after the review of the work
2.4	Llabours Charges for Survey Work	per worker	5.7	437	180	78,660	Modification will be done after the review of the work.

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	Base rate - Rs. 437/ per day						Labour Charges will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. - whichever is higher
					Sub Total- 2	**30,36,660**	
3	**Drilling**						
3.1	a) Drilling up to 300m Rigs) (Medium Hard Rock)	per m	2.2.1.4 a	10,100	500	50,50,000	
3.2	Borehole deviation survey by Multi shot camera	per m	2.2.6	330	500	1,65,000	
3.3	Borehole Pillaring - construction of concrete pillar (12"x12"x30")	per bh	2.2.7.a	2,000	5	10,000	
3.4	Transportation of drill rigs & truckassociated per drill (To & Fro from HQ)	per km	2.2.8	36	1400	50,400	Certification in this regard is required to be provided
3.5	Monthly accommodation charges for drilling camp	monthly	2.2.9	50,000	3	1,50,000	
3.6	a) Drilling camp setting	per drill	2.2.9a	2,50,000	1	2,50,000	
3.7	b) Drilling camp winding	per drill	2.2.9b	2,50,000	1	2,50,000	
3.8	Approach road making	per km	2.2.10	22,020	7	1,54,140	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed for max. 5 km.
3.9	Drill core preservation	per m	5.3	1590	250	3,97,500	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
3.1	Land/crop compensation	per borehole	5.6	20000	5	1,00,000	Amount will be reimburse as per actuals or max. Rs. 20000 per BH with certification from local authorities
3.11	Demarcation Fixation of borehole and determination of co-ordinates & Reduced Level (RL) of the boreholes by DGPS (including charges for labours deployed for the work)	Per point of observation	1.6.2	19,200	6	1,15,200	
					Sub Total- 3	**66,92,240**	

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4	**Laboratory Studies**						
4.1	Chemical Analysis						
	i) Surface sampling (Bed Rock Samples)						
	a) Whole rock analysis (Major oxides)	per sample	4.1.15a	4,200	20	84,000	
	ii) Stream Sample					-	
	a. Separation of heavy minerals from stream sediment samples of 2mm size through gravity and magnetic separation	per sample	4.3.6b	13,820	53+ 215 = 268	37,03,760	215 follow up samples, will be reimbursed as per actual nos of sample however, Max. 53+215 =268 samples
	b. Heavy mineral separation by liquid	per sample	4.3.6a	2,380	53+ 215 = 268	6,37,840	215 follow up samples , will be reimbursed as per actual nos of sample, Max. - 53+215 =268 samples
	c. EPMA studies for suspected Heavy Mineral grains	Per hour	4.4.1	8,540	200	17,08,000	As per actual (25% samples around 40 nos.) and maximum to 200 hrs.
4.2	**ii) BH Sampling (Primary)**						
	a. Separation of heavy minerals from drill samples of -2mm size through gravity and magnetic separation	per sample	4.3.6b	13,820	200	27,64,000	will be reimbursed as per actual nos of sample; Max. 200 samples
	b. Heavy mineral separation by liquid	per sample	4.3.6a	2,380	200	4,76,000	will be reimbursed as per actual nos of sample; Max. 200 samples
	c. EPMA studies for suspected Heavy Mineral grains	Per hour	4.4.1	8,540	100	8,54,000	As per actual (20-25% samples around 30 nos.) and maximum to 100 hrs.
4.3	**Petrological / Mineralographic studies**						
	a) Preparation of thin section (Surface & BH)	per sample	4.3.1	2,353	15	35,295	
	b) Study of thin section for petrography	per sample	4.3.4	4,232	15	63,480	
	c) Digital photomicrograph of thin section	per sample	4.3.7	280	15	4,200	
					Sub Total- 4	**1,03,30,575**	
5					**Sub Total- 1 to 4**	**2,34,17,675**	

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6	**Geological Report Preparation**	Nos	5.2	For the projects having cost exceding Rs 150 Lakh but less than 300 Lakh: A minimum of Rs 7.5 Lakh or 3% of the work whichever more and Rs 3000/- per each additional copy	1	**7,50,000**	EA has to submit the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
7	**Preparation of Exploration Proposal**	**Nos**	**5.1**	2% of the Cost or Rs. 3.8 Lakhs whichever is lower	**1**	**3,80,000**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
8	**Report Peer Review Charges**	lumpsum	As per EC decision	10000	1	**10,000**	
9	**Total Estimated Cost without GST (6+7+8+9)**					**2,45,57,675**	
10	**Provision for GST (18%)**					**44,20,382**	GST will be reimburse as per actual and as per notified prescribed rate
11	**Total Estimated Cost with GST**					**2,89,78,057**	***or Say Rs. 289.78 Lakh***

Note -

1. If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC.
2. In case of execution of the project by EA on its own, a Certificate regarding non outsourcing of any component/project is required.

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Annexure-4B

Schedule timeline for Preliminary exploration (G3) for Diamond in Tikamgarh Cluster- comprising of four sub-blocks- A to D (total area of Cluster- 109.68 sq. km), District: Tikamgarh, Madhya Pradesh.

S. No.	Activities	MONTHS															
		1	2	3	4	5	6	Review	7	8	9	10	Review	11	12	13	14	15
1	Geologist at HQ																	
2	Camp setting																	
3	Large Scale Geological mapping & Sampling days																	
4	Sample preparation days																	
5	Analytical work																	
6	Geophysical survey days																	
7	Survey work for Geophysical Survey days																	
8	Geophysicist at HQ																	
9	Exploratory mining for trenching & Pitting																	
10	Sample preparation days																	
11	Analytical work																	
12	Drilling 500m																	
13	Bore hole logging																	
14	Sample preparation for Drill samples																	
15	Camp winding																	
16	Analytical work drill core samples																	
17	Geologist at HQ																	
18	Geological report																	
19	Peer Review																	
* Commencement of project will be reckoned from the day the exploration acreage is available along with all statutory clearances																		
*Time loss on account of monsoon/agricultural activity/forest clearance/ local law & order problems will be addition to above time line.																		

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