Ministry of Mines
National Mineral Exploration Trust

Minutes of the 26th Technical-cum-Cost Committee (TCC) meeting held on 10th and 11th December, 2020 through videoconferencing at Geological Survey of India, DGCO, A-II Pushpa Bhawan, New Delhi

The 26th meeting of Technical-cum-Cost Committee [TCC] of National Mineral Exploration Trust [NMET] was held under the chairmanship of Shri Janardan Prasad, Additional Director General, Geological Survey of India (ADG, GSI), and Chairman, TCC, NMET on 10th and 11th December, 2020 at GSI, DGCO, A-II Pushpa Bhawan, New Delhi through videoconferencing. The technical experts and representatives of Exploration Agencies [EAs] participated through their respective VC nodes. The list of participants is at Annexure-I.

Dr. L. P. Singh, Director, GSI and Member Secretary, TCC-NMET, welcomed Shri Janardan Prasad, ADG, GSI & Chairman, TCC, Members of the TCC and participants representing various EAs. He briefed about the project proposals submitted by EAs for consideration of 26th TCC meeting.

Shri Janardan Prasad, ADG, GSI and Chairman, TCC welcomed the participants and the new member Shri Ravi Kumar Gupta, DGM (Finance), HCL. Subsequently, the proceeding of meeting was initiated as per circulated agenda.

The agenda-wise discussion followed.

26.1: Technical evaluation of new project proposals:

26.1.1: Heliborne Survey (Phase-I) over 8 mineral target zones identified from interpreted Legacy Aero-geophysical data in parts of Odisha, Chhattisgarh, AP, Telangana and Karnataka.

a. The proposal was previously submitted in the 23rd TCC meeting wherein GSI was suggested to submit the proposal after completing the requisite formalities and endorsement from the Ministry of Mines.

Thereafter, the same proposal was submitted by GSI in 24th TCC meeting (as per communication from MOM) wherein the technical parameters of the project were discussed in detail and minor modifications on selection of line spacing, demarcation of blocks with locality names, targeted minerals were suggested. The project proposal was found technically in order with minor corrections. However, cost evaluation could not be made as the components of work required for heliborne survey are not available in SoC of NMET.

b. The matter of project evaluation where approved SoC is not available was discussed during the 17th EC meeting and following decisions were made:

i. EC reviewed the decision made in 16th EC meeting and decided that NEAs may submit their project proposals to TCC with estimated cost of the project.

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NEAs may devise the procedure for determining cost estimates following the standard guidelines/practices in this regard.

ii. TCC may carry out technical and cost evaluation of the project and recommend the same for approval.

iii. In case SFC/EFC appraisal is warranted, same should be processed by NEAs after recommendation of the project by TCC, as per laid down procedure. After completion of statuary clearances, the project proposal will be put up in EC for approval.

c. Keeping in view the decision of 17th EC meeting, the project proposal for heliborne survey have been reconsidered for discussion in 26th TCC meeting. The technical parameters of the project were again discussed by TCC and found to be in order. GSI has conveyed that for deriving cost estimate Request for Information (RFI) was issued to assess the capacity of the bidders and obtain preliminary cost estimate. Forty airborne survey companies were contacted by GSI. Of them, eleven Project Implementing Agencies [PIAs] indicated positive interest in the program and submitted cost estimates for heliborne based as well as fixed wing survey systems. Based on this, a cost estimate of Rs. 9850/LKM for Heliborne TDEM and Magnetic; Rs. 2200/LKM for Fixed Wing magnetic gradiometer and gamma–ray spectrometer; and Rs. 2000/LKM for fixed wing magnetic gradiometer have been arrived by GSI. Accordingly, the cost estimate of Rs.19.00 Cr for implementation of heliborne survey has been derived on the basis of RFI by the implementing agency i.e. GSI.

d. Based on deliberations the following recommendations have been made:

i. GSI may ensure to utilise all the legacy data including geophysical and geochemical data while planning their Time-Domain Electromagnetic (TDEM) and Magnetic data acquisition.

ii. The execution period mentioned in the proposal is up to 31st December, 2021. This needs to be quantified in terms of total months for easy monitoring.

The Committee suggested that the above comments should be attended before submission of project at estimated cost of Rs. 19.00 Crore to EC for approval.

26.1.2: Multi-sensor Aero-geophysical surveys over blocks 13 to 22 in adjoining Obvious Geological Potential (OGP) areas under National Airborne Geophysical Mapping Programme (NAGMP).

a. The project proposal was discussed in the 24th TCC meeting and the committee suggested GSI to resubmit the proposal after completing due process of approval from Ministry. Now, GSI has resubmitted the project proposal as per communication from MOM.

b. GSI has conveyed that the magnetic (horizontal gradiometer) and gamma-ray spectrometer data acquisition over accessible Obvious Geological Potential [OGP] area of 7,78,641 sq km is in progress over 12 blocks [1-12]. Out of which, data acquisition over about 2 lakh sq km have been completed and about 110 prospective areas have been identified for further stage of exploration.

c. Keeping in view the encouraging outcomes of the NAGMP over blocks 1-4, and decision made in National Mineral Exploration Policy, 2016 for data acquisition over entire country, GSI has envisaged to acquire magnetic (horizontal gradiometer) and gamma-ray spectrometer data over blocks 13-22 covering 4,88,391 sq km area at a cost of about Rs. 266 Cr with same technical specifications.

d. GSI has submitted that the average cost for NAGMP over blocks 1-12 is Rs. 1050/- per line kilometre. After adding 20% escalation in the average cost of NAGMP for ongoing survey over blocks 1-12, GSI has estimated the average cost of Rs. 1260/- per line kilometre for blocks 13-22.

Based on deliberation, it has been observed that the technical parameters kept for magnetic (horizontal gradiometer) and gamma-ray spectrometer data acquisition are in accordance to the work being carried out over blocks 1-12 and appears to be in order.

The committee feels that the instead of 20% escalation in the average cost o NAGMP for ongoing survey over blocks 1 to 12, an escalation of 10% may be considered while deriving the estimated cost. Accordingly, the committee recommends that the estimated cost of the project to be Rs.244.00 crore.

The Committee recommends the submission of the project proposal with revised estimated cost of Rs.244.00 crore to SFC / EFC. Thereafter the project may be submitted to EC for approval.

26.1.3: Proposal for Outsourcing of GCM as per DPR

a. The geochemical mapping program is a flagship program of GSI wherein it was aimed to generate the elemental anomaly maps [64 elements] of entire country on 1:50,000 scale which will be crucial for identifying new prospective zones in different geological domains. Besides this, the NGCM dataset is also of immense use for landuse, landcover, agriculture, ground/surface water contamination, forest and management of environment and many societal aspects of human and animal health.

b. In first phase, Obvious Geological potential [OGP] area of about 5.71 lakh sq. km for gold, basemetal, diamond, iron ore, chromite ore, bauxite, platinum group of elements, coal and lignite etc. have been prioritised for NGCM survey. Accordingly, GSI has completed NGCM of an area of 11.72 lakh sq. km against the total mappable area [31.46 lakh sq km] including entire accessible OGP part of the country by March, 2019. GSI has envisaged to cover another 1.90 lakh sq

km by March, 2021. Additionally, 0.93 lakh sq km have been covered under MoU with Govt. of Gujarat and Rajasthan.

c. Now, GSI has proposed to acquire NGCM data over 1042 toposheets covering Deccan trap [321 TS], Thar Desert [124 TS], Indo-Gangetic Brahmaputra and Alluvial Plain [455 TS], and Himalayan Belt [142 TS] of the country through outsourcing utilising NMET fund. The proposal has been evaluated on three aspects:

   A. Justification for fast-tracking NGCM through outsourcing in the proposed four areas in context of mineral exploration
   B. The proposed timeline of completion and cost-benefit considerations
   C. Issues related to data collection and analyses through outsourcing

After detailed deliberation, the following observations have been made by the TCC which needs to be considered during the SFC/EFC:

A. Justification for fast-tracking NGCM through outsourcing in the proposed four areas in context of mineral exploration:

i. ***The Indo-Gangetic Brahmaputra and Alluvial Plain: The Indo-Gangetic Brahmaputra and Alluvial Plain are mostly covered by thick fluvial sediments to the order of several km and NGCM data collected from such thick pile of sediments may not bring out signatures of mineralisation from underlying country rocks, except in some peripheral areas of the alluvial plains. Therefore, despite the fact that the NGCM data over these densely populated areas will be crucial for Landuse, Landcover, Agriculture, Water resources, Forest and management of Environment and many other societal aspects of human and animal health but it has limited application for mineral exploration perspective.***

ii. ***Regarding NGCM data acquisition over Thar desert, use of coarse fractions of stream sediments is recommended in mineral exploration because iron-rich material is relatively resistant to breakdown in erosional processes, and mechanical dispersion may be crucial than chemical dispersion. In view of this, GSI should first evolve a dedicated strategy with appropriate orientation survey for NGCM data acquisition over arid/desert environment before implementing the project. Moreover, the finer fractions of Thar Desert are mostly Aeolian in nature and thickness of the cover varies from 80 to 150m, which possibly cannot give any idea of the minerals lying below it.***

iii. ***The Deccan Trap consists of multiple layers of solidified flood basalts covering about 5 lakh sq km area. The geochemical fingerprinting has been evolved as an established method for mineral prognosis in flow basalts in some parts of the world. The unique and large PGE–Cu–Ni Noril'sk Deposit located within the Siberian Trap is one such classical example of a major***

deposit in similar large igneous province. NGCM, therefore, may provide signatures of mineral concentrations in the Deccan Traps, especially in the fringe regions. In view of this, the NGCM data acquisition over Deccan Trap may be prioritised by deploying suitable sampling strategy.

iv. *Himalayan belt: The Himalayan belt, though having potential for mineral prospectivity, is relatively less explored due to accessibility, logistics and environmental concerns. NGCM is expected to provide baseline signatures for pursuing further geoscience investigations for mineral targeting. The security issues due to international boundaries in the Himalayan belt needs to be addressed before implementation of NGCM program. Moreover, a suitable sampling strategy may be formulated before taking up the NGCM project in the inaccessible parts of Himalayan terrain.*

B. The proposed timeline of completion and cost-benefit considerations

It has been proposed that, NGCM in all the four areas will be completed by 2024. In this context, as already stated in the previous section, only Deccan Trap and the Himalayan belt shows some promise from mineral exploration perspective. Considering that Deccan Trap has about 5 lakh sq. km area to be covered and the Himalayan belt has about a 2.59 lakh sq km area to be covered. Accordingly, the proposal may be revised to cover Deccan Trap and Himalyan Belt for NMET funding.

C. Issues related to data collection through outsourcing

i. *The NGCM programs are specific type of projects and have been taken up world-wide only by geological survey organisations due to its inherent scale of operations, required expertise and data integrity.*

ii. *The process of NGCM data acquisition, sample preparation, analysis, collation and data interpretation has a very intensive human interference, unlike many other geophysical data collected through instruments and processed digitally.*

iii. *Implementing agency should ensure that the analysis should in NABL accredited labs and all the analysis be completed during the project schedule time.*

iv. *Interpretation of multi-elemental data, map preparation and its correlation with geological domains are specialised components of NGCM which needs to be taken up by experienced geologists. In this connection, while outsourcing the NGCM work, utmost care should be taken while selecting the implementing agency for necessary engagement of geologists in the projects. In case of large pendency, the purpose of fast-tracking of data collection may lose its relevance. Further, close monitoring of handling of samples should be ensured for quality control.*

v. ***The title of the project needs to be modified by including the specific geological domain names wherein the project will be implemented.***

vi. ***The break-up of cost component used for deriving the estimated cost needs to be included in the proposal.***

The Committee suggested that the above comments should be attended and revised proposal may be submitted to TCC.

26.1.4: Proposal for outsourcing of Ground Gravity–Magnetic survey under National Geophysical Mapping Programme (NGPM)

a. The National Geophysical Mapping Program (NGPM) is another ambitious program of GSI initiated in 2002, for systematically generating gravity and magnetic data [station density: one station per 2.5 sq km] to cover the entire country with priority to OGP area. The anomaly maps derived from 1mGal gravity and 50nT magnetic data provides subsurface architecture which is instrumental in designing exploration strategy in the country.

b. GSI has conveyed that 10.73 lakh sq km area will be covered by FS: 2020-21 against the total mappable area [31.46 lakh sq km] of the country. It has been conveyed that the leftover area will be executed by utilizing in-house capacities [1.18 lakh sq km annually] as well as by means of collaboration/ outsourcing. GSI has proposed to engage national/ international agencies for data acquisition, generation of basic (location, Bouguer gravity anomaly & magnetic anomaly) & processed maps, interpretation, integration with legacy data of GSI and recommendation of mineral potential blocks.

c. GSI has estimated a cost of Rs. 5000/- (excluding GST & other taxes) per gravity magnetic (GM) observation point on the basis of expenditure incurred through its in-house resources with 10% additional cost increment for subsequent years in view of price escalation.

d. GSI has proposed data acquisition as per following order of priority: 1. Alluvial cover parts of Rajasthan and Gujarat, 2. Left over areas in blocks demarcated for NAGMP survey, 3. Left over areas in SIS, 4. Priority areas recommended by respective regions, 5. Indo-Gangetic Plains. After detailed deliberation, the following observations have been made by the TCC which needs to be considered during execution:

i. ***It is mentioned in the DPR that NGRI has carried out gravity & magnetic survey in Saurashtra and adjoining areas. Efforts may be made to acquire the legacy G-M data from all the Agencies, if available, to avoid duplication of efforts.***

ii. ***Gravity, Magnetic and elevation data is of critical strategic importance. During finalisation of Data Sharing and Accessibility Policy, 2019 of GSI,***

the Ministry of Defence [MoD] has allowed relaxation of data sharing only upto 1mGal in unrestricted area and 20mGal for restricted area for gravity data and 5 nT in non-restricted area and greater than 100 nT for restricted area for magnetic data. Keeping this in view, GSI should take requisite approval from Ministry of Defence.

iii. ***The survey parameters and technical specifications for the ground gravity-magnetic and DGPS survey must be in accordance with the GSI's SOP of NGPM.***

iv. ***As GSI will also be simultaneously carrying out NGPM survey extensively in different regions, the deployment of senior level officers be ensured for monitoring and quality control.***

The Committee recommends submission of proposal at estimated cost of Rs. 327.00 Crore for SFC / EFC and thereafter, the project may be submitted to EC for approval.

26.1.5: Multi-Sensor Aero-geophysical Surveys over Obvious Geological Potential areas of India, Blocks-6 and 8.

a. The project proposal for Multi-Sensor Aerogeophysical survey over blocks 6 and 8 is a part of pre-approved project for NAGMP data acquisition over blocks 1-12. The approval was accorded by the Ministry vide letter F.No. 11/51/2016-M.I dated 27.9.2016. Accordingly, the PIAs have been selected and cost has been derived through competitive bidding by GSI.

b. GSI has proposed to acquire magnetic (horizontal gradiometer) and gamma-ray spectrometer data over 1,63,963 Sq. km area [Block-6: 76,049 Sq. km and Block-8: 87,914 Sq. km] within a period of 17 months from the date of issuance of work order to PIAs. The technical parameters of data acquisition have been kept similar to that of the parameters kept for data acquisition over Blocks 1-4 and Blocks 9-12 which are under implementation.

c. The data acquisition over Block-6 includes the geological domains of Dharwar and Calc-alkaline Closepet Granite in states of Maharashtra, Chhattisgarh, Andhra Pradesh and Telangana. Whereas the geological domains including parts of Dharwar and Calc-alkaline Closepet Granite in states of Karnataka, Andhra Pradesh and Telangana will be covered in Block-8.

d. GSI has identified project implementing agencies/consortium, M/s Sander Geophysics Limited, Canada and M/s Pan India Consultant Pvt. Ltd., New Delhi, India for block-6 and M/s Mc Phar International Ltd, M/s Oil Field Instrumentation (India) Pvt. Ltd., Mumbai, India and M/s Ultimate Air FZ LLC, Dubai for block-8.

e. The cost of Rs.39,85,74,528.59 (rupees thirty-nine crores eighty-five lakhs seventy-four thousand five hundred and twenty-eight point five nine) inclusive of 18% of GST

and Rs. 44,92,71,483/- (Rupees Forty Four Crore Ninety Two Lakhs Seventy One Thousand Four Hundred Eighty Three only) inclusive of 18% of GST have been derived for block-6 and block-8 respectively through competitive bidding by tendering process by GSI.

The technical parameters are in order and the cost has been arrived through competitive bidding. In view of this the Committee recommended the proposal for Aero-geophysical survey over Blocks 6 and 8 at the cost of Rs.39,85,74,528.59/- (Block-6) and Rs. 44,92,71,483/- (Block-8) with time schedule of 17 months for submission to SFC, if required, and thereafter submitted to EC for approval.

26.1.6: Proposal for General Exploration (G2) in Mundadevta-Darkhuli Copper Block in Baharagora Copper Prospect, Singbhum Copper Belt, District: East Singbhum, Jharkhand, under NMET

a. MECL has conveyed that in Mundadevta-Darkhuli Block, the Copper mineralization occurs along both the limbs as well as in the hinge part of the asymmetric synformal flexure.

b. Mineralisation is in the form of fissure vein type deposit associated with closely spaced shear zone, often show branching, sometimes cymoidal and mostly parallel, sub-parallel to the foliation.

c. Mineralisation in this area is neither confined to any particular stratigraphic horizon nor to any particular litho-unit, however, some litho-units are preferred relative to other. Zones are restricted to quartz-chlorite-biotite Schist, Biotite-quartz rock, quartz-biotite schist, silicified brecciated rock and Metabasites.

d. It has been conveyed that the detailed integration of geological, geochemical and IP-resistivity data was carried out by GSI during 1970 along with drilling of total 5560 m in 31 BHs with 100mx100m spacing in Mundadevta Darkhuli Block and report have been categorised under G3 stage of UNFC compliance.

e. A Reserve/Resource of (indicated + inferred) at cut off grade of 1.0%, 0.7% and 0.5% Cu down to 290 m vertical depth from datum line (at 100m RL) amount to 1.924 mt , 3.876 and 5.925 mt respectively was established by GSI in 1970. It has been informed that beneficiation component was left out.

f. MECL has proposed to take up the investigation with intersection at vertical depth of more than 200m (110m RL). Total 37 BHs at an interval of 50 m with 8125.00 m of drilling.

The Committee recommended that the project may be resubmitted to TCC after detailed assessment of all available data and its suitability for auctioning. Further Committee suggeste that this block may be combined with the South Jharia Copper Block discussed below [Para 26.1.7].

26.1.7: Proposal for General Exploration (G2) in South Jharia Copper Block in Baharagora Copper Prospect, Singbhum Copper Belt, District: East Singbhum, Jharkhand, under NMET

a. It has been submitted that the mineralisation in the area is in the form of fissure vein type associated with closely spaced shear zones, often show branching, sometimes cymoidal and mostly parallel to sub-parallel to the foliation.

b. MECL has submitted that the mineralisation in this area is controlled by litho-structure i.e. various openings developed as a result of multi stage deformation. Ore bodies are located along the shear tension surfaces and are more or less parallel to the foliations of the host rock. Different openings thus gave rise to in-filling types of mineralisation as stringers, veins and veinlets, breccia-filling, etc.

c. MECL has conveyed that the mineralisation in this area is neither confined to any particular stratigraphic horizon nor to any particular litho-unit. However, some litho-units are preferred relative to other. Zones are restricted to quartz-chlorite-biotite schist, biotite quartz rock, quartz-biotite schist, silicified brecciated rock and metabasites.

d. It has been submitted that the detailed integrated Geological, Geochemical and IP-Resistivity investigation of the area was taken up during 1970 based on which total 11 boreholes with 100mx100m spacing were drilled between 1970-1978 by GSI with a cumulative Drilling of 1798.25 m in the South Jharia Block.

e. A Reserve/Resource (indicated + inferred) at cut-off grade of 1.0%, and 0.5% down to 200 m vertical depth from datum line (at 100m RL) amount to 0.65MT and 0.92MT respectively was established by GSI.

f. MECL has proposed to take up the investigation in the South Jharia Block with vertical depth of more than 200m (110m RL). Total 24 BHs at 50m interval with 5080m of drilling have been proposed.

g. The committee has opined that a detailed assessment of all available geoscientific data is to be done before finalisation of required work components. The committee has suggested MECL to combine the two blocks [Mundadevta-Darkhuli + South Jharia] and assess the left out work components. MECL may submit a combined proposal for these two blocks in next TCC meeting.

The committee suggested that the project may be resubmitted to TCC after detailed assessment of all the available data and its suitability for auctioning after combining the two proposals [Mundadevta-Darkhuli + South Jharia].

26.1.8: (i) General Exploration for Limestone in Periyakurichi Block, District-Ariyalur, Tamil Nadu for G2 stage mineral exploration under NMET and

(ii) Proposal for Sendurai and Maruvathur Limestone Block, District-Ariyalur, Tamil Nadu State for G2 Stage Mineral Exploration under NMET.

a. The two project proposals on limestone exploration were recommended during 23rd TCC meeting for approval of EC in its 16th EC meeting. However, the projects were not approved by EC citing limestone and Iron ore exploration projects shall not be considered for NMET funding and exploration work for limestone projects should be carried out by GSI. Further, it was stated that the GSI will prepare an inventory of work done for limestone exploration in each state for availability and demand of limestone.

b. During 17th EC meeting, the Secretary, Mineral Resource Department, Govt. of Chhattisgarh and Secretary, Mines and Geology, Govt. of Jharkhand requested EC to consider proposals of limestone and Iron ore for NMET funding.

c. In view of request from the state of Chhattisgarh and Jharkhand, EC reviewed its decision and decided that the project proposals in respect of Limestone and Iron ore may also be taken up after assessing the demand and availability of these commodities in State.

d. Keeping in view the decision made during 17th EC meeting the two project proposals for limestone in state of Tamil Nadu has been reconsidered by TCC.

e. The Committee suggested that the projects may be implemented as per the directives /recommendations suggested during 23rd TCC meeting.

The Committee suggested that the proposals may be considered for approval subject to submission of certificate from Tamil Nadu state detailing demand and availability of limestone in the state and requirement/demand vis-à-vis availability of limestone resources in Ariyalur district. It is pertinent to mention that, as per the NMI data of IBM 2015, the total Limestone resources of Tamil Nadu is about 1600MT.

The Committee recommended the proposals for approval, subject to submission of certificate from the state of Tamil Nadu

(i) General Exploration (G2) in Periyakurichi limestone Block, District-Ariyalur, Tamil Nadu state with estimated cost of Rs. 117.86 lakh including GST in time schedule of 9 months for carrying out the proposed work and submission of report as per Annexure-IIA and IIB and

(ii) General Exploration (G2) in Sendurai and Maruvathur Limestone Block, District-Ariyalur, Tamil Nadu State with estimated cost of Rs. 139.36 Lakh including GST in time schedule of 10 months for carrying out the proposed work and submission of report as per Annexure-IIIA and IIIB.

26.2: Review of geological reports of completed projects

26.2.1: Geological report on General Exploration (G2) for limestone in Bhimagundam Block, Peddamidium (M), District - YSR Kadapa, Andhra Pradesh – Implementing Agency: MERIT, AP.

a. The geological report and outcomes of limestone exploration in Bhimagundam Block, Peddamidium (M), District- YSR Kadapa, Andhra Pradesh have been reviewed by the committee.

b. MERIT has conveyed that most of the assigned targets have been successfully achieved as per the geoscientific requirement of the project.

c. The limestone thickness varies from 1m to 28m with overburden of 1m to 17m in the Bhimagundam Block. Total 139.40MT in-situ limestone resource has been estimated, by cross sectional method, with 125MT as indicated resource and 14MT as inferred resource. User grade classification of limestone is to be done before submission of report.

d. It has been suggested that the boundary between quartzite and limestone is to be marked in the map.

e. It has been conveyed that the final report and bill submission will be completed by March, 2021, therefore a time overrun up to March, 2021 may be granted.

The Committee recommended for approval of time over run up to 31.03.2021 by Executive Committee and suggested to submit the geological report to NMET Secretariat.

26.2.2: Geological report on General Exploration (G2) for limestone in Gundlakunta Block, Peddamidium (M), District- YSR Kadapa, Andhra Pradesh – Implementing Agency: MERIT, AP.

a. The geological report of limestone exploration in Gundlakunta Block, Peddamidium (M), District- YSR Kadapa, Andhra Pradesh has been reviewed by the committee.

b. It has been conveyed that most of the assigned targets have been successfully achieved as per the geoscientific requirement of the project.

c. The flaggy and massive limestone have been reported from the area. The thickness of flaggy and massive limestone varies from 5-46m and 1-36m respectively, whereas overburden varies from 2-12m.

d. As per UNFC classification, out of the total in-situ resource of 726MT of limestone estimated in Gundlakunta limestone Block, a resource of 669MT and 58MT have been categorized as Indicated Resource (332) and Inferred Mineral Resource (333) respectively.

e. It has been conveyed that the final report and bill submission will be completed by March, 2021, therefore a time overrun up to March, 2021 may be granted.

The Committee recommended for approval of time over run up to 31.03.2021 by Executive Committee and suggested to submit the geological report to NMET Secretariat.

26.2.3: Geological report on General Exploration (G2) for limestone in Dommaranandhyala - Veparala Block, Mylavaram (M), District- YSR Kadapa, Andhra Pradesh – Implementing Agency: MERIT, AP.

a. The geological report of limestone exploration in Dommaranandhyala - Veparala Block, Mylavaram (M), District- YSR Kadapa, Andhra Pradesh has been reviewed by the Committee.

b. It has been conveyed that the assigned targets have been successfully achieved by the MERIT, AP.

c. A total of 1509MT in-situ limestone resource has been estimated by cross sectional method in Dommaranandhyala - Veparala Limestone Block with 1244MT as indicated resource and 266MT as inferred resource.

d. It has been submitted that the analyses of limestone considered for ore resource estimation yielded 46.19% CaO, 0.47% MgO, 12.94% SiO_2, 1.85% Al_2O_3, 1.00% Fe_2O_3, and 0.02% P_2O_5 indicating that the limestone is suitable for cement industry.

e. It has been conveyed that the final report and bill submission will be completed by March, 2021, therefore a time overrun up to March, 2021 may be granted.

The Committee recommended for approval of time over run up to 31.03.2021 by Executive Committee and suggested to submit the geological report to NMET Secretariat.

26.2.4: Geological Report on Reconnaissance Survey (G4) for gold and basemetal in Nandgaon-Gora-Mahewa area, District- Chhattarpur, Madhya Pradesh – Implementing Agency: NMDC.

a. The Committee reviewed the geological report of gold and basemetal exploration carried out in Nandgaon-Gora- Mahewa area, District- Chhattarpur, Madhya Pradesh.

b. It has been conveyed that the assigned targets have been successfully achieved by the NMDC.

c. The surface indication of sulphide mineralization are scanty and sporadic in nature. Occurrence of sulphide mineralization in the form of Pyrite, Chalcopyrite, Bornite, Galena and Sphalerite have been reported in various granite bodies.

d. Chemical analyses of bedrock samples indicated a maximum value of 1148ppm Cu [sample no CH-24]. Besides this, Cu value ranges from 100 ppm to 500 ppm in

other 8 sample. Maximum value of Au has been recorded at 75.43ppb in sample no. CH-28.

e. The analyses show a maximum Pb and Zn value of 1160ppm and 985ppm in sample no. CH-4 and CH-24 respectively. Similarly, the highest Molybdenum content of 89ppm has been reported from sample no. CH-24.

The Committee has noted the outcome of project and suggested to submit the geological report to NMET Secretariat. In view of poor concentration of ores/minerals in the area, the Committee suggested not to take up further exploration.

26.2.5: Geological Report on Reconnaissance Survey (G4) for Gold in Matmari Block, District- Raichur, Karnataka – Implementing Agency: NMDC.

a. The geological report for gold in Matmari Block, District- Raichur, Karnataka has been reviewed by the Committee.

b. It has been conveyed that the assigned targets have been successfully achieved by the NMDC.

c. Three mineralized zones viz. (a) Gadhar village (b) Kataknur village and (c) Buddinni village have been identified through remote sensing studies, geological mapping, geochemical sample analyses and geophysical studies. The outcome of exploration work carried out in each zone is given below:

i. **Gadhar Village:** 109 samples (bedrock, soil and pit) have been analysed and assay values of copper ranging from 0.80 ppm to 10034 ppm have been reported. In two samples the Cu value have been reported to 8822 ppm and 18693 ppm whereas in other samples the Cu content varies from 46 ppm to 331 ppm. Based on outcome of analytical results from the bedrock and trench samples, it appears that the results are not encouraging and no mineralised zone could be established.

ii. **Kataknur Village:** 34 samples (bedrock, soil and pit) have been analysed and the assay value of Copper ranging from 0.30ppm to 10497ppm have been reported. The copper value ranges from 71 ppm to 477 ppm in all the samples except one sample where reported copper value is 12914 ppm. Based on outcome of analytical results from the bedrock and trench samples, it appears that the results are not encouraging and no mineralised zone could be established, moreover, the area also falls in Tungabhadra river bank.

iii. **Buddinni Village:** The assay value of 69 samples (bedrock, soil and pit) shows copper values ranging from 1.90 ppm to 4261 ppm. The copper assay values of trench samples ranges from 127 ppm to 173 ppm. Based on outcome of analytical results from the bedrock and trench samples of quartz vein, it appears that the results are not encouraging and no mineralised zone could be established, moreover, the area lies adjacent to Tungabhadra river.

The Committee has noted the outcome of project and suggested to submit the geological report to NMET Secretariat. In view of poor concentration of ores/minerals in the area, the Committee suggested not to take up further exploration.

26.2.6: (i) Geological Report on Reconnaissance Survey (G4) for limestone in Jeteya Block, Buruborta and Dumurjowa, District- West Singbhum, Jharkhand – Implementing Agency: TSMDC.

(ii) Geological Report on Reconnaissance Survey (G4) for limestone in Gupteswar Block for limestone, District- Koraput, Odisha – Implementing Agency: TSMDC.

The TSMDC informed that due to internet connectivity issue, the geological reports may be reviewed in next TCC meeting.

The Committee agreed to review the geological reports in next TCC meeting.

26.2.7: Geological Report on Preliminary Exploration (G3) for bauxite in Dumarguda Block for bauxite, District- Surguja, Chhattisgarh – Implementing Agency: DGM, Chhattisgarh.

a. The geological report for bauxite exploration in Dumarguda Block for bauxite, District- Surguja, Chhattisgarh has been reviewed by the committee.

b. It has been conveyed that the assigned targets have been successfully achieved.

c. The strike length of block is 1.20 km and depth persistence of the mineralized zone is up to 17.20m

d. Total resource of 15.24 MT has been estimated in Dumarguda bauxite block. In view of discontinuous nature of bauxite deposit, a recovery factor of 70% is considered for calculation of net resource from gross resource. So a total of 10.67 MT net resource have been estimated. Grade wise details are as follows:

BLOCK	GRADE	GROSS ESTIMATED RESOURCES (in MT)	DEDUCT 30%	GROSS ESTIMATED RESOURCES (in MT)	As per UNFC. Category
Dumarguda	>40% Al_2O_3	06.784	2.035	04.749	333
	35% - 40% Al_2O_3	04.170	1.250	02.920	
	30% - 35% Al_2O_3	04.290	1.290	03.000	
	Total	15.244	4.585	10.669	

The Committee noted the outcome of project and suggested to submit the report to NMET Secretariat.

26.2.8: Geological Report on Preliminary Exploration (G3) for bauxite in Dandkesra North area, Mainpat, District- Surguja, Chhattisgarh – Implementing Agency: DGM, Chhattisgarh.

a. The geological report for bauxite exploration in Dandkesra North area, Mainpat, District - Surguja, Chhattisgarh has been reviewed by the committee. It has been conveyed that the assigned targets have been successfully achieved.

b. A total of 6.73 MT gross resources have been estimated in the block. In view of discontinuous nature of bauxite deposit, a recovery factor of 70% is considered for arriving net resources from gross resources. So, a total of 4.89 MT net resources have been estimated.

c. The entire bauxite resources have been kept under inferred category (333) as per exploration norm of bauxite enumerated in the Mineral Evidence and Mineral Content Rule 2015. Resources have been estimated by the Area of Influence Method. Grade wise details are as follows:

BLOCK	GRADE	GROSS ESTIMATED RESOURCES (in MT)	DEDUCT 30%	GROSS ESTIMATED RESOURCES (in MT)	As per UNFC. Category
Dandkesra-North area	>40% Al_2O_3	02.998	0.889	02.099	333
	35% - 40% Al_2O_3	01.962	0.588	01.374	
	30% - 35% Al_2O_3	01.765	0.353	01.412	
	Total	**6.725**	**1.840**	**4.885**	

d. The bauxite deposit of Dandkesra-North Block is potential and viable. The total area of compact bauxite block is delineated by the G3 exploration and it extended over an area of 0.543 sq km.

e. Total 4.89MT resource has been estimated in the area. The average thickness of bauxite is 7.30m whereas the average overburden is 2.46 m. The resource of metal grade bauxite (+40% alumina and <4% silica) have been reported in the Block.

The Committee has noted the outcome of project and suggested to submit the report to NMET Secretariat.

26.2.9: Geological Report on Preliminary Exploration (G3) for bauxite in Parpatia area, Mainpat, District- Surguja, Chhattisgarh – Implementing Agency: DGM, Chhattisgarh.

a. It has been conveyed that the assigned targets have been successfully achieved. The geological report for bauxite exploration in Parpatia area, Mainpat, District-Surguja, Chhattisgarh has been reviewed by the committee.

b. After preliminary exploration, it has been deduced that the average width of bauxite deposit in the area is approximately 2.40 km with Al_2O_3 content ranging between 30.02% to 53.04%.

c. The bauxite thickness varies from 0.6m to 13.9m [average thickness 3.62m] and average overburden is about 3.73m whereas, the total compact bauxite bearing area is about 2.195 sq km.

d. A total of 122 boreholes have been drilled in the area for subsurface information and 18.33MT net inferred bauxite resource have been estimated by Area of Influence Method. Considering 30% deduction of resource due to unforeseen reasons/ mining loss, the calculated resource will be as follows:

BLOCK	GRADE	GROSS ESTIMATED RESOURCES (in MT)	DEDUCTION 30%	GROSS ESTIMATED RESOURCES (in MT)	As per UNFC. Category
Parpatia Bauxite Block	>40% Al_2O_3	7.92	2.38	5.54	333
	35% - 40% Al_2O_3	6.78	2.03	4.75	
	30% - 35% Al_2O_3	11.49	3.454	8.04	
	Total	26.19	7.864	18.33	

e. On the basis of investigation made so far, the prospect of metallurgical grade bauxite occurrence in this area are encouraging.

The Committee has noted the outcome of project and suggested to submit the report to NMET Secretariat.

26.2.10: Geological Report on Preliminary Exploration (G3) for limestone in Khamardih - Gatadih area, District - Raigarh, Chhattisgarh – Implementing Agency: DGM, Chhattisgarh.

a. It has been conveyed that the assigned targets have been successfully achieved. The geological report for limestone investigation in Khamardih-Gatadih area, District- Raigarh, Chhattisgarh has been reviewed by the committee.

b. Total 130.41MT mixed grade limestone resource have been estimated in the area including resource of 30.19 MT [CaO% >44%]; 79.73MT [CaO% 38-44%] and 20.49MT [CaO% 34-38%].

c. The average thickness of limestone in the block is 16.83m whereas average overburden is 2.62m and depth extension of limestone occurrences is upto 33.00m. The block is surrounded by settlement of five villages. Further one canal and two high tension power line also pass through the block, which limits the potentiality of the block.

The Committee has noted the outcome of project and suggested to submit the report to NMET Secretariat.

26.2.11: Geological Report on Preliminary Exploration (G3) for limestone in Khairha area, District- Raigarh, Chhattisgarh – Implementing Agency: DGM, Chhattisgarh.

a. The geological report for limestone in Khairha area, District- Raigarh, Chhattisgarh has been reviewed by the committee.

b. It has been conveyed that the assigned targets have been successfully achieved by the DGM, Chhattisgarh.

c. Total 56.37MT mixed grade limestone resource have been estimated in the area with resource of 18.31MT [CaO: >44%], 31.40 MT [CaO: 38-44%] and 06.66 MT [CaO: 34-38%].

The committee has noted the outcome of project and suggested to submit the report to NMET Secretariat.

26.3: Review of ongoing projects

26.3.1: Reconnaissance Survey (G4) for manganese in Tentuliguda block, District-Koraput, Odisha – Implementing Agency: DGM Odisha.

a. The project was reviewed in 25th TCC meeting held on 05th and 06th November 2020 and it was suggested to submit the details of work carried out so far and outcome in next TCC meeting.

b. DGM, Odisha presented the exploration work carried out so far along with the geological map prepared.

The committee suggested to submit the geological report for the exploration work carried out so far along with all the certificate from local authority regarding law and order issue and non-execution of the proposed proposal.

26.3.2: Reconnaissance Survey (G4) for limestone in Sangmania Block, District-Satna, Madhya Pradesh – Implementing Agency: MPSMCL.

a. The project was approved in 14th EC meeting held on 9th September 2019 with estimated cost of ₹41.52 lakh and timeline of 14 months.

b. MPSMCL was invited for the TCC meeting for review of the exploration work carried out so far however, representative from MPSMCL did not attend the meeting.

c. NMET Secretariat informed that the MPSMCL has sent a letter regarding payments for exploration carried out. It is also informed that MPSMCL is not submitting monthly progress of work to NMET.

The committee suggested that the outcomes of the work are to be reviewed before release of fund.

26.4: Sampling and chemical analysis of graphite samples from Bairapalli manganese block, District- Balangir, Odisha [MECL].

a. MECL informed that mineral exploration for manganese has been carried out in Rengali, Tamiya, Biarapalli and Babja blocks, District- Balangir, Odisha.

b. It was also informed that the geological reports for Rengali, Tamiya and Babja blocks have been submitted.

c. MECL informed that during the mineral exploration of Rengali, Tamiya, Biarapalli and Babja blocks, graphite mineralisation has been observed in some of the of boreholes.

d. MECL has conveyed that the 7 out of 10 samples contains more than 4% FC. In view of this, MECL has requested for analyses of graphite samples in other blocks despite the fact that the geological report was already submitted.

After detailed deliberation the committee opined that the geological reports of Rengali, Tamiya and Babja blocks have been submitted and further chemical analyses for graphite samples may not be possible at this stage. **The committee suggested that MECL may submit a fresh proposal for sampling and chemical analyses for graphite samples.**

26.5: The meeting ended with vote of thanks by Director and Member Secretary, TCC, NMET.

A P Singh
23/12/2020

23/12/2020

List of TCC members attended 26th Technical-cum-Cost Committee (TCC) meeting of NMET held on 10th and 11th December, 2020 through videoconferencing at Geological Survey of India, DGCO, A-II Pushpa Bhawan, New Delhi

S. No.	Name/Designation	Status	Remarks
1	Shri Janardan Prasad, ADG & HoD, SR, GSI, Hyderabad	Chairman, TCC, NMET	Attended via videoconference
2	Shri Ranjan Kumar Sinha, Controller General (Retd.) Indian Bureau of Mines, Noida	TCC Member	Attended via videoconference
3	Shri P. Tarafdar, Dy. Director General (Retd.) Geological Survey of India, Kolkata	TCC Member	Attended via videoconference
4	Dr. Manoranjan Mohanty, Dy. Director General (Retd.) Geological Survey of India, Bhubaneshwar	TCC Member	Attended via videoconference
5	Shri Naeem Ahmad, General Manager-Exploration (Retd.), CMPDI Ltd., Aligarh	TCC Member	Attended via videoconference
6	Dr. Anjani Kumar, Dy. General Manager (Exploration) & HoD-Planning (Retd.), MECL, Nagpur	TCC Member	Attended via videoconference
7	Shri J. V. Ramarao, Dy. Director General (GP) [Retd.], Geological Survey of India, Hyderabad	TCC Member	Attended via videoconference
8	Dr. L. P. Singh, Director, Geological Survey of India, DGCO, New Delhi	Member Secretary, TCC, NMET	Attended in person
9	Shri Amit Saran, Director, NMET, MoM	TCC Member	Attended via videoconference
10	Shri Ravi Kumar Gupta, Deputy General Manager (Finance), HCL, Kolkata	TCC Member	Attended via videoconference
11	Shri P. K. Maharana, Dy. General Manager (Finance), NALCO, Bhubaneshwar	TCC Member	Attended via videoconference
12	Shri Vinay Pal, Assistant Cost Account Officer (Finance), Geological Survey of India, DGCO, New Delhi	TCC Member	Attended in person

23/12/2020

23/12/2020

Annexure-I

List of participants attended 26th Technical-cum-Cost Committee (TCC) meeting of NMET, held on 10th and 11th December, 2020 through videoconferencing at Geological Survey of India, DGCO, A-II Pushpa Bhawan, New Delhi

S. No.	Name/Designation	Email ID	Contact No	Organisation
1	Shri Janardan Prasad, ADG & HoD, SR, GSI, Hyderabad	janardan.prasad@gsi.gov.in	7763800788	Chairman, TCC
2	Shri Ranjan Kumar Sinha, Controller General (Retd.) IBM, Noida	sinhark57@rediffmail.com	9421777637	Member, TCC
3	Shri Pradipta Tarafdar, DDG (Retd.) GSI, Kolkata	tarafdar.pradipta@gmail.com	9503088847	Member, TCC
4	Shri Manoranjan Mohanty, DDG (Retd.) GSI, Bhubaneshwar	manoranjanmoha@gmail.com	9483511287 8249014425	Member, TCC
5	Shri J. V. Ramarao, DDG (GP) (Retd.) GSI, Hyderabad	rarajammi@gmail.com	9440691284	Member, TCC
6	Shri Anjani Kumar, (Retd.), MECL, Nagpur	anjanikumar1957.ak@gmail.com	9975350576	Member, TCC
7	Shri Naeem Ahmed, (Retd.), CMPDI, Aligarh	ahmadnaeem17@yahoo.co.in	8588092153	Member, TCC
8	Shri Amit Saran, Director & HoD, NMET	amit.saran@nic.in	9717647259	Member, TCC
9	Dr. L. P. Singh, Director, GSI, New Delhi	nmet-tcc@gov.in	9490748249	Member Secretary, TCC
10	Shri Ravi Kumar Gupta, DGM (F), HCL, Kolkata	ravi_g@hindustancopper.com	9433274328	Member, TCC
11	Shri P. K. Maharana, DGM (F), NALCO, Bhubaneshwar	pmaharana@rediffmail.com	8500669500	Member, TCC
12	Shri Vinay Pal, ACAO, GSI, New Delhi	palvinay009@gmail.com	8527368161	Member, TCC
13	Shri Hemraj Suryawanshi, Dy.DG (G)	hodm2gsi@gmail.com	9425603674	NMH-II, GSI, Nagpur
14	Dr. B. K. Sahu, Dy.DG (G)	b.sahu@gsi.gov.in	9437568969	RSAS, Bengaluru
15	Shri R. K. Misra, Dy.DG (Geophysics)	nmh1a@gsi.gov.in		National Mission-1A, Kolkata
16	Shri Rajinder Kumar, Dy.DG (G)	nmh1a@gsi.gov.in	9313502359	National Mission-1A, Kolkata
17	Shri Sanjaya Kumar Dash, Director (G)	nmh1a@gsi.gov.in	9494235181	National Mission-1A, Kolkata
18	Shri P. C. Das, Director (GP)	rsasddggp@gmail.com	9483623603	RSAS, Bengaluru
19	Dr. Deshraj Trivedi, Senior Geologist	nmet-tcc@gov.in	9419244294	NMET
20	Shri Subhash Kumar, Senior Geologist	nmet-mines@gov.in	9868302624	NMET
21	Shri M. S. Jairam DDG (Retd.), GSI, Technical advisor	tsmdcltd@gmail.com	9866987154	TSMDC, Hyderabad
22	Shri V. Koteswara Raju, Joint Director	ceo.merit@gmail.com		MERIT, AP
23	Shri B. P. Raturi, GM, (Exploration)	bpraturi100@gmail.com	9422806417	MECL, Nagpur
24	Shri Yogesh Sharma, General Manager (BD)	yogesh21@hotmail.com	9810163792	MECL, Nagpur
25	Shri Sharad Sinha	sharaddgmjhar@gmail.com	9470130780	DGM, Jharkhand
26	Dr. Ch. Sravan Kumar, DGM (Geology)	sravankumar@nmdc.co.in	9490760005	NMDC, Hyderabad
27	Mr. Kailash Dongre, Joint Director (Geology)	kailashdongre.kd@gmail.com	9424282791	DGM, Chhattisgarh
28	Smt. Aruna V.	v.arunajana@gmail.com	9176610967	DGM, Tamil Nadu
29	Dr. P. C. Mishra, Dy. Director Geology	pcmishra66@rediffmail.com		DGM, Odisha

Annexure-IIA

Estimated cost for General Exploration (G2) for limestone in Periyakurichi block, Sendurai taluk, District- Ariyalur, Tamil Nadu Total block area- 1.88 sq km; Nos. of boreholes- 09; borehole depth range- 90 m; Timeline- 09 months							
S. No.	**Item of Work**	**Unit**	**Rates as per NMET SoC 2020-21**			**Estimated Cost of the Proposal**	**Remarks**
			SoC-Item -Sl No.	**Rates as per SoC**	**Qty.**	**Total Amount (Rs)**	
A	**GEOLOGICAL WORK**						
1	Borhole logging & sampling & report writing						
a	Charges for one Geologist per day at HQ	day	1.3	9,000	-	-	
b	Charges for one Geologist per day at field	day	1.3	11,000	120	1,320,000	
c	Labour (2 Nos) Base rate - Rs.350 X 2 = 700	day	5.7	700	120	84,000	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)						
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS	Per Point of observation	1.6.2	19,200	-	-	
b	Charges of one Surveyor (1 Party)	one surveyor per day	1.6.1a	8,300	45	373,500	
c	Labours (4 Nos) Base rate - Rs. 350 x 4 = 1400/-	day	5.7	1,400	45	63,000	Amount will be reimburse 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	100	510,000	
e	Labours (4 Nos) Base rate - Rs. 350 x 4 = 1400/-	day	5.7	1,400	100	140,000	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	2,490,500	
B	**DRILLING**						
1	Drilling -Soft rock	m	2.2.1.1b	5,242	540	2,830,680	
2	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	9	180,000	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local authorities

5	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	9	18,000	
6	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	3,000	108,000	
7	Monthly Accommodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	3	150,000	
8	Drilling Camp Setting Cost	Nos	2.2.9a	250,000	1	250,000	
9	Drilling Camp Winding up Cost	Nos	2.2.9b	250,000	1	250,000	
10	Road Making (Flat Terrain)	Km	2.2.10a	22,020	3	66,060	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed accordingly.
11	Drill Core Preservation	per m	5.3	1,590	500	795,000	
					Sub Total- B	4,647,740	
C	**LABORATORY STUDIES**						
1	Chemical Analysis						
i)	Primary samples						
	a. For 6 radicals i.e. CaO, MgO, Al2O3, SiO2, Fe2O3 and LOI	Nos	4.1.7a & b	2,841	485	1,377,885	
	b. For additional 2 radicals SO3 & P2O5	Nos	4.1.7a	2,506	49	122,794	
ii)	Check samples Internal (5%) and External(10%)						
	a. For 6 radicals i.e. CaO, MgO, Al2O3, SiO2, Fe2O3 and LOI	Nos	4.1.7a &b	2,841	73	207,393	
iii)	Composite Samples						
	a) For 12 radicals (CaO, MgO, Al2O3, SiO2, Fe2O3, SO3, P2O5 , LOI, MnO2, K2O, Na2O and Cl.)	Nos	4.1.7a &b	4,851	72	349,272	
iv)	Petrological samples (Bh Core Samples)						
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Study of Thin Section	Nos	4.3.4	4,232	5	21,160	
v)	Specific Gravity Determination						
	Specific Gravity Determination	No.	4.8.1	1,605	5	8,025	
					Sub Total- C	2,098,294	
D	**Sub Total (A + B + C)**					9,236,534	
E	Geological Report Preparation		5.2	For the projects exceeding Rs. 50 Lakhs but less than 150 Lakhs: A Minimum of Rs. 2.5 lakhs or 5% of the work whichever is more		461,827	

F	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	5 Hard copies with a soft copy	5.1	2% of the Cost or Rs. 3.8 Lakhs whichever is lower		280,000	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.
G	Peer review Charges		As per EC decision			10,000	
H	**ENVIRONMENTAL STUDIES**						
i	Satellite imagery/Aerial photo interpretation studies		5.5.1a			-	a. Charges for procurement of imageries. As per actual cost incurred on procurement from NRSA, No charges will be paid for data freely available from website
ii	Cost of interpretation in terms of Geologist man days	Day		9,000	-	-	
iii	Baseline data collection (Land use/ land cover studies, collection of data on various attributes like Geology, geomorphology, soil, meteorology, biota, socioeconomics)	10 km radius area	5.5.1b	594,570	-	-	
iv	Chemical Analysis (sample collection and analysis in respect of four environmental attributes namely ambient air quality, noise level, water quality and noise quality) of the block (pre and post monsoon)	11 km radius area	5.5.1c	772,329	-	-	
v	Charges for preparation of Environmental Report	One Number (5 Hard copies) along with soft copy	5.5.1d	75,000	-	-	
					Sub Total- H	-	
I	Total Estimated Cost without GST					9,988,361	
J	Provision for GST (18% of I)	%				1,797,905	GST will be reimburse as per actual and as per notified prescribed rate
K	Total Estimated Cost with GST					11,786,266	
							or Say Rs. 117.86 Lakh

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

23/12/2020

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Annexure-IIA

Sl. No.	Activities	Unit	Months (2020-2021 and 2021-22)								
			1	2	3	4	5	6	7	8	9
1	Camp Mobilisation	Month									
2	Surface Drilling (1 rig)	m.									
3	Survey Party days (1 Party)	day									
4	Geologist Party days (1 Party)	day									
5	Sampling Party days, Core Sampling (1 party)	day									
6	Laboratory Studies	Nos.									
7	Camp Demobilisation	Month									
8	Environmental Studies	Month									
9	Geological Report Writing	Month									
Note: 1. Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.											
2. Time loss on account of monsoon/agricultural activity/forest clearance/local law & order problem may be additional to above time line subject to the approval of time line by EC.											

Annexure-IIIA

Estimated cost for General Exploration (G2) for limestone in Sendurai and Maruvattur block, Sendurai taluk, District- Ariyalur, Tamil Nadu Total block area- 1.54 sq km; Nos. of borehole- 11; borehole depth range- 60m; Timeline- 10 months							
S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC- Item-S. No.	Rates as per SoC	Qty.	Total Amount (Rs)	
A	**GEOLOGICAL WORK**						
1	Borhole logging & sampling & report writing						
a	Charges for one Geologist per day at HQ	day	1.3	9,000	-	-	
b	Charges for one Geologist per day at field	day	1.3	11,000	150	1,650,000	
c	Labour (2 Nos) Base rate - Rs.350 X 2 = 700	day	5.7	700	150	105,000	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)						
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS	Per Point of observation	1.6.2	19,200	-	-	
b	Charges of one Surveyor (1 Party)	one surveyor per day	1.6.1a	8,300	45	373,500	
c	Labours (4 Nos) Base rate - Rs. 350 x 4 = 1400/-	day	5.7	1,400	45	63,000	Amount will be reimburse 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	120	612,000	
e	Labours (4 Nos) Base rate - Rs. 350 x 4 = 1400/-	day	5.7	1,400	120	168,000	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	2,971,500	
B	**DRILLING**						
1	Drilling -Soft rock	m	2.2.1.1b*	5,242	660	3,459,720	
2	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	11	220,000	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local authorities
5	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	11	22,000	
6	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	3,000	108,000	

7	Monthly Accommodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	4	200,000	
8	Drilling Camp Setting Cost	Nos	2.2.9a	250,000	1	250,000	
9	Drilling Camp Winding up Cost	Nos	2.2.9b	250,000	1	250,000	
10	Road Making (Flat Terrain)	Km	2.2.10a	22,020	3	66,060	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed accordingly.
11	Drill Core Preservation	per m	5.3	1,590	550	874,500	
					Sub Total- B	5,450,280	
C	**LABORATORY STUDIES**						
1	Chemical Analysis						
i)	Primary samples						
	a. For 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI	Nos	4.1.7a &b	2,841	590	1,676,190	
	b. For additional 2 radicals SO_3 & P_2O_5	Nos	4.1.7a	2,506	59	147,854	
ii)	Check samples Internal (5%) and External(10%)						
	a. For 6 radicals i.e. CaO, MgO, Al2O3, SiO2, Fe2O3 and LOI	Nos	4.1.7a &b	2,841	89	252,849	
iii)	Composite Samples						
	a) For 12 radicals (CaO, MgO, Al2O3, SiO2, Fe2O3 , P2O5 , LOI, MnO2, K2O, Na2O and Cl.)	Nos	4.1.7a &b	4,851	88	426,888	
iv)	Petrological samples (Bh Core Samples)						
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Study of Thin Section	Nos	4.3.4	4,232	5	21,160	
v)	Specific Gravity Determination						
	Specific Gravity Determination	No.	4.8.1	1,605	5	8,025	
					Sub Total- C	2,544,731	
D	**Sub Total (A + B + C)**					10,966,511	
E	Geological Report Preparation		5.2	For the projects exceeding Rs. 50 Lakhs but less than 150 Lakhs: A Minimum of Rs. 2.5 lakhs or 5% of the work whichever is more		548,326	
F	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	5 Hard copies with a soft copy	5.1	2% of the Cost or Rs. 3.8 Lakhs whichever is lower		285,000	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.

G	Peer review Charges		As per EC decision			10,000	
H	Total Estimated Cost without GST					11,809,837	
I	Provision for GST (18% of H)	%				2,125,771	GST will be reimburse as per actual and as per notified prescribed rate
J	Total Estimated Cost with GST					13,935,607	
							or Say Rs.139.36 Lakh
Note- If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execution of the project by NEA on its own, a Certificate regarding non outsourcing of any component/project is required.							

Annexure-IIIB

S. No.	Activities	Unit	Months (2020-2021 and 2021-22)									
			1	2	3	4	5	6	7	8	9	10
1	Camp Mobilisation	Month										
2	Surface Drilling (1 rig)	m.										
3	Survey Party days (1 Party)	day										
4	Geologist Party days (1 Party)	day										
5	Sampling Party days, Core Sampling (1 party)	day										
6	Laboratory Studies	Nos.										
7	Camp Demobilisation	Month										
8	Environmental Studies	Month										
9	Geological Report Writing	Month										
Note: 1. Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.												
2. Time loss on account of monsoon/agricultural activity/forest clearance/local law & order problem may be additional to above time line subject to the approval of time line by EC.												

23/12/2020

23/12/2020

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