Ministry of Mines
National Mineral Exploration Trust
Minutes of the 59th Technical-cum-Cost Committee (TCC) meeting held on 28th&29thNovember, 2023 through video conferencing

The 59thmeeting of Technical-cum-Cost Committee [TCC] of National Mineral Exploration Trust [NMET] was held through video conferencing under the chairmanship of Dr. S. Ravi, Dy. Director General, Geological Survey of India (DDG, GSI) and Chairman, TCC, NMET on 28th& 29thNovember, 2023.

Members of TCC-NMET and representatives from MECL, MPSMC Ltd., DMG Odisha, CMPDI, KIOCL, DGM Madhya Pradesh, DGM Maharashtra and M/s. Gemcokati Exploration Pvt. Ltd., and M/s. Maheshwari Mining Pvt. Ltd. have attended the meeting through their respective VC modes.

The list of participants is at **Annexure-1.**

Shri C. Parthasarathi, Director, GSI and Member Secretary, TCC-NMET, welcomed Dr. S. Ravi, DDG, GSI and Chairman, TCC, NMET, Members of the TCC and participants representing various Notified Exploration Agencies [NEAs].

Shri Vivek Kumar Sharma, Director & HoD, NMET in his opening remarks welcomed the participants and asked the NEAs and NPEAs to come out with more items on strategic and critical commodities. He also asked the NEAs and NPEAs to feel free to contact NMET secretariat if they face any issue while implementing the NMET projects. Besides, he emphasized the committee members to critically review the projects and encourage innovative ideas especially in the items involving strategic and critical commodities in which the country is 100% import dependent.

Dr. S. Ravi, DDG, GSI and Chairman, TCC, welcomed the members of TCC and participants representing various Notified Exploration Agencies [NEAs]/ Notified Private Exploration Agencies [NPEAs]. In his opening remarks, the chairman highlighted the types of items being proposed for review and insisted the NEAs and NPEAs to carve out more items targeting critical commodities rather than bulk minerals where in the risk factor is less. He also asked the NEAs and NPEAs to fix a target while preparing proposals and come out with at least 30% of their proposals dedicated towards critical and strategic commodities. The chairman asked the NEAs and NPEAs to consult the NGCM, NGPM and NAGPM database of GSI and come out with proposals for high value commodities. The chairman also recommended utilizing Artificial Intelligence (AI) and Machine Learning (ML) technologies in exploration strategies

Subsequently, the proceeding of meeting was initiated as per circulated agenda.

Parathi 01/12/2023

Ravi 01/12/2023

Agenda 59.1: Technical evaluation of new project proposals:

Agenda 59.1.1 Preliminary Exploration (G-3 stage) for RockPhosphate in Nimbli Block (2.70 sq km), District:Jaisalmer, Rajasthan.
[Implementing Agency: MECL]

a) The proposed block forms the part of Barmer-Sanchor sub-basin (Birmania Formation) and falls in the SOI toposheet No. 40J/16. The Birmania phosphorite deposit, spanning 4 km x 0.5 km, has been categorized into three sub-blocks by GSI based on geological structures and variations in phosphorite characteristics, namely (a) Birmania, (b) Kohra, and (c) Ladu Singh.

b) MECL informed that Proposed Nimbli block is falling in kohra and part of Bimania blocks marked by GSI.

c) Further MECL also conveyed that GSI carried out exploratory drilling for Phosphorite at Birmania deposit over a strike length 2.2 km.in FS 1968-70. A total 2053.89m of drilling was carried out in 68 no of boreholes and phosphorite was intersected in 55 no of boreholes at depths varying from 1.5 to 40.0 m. Resources were estimated at 10% P_2O_5 cut-off and minimum width of 1.5m and established 3.49 MT with average grade 12.91%.

d) MECL in the year 2022 had explored FAGMIL leasehold area to an extent of 4sq.km at G-2 level, where 69 nos of boreholes were drilled with a meterage of 3752m and estimated 4.63 MT of phosphorite resources at 5% P_2O_5 cut-off (4.54 MT in Birmania sector with average grade of 10.04% and 0.09 MT in Ladu-Singh sector with average grade of 6%).

e) In order to establish the continuity of the ore body in terms of strike (NNE-SSW) and depth through subsurface drilling, the MECL has proposed this G-3 stage exploration item in the Nimbli block, which lies adjacent to the explored Birmania FAGMIL lease and the Biramnia phosphorite deposit investigated by GSI.

f) The project proposal was sent to GSI for comments. In response to this GSI has informed that there is no overlapping with any mission II projects taken in recent past and also there is no mission II proposals for FS: 2024-25 in the proposaed area of MECL (Nimbli Phosphorite Block) for the FSP: 2024-25. However GSI, WR has proposals a STM item which include proposed area by MECL.

g) In view of above, the committee opined that the existing DM on 1:500 scale was mapped more than 4 decades back by GSI and is not legible enough to interpret the structure and disposition of the rock types thus preventing to decide drilling. Therefore the committee decided to locate the borehole position after reviewing the project on completion of the detailed mapping/structural mapping on 1:2000 scale.

h) The project will be reviewed after 02 –months with the structure map and borehole plan.

Recommendation of TCC:

The committee recommends the proposal for approval of EC for "Preliminary Exploration (G-3 stage) for Rock Phosphate in Nimbli Block, District: Jaisalmer, Rajasthan" over an area of 2.70 sq.km with an estimated cost of Rs. 355.98 lakh (including GST) within time schedule of 12 months and submission of report as per annexure-2A & 2B with the following suggestions:

I. Detailed mapping on 1:2000 scale including topographic survey.

II. The mapping part should be completed within two months and the item will be reviewed to decide the number & location of boreholes in the block.

III. Under Geophysical survey, gravity survey should be omitted.

IV. Realization of other components i.e. drilling, BRS, PT, PTS, CS, PS and PCS in the NQT will be decided after the review of DM.

Agenda 59.1.2 Preliminary Exploration (G-3 stage) for Manganese & Graphite in Larambha Block (2.57 sq. km), District- Balangir, Odisha.
[Implementing Agency: MECL]

a) The exploration area lies in the northern part of the Eastern Ghat Supergroup of rocks belonging to the meta-sedimentary sequence of Precambrian Khondalite.

b) MECL informed that the proposed item is an upgradation of the G-4 stage exploration by MECL for Manganese & Graphite in Larambha-Kanaital & Pudapadar- Bharatbahal Block. During the reconnaissance survey, the MECL identified five potential blocks out of which the Larambha manganese and graphite block is highlighted as one.

c) The committee was informed that the G4 stage exploration revealed manganese percentages in bedrock samples vary from 1.34% to 20.07% Mn. The mineralized zone in the area has an average thickness of 24m and a cumulative strike length of 1058m. The exploration has indicated 28100 tonnes of manganese with an average grade of 17.42% Mn at 10% Mn cut-off, and 6750 tonnes of graphite with an average grade of 2.70% FC at a 2% FC cut-off estimated on the basis of trenching.

d) MECL further conveyed that the peer reviewer of the GR of G4 stage suggested to upgrade the project for next level of exploration by carving out two new blocks with a judicious approach towards the major nala and hill.

e) To prove further vertical and lateral continuity of the mineralized zones this G3 item has been proposed by MECL.

f) The project proposal was sent to GSI for comments. In response to this GSI has informed that the proposed block is neither overlapping with any of the present explored blocks of GSI taken up during FS 2023-24 nor in blocks proposed for FS 2024-25.

g) After the detailed deliberation, the committee suggested to carry out detailed mapping including topographic survey on 1: 2000 scale, First level boreholes for 30 m vertical depth should be drilled at 200 m borehole spacing. Second level boreholes will be decided only after analyzing the samples of first level boreholes. The committee also mentioned that the First level drilling along the profile lines falling in the non-mineralised area will have to be proved by trenching. Core samples and trench samples are to be collected at 1m sample length. At least 10% of the total samples (core samples) from Mn horizons should be analyzed for Cobalt and Vanadium.

h) The project will be reviewed after 04 months.

Recommendation of TCC:

The committee recommends the proposal for approval of EC for "Preliminary Exploration (G-3 stage) for manganese and graphite in Larambha Block (2.57 sq. km), District: Balangir, Odisha" with an estimated cost of Rs. 214.14 lakh (including GST) within time schedule of 11 months and submission of report as per annexure-3A & 3B with the following suggestions:

I. DM including topographic survey should be carried out on 1: 2000 scale.
II. First level boreholes for 30 m vertical depth should be drilled at 200 m borehole spacing. Second level boreholes will be decided only after analyzing the samples of first level boreholes. Final quantity of drilling in the block will be realized on the basis of outcome of the first level boreholes.
III. First level drilling along the profile lines falling in the non-mineralised area will have to be initially proved by trenching.
IV. Core samples and trench samples will be collected at 1m sample length.
V. At least 10% of the total samples (core samples) from Mn horizons should be analyzed for Cobalt and Vanadium.
VI. No change suggested for samples proposed under graphite horizons.

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Agenda 59.1.3 Preliminary Exploration (G-3 stage) for Manganese& Graphite in Kanaital Block (4.26 sq. km), District-Balangir, Odisha.
[Implementing Agency: MECL]

a) The proposed item is an upgradation of the G-4 stage exploration by MECL for Manganese & Graphite in Larambha-Kanaital & Pudapadar- Bharatbahal Block.

b) MECL informed that during the reconnaissance survey, the MECL identified five potential blocks out of which the Kanaital manganese and graphite block is highlighted as one. Further, the peer reviewer of the GR of G4 stage suggested to upgrade the project for next level of exploration by carving out two new blocks with a judicious approach towards the major nala and hill.

c) The committee was informed that in the previous exploration, bedrock samples and one trench revealed manganese percentages ranging from 1.08% to 31.79% Mn and graphite percentages from 0.29% to 5.07% FC. The average thickness of the mineralized zone is approximately 16m, with a cumulative strike length of about 1598m. The identified mineralized zones in the trench show 40,745 tonnes of manganese with an average grade of 17.42% Mn at a 10% Mn cut-off and 32,280 tonnes of graphite with an average grade of 2.70% FC at a 2% FC cut-off.

d) To establish vertical as well as horizontal extension of the mineralized zones and to enhance the level of confidence this item has been proposed by MECL under G3 stage.

e) The project proposal was sent to GSI for comments. In response to this GSI has informed that the proposed block is neither overlapping with any of the present explored blocks of GSI taken up during FS 2023-24 nor in blocks proposed for FS 2024-25.

f) After the detailed deliberation, the committee suggested to carry out detailed mapping including topographic survey on 1: 2000 scale. First level boreholes for 30 m vertical depth should be drilled at 200 m borehole spacing. Second level boreholes will be decided only after analyzing the samples of first level boreholes. The committee also mentioned that the first level drilling along the profile lines falling in the non-mineralised area will have to be proved by trenching.Core samples and trench samples are to be collected at 1m sample length. At least 10% of the total samples (core samples) from Mn horizons should be analyzed for Cobalt and Vanadium.

g) The project will be reviewed after 04 months.

Recommendation of TCC:

The committee recommends the proposal for approval of EC for "Preliminary Exploration (G-3 stage) for Manganese & Graphite in Kanaital Block (4.26 sq. km), District-Balangir, Odisha" with an estimated cost of Rs. 223.40 lakh (including GST) within time schedule of 11 months and submission of report as per annexure-4A & 4B with following suggestions:

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I. ***DM including topographic survey should be carried out on 1: 2000 scale.***
II. ***First level boreholes for 30 m vertical depth should be drilled at 200 m borehole spacing. Second level boreholes will be decided only after analyzing the samples of first level boreholes. Final quantity of drilling in the block will be realized on the basis of outcome of the first level boreholes.***
III. ***First level drilling along the profile lines falling in the non-mineralised area will have to be initially proved by trenching.***
IV. ***Core samples and trench samples will be collected at 1 m sample length.***
V. ***At least 10% of the total samples (core samples) from Mn horizons should be analyzed for Cobalt and Vanadium.***
VI. ***No change suggested for samples proposed under graphite horizons.***

Agenda 59.1.4Reconnaissance Survey (G-4 stage) for REE and Rare Metals in Kumhardih-Khijuri-Pachamba Block(155.51 sq. km), District- Giridih, Jharkhand. [Implementing Agency: MECL]

a) The proposed Kumhardih-Khijuri-Pachambha Block area belongs to Bihar Mica Belt and falls in Survey of India Toposheet No 72L/2. Bihar Mica Belt is known for its mineral potential. But due to forest cover a large part of the belt is remaining unexplored. Bihar Mica belt exposes REE & RM baring pegmatite bodies besides mica schist, phyllite and others.

b) It has been informed that the proposed block comprises of Paleoproterozoic to Mesoproterozoic phyllites, mica schists, quartzites and gritty quartzites of Koderma Group and Neoproterozoic Hazaribagh Granites. All these suite of rocks are intruded by pegmatites.

c) MECL informed that GSI is carrying out several G-4 exploration items for REE and Rare Metals in the adjoining toposheet which have encouraging REE values in NGCM samples. The proposed block lies to the eastern extension having similar geological setup suitable for hosting REE and Rare metal mineralization.

d) Further, MECL has consulted the NGCM data of GSI (through BHUKOSH) for Stream Sediment Samples falling in Toposheet No. 72L/2 and found encouraging LREE & HREE. The geochemical survey (NGCM) by GSI in the area has indicated Lanthanum up to 332.56 ppm, Cerium up to 621 ppm and Neodymium up to 272 ppm and Yttrium up to 166 ppm.

e) Upon review, the committee suggested to modify the block boundary to make it a regular rectangular shape. Accordingly, the area of the block has been modified into 175.28 sq.km. instead of 155.51 sq.km proposed initially.

f) After the detailed deliberation, the committee suggested to classify the pegmatites exposed in the proposed area, as per the standard classification system, to understand REE & RM mineralization.

g) The project will be reviewed after 05 months.

Recommendation of TCC:

The committee recommends the proposal "Reconnaissance Survey (G-4 stage) for REE and Rare Metals in Kumhardih-Khijuri-Pachamba Block (175.28 sq. km), District- Giridih, Jharkhand" to EC for approval with an estimated cost of Rs. 78.10 lakh (including GST) within time schedule of 09 months and submission of report as per annexure - 5A & 5B with following suggestions:

I. The block shape should be changed to rectangular and recalculate the total area of LSM.
II. The pegmatites exposed in the proposed area have to be classified as per the standard classification system to understand REE & RM mineralization.
III. Samples to be collected under regolith is 50 nos., BRS is 150 nos., PT is 100 cu.m and PTS is 100 nos.
IV. Other components in the NQT are kept as proposed.

Agenda 59.1.5 Reconnaissance Survey (G4 stage) for Iron and Bauxite in Dhimarkheda-01 Block, DhimarkhedaTehsil Katni District, Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

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Agenda 59.1.6 Reconnaissance Survey (G4 stage) for Iron and Bauxite in Dhimarkheda-02 Block, DhimarkhedaTehsil, Katni District, Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

a) Initially, the project was submitted in 58th TCC meeting of NMET held on 30th, 31st October and 01st November 2023. In the meeting MPSMCL was asked to make field visit to the proposed area and carry out check sampling and submit the proposals, if area is found potential.

b) In 59th TCC meeting, MPSMC conveyed that field visit and random sampling in the proposed area has been completed but chemical analysis is still awaited.

c) In view of the above MPSMCL withdrew the above two proposals and requested to submit the same in next TCC meeting for review.

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Recommendation of TCC:

The committee agreed to submit the Dhimarkheda-01 Block in next TCC meeting after receiving result of the sample analysis.

Further the TCC suggested MPSMC Ltd. to consult the the GSI's work and recast Dhimarkheda-02 thoroughly by avoiding the overlapping areas.

Agenda 59.1.7 General exploration (G2) for Umriha Limestone Block, District Satna, Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

d) The proposed block belongs to Bhander Group of Vindhyan Supergroup. The limestone deposits of the Bhander Group within the Vindhyan Supergroup are renowned globally for the economic grade.

e) MPSMC ltd. conveyed that there are lots of working mines around the proposed block. Previous researchers have confirmed the existence of limestone. Currently, the quality and quantity can be determined through chemical analysis of systematic surface samples, as well as through techniques such as pitting, trenching, and drilling.

f) The project was put up in 58th TCC for review but was found completely overlapping with already explored limestone in Rewa - Satna area, G4 & G3 Stage. Hence, the committee decided to drop the item to avoid duplication of the work.

Recommendation of TCC:

Upon perusal of the proposal, the committee suggested to drop the item as there is a provision under MEMC Rules, 2021 to auction any limestone block under G3 stage of exploration itself.

Agenda 59.1.8 Reconnaissance Survey (G4 stage) forBariya Limestone Block, District Dhar, Madhya Pradesh
[Implementing Agency: MPSMC Ltd.]

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Agenda 59.1.11 Reconnaissance Survey (G4 stage) for Awral Limestone Block, District Dhar, Madhya Pradesh
[Implementing Agency: MPSMC Ltd.]

a) The proposed areas belong to Bagh Group, underlain by the Archean and Bijawar Group of rocks. Bagh beds comprise of Lower Nimar, Sandstone, Middle Nodular

Limestone and Upper Coralline Limestone and the thickness of Bagh beds varies from few meters to 20 m.

b) The limestone, characterized by its greyish color and bedded structure, exhibits CaO percentages ranging from 36-45%, making it suitable for cement production.
c) The item is proposed based on the occurrence of limestone shown in the map carried out long back by GSI. Block dimensions proposed is very small for G4 stage of exploration.
d) Upon perusal of the proposal, the committee felt the proposed area is very irregular and too small for carrying out reconnaissance survey for limestone. It suggested MPSMCL to identify a block BY combining Bariya and Awral blockS suitable for G4 level of exploration.
e) The committee also suggested the implementing agency to visit GSI office at Bhopal and consult proper geological maps of the concerned area and carve out a block of at least 25-30 sq.km area to carry out exploration with few scout drilling.
f) Accordingly, the MPSMCL brought out the larger area by combining both Bariya and Awral Block for exploration of limestone under G4 stage and presented it on 29.11.2023.
g) After detailed deliberation, the committee observed that the major asphalt road in the west, major river at the center and two major canals on either sides of the river may create a problem in future. Accordingly, the TCC asked MPSMCL to thoroughly work out the modalities in respect of mining in future to take up the area through ground check and come out with proper proposal for approval.

Recommendation of TCC:

The committee deferred the project and suggested to thoroughly work out the modalities in respect of mining in future to take up the area through ground check and come out with proper proposal.

Agenda 59.1.9 General exploration (G2) for Jhanjhar Limestone Block, District Satna, Madhya Pradesh.

[Implementing Agency: MPSMC Ltd.]

a) The proposed area belongs to the Bhander Series Limestone Deposit. The Bhander limestone Formation within the Bhander series exhibits a thickness ranging from approximately 35 to 45 meters, as observed in the nearby Hinauti limestone mines operated by Prism Johnson Cement.

b) MPSMC ltd. conveyed that in the region, three separate limestone layers have been identified: the Upper limestone, the lower limestone, and the purple to grey argillaceous limestone. The highest quality limestone is found exclusively within the Lower grey limestone stratum.

c) The project proposal was sent to GSI for comments. In response to this GSI has informed that the proposed block is overlapping with following projects:

i. Sejhata_G3 Block (Report on the investigation for flux grade limestone in Sejhata Block, Satna District, Madhya Pradesh.
ii. Report on the Investigation for Flux Grade Limestone in Rewa -Satna area, Madhya Pradesh.
iii. Garharwar_G4 block (Report on the Preliminary investigation of Limestone Deposits Garharwar area).

Recommendation of TCC:

Upon perusal of the proposal, the committee suggested to drop the item as there is a provision under Amendment of MEMC Rules, 2021 to auction any limestone block under G3 stage of exploration itself. Besides, the block also shows overlapping issues.

Agenda 59.1.10 Reconnaissance Survey (G4 stage) for Amarpur Basemetal Block, District Tikamgarh & Chhatarpur Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

a) The proposed area constitutes the southeastern periphery of the Bundelkhand Gneissic Complex, exhibiting signs of basemetal presence, and is falling within the Chhatarpur and Tikamgarh districts of Madhya Pradesh. Geological Survey of India (GSI) has conducted two explorations on both the northern and southeastern sides of this block, yielding positive results.

b) Sulphide mineralization is reported in various locations within altered granite and quartz reefs. Local occurrences of disseminated sulphide mineralization primarily in the form of pyrite, chalcopyrite, and malachite stains in the Amarpura area have been reported.

c) GSI's application of multispectral remote sensing techniques for mapping of alteration/mineralized zones in the area reveals strong correlations between Al2O3, Fe_2O_3, K_2O, Ba, Ga, V, Rb, Sr, Cu, Zn, and U elements and the identified alteration zones. Stream sediment Fe2O3 analysis correlates well with satellite-detected ferric iron alteration zones, aligning with high Bouguer Gravity anomalies in the area.

d) The project proposal was sent to GSI for comments. In response to this GSI has informed that there is no overlap.

e) After the detailed deliberation, the committee informed MPSMCL that the block requires more data to fortify the proposal to demand exploration. It suggested the agency to integrate the Geological mapping, NGCM and NGPM data of GSI and carry out field

check to confirm the geological set up in the proposed block. After the field check and some random bedrock sampling along with analysis, the proposal in proper format may be submitted in the next TCC for review.

Recommendation of TCC:

The committee suggested to incorporate NGCM and NGPM data of the proposed area for proper understanding. The committee also suggested MPSMCL to visit the proposed area and carry out check sampling along with analysis and submit the proposals, if area is found potential.

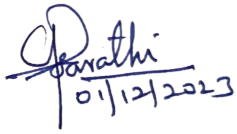
Agenda 59.1.12 Reconnaissance Survey (G4 stage) for Khera Basemetal Block, District Tikamgarh Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

a) The proposed area lies in SSE fringe of Bundelkhand Gneissic complex shows indication of basemetal mineralization. GSI employed multispectral remote sensing techniques to map alteration/mineralized zones in parts of Bundelkhand Gneissic Complex, Tikamgarh, and Chhatarpur and found that Al_2O_3, Fe_2O_3, K_2O, Ba, Ga, V, Rb, Sr, Cu, Zn and U elements are well correlating with alteration zones.

b) It was informed that chemical analysis of Stream sediment for Fe_2O_3 displayed a significant correlation with satellite-based ferric iron alteration zones, coinciding with high Bouguer Gravity anomaly zones in the area. The evidence of hydrothermal alteration are observed in the form of sulphide mineralisation, such as malachite stains and specks of pyrite, chalcopyrite, covellite and bornite around the proposed area. Based on the chemical analysis and thin section studies nine nos of blocks are recommended for further detailed studies, i.e Khera, Tigoda, Nandgaon, Gairwar, Mamon, Dikoli, Bilwara, Nayakhera and Amarpur areas.

c) MPSMC Ltd conveyed that active pyrophyllite mines were observed in Khera and Sarkana villages.

d) After detailed deliberation, the committee informed MPSMCL that the block requires more data to fortify the proposal to demand exploration. It suggested the agency to integrate the Geological mapping, NGCM and NGPM data of GSI and carry out field check to confirm the geological set up in the proposed block. After the field check and some random sampling along with analysis, the proposal in proper format may be submitted in the next TCC for review.





Recommendation of TCC:

The committee suggested to incorporate NGCM and NGPM data of the proposed area for proper understanding. The committee also suggested MPSMCL to visit the proposed area and carry out check sampling along with analysis and submit the proposals, if area is found potential.

Agenda 59.1.13Reconnaissance Survey (G4 stage) for Deura Brahmanpuri Muhali Limestone Block, District Dhar, Madhya Pradesh.
[Implementing Agency: MPSMC Ltd.]

a) The proposed area belongs to Bagh Group, underlain by the Archean and Bijawar Group rocks. Bagh beds comprise of three units Lower Nimar, Sandstone, Middle Nodular Limestone and Upper Coralline Limestone and the thickness of Bagh beds varies from few meters to 20 m.

b) The limestone, characterized by its grayish color and bedded structure, exhibits CaO percentages ranging from 36-45%, making it suitable for cement production.

c) Earlier investigations by GSI have confirmed the existence of limestone deposits. Notably, Jain and Shrivastava (CR_015521) reported that random sampling and analysis of nodular limestone around Bagh have yielded values as high as 48.44% CaO. They recommended further systematic sampling and analysis to assess the suitability of these limestone deposits for industrial applications.

d) MPSMCL informed that besides Badiya Limestone Block (Sitpuri-Deori), numerous small mines are also located in northern part of the proposed area.

e) In view of the above, the committee opined that the proposed area requires thorough ground check before initiation. The committee suggested MPSMCL to visit the area and confirm the presence of host lithology along with collection of few grab samples and analyse. Based on the findings, a block of 3-4 sq.km area should be identified for G3 level of exploration involving drilling. Besides, it also suggested MPSMCL to consult the latest map of GSI and prepare proposal in proper format and input justifying the stage of exploration.

Recommendation of TCC:

The committee suggested to modify the proposal as per discussion in the meeting and also suggested to carry out check sampling along with analysis and submit the proposals, if area is found potential.

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Agenda 59.1.14 Reconnaissance Survey (G4 stage) for Darukona Graphite Block, Rayagada District, Odisha [Implementing Agency: DMG Odisha (M/s. Maheshwari Mining Private Limited, MMPL]

a) The block falls in the Eastern Ghats. In the Eastern Ghats, migmatite complex of Orissa, graphite is more abundant in migmatised khondalite and calc-silicate granulite compared to their non-migmatised counterparts. Graphite is found in graphite-rich schists and gneisses, both in vein form and as disseminated flakes that follow grain boundaries.

b) The proposed areas expose pelitic and psammopelitic meta-sediments often migmatised and associated with graphite and sillimanite. Moreover the areas are located near to the well-known Tumbudibandh graphite belt controlled by Tumbudibandh shear zone.

c) MMPL informed the committee that recently a team of geologists from MMPL visited the area and identified a consistent zone with graphite mineralization associated with sillimanite- rich gneiss (khondalite) and granite gneiss.Three samples collected from the area indicated Fixed Carbon (FC) values of 2.34%, 6.17%, & 6.78%.

d) The project proposal was sent to GSI for comments. In response to this GSI has informed that the proposed block is neither overlapping with the present blocks of GSI under exploration for FS 2023-24 nor with the blocks envisaged for FS 2024-25.

e) In view of the above, the committee agreed to take up G4 stage exploration in the proposed block by carrying out Large Scale Mapping, scout drilling, magnetic & SP surveys and laboratory studies.

f) The project will be reviewed after 05 months.

Recommendation of TCC:

The committee recommends the proposal "*Reconnaissance Survey (G4 stage) for Darukona Graphite Block (119 sq.km.), Rayagada District, Odisha*" to EC for approval with an estimated cost of Rs. 173.82 lakh (including GST) within time schedule of 12 months and submission of report as per annexure-6A & 6B with following suggestions:

I. LSM area proposed remains same.
II. Scout drilling of proposed 1000 m is reduced to 500 m.
III. Core samples (CS) should also be reduced to 100 nos.
IV. Under Geophysical Surveys, only Magnetic & SP are suggested. Gravity Survey is excluded.
V. Other components in the proposed NQT remain unchanged.

Agenda 59.1.15 Reconnaissance Survey (G4 stage) forKanapulisi Graphite Block, Rayagada District, Odisha.

[Implementing Agency: M/s. Maheshwari Mining Private Limited, MMPL]

a) The area belongs to Rayagada District of Odisha, occupied by the Eastern Ghat Mobile Belts, which consists of sillimanite-rich gneiss (khondalite), calc-silicates, basic (pyroxene) granulite and granite gneiss.

b) MMPL informed that graphites are concentrated in khondalite, granite gneiss and calc-silicates. Lodes of graphite are structurally controlled and they occur along dominant foliation that show the effects of polyphase deformation.Faults, fractures and joints also act as locales of graphite mineralisation. The graphite also occurs with graphite-rich schists and gneisses in the form of veins and flakes.

c) MMPL informed the committee that recently a team of geologists from MMPL visited the area and identified a consistent zone with graphite mineralization associated with sillimanite- rich gneiss (khondalite) and granite gneiss.Four samples collected from the area indicated Fixed Carbon (FC) values of 10.33%, 15.23%, 10.97% & 4.24%.

d) The project proposal was sent to GSI for comments. In response GSI has informed that the proposed block is neither overlapping with the present blocks of GSI under exploration for FS 2023-24 nor with the blocks envisaged for FS 2024-25.

e) The committee suggested to modify the block boundary into regular shape.

f) Accordingly, MMPL presented the revised area of 98.3 sq.km, instead of 79sq.km. proposed initially.

g) In view of the above, the committee agreed to take up G4 stage exploration in proposed block by carrying out Large Scale Mapping, scout drilling, magnetic & SP surveys and laboratory studies.

h) The project will be reviewed after 05 months.

Recommendation of TCC:

The committee recommends the proposal "Reconnaissance Survey (G4 stage) for Kanapulisi Graphite Block (98.3 sq.km.), Rayagada District*, Odisha*" to EC for approval with an estimated cost of Rs. 169.50 lakh (including GST) within time schedule of 12 months and submission of report as per annexure-7A & 7B with following suggestions:

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I. ***The block boundary in the north and south needs to be changed to form a regular shape and hence will be increased.***
II. ***Scout drilling of proposed 1000 m is reduced to 500 m.***
III. ***Core samples (CS) should also be reduced to 100 nos.***
IV. ***Under Geophysical Surveys, only Magnetic & SP are suggested. Gravity Survey is excluded.***
V. ***Other components in the proposed NQT remain unchanged.***

Agenda 59.2: Review of Ongoing Project / Completed Project & Timeline Extension

Agenda 59.2.1 Preliminary Exploration (G3) for Limestone in Malkhed-1 & 2 Block, Gulbarga District, Karnataka.
[Implementing Agency: MECL]

a) The project proposal was approved in 27th meeting of the Executive Committee (EC) held on 10th January, 2023 with estimated cost of ₹147.77 Lakh and timeline of 10 months and the project was reviewed in 55th & 57th TCC meetings. TCC in its 57th Meeting approved the additional cost of ₹ 10.19 lakh for additional sample related work.

b) MECL presented the resources and grades in each block and are given below:

MALKHED 1 GEOLOGICAL RESOURCES in Million Tonnes

Grade	Categ.	No of Zones	Gross Res.	Net Res.	CaO% MgO% SiO_2%
Cement Grade	333	4	703.73	562.99	49.10% 0.41% 11.47%
	334	3	154.09	123.27	49.04% 0.42% 11.58%
	Total	4	857.82	686.26	49.09% 0.42 % 11.49%
Blend. Grade	333	3	21.28	17.02	45.870/0,0.48%, 16.83%
	334	3	9.97	7.98	45.86%, 0.49%, 16.85%
	Total	3	31.25	25.00	45.87%,0.48%, 16.84%
Blend/ Thresh	333	3	329.89	263.91	43.35%,0.52%,20.58%
	334	3	103.73	82.98	42.98%,0.54%,20.98%
	Total	3	433.62	346.89	43.26% ,0.52%,20.68%
All Gr.	All	4	1322.69	1058.15	47.10%, 0.45%, 14.63%

MALKHED2 GEOLOGICAL RESOURCES in Million Tonnes

Grade	Categ.	No of Zones	Gross Res.	Net Res.	CaO% MgO% SiO_2%
Cement Grade	333	3	231.82	185.45	48.31 % 0.38% 13.17%
	334	3	98.21	78.57	47.33% 0.55% 11.91 %
	Total	3	350.03	264.02	48.02% 0.42% 12.80%
Blend. Grade	333	Nil	Nil	Nil	Nil
	334	Nil	Nil	Nil	Nil

	Total	Nil	Nil	Nil	Nil
Blend/ Thresh	333	2	554.29	443.43	43.45%, 0.47%, 20.59%
	334	2	204.08	163.27	43.67%, 0.49%, 20.56%
	Total	2	758.37	606.70	43.510/0, 0.48%, 20.58%
All Gr.	All	3	1088.40	870.72	44.88%, 0.465%, 18.22%

c) The committee noted the outcome of the project and agreed for the submission of geological report.

Recommendation of TCC:

The committee reviewed the item and recommended MECL to submit the GR on or before 15.12.2023 along with compliance report of Peer Reviewer comments. The committee also suggested MECL to highlight the areas with significant limestone thickness in the block to enhance their suitability for auction.

Agenda 59.2.2 Preliminary Exploration (G3) for Copper in ThakurdihCharakmara Block, East Singhbhum District, Jharkhand. [Implementing Agency: MECL]

a) The project was approved in the 23rd EC meeting of NMET held on 11th March 2022 for a cost of ₹ 3.88 crore with 18 months timeline. The project was reviewed in 46th, 52nd and 58th TCC meetings. MECL conveyed that they have received the peer reviewer's comments and the have been complied in the final geological report.

b) MECL has drilled 8 boreholes 1497.50m of drilling in 12 nos of boreholes in the area.

c) MECL further conveyed that chemical analysis of total 9 samples are awaited and will be incorporated in the final GR.

d) Copper ore resource estimated at 0.20% Cu cut-off are as follows:

Area Name	**UNFC**	**Net Resource (Tonnes)**	**Average Grade (Cu%)**	**Average Thickness (m)**	**Total Metal Content (Tonnes)**
Charakmara	(333)	40516	0.27	2.96	109
Area-1	(334)	129378	0.40	3.37	515
Total		169894 (0.17 m.t)	0.37	3.16	7.3

e) The committee noted the outcome of the project and agreed for the submission of geological report.

Recommendation of TCC:

The committee noted the outcome of the project and suggested MECL to submit GR with balanced recommendations along with the compliance report of Peer Reviewer comments on or before 15.12.2023.

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Agenda 59.2.3 Reconnaissance Survey (G4 stage) fo rPGE, Nickel & Chromite in Chandiposh Block District Sundargarh, Odisha.
[Implementing Agency: MECL]

a) MECL informed the committee that analysis of PGE of surface samples are not available and sought permission to present the progress in the next TCC meeting.

Recommendation of TCC:

The committee agreed for the request of MECL and asked to present the data along with chemical analysis in the 60th TCC meeting.

Agenda 59.2.4 Preliminary Exploration (G3) for Basemetals in Chintakuntala Block District-Nalgonda, Telengana. [Implementing Agency: MECL]

a) The project was approved by 27th EC meeting of NMET and the sanction order was issued to MECL vide MoM letter No. F.NO.23/291/2023-NMET/314 dated 3rd February, 2023.

b) MECL conveyed that phase-1 work commenced in Feb, 2023 and completed in Oct, 2023. Exploration activities of Phase-1 includes Detailed Geological Mapping (1:2000 scale) over 5.0 sq.km area supported with Bedrock/channel samples, ground geophysical survey (S.P. & I.P. in 11 Lkm) and trenching work.

c) MECL further informed that Based on Geological mapping (1:2000 scale) and surface geochemical sampling (bedrock/channel), geophysical anomalies, two potential zones i.e. Zone 1 and Zone-2 has been delineated. In Zone-1, Mineralized zone has a strike length of 100m with Avg. 5m thickness. In Zone-2 , Mineralized zone has a cumulative Strike length 450m with Avg. 6m thickness. Lead (Pb) mineralisation is mostly confined to Quartz veins intruded into to 1st generation quartz reefs in close association with dolerite/mafic dykes. Further, the analytical results of surface geochemical samples has reported high Pb values in 5 bedrock samples. (>1.32% Pb 8.72%Pb)and 4 channel samples (>1.01%Pb to 8.52%Pb) in-situ quartz veins as well as in old working dumps. Besides these anomalous values of Cu (>0.11% to 0.45% in bedrock and channel) has also observed.Canal section study reveals that the intensity of mineralisation and thickness is expected to increase in depth.

d) In view of the above, the committee opined that exploratory drilling is required to figure out the sub surface configuration of the ore body and to check strike and depth continuity of mineralised zones in the area. Therefore committee recommends 7 bhs in the block and also suggested to get NoC from State Govt. for the area around canal. Further TCC also suggested to review the project after 4months.

Recommendation of TCC:

The committee reviewed the progress and suggested to complete the drilling at 400 m (approx.) borehole interval (No. of boreholes may go upto 7). Besides, the committee also

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suggested carrying out detailed mapping along with topographic survey through either DGPS or Total Station instrument. The committee also raised concern about the cultural feature i.e. major canal for which NoC may has to be obtained from the concerned agency. Progress of the item will be reviewed again after four months.

Agenda 59.2.5 Preliminary Exploration (G3) for Coals in East of Chuperbhita Block, Rajmahal Coalfield, District- Godda, Jharkhand.
[Implementing Agency: CMPDI]

a) The project was approved in 23rd EC meeting held on 06.03.2022. Accordingly the sanction order was issued on 02.05.2022 vide Sanction Order No.:23/249/2022-NMET/20.
b) The project got time extension for 6 month i.e. 31.12.2023 in 31st EC meeting.
c) CMPDI conveyed that a total of fourteen major seams have been identified in the block. The seams are XIV, XIII, XII, XI, X, IX, VIII. VII, VI, V, IV, III, II, I and the local seams have been named as L-7, L-6, L-5, L-4, L-3, L-2, L-1 and L-0 in descending order.A total of 1700.870 MT of coal resource has been estimated in the block under inferred category.
d) CMPDI sought approval for 20/23 samples against approved 25 sample for Special tests like (Ultimate analysis, HGI, AFT).These tests have been carried out for 45 samples.

Sl.no	Analyses	No. of Additional samples	Rate (Rs.)	Amount(Rs.)
1	**Petrographic Analysis**			
a.	Pellet preparation	23	1160	26680
b.	Maceral Analysis (with photomicrography)	23	25000	575000
c.	Mean Ro%	23	16345	375935
2.	Ultimate analysis	20	9945	198900
4.	HGI	20	3805	76100
5.	AFT	20	2745	54900
	Total			1307515
	Total including GST @18%			1542868

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Recommendation of TCC:

The committee approved the additional cost of ₹ 1542868/- for additional samples and asked CMPDI to submit the proper justification for enhancement of the sample.

Agenda 59.2.6 General exploration (G2) for Coal in south of Damuda Block, Jharia Coalfield, District: Dhanbad, Jharkhand. [Implementing Agency: CMPDI]

a) The project was approved in 24th EC meeting held on 18th may 2022. Accordingly, sanction order was issued vide F.No.23/252/2022-NMET/47, 01st June,2022.

b) CMPDI conveyed that scheduled date for completion of the project is 30.11.2023.

c) CMPDI presented the progress of the item and sought for approval of timeline extension up to four months to complete the drilling component which had to be suspended due to local law and order issue.

d) The committee reviewed the progress and insisted CMPDI to complete the drilling and subsequent chemical analysis as early as possible and submit report by 29th February, 2024.

Recommendation of TCC:

The committee recommends the timeline extension upto 29th February ,2024 for submission of final geological report.

Agenda 59.2.7 Preliminary Exploration (G3) for Coals in West of Chano-Rikba Coal Block, North Karanpura Coalfield, District- Hazaribagh, Jharkhand. [Implementing Agency: CMPDI]

a) The project was approved in 24th EC meeting held on 18th May 2022. Accordingly, sanction order was issued F.No.23/256/2022-NMET/57, 02-June,2022

b) The project got timeline extension for 6 month i.e. 01.12.2023 in 31st EC meeting.

c) CMPDI conveyed the major seams encountered in the block are as follows:

Seam Name	Thickness Range (m)	Depth Range (m)
VTop	**9.82- 12.56**	**19.14-588.41**
VBot	**0.85-9.29**	**44.63- 612.51**
IVD	**0.61-4.60**	**57.60-618.21**
IVC	**1.56-5.54**	**62.55-625.00**

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IV	**2.49-14.83**	**84.91-610.52**
III	**5.57-8.33**	**109.58-635**

d) CMPDI presented the progress of the item and sought for approval of timeline extension up to five months to complete 300 m of drilling component which could not be done due to paddy cultivation.

e) The committee reviewed the progress and insisted CMPDI to complete the drilling and subsequent chemical analysis as early as possible and submit report by 31st March, 2024.

Recommendation of TCC:

The committee recommend the timeline extension upto 31st March, 2024 for submission of final geological report.

Agenda 59.2.8 Preliminary Exploration for West of Borda and Ghonsa-Parsoda Block, Wardha Valley Coalfield, District- Chandrapur, Maharashtra. [Implementing Agency: CMPDI]

a) CMPDI conveyed that The First tender floated through GEM portal was cancelled due to technical disqualification of all bidders. Retendering was done and after finalization of tender , the work order issued on 19/10/2023.6 proposed boreholes are falling within the forest area. FC was received on 14/12/2022 for the duration of 3 months. FC expired on 13/03/2023 without drilling of any borehole in the forest area. Subsequently, application for renewal of FC has been submitted to forest department on 17/10/2023. Renewal of FC from Forest department is received on 23/11/2023.

b) In view of the above, CMPDI requested for timeline extension of 10 months.

c) The committee reviewed the progress and insisted CMPDI to initiate the drilling as soon as possible and get it reviewed in the TCC meeting to be held in April, 2024.

Recommendation of TCC:

The committee recommend the timeline extension upto 30th September, 2024 for submission of final geological report and project will be reviewed in April, 2024.

Agenda 59.2.9: Reconnaissance Survey (G4 Stage) for Bauxite in Sirmaur-Kevati Block (145 Sq. Km.), District: Rewa, Madhya Pradesh.
[Implementing Agency: DGM MP (M/S. Maheshwari Mineral Private Ltd)].

a) The MMPL presented the progress of the item and informed the committee regarding the six pockets, namely Block-A, B, C, D, E & F, with bauxite identified during the course of mapping along with their dimensions, disposition, grade, and tentative drilling points.

b) Upon review, the committee asked MMPL to plan regular drilling in Block-C & D as they show better potentiality compared to other four pockets. Accordingly, the MMPL prepared tentative borehole locations planned at 400 m x 400 m grid pattern averaging 10 m depth in each borehole.

Recommendation of TCC:

The committee reviewed the progress and modified borehole plan in Block-C and asked MMPL to complete it within stipulated timeline. The committee also suggested for random boreholes in blocks with less potentiality without exceeding the total approved drilling in the project and prepare GR for review.

Agenda 59.2.10: Reconnaissance Survey (G-4 Stage) for Iron Ore in Alenga-Nendwadi Block, District: Gadchiroli, Maharashtra. [Implementing Agency: DGM Maharashtra (M/S. Gemcokati Exploration Private Ltd.)].

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Agenda 59.2.11: Reconnaissance Survey (G-4 stage) for Iron Ore in Marampalli-Jinjgaon Block, District: Gadchiroli, Maharashtra. [Implementing Agency: DGM Maharashtra (M/S. Gemcokati Exploration Private Ltd.)].

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Agenda 59.2.12: Reconnaissance Survey (G-4 Stage) for Iron Ore in Tadgaon-Wateli Block, District: Gadchiroli, Maharashtra. [Implementing Agency: DGM Maharashtra (M/S. Gemcokati Exploration Private Ltd.)].

a) The Gemcokati Exploration Private Ltd. presented the progress of the three items and showed the tentative resources of iron ore estimated under 334 category of UNFC on the basis of random grab sampling carried out in the area.

b) The Gemcokati Exploration Private Ltd. also informed the committee that mapping on 1:12500 scale could not be carried out due to local issues and the current LSM map on

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1:25000 scale in all the three items is completed only through PGRS study and subsequent field checks along the limited traverse lines.

Recommendation of TCC:

The committee reviewed the progress and opined that the exploration agency should not have taken these items in one go without understanding the ground reality. It asked the agency to submit the geological reports along with properly interpreted geological maps, samples details, methodology of sampling, chemical analysis and actual field days of the geologists spent in each item (as the scale of mapping could not be done as per the recommendation) for further necessary action. The committee recommended for timeline extension for final submission of GR upto 15th Feb'2024 as per Rules of MEMC 2015.

Agenda 59.2.13Reconnaissance Survey (G4 stage) forPhosphorite Baryte &REE in Katamadevarahalli area, Kalburgi District, Karnataka.
[Implementing Agency: KIOCL]

a) The project was approved in the 30th EC meeting of NMET on 06.06.2023 with a timeline of 08 months.
b) KIOCL presented the progress of the project and informed the committee mapping on 1: 12,500 scale was completed in the area of 100 sq km. A total of 78 nos of samples performed with Shapiro's kit did not indicate any positive results , however 35 BRS collected for chemical analysis show lesser values (0.27- 0.30% P2O5).

c) KIOCL informed that about the major lithologies observed in the area include shale, limestone, flaggy limestone and basalt.

Recommendation of TCC:

The committee reviewed the progress and sought the clarity on the disposition of phosphorite horizon in the area. Upon hearing the non-occurrence of phosphorite horizon, barite and REE in the block, the committee suggested KIOCL to analyse few samples from the limestone observed in the area to assess their potentiality for CaO. The project will be again reviewed after the receipt of the analysis carried out as suggested above.

The committee also suggested to KIOCL to adopt the same strategy for chemical analysis of samples in the Hulkal and Channar phosphorite blcoks which are under exploration by KIOCL.

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Agenda 59.2.14 Reconnaissance Survey (G4 stage) for Polymetalic Mineralization (Au, Cu, Ni, Co) in Dharwar Shimoga Schist Belt of Nagavanda area Dhavangere, Haveri and Shimoga districts, Karnataka.
[Implementing Agency: KIOCL]

a) The KIOCL presented the progress of the item and informed the committee about the lithology observed, feeble Au values analysed in the area and sought for the submission of the GR within stipulated timeline.

Recommendation of TCC:

The committee reviewed the progress and discussed the chemical analysis. It was learnt that all the surface samples generated in the item have been processed through -200 mesh size and analysed in ICPMS method instead of analyzing either in AAS or Fire Assay methods. KIOCL informed few samples were also analysed in Fire assay method in which two samples showed 0.8 and 0.4 g/t Au values. Accordingly, the committee suggested KIOCL to process the samples in -120 mesh size instead -200 and analyse them either under AAS or Fire Assay method.

The project will be again reviewed after the receipt of the analysis carried out as suggested above.

Additional Discussion:

Agenda:59.2.15. Preliminary Exploration (G3) for Coal In West of UrdhanJamuniaPenchKanhanTawa Valley Coalfield, Chhindwada, Madhya Pradesh

a) The CMPDI presented the progress of the item and sought approval for shifting of two bhorehole locations.

Recommendation of TCC:

TCC approved the following:

SL no.	***Borehole proposed for Shifting***	***Proposed Shifting***
1	***P-5***	***2500m towards North West direction between BH no. PKK-7 & PKK-6A.***
2	***P-7***	***950m towards South-West direction, outside the forest boundary.***

The meeting ended with vote of thanks by Member Secretary, TCC, NMET.

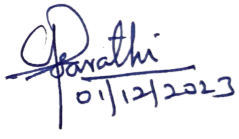
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Annexure 1

Minutes of the 59th Technical-cum-Cost Committee (TCC) meeting held on 28th and 29th November 2023 through video conferencing

S.NO	Name/ Designation	Status	Remarks
1	Dr. S. Ravi, Dy. Director General, SU: Karnataka & Goa, GSI Bangalore.	Chairman, TCC	Through VC
2	Shri I.R. Kirmani, ADG (Retd.), GSI.	Member	Through VC
3	Shri HemrajSuryavanshi, Addl. Director General (Retd.), GSI	Member	Through VC
4	Shri K. Koteshwar Rao, Dy.D.G. (Retd.) GSI.	Member	Through VC
5	Dr. S. K. Kulshrestha, DDG-RMH-III, NER, GSI, Shillong	Member	Through VC
6	Shri S.K. Adhikari, Chief Mining Geologist, IBM, Nagpur.	Member	Through VC
7	Dr.E.V.S.S.KBabu, Scientist (G), NGRI.	Member	Through VC
8	Shri K.L. Mundra, Head-RMRE, AMD, Hyderabad	Member	Not Attended
9	Shri A.R. Sengupta, Director (IFD), Ministry of Mines.	Member	Not Attended
10	Shri Vivek Kumar Sharma,Director, NMET, Ministry of Mines	Member	Through VC
11	Shri P.K. Maharana, AGM (Finance), NALCO, Bhubaneswar	Member	Through VC
12	Shri Ravi Kumar Gupta General Manager (Finance) HCL, Kolkata	Member	Through VC
13	Smt. Vandana, Cost Accounts Officer, RSAS, Bangalore, GSI.	Member	Through VC
14	Shri C. Parthsarathi, Director, GSI&Member Secretary, TCC-NMET, GSI, Bengaluru	Member Secretary	Through VC





List of participants attended 59th Technical-cum-cost Committee (TCC) meeting of NMETDated:28th and 29th November 2023 through video physical

S.No.	Name/Designation	Email ID	Contact No	Organization
1.	Dr. S. Ravi, Dy. Director General, SU: Karnataka & Goa, GSI Bangalore	s.ravi1@gsi.gov.in	9441138834	Chairman, TCC
2.	ShriI.R. Kirmani, ADG (Retd.), GSI	irkirmani@yahoo.com	9414014723	Member TCC
3.	Shri HemrajSuryavanshi, Addl. Director General (Retd.), GSI	hemrajgsi@gmail.com	7477042176	Member TCC
4.	Shri K. Koteshwar Rao, Dy.D.G. (Retd.) GSI.	kkrao1957@gmail.com	9000117969	Member TCC
5.	Dr. S. K. Kulshrestha, DDG-RMH-III, NER, GSI, Shillong	s.kulshrestha@gsi.gov.in	9413330658	Member TCC
6.	Dr.E.V.S.S.KBabu, Scientist (G), NGRI.	evsskbabu@ngri.res.in	9441535852	Member TCC
7.	Shri S.K. Adhikari, Chief Mining Geologist, IBM, Nagpur.	skadhikari@ibm.gov.in	7588690545	Member TCC
8.	Shri Vivek Kumar Sharma,Director, NMET, Ministry of Mines	vksharma.ofb@gov.in	7024570055	Member Ex-office
9.	Shri P.K. Maharana, AGM (Finance), NALCO, Bhubaneswar	pmaharana@rediffmail.com	8500669500	Member TCC
10.	Shri Ravi Kumar Gupta General Manager (Finance) HCL, Kolkata	ravi_g@hindustancopper.com	9433274328	Member TCC
11.	Smt. Vandana, Cost Accounts Officer, RSAS, Bangalore, GSI.	vandana@gsi.in	8660939235	Member TCC
12.	Shri C. Parthsarathi, Director, GSI&Member Secretary, TCC-NMET, GSI, Bengaluru	c.parthasarathi@gsi.gov.in	9483186932	Member Secretary
13.	Shri P.P.Kulkarni DGM (Exploration)	kulkarnip.mecl@gmail.com	8319364061	MECL
14.	Shri. Naveen Kumar Pala Senior Manager	naveenpala.mecl@gmail.co	7738368657	MECL

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	(Geology)	m		
15.	Shri S. K. Satapathy Manager (Geology)	sksatapathy4u@gmai.com	9993617090	MECL
16.	Shri MDDastageer Manager (Geology)	dastageermd@gmail.com	9560739350	MECL
17.	Shri SwarupDhara Manager (Geology)	swarupdhara@gmail.com	9630307282	MECL
18.	Ms Moumita Ghosh Sr. Geologist	Moumitaghosh03091991@gmail.com	9001801591	MECL
19.	Ms Rajanya Roy Sr. Geologist	royrajanya@gmail.com	7301099066	MECL
20.	Shri Niraj Kumar Chowdhary Appointed Consultant	mpsmc@mp.gov.in	9179084301	MPSMCL
21.	Dr.P.C.Mishra JDG	jointpcmishra66@rediffmail.com	9861465695	DMG, Odisha
22.	Shri TufanBhowmik Geologist	tufan.bhowmik@maheshwaree.in	7979190515	MMPL
23.	Shri Saswat Subedit Geologist	saswa.s@maheshwaree.in	7602994286	MMPL
24.	Shri Subrata Sarkar (V.P)	subrata.sarkar@gemcokati.com	7044208900	Gemcokati Exploration Pvt.Ltd.
25.	Ms. Anju C.S. Senior Geologist	nmet.mines@gov.in	8588836933	NMET
26.	Ms. Ujjwala Sharma Assistant manager	nmet.mines@gov.in	8957806004	NMET
27.	Representative from DGMM.P	geology.dgm@mp.gov.in	-	DGMM.P
28.	Representative from DGM Maharashtra	-	-	DGM Maharashtra

ANNEXURE 2A

COST ESTIMATE FOR PRILIMINARY EXPLORATION (G-3) FOR PHOSPHORITE IN NIMBLI BLOCK, BIRAMNIA BASIN, TEHSIL: FATEHGARH, DISTRICT: JAISALMER, STATE: RAJASTHAN.
Total Area - 2.70 sq km; Nos. of Borehole - 32 (Tentative) ; Completion Time - 12 Months, Review: after 2 months

S.N	Item of Work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Total Amount (Rs)	
A	**GEOLOGICAL WORK**						
1	**Detalied Mapping, Topographical Survey, Borehole logging & sampling & report writing**						
a	Charges for one Geologist per day at HQ	day	1.3	9,000	30	2,70,000	
b	Charges for Geologist party per day at field	day	1.3	11,000	180	19,80,000	
c	Labour (2 Nos each party)	day	5.7	504	360	1,81,440	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
d	Charges for one Sampler per day (1 Party)	one sampler per day	1.5.2	5,100	55	2,80,500	
e	Labours (4 Nos)	day	5.7	504	220	1,10,880	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt.

							whichever is higher
2	**Survey (on 1:2000 Scale)**						
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and Boundary points by DGPS	Per Point of observation	1.6.2	19,200	37	7,10,400	BH-32 nos (Tentatively) & Base Station 1 Nos and Block boundary 4 nos
b	Surveyor	per day	1.6.1a	8,300	30	2,49,000	
c	Labour	day	5.7	504	120	60,480	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
	Sub-Total A					**38,42,700**	
B	**DRILLING (After Review:2 months)**						with Structural Map (1:2000) &bh plan
1	Drilling up to 300m (Hard Rock)	m	2.2.1.4a	11,500	1,700	1,95,50,000	bh:32
3	Borehole deviation Survey by Multishot Camera	m	2.2.6	330	-	-	
4	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	32	6,40,000	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local

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							authorities
5	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	32	64,000	
6	Borehole plugging by cement	m	2.2.7b	150	-	-	
7	Transportation of 2 no of Drill Rig & Truck associated per drill	Km	2.2.8	36	7,360	2,64,960	To: 2 rig (Nagpur to Virbhani, Jaisalmer) =1840*2 km
8	Monthly Accommodation Charges for drilling Camp (Rs 50000/- per Month upto 2 rigs	month	2.2.9	50,000	5	2,50,000	
9	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	2	5,00,000	
10	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	2	5,00,000	
11	Road Making (Flat Terrain)	Km	2.2.10a	22,020	6	1,32,120	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed accordingly.
12	Drill Core Preservation	per m	5.3	1,590	480	7,63,200	
	Sub Total B					**2,26,64,280**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i)	**Primary samples**						

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	a. Analysis of 5 radicals i.e. P_2O_5, SiO_2, Al_2O_3, $Fe_2O_3$and LOI	Nos	4.1.15a	4,200	400	16,80,000	350 Core samples and 50 bedrock/channel samples
ii)	**Check samples External(10%)**						
	a. Analysis of 5 radicals i.e. P_2O_5, SiO_2, Al_2O_3, $Fe_2O_3$and LOI	Nos	4.1.15a	4,200	40	1,68,000	
iii)	**Check samples Internal(5%)**						
	a. Analysis of 5 radicals i.e. P_2O_5, SiO_2, Al_2O_3, $Fe_2O_3$and LOI		4.1.7a	2,506	-	-	
iii)	XRD analysis for identification of minerals (Random)	Nos	4.5.1	4,000	10	40,000	
Iv)	34 elemental Trace Elemental studies on composite samples (alongwith U &Th)	Nos	4.1.14	7,731	30	2,31,930	
	Sub-Total -1					**21,19,930**	
2	**Physical Laboratory**						
i.	Specific Gravity Determination	No.	4.8.1	1,605	10	16,050	
ii	Complete Petrographic/ore microscopic study/Minerographic report of rock samples	No.	4.3.4	4,232	20	84,640	
	Preparation of Standard Thin Section		4.3.1	2,353	20	47,060	
iv	**Sub Total- 2**					**22,67,680**	

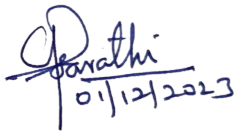
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E	**Total - A to D**					**2,87,74,660**	
G	**Geological Report Preparation**		**5.2**	**Reconnaisance Survey/Preliminary exploration / General exploration / Detailed exploration exceeding Rs 150 laksh but less than 300 lakhs: A minimum of Rs. 7.5 lakhs or 3% of the value of work whichever is more and Rs 3000/- per each additional copy.**		**8,63,240**	EA has to submit the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET
H	**Peer review Charges**		**As per EC decision**			**30,000**	
	Preparation of Exploration Proposal (5 Hard copies with a soft copy),	5 Hard copies with a soft copy	5.1			**5,00,000**	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
J	**Total Estimated Cost without GST**					**3,01,67,900**	

K	**Provision for GST (18% of GST)**	**%**				**54,30,222**	GST will be reimbursed as per actual and as per notified prescribed rate
L	**Total Estimated Cost with GST**					**3,55,98,122**	
					Say in Lakhs (Rs.)	***355.98***	

Note - If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.





ANNEXURE 2B

TIME SCHEDULE/ACTION PLAN FOR PRILIMINARY EXPLORATION (G-3) FOR PHOSPHORITE IN NIMBLI BLOCK, BIRAMNIA BASIN, TEHSIL: FATEHGARH, DISTRICT: JAISALMER, STATE: RAJASTHAN.

Sl. No.	Activities	Unit	MONTHS											
			1	2	3	4	5	6	Review	7	9	10	11	12
1	Camp Setting	day												
2	Core Drilling (2 rigs)	m.												
4	Geologist Party days (1 Party)	day												
5	Sampling Party days, Core Sampling	day												
6	Camp Winding	day												
7	Laboratory Studies	Nos.												
8	Geologist Party days (1 Party), HQ	day												
10	Report Writing & Peer review	day												
NOTE														
1	**Commencement of project may be reckoned from the day the exploration acreage is available along with all stautory clearances.**													
2	**Time loss on account of monsoon/agricultural activity/forest clearence/local law & order problem/ lockdown etc will be additional to above time line.**													

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ANNEXURE 3A

ESTIMATED COST FOR PRELIMINARY EXPLORATION (G3) FOR MANGANESE ORE AND GRAPHITE IN LARAMBHA BLOCKS, DISTRICT: BALANGIR, ODISHA. [BLOCK AREA- 2.57 SQ. KM; NOS. OF BOREHOLE- 13; BOREHOLE DEPTH RANGE- 50M; SCHEDULE TIMELINE- 11 MONTHS REVIEW: 4 MONTHS]

S. No.	Item of Work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Amount (Rs)	
A	**GEOLOGICAL WORK**						
1	**Mapping (1:2000), Borehole logging, sampling & Report writing**				**2.57 sq.km.**		
i	Charges for one Geologist- Field	day	1.2	11,000	150	16,50,000	
ii	Charges for one Geologist per- HQ	day	1.2	9,000	30	2,70,000	
iii	2 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	300	1,51,200	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Core Sampling -1 Samplers Labour charge not included	day	1.5.2	5,100	72	3,67,200	

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v	4 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	288	1,45,152	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
2	**Survey (on 1:2000 Scale), Topographical Survey**						
i	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS and boundary coordinates	Per Point of observation	1.6.2	19,200	18	3,45,600	13 BHs, 4 boundary coordinates and 01 Base
ii	Charges of Surveyor	one surveyor per day	1.6.1a	8,300	30	2,49,000	
iii	Labours Charges for survey work; Base rate - Rs.504	day	5.7	504	120	60,480	Amount will be reimburse as per the notified rates for unskilled labor by the Central Labour Commissioner or respective State Govt. whichever is higher
	Sub Total- A					**32,38,632**	
B	**PITTING AND TRENCHING**						
i	Trenching (1m x 2mx 15 m) x 7 trenches	Cu m	2.1.1	3330	210	6,99,300	
	Sub Total- B					**6,99,300**	

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C	**DRILLING (After Review)**						
i	Drilling upto300m (Hard Rock) (1 rigs)	m	2.2.1.4a	11,500	820	94,30,000	10BH-1st level, 03BH-2nd level
ii	Borehole deviation Survey	m	2.2.6	330	200	66,000	2nd Level bhs
iii	Land / Crop Compansation	per BH	5.6	20,000	13	2,60,000	Amount will be reimburse as per actuals or max. Rs. 20000 per BH with certification from local authorities
iv	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	13	26,000	
v	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	1,050	37,800	Certification in this regard is required to be provided
vi	Monthly Accomodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	4	2,00,000	
vii	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	1	2,50,000	
viii	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	1	2,50,000	
ix	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	5	1,10,100	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed later

x	Core Preservation: One complete borehole plus mineralised cores of all the remaining Bhs	m	5.3	1,590	410	6,51,900	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
	Sub Total- C					**1,12,81,800**	
D	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i	**Primary & Check samples for Maganese**						
	a. Primary Samples for 6 radical (SiO2, P2O5, Fe2O3, MnO and Insolubles)	Nos	4.1.7a + 7b	2,841	325	9,23,325	Trench-105, BH-220
	b. Primary Samples for 02 radicals (Cobalt &V2O5) 10% of primary samples	Nos	4.1.7b	670	33	22,110	
	c-Internal (5%) Check samples for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO and Insolubles)	Nos	4.1.7a + 7b	2,841	-	-	
	d-External(10%) Check samples from NABL Lab for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	4.1.7a + 7b	2,841	33	92,333	
ii	**Primary & Check samples for Graphite**						
	a. Proximate Analysis for Graphite (Ash, Moisture, V.M. and	Nos	4.1.16	3,000	200	6,00,000	Trench-75, BH-125

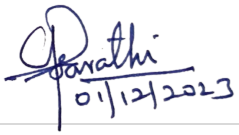
	F.C.) for Primary Samples						
	b Proximate Analysis for Graphite (Ash, Moisture, V.M. and F.C.) for Internal (5%) Check Samples	Nos	4.1.16	3,000	-	-	
	c Proximate Analysis for Graphite (Ash, Moisture, V.M. and F.C.) for External (10%) Check Samples NABL Lab	Nos	4.1.16	3,000	20	60,000	
iii	**Composite samples for Manganese**	Nos	4.1.7a + 7b	2,841	-	-	
iv	**Composite samples for Graphite**	Nos	4.1.16	3,000	-	-	
2	**Physical & Petrological Studies**						
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Complete petrographic study report	Nos	4.3.4	4,232	5	21,160	
iii	Preparation of polished section	Nos	4.3.2	1,549	5	7,745	
iv	Complete	Nos	4.3.4	4,232	5	21,160	

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	mineragraphic study report						
v	Digital Photographs	Nos	4.3.7	280	5	1,400	
vi	Whole Rock Analysis (Major oxide and 8 additional trace elements)	Nos	4.1.15a& b	7,568	5	37,840	
vii	Specific gravity studies	Nos	4.8.1	1,605	5	8,025	
	Sub Total- D					**18,06,863**	
E	**Total A to D**					**1,70,26,595**	
F	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs. 150 lakhs and less than Rs. 300 lakhs - A minimum of Rs. 7.5 lakhs or 3% of the value of work whichever is more		**7,50,000**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
G	**Peer review Charges**		**As per EC decision**			**30,000**	

H	**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.5 Lakhs whichever is lower		**3,40,532**	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.
I	**Total Estimated Cost without GST**					**1,81,47,126**	
J	**Provision for GST (18% of I)**					**32,66,483**	GST will be reimburse as per actual and as per notified prescribed rate
K	**Total Estimated Cost with GST**					**2,14,13,609**	***Rs. 214.136Lakh***
Note:							
1	**Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.**						
2	**In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.**						
3	**If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.**						
4	**Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.**						





ANNEXURE 3B

Estimated time schedule for Preliminary Exploration (G-3) for Manganese and Graphite in Larambha Block, Districts: Balangir State: Odisha [Block area- 2.57 sq. km; Schedule timeline- 11 months]

S. No.	Particulars	Months	1	2	3	4	5	6	7	8	9	10	11
1	Camp Setting	Months					Review						
2	Survey days	days											
3	Trenching	cu.m											
4	Drilling (1 rig)	m											
5	Geologist days	days											
6	Sampling days, Trench & Core Sampling	days											
7	Camp winding	Months											
8	Laboratory Studies	days											
9	Geologist days, HQ	days											
10	Report Writing with Peer Review	days											

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ANNEXURE 4A

ESTIMATED COST FOR PRELIMINARY EXPLORATION (G3) FOR MANGANESE ORE AND GRAPHITE IN KANAITAL BLOCKS, DISTRICT: BALANGIR, ODISHA. [BLOCK AREA- 4.26 SQ. KM; NOS. OF BOREHOLE- 13; BOREHOLE DEPTH RANGE- 50M; SCHEDULE TIMELINE- 11 MONTHS REVIEW:AFTER 4 MONTHS]

S. No.	Item of Work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Amount (Rs)	
A	**GEOLOGICAL WORK**						
1	**Mapping (1: 2000), Topographical Survey, Borehole logging, sampling & Report writing**						
i	Charges for one Geologist- Field	day	1.2	11,000	150	16,50,000	
ii	Charges for one Geologist per- HQ	day	1.2	9,000	30	2,70,000	
iii	2 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	300	1,51,200	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Core Sampling -1 Samplers Labour charge not included	day	1.5.2	5,100	76	3,85,688	
v	4 labours/ party (Rs 504/day/labour)	day	5.7	504	303	1,52,460	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher

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	(As per rates of Central Labour Commissioner)						
2	**Survey (on 1:2000 Scale)**						
i	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS and boundary coordinates	Per Point of observation	1.6.2	19,200	17	3,26,400	13 BHs and 4 boundary coordinates
ii	Charges of Surveyor	one surveyor per day	1.6.1a	8,300	40	3,32,000	
iii	Labours Charges for survey work; Base rate - Rs.504	day	5.7	504	160	80,640	Amount will be reimburse as per the notified rates for unskilled labor by the Central Labour Commissioner or respective State Govt. whichever is higher
	Sub Total- A					**33,48,388**	
B	**TRENCHING**						
i	Trenching (1m x 2m x 15 m) x 10 trenches	Cu m	2.1.1	3330	300	9,99,000	
	Sub Total- B					**9,99,000**	
C	**DRILLING**						
i	Drilling upto300m (Hard Rock) (1 rigs)	m	2.2.1.4a	11,500	855	98,32,500	10BH- 1st level +03 bh 2nd level
ii	Borehole	m	2.2.6	330	-	-	

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	deviation Survey						
iii	Land / Crop Compansation	per BH	5.6	20,000	13	2,60,000	Amount will be reimburse as per actuals or max. Rs. 20000 per BH with certification from local authorities
iv	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	13	26,000	
v	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	1,050	37,800	Certification in this regard is required to be provided (to & fro)
vi	Monthly Accomodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	4	2,00,000	
vii	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	1	2,50,000	
viii	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	1	2,50,000	
ix	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	5	1,10,100	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed later
x	Core Preservation: One complete borehole plus mineralised cores of all the remaining Bhs (as per actual)	m	5.3	1,590	375	5,96,250	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
	Sub Total- C					**1,15,62,650**	
D	**LABORATORY STUDIES**						

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1	**Chemical Analysis**						
i	**Primary & Check samples for Maganese**						
	a. Primary Samples for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	4.1.7a + 7b	2,841	350	9,94,350	Trench-150, BH-200 (1m sample length)
	b-10% of primary samples for Co & V	Nos	4.1.7b	670	35	23,450	
	c-Internal (5%) Check samples for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	4.1.7a + 7b	2,841	-	-	
	d-External(10%) Check samples from NABL Lab for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	4.1.7a + 7b	2,841	35	99,435	
ii	**Primary & Check samples for Graphite**						
	a. Proximate Analysis for Graphite (Ash,	Nos	4.1.16	3,000	200	6,00,000	Trench-50, BH-150

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	Moisture, V.M. and F.C.) for Primary Samples						
	b Proximate Analysis for Graphite (Ash, Moisture, V.M. and F.C.) for Internal (5%) Check Samples	Nos	4.1.16	3,000	-	-	
	c Proximate Analysis for Graphite (Ash, Moisture, V.M. and F.C.) for External (10%) Check Samples NABL Lab	Nos	4.1.16	3,000	20	60,000	
iii	**Composite samples for Manganese**	Nos	4.1.7a + 7b	2,841	-	-	
iv	**Composite samples for Graphite**	Nos	4.1.16	3,000	-	-	
2	**Physical & Petrological Stusies**				**-**		
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Complete petrographic study report	Nos	4.3.4	4,232	5	21,160	

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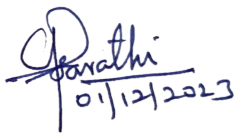
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iii	Preparation of polished section	Nos	4.3.2	1,549	5	7,745	
iv	Complete mineragraphic study report	Nos	4.3.4	4,232	5	21,160	
v	Digital Photographs	Nos	4.3.7	280	5	1,400	
vi	Whole Rock Analysis (Major oxide and 8 additional trace elements)	Nos	4.1.15a& b	7,568	5	37,840	
vii	Specific gravity studies	Nos	4.8.1	1,605	5	8,025	
	Sub Total- D					**18,86,330**	
E	**Total A to D**					**1,77,96,368**	
F	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs. 150 lakhs and less than Rs. 300 lakhs - A minimum of Rs. 7.5 lakhs or 3% of the value of work whichever is more		**7,50,000**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.

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G	**Peer review Charges**		**As per EC decision**			**30,000**	
H	**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. 5 Lakhs whichever is lower		**3,55,927.35**	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.
I	**Total Estimated Cost without GST**					**1,89,32,294.85**	
J	**Provision for GST (18% of I)**					**34,07,813.07**	GST will be reimburse as per actual and as per notified prescribed rate
K	**Total Estimated Cost with GST**					**2,23,40,107.92**	***Rs. 223.40Lakh***
Note:							
1	**Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.**						
2	**In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.**						
3	**If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.**						
4	**Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.**						

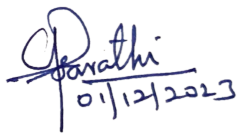




ANNEXURE 4B

Estimated time schedule for Preliminary Exploration (G-3) for Manganese and Graphite in Kanaital Block, Districts: Balangir State: Odisha [Block area- 4.26 sq. km; Schedule timeline- 11 months]

S. No.	Particulars	Months	1	2	3	4	5	6	7	8	9	10	11
1	Camp Setting	Months					Review						
2	Survey days	days											
3	Trenching	cu.m											
4	Drilling (1 rig)	m											
5	Geologist days	days											
6	Sampling days, Trench & Core Sampling	days											
7	Camp winding	Months											
8	Laboratory Studies	days											
9	Geologist days, HQ	days											
10	Report Writing with Peer Review	days											





ANNEXURE 5A

ESTIMATED COST FOR RECONNAISSANCE SURVEY (G-4) FOR REE IN KUMHARDIH-KHIJURI-PACHAMBHA BLOCK, DISTRICT- GIRIDIH, JHARKHAND
TOTAL BLOCK AREA- 175.28 SQ KM; COMPLETION TIME- 09 MONTHS, REVIEW: AFTER 5 MONTHS

Sl. No.	Item of Work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC- Item-S. No.	Rates as per SoC	Qty.	Total Amount (Rs)	
1.0	**Large scale (LSM) Geological mapping (1:12500)/ Trenching/ Drilling**						
1.1	Large scale (LSM) Geological mapping/ Trenching/ Drilling						
	Geologist man days (1 No.) for Geological map & Report (HQ)	days	1.1b	9,000	30	2,70,000	
	a) Geologist man days (2 No) for Large scale (LSM) Geological mapping/ Trenching/ Drilling	days	1.2	11,000	180	19,80,000	
	b) Labour (field)	per worker	5.7	504	360	1,81,440	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher

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	c) Sampler for Suface Samples/ Trench Samples / Core Samples Labour charge not included (1 sampler)	day	1.5.2	5100	30	1,53,000	
	d) 4 labours/ party (As per rates of Central Labour Commissioner)	day	5.7	504	120	60,480	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
	Sub-Total 1.0					**2644920**	
2	**Mineral Investigation**						
2.1	**Pitting**						
	a) Excavation of pits	per cu m	2.1.1	3800	30	114000	10 pits
	Sub-Total 2.0					**114000**	
3	**Laboratory Studies**						
3.1	**Chemical Analysis**						
	i) Heavy Mineral Seperation	per sample	4.3.6a, 4.3.6b	16200	80	1296000	
	ii) Surface sampling (Bed Rock Samples/Stream Sediment & Pit Samples)						
	a. For 34 elemental analysis includes Nb, Sr, Ta, W, Mo, Sn, Rb, Be, Cs, LI &REE analysis by ICP-AES / ICPMS (sequential technique)	per sample	4.1.14	7731	150	1159650	150 Bedrock Samples

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	b. For 34 elemental analysis includes Nb, Sr, Ta, W, Mo, Sn, Rb, Be, Cs, LI &REE analysis by ICP-AES / ICPMS (sequential technique)	per sample	4.1.14	7731	80	618480	30 Soil samples from 10 Pits (each pit : 03samples) and 50 Stream Sediment Samples
	iii) Check Samples (Bed Rock/Soil/Stream Sediment Samples & Pit) -10% External					0	
	a. For 34 elemental analysis includes Nb, Sr, Ta, W, Mo, Sn, Rb, Be, Cs, LI &REE analysis by ICP-AES / ICPMS (sequential technique)	per sample	4.1.14	7731	23	177813	
3.2	**Petrological / Mineralographic studies**					-	
	a) Preparation of thin section	per sample	4.3.1	2,353	10	23,530	
	b) Study of thin section for petrography	per sample	4.3.4	4,232	10	42,320	
	c) Preparation of polished section	per sample	4.3.2	1,549	10	15,490	
	d) Study of polished section for mineragraphy	per sample	4.3.4	4,232	10	42,320	
	e) Digital photomicrograph of thin polished section	per sample	4.3.7	280	10	2,800	
	f) XRD Mineral Phase Analysis	per sample	4.5.1	4,000	5	20,000	
	Sub-Total 3.0					**33,98,403**	
4.0	**Total (1.0 to 3.0)**					**61,57,323**	

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5.0	**Geological Report Preparation**	**Nos**	**5.2**	A Minimum of Rs. 2.5 lakhs or 5% of the work whichever is more	**1**	**3,07,866**	For the projects having cost up to exceeding Rs. 50 Lakhs but less than 150 Lakhs: A Minimum of Rs. 2.5 lakhs or 5% of the work whichever is more and Rs. 3000/- per each additional copy.
8.0	**Preparation of Exploration Proposal**	**Nos**	**5.1**	2% or Rs. 500000 whichever is less	**1**	**1,23,146**	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.

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9.0	**Report Peer Review Charges**	**lumpsum**	**As per EC decision**	**30000**	**1**	**30,000**	
10.0	**Total Estimated Cost without GST (7+8+9+10)**					**66,18,336**	
11.0	**Provision for GST (18%)**					**11,91,300**	GST will be reimburse as per actual and as per notified prescribed rate
12.0	**Total Estimated Cost with GST**					**78,09,636**	
					in Lakhs	**78.10**	
Note :							
*	Marked items not indicated in SoC and required to be taken up during the course of exploration shall be charged separately (as per actuals)						
$	Trenching/Pitting dimensions are tentative may vary depending upon the geology and field conditions						
i	Satellite imageries shall be procured from website/NRSA as the case may be and procurement charges if any shall be charged at actuals.						
#	2nd level of work shall be carried out after review of 1st level work i.e. Geological mapping, geochemical sampling and analysis						
1	**Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.**						
2	**In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.**						
3	**If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.**						
4	**Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.**						

ANNEXURE 5B

Tentative Time schedule / Action plan of Reconnaissance Survey (G-4) for REE in Kumhardih- Khijuri-Pachamba Block, District- Giridih, Jharkhand
Total block area- 175.28 sq km; Completion Time- 12 Months

Sl. No.	Activities	Months												
		1	2	3	4	REVIEW	5	6	7	8	9	10	11	12
1	Camp setting													
2	Geological mapping & Sampling													
3	Exploratory Trenching & Sampling													
3	Sample preparation													
4	Analytical work													
10	Camp winding													
12	Geologist at HQ													
13	Geological report													
14	Peer Review													

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Rani 01/12/2023

ANNEXURE 6A

ESTIMATED COST OF RECONNAISSANCE SURVEY (G4 STAGE) FOR DARUKONA GRAPHITE BLOCK (119 SQ.KM), RAYAGADA DISTRICT, ODISHA

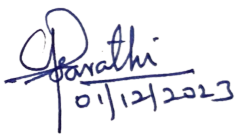
TOTAL AREA: 119 SQ KM, PERIOD OF COMPLETION: 12MONTHS, NO. OF BH:10 REVIEW: AFTER 5 MONTHS

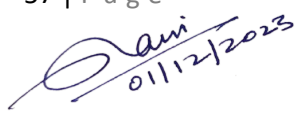
Sl. Nos.	Item of work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal	
			SoC-Item-Sl No	Quantity	Rates as per SoC	Total
1	**Geological Mapping (on 1:12,500) (119 sq km)**					
	(a) Charges for Geologist in field (without labourer)	per day per Geologist	1.2. b	180	11,000	1980000
	(b) Charges for Geologist at Headquarters	per day per Geologist	1.2. a	40	9,000	360000
	(c) Wages for 2 labourers for geologist	per day	5.7	360	504	181440
2	**Land/Crop compensation**	per borehole	5.6	10	20000	200000
3	**Geochemical sampling (Bedrock sampling)**	100nos				
4	**Geophysical survey (Magnetic survey and SP survey) (5 L.km)**	5 L.km				
	(a) Charges for 1 Geophysicist in field (without labourer)	per day	3.18b	0	11000	0
	(b) Charges for 1 Geophysicist at Headquarters	per day	3.18a	30	9000	270000
	(c) Wages for 4 labourers in field with geophysicist	per day	5.7	0	504	0
	(d) Charge for Gravity survey	per station	3.1a.i	0	3800	0
	(e) Charge for Magnetic survey	per station	3.2a.i	350	1800	630000
	(f) Charge for SP survey	per L.km	3.3a	5	29600	148000
5	**Survey work**					
	(a) Surveyor Charges (without labourer)	per day	1.6.1a	30	8300	249000
	(b) Labour(4nos) charges for survey work	per day	5.7	120	504	60480

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6	**Technological Survey**					
	(a) Pitting (Where BRS are not available)	per cu m	2.1.2	30	3800	114000
	(a) Trenching	per cu m	2.1.1	100	3330	333000
	(b) Drilling	per m in soft rock	2.2.1.4a	500	11500	5750000
	(c) Borehole pillaring (construction of concrete pillar) 12 inches x12 inches x 30 inches	per borehole	2.2.7a	10	2000	20000
	(d) Transportation of Drill Rig and truck(to and from Headquarter s or Previous drill site)	per km	2.2.8	900	36	32400
	(e) Drilling camp setting cost	per drill	2.2.9a	1	250000	250000
	(f) Drilling camp winding cost	per drill	2.2.9a	1	250000	250000
	(g) Monthly accommodation charges for drilling camp	per month	2.2.9	3	50000	150000
	(h) Approach road making to drill site (as per actual)	per km	2.2.10	5	22020	110100
7	**Laboratory Studies**					
	(a) Proximate analysis for graphite	per sample	4.1.16	330	3000	990000
	(a) Proximate analysis for graphite 10% external check	per sample	4.1.16	33	3000	99000
	(b) Analysis for associated trace element (Vanadium)					0
	(c) Analysis for associated REE+ Vanadium (ICPMS 14 elements)	per sample	4.1.13	150	5380	807000
	(d) Petrochemical studies (PCS)	per sample	4.1.15a	10	4200	42000
8	**Petrographic studies**					
	(a) Preparation of thin sections	per sample	4.3.1	10	2353	23530
	(b) Study of thin sections	per sample	4.3.4	10	4232	42320
	Sampler		1.5.2	45	5100	229500
	Labour		5.7	180	504	90720
9	**Bulk Density/specific gravity Determination**	per sample	4.8.1	5	1605	8025





10	**Drill core preservation (1 bh+ mineralised zone : as per actual)**	per m	5.3	200	1590	318000
	Total					13738515
11	**Geological Report preparation (5 hard copies with a soft copy)**	cost per 5 hard copies along with soft copy	5.2		As the exploration cost is exceeding 50 lakhs but less than 150 lakhs.	686926
12	**Peer Review**	lumpsump	as per EC decision	1	30000	30000
13	**Preparation of exploration proposal (5 hard copies with a soft copy)**	one number (5 hard copies) along with soft copies	5.1	1	2% of approved project cost or 5lakh, whichever is lower	274770
	Grand Total of estimated cost:					**₹ 1,47,30,211.05**
	Grand Total including 18%GST					**₹ 1,73,81,649.04**
Total						

Note:	
1	**Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.**
2	**In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.**
3	**If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.**
4	**Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.**

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ANNEXURE 6B

TIME SCHEDULE/ ACTION PLAIN RECONNAISSANCE SURVEY (G4 STAGE) FOR DARUKONA GRAPHITE BLOCK (119 SQ.KM), RAYAGADA DISTRICT, ODISHA

	Months											
Item of work	**1**	**2**	**3**	**4**	**5**		**6**	**7**	**8**	**9**	**10**	**11**	**12**
Large Scale Mapping (1:12,500)													
Bed rock sampling													
Geophysical survey by Geophysicist													
Laying of Geophysical survey lines & location of Boreholes by surveyors													
Trenching & Sampling													
Chemical analysis of surface samples						**REVIEW**							
Drilling													
Core Sampling & its preparation													
Chemical analysis of core samples													
Processing of Analytical data													
Preparation of Geological report													

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ANNEXURE 7A

ESTIMATED COST OF RECONNAISSANCE SURVEY (G4 STAGE) FOR KANAPULISI GRAPHITE BLOCK (98.3 SQ.KM), RAYAGADA DISTRICT, ODISHA TOTAL AREA: 98.3 SQ KM, PERIOD OF COMPLETION: 12MONTHS BH :10 NOS. REVIEW: AFTER 5MONTHS

Sl. Nos.	Item of work	Unit	Rates as per NMETSoC 2020-21		Estimated Cost of the Proposal	
			SoC-Item-Sl No	Quantity	Rates as per SoC	Total
1	**Geological Mapping (on 1:12,500) (98.3 sq km)**					
	(a) Charges for 2 Geologists in field (without labourer)	per day per Geologist	1.2. b	170	11,000	1870000
	(b) Charges for 2 Geologists at Headquarters	per day per Geologist	1.2. a	40	9,000	360000
	(c) Wages for 2 labourers for geologist	per day	5.7	340	504	171360
2	**Land/Crop compensation (as per actual)**	per borehole	5.6	10	20000	200000
3	**Geochemical sampling (Bedrock sampling)**	100nos				
4	**Geophysical survey (Magnetic survey and SPsurvey) (4.5 L.km)**	4.5 L.km				
	(a) Charges for 1	per day	3.18b	0	11000	0

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	Geophysicist in field (without labourer)					
	(b) Charges for 1 Geophysicist at Headquarters	per day	3.18a	30	9000	270000
	(c) Wages for 4 labourers in field with geophysicist	per day	5.7	0	345	0
	(d) Charge for Gravity survey	per station	3.1a.i	0	3800	0
	(e) Charge for Magnetic survey	per station	3.2a.i	300	1800	540000
	(f) Charge for SP survey	per L.km	3.3a	4.5	29600	133200
5	**Survey work**					
	(a) Surveyor Charges (without labourer)	per day	1.6.1a	30	8300	249000
	(b) Labour(4nos) charges for survey work	per day	5.7	120	504	60480
6	**Technological Survey**					
	(a) Trenching	per cu m	2.1.1	100	3330	333000
	(b) Drilling	per m in soft rock	2.2.1.4a	500	11500	5750000
	(c) Borehole pillaring (construction of concrete pillar) 12 inches x12 inches x 30 inches	per borehole	2.2.7a	10	2000	20000

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	(d) Transportation of Drill Rig and truck(to and from Headquarter s or Previous drill site)	per km	2.2.8	900	36	32400
	(e) Drilling camp setting cost	per drill	2.2.9a	1	250000	250000
	(f) Drilling camp winding cost	per drill	2.2.9a	1	250000	250000
	(g) Monthly accommodation charges for drilling camp	per month	2.2.9	3	50000	150000
	(h) Approach road making to drill site (as oer actual)	per km	2.2.10a	5	22020	110100
7	**Laboratory Studies**					
	(a) Proximate analysis for graphite	per sample	4.1.16	330	3000	990000
	(a) Proximate analysis for graphite(10% external Check)	per sample	4.1.16	33	3000	99000
	(b) Analysis for associated trace element (Vanadium)	per sample	4.1.15b		421	0
	(c) Analysis for associated REE (ICPMS-14 elements)	per sample	4.1.13	150	5380	807000
	(d) Petrochemical	per sample	4.1.15a	10	4200	42000

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	studies (PCS)					
8	**Petrographic studies**					
	(a) Preparation of thin sections	per sample	4.3.1	10	2353	23530
	(b) Study of thin sections	per sample	4.3.4	10	4232	42320
9	**Bulk Density/specific gravity Determination**	per sample	4.8.1	3	1605	4815
10	**Drill core preservation (1 bh+ mineralised zone : as per actual)**	per m	5.3	200	1590	318000
	Sampler			45	5100	229500
	Labour			180	504	90720
	Total					13396425
11	**Geological Report preparation (5 hard copies with a soft copy)**	cost per 5 hard copies along with soft copy	5.2			669821
12	**Peer Review**	lumpsump	as per EC decision	1	30000	30000
13	**Preparation of exploration proposal (5 hard copies with a soft copy)**	one number (5 hard copies) along with soft copies	5.1	1	2% of approved project cost or 5 lakh, whichever is lower	267928.5
	Grand Total of estimated cost:					**₹ 1,43,64,174.75**

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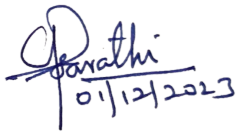
	Grand Total including 18%GST	**₹ 1,69,49,726.21**
Grand Total		
Note :		

1. Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.

2. In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.

3. If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMETSoC and Item no. 6 of NMETSoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.

4. Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.





ANNEXURE 7B

TIME SCHEDULE/ ACTION PLAIN RECONNAISSANCE SURVEY (G4 STAGE) FOR KANAPULISI GRAPHITE BLOCK (98.3 SQ.KM), RAYAGADA DISTRICT, ODISHA

	Months											
Item of work	**1**	**2**	**3**	**4**	**5**		**6**	**7**	**8**	**9**	**10**	**11**	**12**
Large Scale Mapping (1:12,500)													
Bed rock sampling													
Geophysical survey by Geophysicist													
Laying of Geophysical survey lines & location of Boreholes by surveyors													
Trenching & Sampling													
Chemical analysis of surface samples													
Drilling													
Core Sampling & its preparation													
Chemical analysis of core samples													
Processing of Analytical data													
Preparation of Geological report													

REVIEW

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