Ministry of Mines
National Mineral Exploration & Development Trust
Minutes of 27th meeting of Technical-cum-Cost Committee - II (TCC - II)
held on 13th and 23rd April 2026

The 27th meeting of Technical-cum-Cost Committee–II (TCC-II) of National Mineral Exploration and Development Trust (NMEDT) was convened through video conferencing under the Chairmanship of Shri Pradeep Singh, Deputy Director General (DDG), Geological Survey of India (GSI) and Chairman, TCC-II, NMEDT held on 13th and 23rd April 2026.

Members of TCC-II, NMEDT and representatives from M/s United Exploration India Private Limited, M/s GMMCO Technology Services Limited, M/s Critical mineral trackers (CMT), M/s Eartnenviro Lab Private Limited, M/s Gemcokati Exploration Private Limited, Mineral Exploration and Consultancy Limited (MECL), M/s PRB Infraprojects Private Limited, M/s Geo Marine Solutions Private Limited, M/s My World Consultancy Services Private Limited (WCS), M/s Indian Mine Planners and Consultants(IMPCon), M/s Vardan Environet LLP, M/s. Geo Exploration and Mining Solution, M/s Engeotech Consultant etc. have attended the meeting through video conferencing mode.
The list of participants is at **Annexure-1.**

Shri Pradeep Singh, DDG, GSI and Chairman, TCC-II, NMEDT warmly welcomed all TCC-II members and every participant representing from State DGMs/DMGs, Notified Exploration Agencies (NEAs) and Notified Private Exploration Agencies (NPEAs).

Shri Pradeep Singh, Chairman, TCC-II, NMEDT reminded once again to all exploration agencies that the details of ongoing mineral exploration blocks must be uploaded on the NGDR portal. All NEAs, NPEAs, and State DGMs/DMGs were requested to coordinate with NMEDT to ensure compliance.

27.1 Technical Evaluation of New Project Proposals

Agenda 27.1.1 Preliminary Exploration (G3) for Graphite Around Lakshmipur, Sikabarhi and Barha Kachapai, Rayagada District, Odisha.
[Implementing Agency: M/s United Exploration India Private Limited,]

a) The proposed preliminary exploration (G3) block, covering an area of 13.28 sq. km, is located in parts of Rayagada District, Odisha, and falls within Survey of India Toposheet No. 65M/11.
b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	Comments were not available during the course of the meeting.
2	DoMG	DMG Odisha informed that the proposed area was explored by DoMG at the G-4 level during F.S. 2013–15 through geological mapping, trial excavation, and sampling. Occurrences of graphite have been identified in the northern and western parts of the Barha-

		Kachapai area, with F.C. values ranging from 27.48% to 45.43%. The Sikabarhi deposit is considered promising, with graphite mineralization extending over more than 600 m in length and 5 to 12 m in width. In certain zones, the graphite bands contain small pockets of high-grade flaky graphite. A reconnaissance resource of approximately 8,375 tonnes of graphite, with F.C. content ranging from 8.41% to 20.70%, has been reported. Therefore, the block may be considered for further exploration.
3	MECL	The block proposed by M/S United Exploration India Private Limited. is not overlapping with MECL explored block and ongoing blocks.
4	NMEDT	The proposed block is not overlapping with NMEDT funded block.

c) These blocks were identified by GSI from the DMG reports and were allotted to NPEAs from NMEDT. The exploration project has been prepared by consulting the reports of DMG, Odisha.

d) The agency informed the committee that the block was delineated through analytical evaluation of geochemical data. Proximate analysis of graphite samples from different blocks indicates considerable variation in Fixed Carbon (F.C.) content, ranging from 7.86% to 46.25%. The Barha Kachapai block shows F.C. values between 27.48% and 45.43%. The Sikabarhi graphite deposit is estimated to host approximately 8,375 tonnes of graphite with F.C. content varying from 8.41% to 46.25%, whereas the Lakshmipur deposit is likely to contain about 590 tonnes with F.C. ranging from 7.86% to 10.88%.

e) The Agency further stated that the analytical results suggest that the Lakshmipur, Sikabarhi, and Barha Kachapai blocks possess significant potential for economically viable graphite mineralization. These findings highlight the need for detailed exploration.

f) The proposal was initially discussed during the 21st TCC-II meeting held on 19th and 22nd January 2026, where it was deferred to enable systematic integration of all available baseline data, including NGCM, NGPM, aero-geophysical data, and STM, for better formulation and strengthening of the G3 stage exploration project.

g) The committee, during re-examination of the DPR, observed that the area delineated for the G3 block remains excessively large and that significant data gaps persist, rendering it inadequate for consideration at the G3 stage. The NPEA informed that the Geological Report (GR) of the Directorate of Mines and Geology (DMG), Odisha, pertaining to FS: 2013–15, is not available, and that the DPR has mainly been prepared based on information derived from Mineral Investigation reports of the 1980s.

h) In view of these limitations, the committee recommended that the project be restructured at the G4 stage by combining both blocks and focusing on the calc-granulite lithology hosting known graphite occurrences, covering an area of approximately 25–30 sq. km. It was further advised that the block configuration and dimensions be aligned with the regional geological trend of the area.

Recommendations of TCC–II.

- ***The Committee observed that the proposed G3 block covers a large area and has significant data gaps, making it unsuitable for G3-level exploration. It also noted that the Geological report (GR) of DMG, Odisha of FS: 2013–15 was unavailable.***
- ***Accordingly, it was recommended that the project should be modified at the G4 stage by merging both blocks into a single block, focusing on calc-granulite lithology with known graphite occurrences over an area of 25–30 sq. km and that the DPR be submitted in the upcoming TCC-II meeting.***

Agenda 27.1.2 Reconnaissance Survey (G4) for Vanadium bearing Titaniferous Aluminous Laterite in Bilalpur Block, Sangareddy District, Telangana.

[Implementing Agency: M/s GMMCO Technology Services Limited,]

a) The proposed reconnaissance survey (G4), covering an area of 47 sq. km, is located in parts of Sangareddy District, Telangana, and falls within Survey of India Toposheet No. 56G/10.

b) The table containing the comments is given below:

S.N.	Agency	Comment
1	**GSI**	GSI, SU: Telangana has proposed a CMAP project Manyarpalli block which has been approved for FS 2026-27 and falls in the southeastern portion and the overlapped area is 23.32 sq.km. out of the total 74 sq.km area of Bilalpur block.
2	**DMG**	No previous or ongoing reconnaissance/exploration work, departmental exploration, or existing mining/quarry lease has been reported within the proposed area.
3	**AMD**	AMD has not carried out any exploration or reconnaissance work in the proposed block, and there is currently no ongoing project; moreover, the organization does not possess any baseline or exploration data for the concerned commodity in the area.
4	**MECL**	The block proposed is not overlapping with explored block and ongoing blocks.
5	**NMEDT**	There are no completed or ongoing NMEDT-funded projects in the proposed block.

c) The proposal was initially discussed during the 24th TCC-II meeting held on 2nd and 3rd March 2026, where the committee accorded in-principle-approval to the proposal based on the presence of significant values of Al_2O_3, Titanium and Vanadium in referenced GSI's G4 work and hand held XRF results of samples collected by the agency. During the 24th TCC-II meeting, the Committee advised revising the proposed 74 sq. km area by excluding the portion overlapping with GSI's area.

d) The agency informed the committee that the block is predominantly underlain by Deccan Trap basaltic rocks of Late Cretaceous-Early Paleogene age. Prolonged sub-aerial exposure under tropical climatic conditions has led to intense lateralization of the basaltic protolith. The agency referred the G4 work of GSI FS 2022-23 where the results showed significant enrichment of Al_2O_3, 18.18% to 34.63% along with notable Fe_2O_3, 14.56% to 37.24%, TiO_2, 1.15% to 8.55%.

e) The agency has collected five samples in the proposed area and their handheld XRF results show Al_2O_3 values from 20.9% to 35.4%, Titanium– 0.79% to 1.87% and Vanadium- 480.63 to 1074 ppm.

f) As per the GSI report (2023), NGCM data indicates vanadium values ranging from 239 ppm to 1183 ppm.

g) In view of the above facts, the Committee recommended the proposal with time schedule of 10 months for carrying out the proposed work and submission of final geological report. The item will be reviewed after 4 and 8 months respectively.

Recommendations of TCC-II

The Committee recommended the proposal titled "*Reconnaissance Survey (G4) for Vanadium bearing Titaniferous Aluminous Laterite in Bilalpur Block, Sangareddy District, Telangana*" for approval of PSC, NMEDT with an estimated cost of ₹ 65.24 lakhs (including GST) within time schedule of 10 months for carrying out the proposed work and submission of geological report as per Annexure – 2A & 2B. The item will be reviewed after 4 and 8 months.

Annexure-2A

Reconnaissance survey (G4) for Vanadium bearing Titaniferous Aluminous Laterite in Bilalpur Block, Sangareddy District, Telangana
Total Block Area- 47 sq.km, Completion time- 10 months, Review-4 months and 8 months; Drilling 100m in 4 BHs (25 m each)
Implementing Agency: GMMCO Technology Services Limited

S. No.	Item of Work	Unit	Rates as per NMEDT SoC 2025		Estimated Cost of the Proposal		
			SoC-Item No.	Rates as per SoC (a)	Qty.(b)	Total Amount (Rs) (a*b)	Remarks
A	Geological Mapping Other Geological Work & Surveying						
i	Geological mapping, (1:12,500 scale)	Sq.km	1.1	18,300	47	8,60,100	
ii	Charges for Geologist per day (Field) for geological mapping & trenching work	day	1.2.1a	14,500	120	17,40,000	
iii	Charges for Geologist per day (HQ)	day	1.2.1a	10,500	30	3,15,000	
iv	Labours Charges for geologist	day	5.8	541	240	1,29,840	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher.
v	Charges for one Sampler per day (1 Party)	one sampler per day	1.2.1b	7,850	17	1,33,450	

vi	Labours (4 Nos)	Per day	5.8	541	68	36,788	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher.
vii	Surveyor for topographic survey/DGPS Survey and for BH fixation & RL determination (4 BH plus 8 Boundary points)	Per Point of observation	1.3.2	24,000	12	288000	
	Sub Total- A					**35,03,178**	
B	Trenching/pitting						
1	Pitting	per cu. m	2.1.2	4725	20	94500	1mX1mX1m
2	Drilling (Inhouse)	per m	2.2.1.1c	5500	100	550000	4 BHs 25 m each
3	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	30000	4	120000	As per actuals as certified by local authorities subject to a maximum of 30,000 per bore hole
4	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7	2000	4	8000	
5	Borehole plugging by cement	Lum sum per borehole	2.2.8	10000	4	40000	

6	Miscellaneous Charges (Transportation of Drilling Rig, Accommodation for Drill Camp, Camp setting and winding, construction of Approach Road and Drill core preservation)	Drilling cost	2.2.9	0.25		137500	1. For Drilling cost less than 50 Lakhs: 25% of the Drilling Cost
	Sub Total- B					**9,50,000**	
C	LABORATORY STUDIES						
1	Chemical Analysis						
i	Geochemical samples						
	Major oxides (WD XRF)- (oxides+ traces -24 elements)	Per sample	4.1.17a	4200	100	420000	PS:20; CS:80
	External Check (10%)	Per sample	4.1.17a	4200	10	42000	
	Analysis of Minor, Trace RM and REE elements by ICPMS	Per sample	4.1.15	7400	20	148000	
	External Check (10%)	Per sample	4.1.15	7400	2	14800	
ii	Physical and Petrological studies						
iii	Preparation of thin section	Per sample	4.3.1	500	10	5000	
iv	Study of thin section	Per sample	4.3.4	2800	10	28000	
v	Preparation of polish section	Per sample	4.3.3	700	10	7000	
vi	Study of polish section	Per sample	4.3.4	2800	10	28000	
	Sub Total C					**6,92,800**	
	Total A to C					**51,45,978**	

D	Geological Report Preparation	5 Hard copies with a soft copy	5.2	Total cost exceeding ₹50 lakh but less than ₹150 lakh. ₹2.5 lakh	2,50,000	
E	Peer review Charges	As per EC decision			30,000	
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. 5.0 Lakhs whichever is less	1,02,920	
G	**Total Estimated Cost without GST**				**55,28,898**	
H	**Provision for GST (18% of G)**				**9,95,202**	
I	**Total Estimated Cost with GST**				**65,24,099**	
				or Say Rs. In Lakhs	**65.24**	
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 NMEDT SoC and Item no. 6 of NMEDT SoC. In					
4	Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.					
5	Any item of work not mentioned above shall be added as per SoC.					
6	All the Geological Reports and data are to be uploaded on NGDR as per MERT template by the agency.					

Annexure-2B

Reconnaissance survey (G4) for Vandium bearing Titaniferous Aluminous Laterite in Bilalpur Block, Sangareddy District, Telangana
Total Block area: 47 sq.km, Completion time- 10 months, Review-4 month and 8 months; Drilling 100m in 4 BHs (25 m each)
Implementing Agency: GMMCO Technology Services Limited

S. No	Activity	Unit	Months										
			1	2	3	4	Review-1	5	6	7	8	Review-2	9	10
1	Camp Establishment	Months												
2	Geological mapping	Months												
3	Sampling (BRS, Pitting)	Months												
4	Sampling analysis (BRS, Pitting)	Months												
5	Survey (Boundary points and Drill collars)	Months												
6	Scout Drilling	Months												
7	Core logging & sampling	Months												
8	Sampling analysis (Drill core samples)	Months												
9	Laboratory analysis (Petrography & SEM)	Months												
10	Camp winding	Months												
11	Report preparation and submission	Months												

27.2 Review of Ongoing Projects/ Completed Project & Timeline Extension

Agenda 27.2.1 Reconnaissance survey (G4) for Nickel, Cobalt and PGE in Botad area, Botad District, Gujarat.
[Implementing Agency: M/s Critical mineral trackers (CMT)]

a) The project was recommended in 6th TCC meeting held on 27th and 28th February, 2025 and 6th March 2025 and approved in the 41st EC Meeting held on 11th March 2025. The sanction order was issued on 23rd March 2025 for timeline of 10 months up to 22nd January 2026 with an approved cost of ₹128.25 Lakh. While recommending the proposal the Committee opined that drilling in the proposed block will be subject to positive outcomes of Geological Mapping and analysis for PGE would be undertaken only if Nickel (Ni) value exceeds 0.2% & if PGM grains are identified through Electron Probe Microanalysis.
b) In the 19th TCC-II meeting, the Committee observed that the project, has no significant Ni, Cr or PGE values from surface geological studies. So, the committee advised pre-closure of the project. Further, the committee instructed agency to present revised cost sheet in the upcoming TCC -II meeting.
c) Further, in 20th meeting of TCC-II held on 2nd & 5th January 2026 after detailed technical deliberations, the Committee decided for pre-closure of the project as the results were not encouraging for further exploration. Subsequently, one (01) month timeline extension up to 22nd February 2026, for final GR submission was also agreed. The project was recommended to PSC for approval of revised cost from ₹128.25/- lakh to ₹ 46.44/- lakh and the proposed revised cost & timeline extension was approved in 4th PSC meeting held on 13th January 2026.
d) During the 23rd TCC-II meeting held on 16th and 17th February 2026, the agency further requested for timeline extension of 1 months & 10 days up to 31 st March 2026 for completion of the project and it was approved in 6th PSC meeting held on 2nd March 2026. Further in 25th TCC-II meeting held on 17th and 18th March 2026 timeline extension of 1 month up to 30th April 2026 was recommended for GR submission and it was approved in 7th PSC meeting held on 27th March 2026.
e) The agency informed that the Peer Review of the Final Geological Report (GR) has been completed, and all observations/suggestions made by the peer reviewer have been duly incorporated. The Agency requested approval for submission of the final GR.
f) The Committee agreed to the submission of the final GR within the stipulated timeline, i.e., 30th April 2026.

Recommendation TCC-II
The committee agreed for submission of the Final Geological Report (GR).

Agenda 27.2.2 Preliminary Exploration (G3) for Graphite and associated minerals in Jarapa Block, District, Rayagada, Odisha.
[Implementing Agency: M/s Eartnenviro Lab Private Limited]

a) The project was recommended during 81st meeting of TCC-I. However, the project was deferred in 2nd meeting of PSC of NMEDT held on 04.11.2025 and referred back to TCC to re-evaluate the cost of the project.
b) Further, the project was recommended in 85th meeting of TCC-I held on 27th November, 1st and 5th December 2025 and approved in the 3rd PSC Meeting held on 15th December 2025. The Sanction Order was issued on 8 January 2026 for scheduled timeline of 12 months up to 7th January 2027 with an approved cost of ₹ 257.62/- Lakh (including GST).
c) The Agency informed that a total of 25 Bed Rock Samples (BRS) have been collected, of which 3 samples have shown Fixed Carbon (FC) values ranging from 13.67% to 16.53%.
d) The Committee observed that the structural data have not been properly measured in the field. In an intensely folded terrain, dip values in the range of 9°–15° are unlikely and require revalidation. It was recommended to put some channels across the graphitic bands and undertake systematic sampling and analysis. Further, for ground geophysical (GP) investigations, only Self-Potential (SP) survey is considered necessary.
e) The TCC-II Committee advised the agency to complete the geological mapping work in a comprehensive and systematic manner, ensuring full coverage of the entire study area. The committee further emphasized the deployment of experienced geologists in the field to carry out geological mapping, collection of bedrock samples, groove sampling, and acquisition of structural data in a scientific manner, along with appropriate group sample analysis.

Recommendation TCC-II

The committee advised the agency to complete geological mapping systematically with full area coverage and to deploy experienced geologists for bedrock sampling, groove sampling, structural data collection, and proper sample analysis.

Agenda 27.2.3 Preliminary Exploration (G3) for Bauxite in Ran Block, Dev Bhumi Dwarka District, Gujarat.

[Implementing Agency: M/s Gemcokati Exploration Private Limited]

a) The proposed exploration block, covering 7.87 sq. km area, is located on Survey of India Toposheet No. 41F/8 and falls within parts of Dev Bhumi Dwarka District, Gujarat. In-principle-approval was given for this proposal in 7th TCC-II meeting held on 24th & 25th March 2025.
b) The project was recommended in 12th meeting of TCC-II held on 22nd, 25th, 26th August 2025 and additional session on 27th August 2025 and approved in the 1st PSC Meeting held on 9th October 2025. The Sanction Order was issued on 10th November 2025 for scheduled timeline of 12 months up to 9th November 2026 with approved cost of ₹ 115.76/- Lakh (including GST). The item will be reviewed after 5 months. Total 16 boreholes planned, each with 30 m depth. In Phase-I, 4 boreholes (30 m each), Phase-II, 12 boreholes (30 m each) at spacing of 800m x 800m. Subsequent drilling will be after review of outcome of Phase-I boreholes.

c) The Agency informed that geological mapping covering an area of 7.87 sq. km at a 1:2000 scale has been completed. Additionally, 87 m of drilling has been carried out across 4 boreholes, from which 19 core samples have been collected.
d) After detailed deliberation on the agency's presentation on geological mapping and drilling carried out across four boreholes, the Committee approved proceeding with further drilling in boreholes 9, 10, and 11. Lithology wise resource to be estimated.

Recommendation TCC-II

The Committee approved the continuation of drilling operations in boreholes 9, 10, and 11, and advised the agency to carry out lithology-wise resource estimation.

Agenda 27.2.4 Reconnaissance Survey (G4) for Glauconite in Ambara West Area, Kachchh District, Gujarat

[Implementing Agency: Mineral Exploration and Consultancy Limited (MECL)]

a) The project was recommended in 1st TCC-II meeting held on 26th & 27th September 2024 with area of 143.15 sq. km and approved in the 38th EC Meeting held on 29th November 2024. The sanction order was issued on 13.12.2024 for timeline of 12 months up to 12.12.2025 with an approved cost of ₹107.78 Lakh.
b) In 12th TCC-II the committee advised continuation of project work as per the approved quantum of work. In 13th TCC-II The committee reviewed the outputs and opined that value of K_2O percentage (average value 3 % for 74 BRS) is not encouraging and suggested for the complete analysis of BRS and Pit samples. The agency came up in 86th TCC-I for timeline extension 31.3.2026 for GR submission and got approval in 4th PSC.
c) In 24th TCC-II the committee recommended the proposal for approval of PSC for "revised cost ₹ 117.69 Lakh against the approved cost of ₹ 107.78 Lakh due to additional analysis of 114 nos. of BH samples & inclusion of modal analysis for 10 samples. In 25th TCC-II MECL informed that all approved quantum of work has been completed. Further, the final Geological Report (GR) has undergone peer review.
d) The agency informed that their report had been peer reviewed by Dr. Arun Kumar Panda, CMPDI. The agency attended all the suggested comments by external peer reviewer, the comment about resource estimation which did not include BH-6 and BH-7 (K_20> 3%) out of 10 drilled boreholes, replied that these boreholes were from shaly sandstone. The agency requested for timeline extension up to 30.4.2026 for final Geological report submission.

Recommendation TCC-II

The committee recommended the proposal for approval of PSC for "Timeline extension of 1 month up to 30th April 2026 for submission of final geological report"

Agenda 27.2.5 Reconnaissance Survey (G4) for REE and Associated Minerals in Ektala-Rajanpali and Jogiapali-Govindpur Area, Nayagarh District, Odisha.

[Implementing Agency: Mineral Exploration and Consultancy Limited (MECL)]

a) The proposed area belongs to Eastern Ghat Mobile Belt, Odisha and falls in the Survey of India Toposheet no. 73H/04.
b) The project was recommended by 75th TCC-I held on 27th and 28th March, 2025 and approved in 42nd Executive Committee (EC) meeting, NMEDT held on 2nd June 2025 with an approved cost of ₹ 116.17/- Lakh (including GST). The Sanction Order was issued on 20th June 2025 for scheduled timeline of 10 months up to 19th April 2026.
c) The Agency informed that geological mapping covering 127 sq. km on 1:12,500 scale has been completed, along with the collection of 46 Stream Sediment Samples (SSS), 20 pit samples from 5 pits, 6 samples for petrography, and 6 Bed Rock Samples (BRS).
d) The Committee advised the agency to undertake auger drilling to examine subsurface soil profiles in the identified soil-covered zones, particularly in the northeastern and north-central parts where REE values exceed 1000 ppm. It further recommended systematic sampling of pegmatite bodies for REE analysis.
e) The Committee advised undertaking auger drilling to determine the thickness of the sediments, with emphasis on assessing sediment thickness on an upper catchment area-wise basis. The agency requested revising the approved cost sheet with removing the drilling of hard rock component, increase in Auger drilling component, increase in number of samples for ICPMS analysis and increase in number of samples for thin section preparation.
f) The agency also requested timeline extension for 6 months up to 19th October 2026 for final submission of geological report and the committee agree for timeline extension for 6 months up to 19th October 2026.

Recommendation TCC-II

- ***The committee recommended the proposal for approval of PSC for "Revised cost ₹ 90.46 Lakh against the approved cost of ₹ 116.17 Lakh due to removal of drilling in hard rock component, increase in auger drilling quantum, addition of samples for ICPMS analysis and thin section preparation.***

- ***The committee reviewed the agency's request for a timeline extension and agreed to recommend a six-month extension, up to October 19, 2026, for the final submission of the geological report. This recommendation is based on several unavoidable constraints that hindered completion within the stipulated timeframe, including the late commencement of fieldwork (started on 28 August 2025 despite approval in June 2025) due to the monsoon and pending forest clearances for approximately 50% of the area (proposals submitted to PCCF and DFO but approval awaited). Furthermore, restricted accessibility due to forest regulations, frequent elephant***

movement, and high water levels prevented the completion of stream sediment sampling. These challenges were compounded by delays in laboratory analysis resulting from limited slot availability and a heavy sample backlog, necessitating the prioritization of other projects.

Annexure-3

Revised Estimated cost for Reconnaissance Survey (G-4) for REE and associated minerals in Ektala-Rajanpali and Jogiapali-Govindpur area, District: Nayagarh, Odisha. [Block area- 127.00 sq. km; Nos. of Borehole (Auger 180m)-20; Core drilling:200 m; Borehole depth range:40-50 m; Schedule timeline-10 months, Review:4 & 8 months

Implementing Agency: Mineral Exploration and Consultancy Limited (MECL)

S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Revised Cost Estimation		Remarks
			SoC-Item & Sl No.	Rates as per SoC	Qty.	Amount (Rs)	Qty.	Amount (Rs)	
A	**GEOLOGICAL WORK**								
1	**Geological Mapping (1:12500), Borehole logging, sampling & Report writing**								
i	Charges for one Geologist- Field	day	1.2	11,000	150	16,50,000	150	16,50,000	
ii	Charges for one Geologist - HQ	day	1.2	9,000	45	4,05,000	45	4,05,000	
iii	2 labours/ party (Rs 522/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	526	300	1,57,800	300	1,57,800	Amount will be reimbursed 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	32	1,63,200	54	2,74,763	
v	4 labours/ party (Rs 526/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	526	128	67,328	216	1,13,353	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
				Sub Total- A		**24,43,328**	**-**	**26,00,916**	
B	**Pitting**								

i	Pitting (For orientation and Heavy Mineral Separation Sample)	Cu. m.	2.1.2	3800	20	76,000	20	76,000	
					Sub Total- B	**76,000**		**76,000**	
C	**DRILLING**								
i	Drilling up to 300m (Hard Rock) (1 rig)	m	2.2.1.4a	11,500	200	23,00,000	-	-	04 BHs
ii	Land / Crop Compensation	per BH	5.6	20,000	4	80,000	-	-	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local authorities
iii	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	4	8,000	-	-	
iv	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	3,000	1,08,000	-	-	Certification in this regard is required to be provided
v	Monthly Accommodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	3	1,50,000	-	-	
vi	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	1	2,50,000	-	-	2 rigs
vii	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	1	2,50,000	-	-	2 rigs
viii	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	4	88,080	-	-	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed later
ix	Core Preservation: One complete borehole plus mineralised core of all the remaining Bhs	m	5.3	1,590	100	1,59,000	-	-	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
x	DGPS survey for BH fixation	Nos	1.6.2	19,200	4	76,800	-	-	BH-4
xi	Auger Drilling	m	2.2.2	4,760	150	7,14,000	180	8,56,800	Outsourcing

					Sub Total- C	**41,83,880**	**-**	**8,56,800**	
D	**LABORATORY STUDIES**								
1	**Chemical Analysis**								
i	**Primary & Check samples**								
a	Analysis for 34 elements (REE + RM and others) by ICPMS method	Nos	4.1.14	7,731	230	17,78,130	360	27,83,160	Bedrock (50) + Stream Sediment (100) + Pitting (20) + Auger sample (180) + Heavey Mineral (10)
b	b-External (10%) Check samples from NABL Lab by ICPMS method for 34 elements (REE + RM and others)	Nos	4.1.14	7,731	23	1,77,813	36	2,78,316	
2	**Physical & Petrological Studies**								
i	Preparation of thin section	Nos	4.3.1	2,353	10	23,530	10	23,530	
ii	Complete petrographic study report	Nos	4.3.4	4,232	10	42,320	10	42,320	
iii	Preparation of polished section	Nos	4.3.2	1,549	10	15,490	10	15,490	
iv	Complete mineragraphic study report	Nos	4.3.4	4,232	10	42,320	10	42,320	
v	Digital Photographs	Nos	4.3.7	280	10	2,800	10	2,800	
vi	XRD studies	Nos	4.5.1	4,000	15	60,000	15	60,000	Heavey Mineral (5) + Mineralized zones (10)
vii	EPMA	Hour	4.4.1	8,540	10	85,400	10	85,400	
viii	Preparation of thin section	Nos	4.3.1	2,353	-	-	5	11,765	
ix	Heavey Mineral Separation	Nos	4.3.6a & b	16,200	10	1,62,000	10	1,62,000	
					Sub Total- D	**23,89,803**	**-**	**35,07,101**	

E				**Total A to D**	**90,93,011**	**-**	**70,40,817**	
F			**Total without outsourced cost**		**83,79,011**	**-**	**61,84,017**	
F	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs. 50 lakhs and less than Rs. 150 lakhs- A minimum of Rs. 2.5 lakhs or 5% of the value of work whichever is more	**4,54,651**	**-**	**3,52,041**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMEDT.
	Operational charges (10% of approved drilling cost		**6 (i)**		**71,400**	**-**	**85,680**	
	Tender processing cost (2% of the approved drilling cost		**2.3**		**14,280**	**-**	**17,136**	
G	**Peer review Charges**		**As per EC decision**		**30,000**	**-**	**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	**1,81,860**	**-**	**1,40,816**	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-NMEDT in its meeting while clearing the proposal.
I	**Total Estimated Cost without GST**				**98,45,202**	**-**	**76,66,490**	
J	**Provision for GST (18% of I)**				**17,72,136**	**-**	**13,79,968**	GST will be reimburse as per actual and as per notified prescribed rate

K	**Total Estimated Cost with GST**	**1,16,17,338**	**-**	**90,46,458**	
	or Say Rs. In Lakhs	**116.17**		**90.46**	
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 NMEDT SoC and Item no. 6 of NMEDT SoC. In				
4	Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.				
5	Any item of work not mentioned above shall be added as per SoC.				
6	All the Geological Reports and data are to be uploaded on NGDR as per MERT template by the agency.				

Agenda 27.2.6 Preliminary Exploration (G3) for Graphite in Dahita Block, District-Bargarh, Odisha.

[Implementing Agency: Mineral Exploration and Consultancy Limited (MECL)]

a) The agency informed that the results of sample analysis are still awaited; therefore, the committee deferred the review to the next TCC meeting.

Recommendation TCC-II

The committee deferred the review to the next TCC meeting as the agency's results of sample analysis were awaited.

Agenda 27.2.7 Preliminary Exploration (G3) for Limestone in Ishwariya Block, Gir Somnath District, Gujarat

[Implementing Agency: M/s PRB Infraprojects Private Limited]

a) The proposed exploration block of 3.43 sq.km. area falls in Survey of India Toposheet number 41L/05, 41L/09in parts of Gir Somnath District, Gujarat. The project was given in-principle approval in the 7th meeting of TCC-II, NMEDT, held on 24th and 25th March 2025.
b) The project was recommended by 8th TCC-II held on 28th, 29th April & 2nd May 2025 and approved by 42nd EC held on 02nd June 2025 with schedule time for 10 months. Sanction Order was issued on 01st July 2025 with project completion date up to 30th May 2026 the approved cost of the project was ₹70.43 Lakh (including GST). Duration of review was scheduled after 4 months. Total 120 meters of drilling in 06 boreholes, with average depth of 20m was agreed.
c) The Agency informed that geological mapping covering an area of 3.43 sq. km has been completed, along with the collection of 40 Bed Rock Samples (BRS). Further, drilling of 120 m across 6 boreholes remains pending due to the relocation of approved borehole sites necessitated by the presence of agricultural land.
d) The agency requested a timeline extension of three (3) months, up to 30 August 2026, which was agreed upon by the Committee. The Committee also approved the relocation of the sanctioned borehole sites due to constraints arising from the presence of agricultural land.

Recommendation – TCC-II:

The Committee considered the agency's request for a three (3) month extension and agreed to grant the same, extending the timeline up to 30 August 2026. The Committee also approved the relocation of the sanctioned borehole sites due to constraints posed by the presence of agricultural land.

Agenda 27.2.8 Reconnaissance Survey (G4) for Vanadium and Titanium in Magnetite bearing sand in the beach/dune sands along the Saurashtra coast, Gujarat.

[Implementing Agency: M/S Geo Marine Solutions Pvt. Ltd.]

a) The project was recommended in 2nd TCC-II meeting held on 22nd and 23rd October 2024 and approved in 38th EC meeting held on 29th November 2024 with schedule time for 15 months up to 29th March 2026. The sanction order was issued on 30th December 2024. The approved cost of the project was ₹170.37/- Lakh. The project was reviewed in 11th TCC-II meeting held on 23rd, 24th, 25th and 30th July 2025.
b) The Agency informed that the Peer Review of the Final Geological Report (GR) has been completed, and all observations/suggestions made by the peer reviewer have been duly incorporated. The Agency requested approval for submission of the final GR.
c) The Committee agreed to the submission of the final GR.

Recommendation TCC-II
The Committee agreed to the submission of the final GR.

Agenda 27.2.9 Reconnaissance Survey (G-4) for Graphite and associated mineralisation in Phandka-Gatakhera area, Betul District, Madhya Pradesh.
[Implementing Agency: M/s Vardan Environet LLP]

a) The project was recommended in 11th TCC-II meeting held on 23rd-25th July 2025 approved in the 1st PSC meeting held on 9th October 2025. The sanction order was issued on 13th November 2025 with timeline of 10 months up to 20th September 2026 with an approved cost of ₹211.16/- Lakh (including GST).
b) The agency informed that this is the first review of the project and apprised the committee that they have completed the 23.17 sq. km of mapping, 91 cubic meters out of 100 cubic meters and Self Potential (SP) survey (Geophysics), 60 samples for XRF analysis, 15 samples for ICPMS, 14 samples for XRD analysis. It further informed the committee that they have initiated the drilling in borehole MPPG-I with length of approximately 72 along the borehole targeting the vertical depth of 40-50 m on an average. SP survey was conducted by the agency in A, B, C, D and E sub blocks respectively.
c) The committee observed that the SP survey is showing encouraging results in block A and advised the agency to target the remaining boreholes at vertical depth of 30 m. It further advised the agency to show the SP survey blocks locations on LSM geological map for better understanding of the integrated geoscience data.

Recommendation TCC-II
The committee suggested the agency to target the remaining boreholes at vertical depth of 30 m. It further advised the agency to show the SP survey blocks locations

on LSM geological map for better understanding of the integrated geoscience data to the committee in the upcoming TCC-II meeting.

Agenda 27.2.10 Reconnaissance Survey (G-4 Stage) for Limestone in and around Amanganj Gunnor-Pawai Area, Panna District, Madhya Pradesh.
[Implementing Agency: M/s Engeotech Consultant]

a) The project (93.13 sq. km) was recommended in 7th TCC-II meeting held on 24th-25th March 2025 approved in the 42nd meeting held on 2nd June 2025. The sanction order was issued on 1st July 2025 with timeline of 10 months up to 30th April 2026 with an approved cost of ₹86.22/- Lakh (including GST).
b) The project was reviewed during 22nd meeting of TCC-II held on 4th and 5th February 2026 where in the committee agreed for commencement of drilling in BH nos. 1, 2 and 5 and advised that the further drilling will be decided after review.
c) The project was reviewed during 24th meeting of TCC-II held on 2nd and 3rd March 2026, wherein the committee recommended the proposal for approval of PSC for "Revised cost ₹ 44.96 Lakh against the approved cost of ₹ 86.22 Lakh due to closure of further work based on non- intersection of limestone band in two drilled boreholes BH-2 and BH-5.
d) The agency requested the committee for peer review of the Geological report and further timeline extension up to 30 June 2026 for final GR submission.
e) The committee agreed for the request.

Recommendation TCC
The committee recommended the proposal for approval of PSC for timeline extension of two (02) months up to 30th June 2026 for peer review of GR report and final GR submission.

27.3 Project Evaluation for In–Principle Approval

Agenda 27.3.1 Reconnaissance Survey (G4) for REE in Redhakhol Area, District - Sambalpur, Odisha.
[Implementing Agency: M/s My World Consultancy Services Private Limited (WCS)]

a) The proposed reconnaissance survey (G4) of 67.85 sq. km. area, falls in Survey of India Toposheet numbers 73C/08 in parts of Sambalpur, Odisha.
b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	The GSI informed that there is no exploration or reconnaissance work in the proposed block, and there is currently no ongoing project.

2	AMD	The proposed block does not overlap with AMD-explored or ongoing blocks.
3	DMG	The proposed area overlaps with the Dalki-Kusumkhol Block proposed by MECL for exploration under NMEDT. As per available information, DoMG has given consent for exploration for REE, Sn, Nb over an area of 86.63 sq. km, Sambalpur, Odisha falling in Survey of India Toposheet No. 73C/08 through NMEDT funding.
4	MECL	The proposed Redhakhol Block, Sambalpur district, Odisha by My World Consultancy Services overlaps completely with the proposed MECL's Hatibahal Block for REEs and associated minerals for which consent from the state govt. has already been accorded. The proposal is under preparation for submission in the forthcoming TCC.
5	NMEDT	There is no overlapping with NMEDT funded block in the proposed area

c) The agency informed the committee that the proposed block lies in Rairakhol Alkaline Complex in Sambalpur district, Odisha. Regional geochemical mapping (Mohanty & Srinivas, FS 2001–02) had reported significant ΣREE concentrations ranging from ~95 ppm to ~1%, with higher values associated with quartzo-feldspathic schist, granite gneiss, pegmatite, and quartzite. Subsequent specialised thematic mapping (Moharana & Pachauri, 2018) identified key REE-bearing minerals such as allanite and xenotime in syenite pegmatite and nepheline syenite. Reconnaissance studies by GSI (Rana & Roychoudhury, 2019) further confirmed the presence of REE mineral phases including allanite, perrierite, monazite, and Y+REE phosphates, with total REE values reaching up to 2108 ppm in bedrock and 7399 ppm in stream sediments. Additionally, distinct geochemical anomaly peaks (up to ~10183 ppm ΣREE) in stream sediments reinforce the strong potential for REE mineralization in the area.
d) The committee informed to the agency that earlier GSI work indicated sporadic occurrences of REE in area. REE in both primary & secondary source to be evaluated.
e) Based on the discussions and previous studies indicating favourable conditions for REE mineralization, the Committee agreed to grant in-principle approval to the project.

Recommendation TCC

The committee accorded in-principle approval to the project and advised the agency to submit the DPR within two (02) months.

Agenda 27.3.2 Preliminary Exploration (G3) for Graphite in Birida Block, District Raygada, Odisha.

[Implementing Agency: M/s Eartnenviro Lab Private Limited]

a) The proposed preliminary exploration (G3) of 4.43 sq. km. area, falls in Survey of India Toposheet number 65M/07 in parts of District Raygada, Odisha.
b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	A mining lease area is entirely encompassed within the boundaries of the proposed block, resulting in a complete spatial overlap.
2	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
3	DoMG	Graphite Mines of S. Pradhan lies at the central part of proposed block, and another mining lease lies close to the proposed block in NW of the same lessee. The area was covered by DoMG at G4 level and graphite occurrence within the block were delineated which are under mining and G4 exploration in the area also did not encounter any additional graphite incidence. Hence the block may not be allowed for further exploration.
4	NMEDT	The proposed area shows no overlap with NMEDT funded projects.

c) The TCC–II Committee observed that the area has already been explored by the DoMG at the G4 stage, wherein graphite occurrences were delineated and are presently under mining. It was further noted that subsequent G4-level exploration in the area did not identify any additional graphite mineralization.
d) The Committee did not agree to grant in-principle approval, as the proposed block entirely overlaps with a Mining Lease (ML) area for graphite, as stated by DoMG Odisha.

Recommendation TCC

The Committee did not agree for the in-principle approval of the proposal, noting that DoMG has already carried out G4 stage of exploration, where graphite occurrences have been delineated and are currently under mining. It was further noted that subsequent G4-level exploration in the area did not identify any additional graphite mineralization.

Agenda 27.3.3 Preliminary Exploration (G3) for Manganese and REE in Tekartola Block, District-Kalahandi, Odisha.

[Implementing Agency: M/s Eartnenviro Lab Private Limited]

a) The proposed 3.73 sq. km. area for preliminary exploration (G-3), falls in Survey of India Toposheet number 65M/05 in parts of District-Kalahandi, Odisha.
b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	GSI has previously executed G4-stage reconnaissance exploration for manganese within the area. The investigation delineated sporadic and spatially restricted manganese bands, identified through preliminary geological mapping and limited subsurface assessment

2	DMG	The area is already covered in G4 by DMG. There is no report of manganese incidence in the area. However, graphite incidences have been reported.
3	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
4	NMEDT	The proposed area shows no overlap with NMEDT funded projects.

c) The agency referenced the GSI reconnaissance survey report, 2018 in which the investigation delineated sporadic and spatially restricted manganese bands, identified through preliminary geological mapping and limited subsurface assessment. The agency referred stream sediment values (NGCM) for REE.

d) The committee observed that the mineralization is manifested as discontinuous, lensoidal ore bodies, lacking lateral persistence and exhibiting irregular geometry. Such morphological characteristics indicate poor continuity, limited strike extension, and sub-economic volumetric potential. Geochemical interpretation did not indicate any significant TREE (Total Rare Earth Elements) anomaly within the block, suggesting an absence of associated REE enrichment. Further the area had already been covered by DMG which reported no manganese in the area.

e) The committee was of the opinion that that based on above observations by GSI and DMG the proposal is not viable for taking G3 exploration.

f) The Committee did not agree to grant in-principle approval, as DMG Odisha informed that G4 level exploration has already been carried out in the area and no occurrence of manganese was identified.

Recommendation TCC

The Committee did not agree to grant in-principle approval to the proposal based on DoMG Orissa G4 exploration where no manganese occurrence was reported.

Agenda 27.3.4 Reconnaissance Survey (G4) for lithium and RARE metal (RM) bearing minerals in Katghora Area, District -Korba, Chhattisgarh.
[Implementing Agency: M/s Indian Mine Planners and Consultants (IMPCon)]

a) The proposed reconnaissance survey (G4) of 5.06 sq. km. area, falls in Survey of India Toposheet number 64 J/11 in parts of District -Korba, Chhattisgarh.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	No overlapping found in the proposed block with GSI previous works.
2	AMD	The area is under active exploration by AMD at different stages (G4 to G2). AMD has carried out exploration works for uranium and critical minerals in different phases, in and around the proposed block. Grab samples (n=7) analysed up to 245ppm U3O8 and 470ppm ThO2.The proposed area overlaps with ongoing exploration of AMD. Samples from the proposed block have analysed

		uranium content equal to or above the threshold value notified in Schedule A of AMCR, 2016. In such cases, mineral concessions shall be granted by the State Government as per the provisions of AMCR, 2016.
3	DGM	At present no work is being carried out in the proposed block
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	The proposed area shows no overlap with NMEDT funded projects.

c) The agency informed the committee that the proposed area falls within the favourable Chhotanagpur Gneissic Complex of Archaean–Palaeoproterozoic age, known to host such mineralization. Geochemical studies by GSI (Nagaraju et al., FS 2013–15) have reported anomalous lithium values (~202 ppm) in stream sediments in nearby areas, indicating possible upstream sources. Further, reconnaissance investigations by GSI (Mishra & Badapanda, FS 2018–19) in the adjacent Katghora–Garhtara area have confirmed the presence of lithium-bearing mica in leucogranite, with values up to 4300 ppm Li_2O in bedrock and 1356 ppm in core samples. Supporting geochemical data and regional studies (Chakraborty & Baruah, FS 2021–22; Rao, FS 1965–66) also indicate enrichment of associated elements such as Ta, Rb, and Be, collectively suggesting strong potential for lithium and rare metal mineralization in the proposed block.

d) The Committee did not agree to grant in-principle approval in view of the information provided by the Atomic Minerals Directorate (AMD) regarding the applicability of AMCR Rules (Schedule A) to the proposed block, and noted that the area is presently under active exploration by AMD.

Recommendation TCC

The Committee did not agree to grant in-principle approval to the proposal, as the Atomic Minerals Directorate (AMD) informed that the area is currently under active exploration by them.

Agenda 27.3.5 Preliminary Exploration (G3) for Limestone in Adividevulapalli Block (Area 5 Sq. Km), Nalgonda District, Telangana.

[Implementing Agency: M/s GMMCO Technology Services Limited]

a) The proposed preliminary survey (G3) of 5.0 sq. km of 5 sq. km. area, falls in Survey of India Toposheet number 56P/10 in parts of District, -Nalgonda, Telangana

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	The Adividevulapalli Block area proposed falls within the G4 stage exploration block carried out by GSI during the FS year 2013-14 for Limestone and also falls within the Kotta- Ambapuram and Wazirabad Diamond Block (G4) which will be taken up in FS 2026-27.

2	AMD	There is no ongoing exploration / reconnaissance project
3	DMG	The proposed block does not overlap with DGM-explored or ongoing blocks.
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	The proposed area shows no overlap with NMEDT funded projects.

c) The agency referred the GSI's G4 stage exploration (1:25,000 scale) over ~100 sq. km. The study identified extensive limestone development around Adividevulapalli block, with favourable chemical composition—average CaO of 46.43%, SiO_2 of 12.83%, and low MgO (0.28–0.89%)—indicating suitability for cement manufacturing. Surface exposures along the northern bank of the Krishna River and towards Virappagudem suggest good lateral continuity. The agency informed that the, subsurface continuity, thickness, and grade variation are yet to be established. Hence, systematic G3 stage core drilling is required to delineate limestone geometry, classify grade zones, and establish UNFC-compliant resources.

d) Based on these findings, the Committee agreed to grant in-principle approval to the proposal.

Recommendation TCC

The committee accorded in-principle approval to the project and advised the agency to submit the DPR within two (02) months.

Agenda 27.3.6 Reconnaissance survey (G4) for Base metal & Associated Critical, Strategic Mineralization (102.76 sq. km) in Kadisahan-Bachhkhera Area, Bhilwara District, Rajasthan.

and

Agenda 27.3.7 Reconnaissance Survey (G4) for Base metal & Associated Critical, Strategic mineralization in Dhola -Nangal Area, District- Bharatpur, Rajasthan.

[Implementing Agency: M/s Critical mineral trackers (CMT)]

a) The proposed reconnaissance survey (G4) area of 102.76 sq. km., falls in Survey of India Toposheet number 45 K/14 & 45O/2 in Bhilwara district, Rajasthan.

b) The proposed reconnaissance survey (G4) of 31.1 sq. km. area, falls in Survey of India Toposheet number 54 E/1 in parts of Bharatpur District, Rajasthan.

c) In the 25th TCC-II meeting the committee deferred the proposal to the next TCC meeting, as the agency was unable to present the AI/ML-generated prospectivity map along with the methodology adopted for its preparation. The committee further advised the agency to comprehensively present the complete AI/ML workflow, including data inputs, processing techniques, model selection,

validation procedures, and the final prospectivity map in a clear and detailed manner in the next meeting.

d) In continuation of the discussions and points discussed in 25th TCC-II meeting, for technical evaluation and discussions of the AI/ML based technique adopted by the agency, the TCC–II Chairman invited AI/ML experts from different regions (GSI-NER, GSI-WR, and GSI-CR) of the Geological Survey of India. The representative from the agency apprised the committee about the basic and fundamentals of AI/ML techniques. The committee asked the agency to focus on the technique used by them to carve out the G4 blocks.

e) The committee in concurrence of the technical experts from GSI made following observations on the presentation made by the agency in context of the AI/ML technique used for carving out the blocks.

f) The proposal presented basics for identification of mineralized zones through integration of geological, geophysical, and geochemical datasets using Artificial Intelligence/Machine Learning techniques. Although the conceptual framework of multi-source data integration was appropriate for mineral prospectivity analysis, the methodological details were inadequately described, thereby limiting the scientific assessment of the work. The committee observed that the geoscience data integration without proper scale and resolution restricts the output.

g) The study did not provide a clearly defined modelling workflow. Essential components such as source of data, data pre-processing, data cleaning, data normalisation and analysis, feature generation, training–testing strategy, model calibration, and validation procedures were not documented. In the absence of a structured workflow, the reproducibility and robustness of the modelling exercise remained uncertain. The term “AI prediction” was used extensively; however, the underlying computational framework was not sufficiently elaborated.

h) The definition and source of training data used for model development were not explicitly stated. It remained unclear whether mineral occurrence datasets (STM, G-4, G-3 reports data) from the Geological Survey of India have been utilized as ground truth for supervised learning. Further, the criteria for classification of mineralized versus non-mineralized zones were not defined. The absence of clarity regarding label generation introduced uncertainty in the validity of model outputs.

i) The geological input datasets appeared to be derived from District Resource Map and not associated with GSI (50k), STM (25k) or LSM maps. These datasets were generalized in nature and were not designed for high-resolution predictive modelling. The study did not address the inherent limitations of such datasets, including scale mismatch with geophysical and geochemical inputs, generalization of lithological boundaries, and lack of detailed structural information at the prospect scale. This limitation had a direct bearing on the reliability of model predictions.

j) The methodology pertaining to geochemical data integration was not adequately described. It was not specified whether individual elemental concentrations had been used directly, or whether any pre-processing such as normalization, transformation, or multivariate statistical treatment (e.g., Principal Component Analysis) had been applied. Given the multivariate and compositional nature of geochemical data, the absence of such information raised concerns regarding the effectiveness of geochemical inputs in the model.

k) It was observed that only NGPM data had been used for preparing the geophysical layer maps. The OGP areas in Rajasthan were also covered by high and low altitude aeromagnetic data, which may be integrated to improve data quality. Further, derivative maps from NGPM data showed anomalies along toposheet edges, indicating possible edge effects or processing issues.

l) The selection of the machine learning algorithm was not justified. The study appears to employ XG Boost; however, no rationale was provided for choosing this model over other commonly used algorithms in mineral prospectivity studies, such as Random Forest, Artificial Neural Networks, or Convolutional Neural Networks. There was no evidence of comparative model evaluation or benchmarking, which was necessary to establish the suitability of the chosen algorithm for the given dataset and geological setting.

m) Model performance had been evaluated solely based on accuracy. This metric was insufficient and potentially misleading in mineral prospectivity studies, where datasets were typically characterized by strong class imbalance. The study did not report other essential evaluation parameters such as precision, recall, F1-score, or confusion matrix elements (true positives, false positives, false negatives, true negatives). Consequently, the reliability of the reported performance metrics could not be adequately assessed.

n) Further, the study did not include standard validation diagnostics such as Receiver Operating Characteristic (ROC) curves, Area Under Curve (AUC), Precision–Recall curves or learning curves. These were critical for understanding model discrimination capability, performance under class imbalance, and learning behaviour with respect to overfitting or under fitting.

o) There was no indication that spatial cross-validation techniques have been employed. In geoscientific datasets, spatial autocorrelation was significant, and the absence of spatial cross-validation (e.g., block or grid-based validation) might result in data leakage between training and testing datasets. This could artificially inflate model performance metrics and did not reflect true predictive capability.

p) The feature engineering approach appeared to be limited to direct integration of input layers without derivation of higher-order geological predictors. There was no discussion on the generation of proximity-based features (e.g., distance to faults or contacts), structural density measures, or multi-scale geophysical attributes. Similarly, lithological information did not appear to have been properly

generalised and encoded in a manner suitable for machine learning applications. This limited the geological interpretability and predictive strength of the model.

q) The reported progressive increase in model accuracy with the addition of datasets, reaching values as high as ~0.99, was not critically examined. In the absence of independent validation and robust evaluation metrics, such high accuracy values might indicate overfitting rather than genuine predictive capability.

r) The study did not provide any assessment of model interpretability. There was no analysis of feature importance or contribution of individual datasets to the prediction results. Consequently, the relationship between model outputs and geological processes remained unexplored, limiting the scientific value of the work. The study lacked the information and steps regarding training and testing the generated model.

s) It had been observed that although the agency demonstrated understanding of the fundamental principles and methodologies involved in geoscientific data integration but there appeared to be a lack of systematic approach in synthesizing multi-source datasets—such as geological, geophysical, geochemical, and remote sensing data—which was essential for developing reliable exploration targets and predictive models. The output generated lacked the ground validation.

t) In view of the above, the committee opined that the agency must have adopted a more rigorous and scientifically sound approach by incorporating high-resolution and standardized datasets, and by applying proper geoscientific data integration techniques to ensure accurate interpretation and effective exploration planning.

Recommendation TCC

- **The committee observed that the proposed blocks, generated using AI/ML techniques, did not adhere to established scientific standards. The study suffers from fundamental deficiencies, including inadequate data processing, absence of intermediate output layers, inappropriate grid interval selection, lack of lithological generalization, and non-application of multivariate techniques such as Principal Component Analysis, information regarding the training and testing of the generated model rendering the outputs scientifically unreliable. The committee expressed strong dissatisfaction with the presentation and advised that such AI/ML-based proposals, lacking scientific rigor, proper data utilization, and necessary ground validation, should not be considered.**
- **The committee did not agree for the proposals carved out using the AI/ML based technique.**

Agenda 27.3.8 Reconnaissance survey (G4) for Bauxite and associated minerals in Reladiya Manjal area, Kachchh district, Gujarat.

&

Agenda 27.3.9 Preliminary Exploration (G3) for Bauxite and Associated minerals in Kalar Vandh Block, District -Kachchh, Gujarat.

[Implementing Agency: M/s Vardan Environet LLP]

a) The proposed area of 2.10 sq. km for preliminary exploration (G-3), Raydhanjar block (26th TCC-II), proposed area of 3.18 sq. km for reconnaissance survey (G4), Reladiya Manjal area and proposed area of 6.68 sq. km for preliminary survey falls in Survey of India Toposheet number 41E/04 in parts of Kachchh District, Gujarat.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	GSI Informed that the proposed blocks do not overlap with GSI explored or ongoing blocks.
2	AMD	The proposed blocks do not overlap with AMD-explored or ongoing blocks.
3	CGM Gujarat	CGM Gujarat referenced the Report on the assessment of Bauxite deposit in Kutch district Gujarat state (Year: 1963-64, 1964-65, 1965-66, 1966-67, 1967-68, 1968-69, 1969-70) (RN_63). The NOC for the said blocks have been issued to M/s. Vardan Environet LLP vide mail dated 23.01.2026
4	MECL	The proposed block by M/s. Vardan Environet LLP has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	There is no overlapping with NMEDT funded block in the proposed area.

c) In the 26th TCC-II meeting, committee opined that a DPR for the G-4 stage exploration proposal, covering all three sub-blocks—Reladiya Mangal Block (G-3 Stage), Raydhanjar Block (G-3 Stage), and Kalar Vandha Block (G-4 Stage) (for which NOC has been obtained from CGM, Gujarat), should be prepared and submitted for evaluation in the upcoming TCC-II meeting.

Recommendation TCC

The Committee approved and advised that a DPR for the G-4 stage exploration proposal, covering all three sub-blocks Reladiya Mangal Block (G-3 Stage), Raydhanjar Block (G-3 Stage), and Kalar Vandha Block (G-4 Stage) (for which NOC has been obtained from CGM, Gujarat), should be prepared and submitted for evaluation in the upcoming TCC-II meeting.

Agenda 27.3.10 Preliminary exploration (G3) for Graphite & associated mineralisation in Maramjhiri-Gauthana Block, District- Betul, Madhya Pradesh.

[Implementing Agency: M/s Vardan Environet LLP]

a) The proposed 1.15 sq. km. area for preliminary exploration (G-3), falls in Survey of India Toposheet number 55G/13 in parts of Betul District, Madhya Pradesh.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	GSI informed that multiple exploration activities (G-4 and G-2 stages) for graphite and associated minerals have been carried out in the Betul area, including surveys in Tikari–Gauthana–Chiklar and surrounding regions, as well as tungsten reconnaissance. The studies indicate graphite mineralisation extending over ~3.5 km with variable widths and 5–17.3% fixed carbon, hosted in metasedimentary rocks and structurally controlled zones. As the proposed block lies adjacent to the explored area, it is considered prospective for further exploration of graphite and associated minerals.
2	AMD	AMD informed that past G-4/G-3 stage uranium exploration has been carried out in and around the proposed block, which overlaps with previously explored AMD areas. Ongoing work includes radiometric surveys and geological mapping in the Gothana, Chiklar, and Betul areas. Grab samples (n=8) have shown up to 0.015% U_3O_8. Considering the uranium potential, analysis of uranium is recommended, and if any, during the exploration may be communicated to AMD for gamma ray logging.
3	MECL	The Chiklar area, Betul District, Madhya Pradesh proposed by M/s Vardan Environet Llp is not overlapping with any of the completed/ongoing/proposed blocks of MECL
4	DMG	DGM informed that the proposed area is fully covered under area previously proposed by M/s Kartikeya Exploration submitted earlier to NMEDT. The block lies adjacent to SW of an auctioned block.
5	NMEDT	There is no overlapping with NMEDT funded block in the proposed area.

c) GSI has conducted G4 stage of exploration in FS 2012-13 and reported Fixed Carbon (FC) values from 5% to 17.3% in the proposed area.

d) The Committee agreed to grant in-principle approval to the proposal. The proposed block (area) to be modified in line with the adjacent G2 block.

Recommendation TCC

The committee accorded in-principle approval to the project and advised the agency to modify the proposed block (area) in line with the adjacent G2 Tikari-Gauthana-Chiklar block, and to submit the DPR within two months.

Agenda 27.3.11 Preliminary Exploration (G3) for Vanadium, Scandium, Gallium and associated minerals in and around Chatnalli Block, Bidar district, Karnataka.

[Implementing Agency: M/s Geo Marine Solutions Private Limited]

a) The proposed preliminary exploration (G3) of 5.88 sq. km. area, falls in Survey of India Toposheet number 56G/5 in parts of Bidar district, Karnataka.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	In the proposed block, no exploration/reconnaissance projects are ongoing. The block lies in western part of the Sindol Tanda block area where GSI in FS 2024-25 (25 sq. km) has carried out work on critical mineral assessment programme for Vanadium and associated critical minerals in lateritic rocks.
2	AMD	There is no ongoing exploration / reconnaissance project.
3	DMG	The proposed block does not overlap with explored or ongoing blocks.
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	As per the NGDR portal, the proposed block does not overlap with explored or ongoing blocks.

c) The agency referenced the project under Critical Mineral Assessment programme (CMAP) exploration work carried out by GSI (FS 2024–25) in the Sindol Tanda block, Bidar, for the potential for V–Sc mineralization in lateritized Deccan Trap basalts based on consistent geological and geochemical evidence. Bedrock samples show V_2O_5 (159–2212 ppm; avg ~1319 ppm), Sc (6–87 ppm; avg. ~54 ppm), Ga (17–52 ppm), and ΣREE (35–382 ppm), while profile/trench samples record higher V_2O_5 (1467–2087 ppm; avg ~1623 ppm) and Sc (57–76 ppm; avg ~64 ppm). Borehole data (KBST-1, KBST-3) indicate a continuous supergene system with vanadium enrichment up to 1057 ppm near surface, Sc up to 79 ppm (avg ~42 ppm), and ΣREE up to 503 ppm. These elevated values, particularly in ferruginous duricrust horizons, confirm Fe–Ti–V–Sc oxide mineralization potential and justify further exploration.

d) The agency proposed two G3-stage blocks carved out from the CMAP exploration carried out by GSI (FS 2024–25) in the Sindol Tanda block. The Committee opined that only one project should be approved at a time, while the second block should be kept on hold until the outcome of the first project is completed and reviewed. Accordingly, the second block remains on hold.

Recommendation TCC

The Committee deferred (kept on hold) the proposal till the review of the results of the Satoli block.

Agenda 27.3.12 Preliminary Exploration (G3) for Vanadium, Scandium, Gallium and associated minerals in and around Satoli Block, Bidar district, Karnataka.

[Implementing Agency: M/s Geo Marine Solutions Private Limited]

a) The proposed preliminary exploration (G3) of 9.00 sq. km. area, falls in Survey of India Toposheet number 56G/5 in parts of Bidar district, Karnataka.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	In the proposed block, no exploration/reconnaissance projects are ongoing. The block lies in eastern part of the Sindol Tanda block area (25 sq. km) where GSI in FS 2024-25 has carried out work on critical mineral assessment programme for Vanadium and associated critical minerals in lateritic rocks.
2	AMD	The proposed block does not overlap with AMD-explored or ongoing blocks.
3	DMG	The proposed block does not overlap with explored or ongoing blocks.
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	As per the NGDR portal, the proposed block does not overlap with explored or ongoing blocks.

c) The agency referenced the project under Critical Mineral Assessment programme (CMAP) exploration work carried out by GSI (FS 2024–25) in the Sindol Tanda block, Bidar, for the potential for V–Sc mineralization in lateritized Deccan Trap basalts based on consistent geological and geochemical evidence. Bedrock samples show V_2O_5 (159–2212 ppm; avg ~1319 ppm), Sc (6–87 ppm; avg. ~54 ppm), Ga (17–52 ppm), and ΣREE (35–382 ppm), while profile/trench samples record higher V_2O_5 (1467–2087 ppm; avg ~1623 ppm) and Sc (57–76 ppm; avg ~64 ppm). Borehole data (KBST-1, KBST-3) indicate a continuous supergene system with vanadium enrichment up to 1057 ppm near surface, Sc up to 79 ppm (avg ~42 ppm), and ΣREE up to 503 ppm. These elevated values, particularly in ferruginous duricrust horizons, confirm Fe–Ti–V–Sc oxide mineralization potential and justify further exploration.

d) The Committee observed that the present block and the adjoining Chatnalli block have both been delineated from the same GSI geological report, representing eastern and western segments of the same block. The Committee advised that the agency should prioritize the more prospective block based on GSI findings. The agency informed that the **Satoli block** is more promising, supported by borehole KBST-3 (35.1 m), which intersected a well-developed lateritic profile comprising duricrust, limonitic laterite, clay-rich zone, and ferruginous saprolite over basalt. Significant values include V: 2209 ppm over 1.25 m, Sc: 157.51 ppm over 18.1 m (with intervals >200 ppm between 13.8–17.1 m), TiO_2: 3.32% over 26.5 m, and ΣREE: 1138 ppm over 4.2 m.

Recommendation TCC

The committee accorded in-principle approval to the project and advised the agency to submit the DPR within two (02) months.

Agenda 27.3.13 Preliminary Exploration (G3) For Limestone in Kolkunda-Turnur Block, Kalaburagi District, Karnataka.

[Implementing Agency: M/s Geo Exploration and Mining Solution]

a) The proposed reconnaissance survey (G3) of 13 sq. km. area, falls in Survey of India Toposheet number 56D/13 in parts of Kalaburagi District, Karnataka.

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	In the proposed area, no exploration/reconnaissance projects are ongoing. GSI has carried out G3 exploration in the adjacent Kadaboor block and Nalwar block and estimated the resources as 217.118 MT and 224.31 MT FS 2023-24 respectively.
2	AMD	AMD has carried out reconnaissance exploration (G4 stage) for uranium in the proposed block in different phases, wherein evidence of U mineralisation has been established. Grab samples analysed up to 0.064% U3O8 from the area. AMD is carrying out G3/G4 stage of exploration to establish granite related uranium mineralisation in the area. The proposed block has partial overlap with the AMD block
3	DMG	The occurrence of Limestone is well established in the region and the state has processed more than 15 blocks of Limestone for auctioning. Taking demand and supply of the commodity, DMG, Karnataka prefers to not to recommend any agency to take up the exploration for Limestone in the state at this stance.
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	As per the NGDR portal, the proposed block does not overlap with explored or ongoing blocks.

c) The committee observed that the state DMG is not in favour of recommending the Limestone block and since the area overlaps with the AMD work for Uranium exploration, therefore did not agreed for in-principle approval for the proposal.

Recommendation TCC

The Committee did not agree to grant in-principle approval to the proposal, as the area is currently under AMD for uranium exploration and DMG Karnataka had not given recommendation for this proposal.

Agenda 27.3.14 Preliminary Exploration (G3) For Aluminous Laterite, Titanium, Vanadium and associated minerals in Rukmapur Block, Sangareddy District, Telangana

[Implementing Agency: M/s GMMCO TECHNOLOGY SERVICES LTD]

a) The proposed preliminary survey (G3) of 5.0 sq. km. area, falls in Survey of India Toposheet number 56 G/9 in parts of Sangareddy District, Telangana

b) The table containing the comments is given below.

S.N.	Agency	Comment
1	GSI	In the proposed area, no exploration/reconnaissance projects are ongoing. Falls within the G4 Naimatabad laterite G4 block of FS 2024-25.
2	AMD	The proposed block does not overlap with AMD-explored or ongoing blocks.
3	DMG	Comments were not available
4	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
5	NMEDT	As per the NGDR portal, the proposed block does not overlap with explored or ongoing blocks.

c) The agency referred the GSI (2024) G4 stage report in the Naimatabad block which delineated four potential zones within aluminous laterite, indicating strong prospects for critical mineralization. Analytical results from bedrock, channel, and pit samples show significant enrichment of Al_2O_3 (up to 41.98%), TiO_2 (up to 3.13%), V (up to 1543 ppm), Sc (up to 124 ppm), and Ga (up to 37 ppm), reflecting intense lateralisation and residual concentration over Deccan Trap basalts. This multi-element association confirms favourable conditions for alumina–Fe–Ti–V–Sc mineralization.

d) The committee agreed for In-principle approval.

Recommendation TCC

The committee accorded in-principle approval to the project and advised the agency to submit the DPR within two (02) months.

Agenda 27.3.15 Preliminary Exploration (G3) for Limestone in Mudimanikyam Block (Area 5 sq. km), District, -Nalgonda, Telangana.

[Implementing Agency: M/s GMMCO TECHNOLOGY SERVICES LTD]

a) The proposed preliminary survey (G3) of 5.0 sq. km of 5 sq. km. area, falls in Survey of India Toposheet number 56P/10 in parts of District, -Nalgonda, Telangana

b) The table containing the comments is given below

S.N.	Agency	Comment
1	GSI	In the proposed area, no exploration/reconnaissance projects are ongoing. The Mudimanikyam Block falls within the G4 stage exploration block carried out by GSI during the FS year 2013-14 and also falls within the Kotta- Ambapuram and Wazirabad Diamond block which will be taken up in FS 2026-27.
2	DMG	Comments were not available
3	MECL	The proposed block has no overlapping with the ongoing or completed blocks of MECL.
4	NMEDT	As per the NGDR portal, the proposed block does not overlap with explored or ongoing blocks.

c) The agency referred the GSI's G4 stage exploration (1:25,000 scale) over ~100 sq. km. The study identified extensive limestone development around Mudimanikyam, with favourable chemical composition—average CaO of 46.43%, SiO_2 of 12.83%, and low MgO (0.28–0.89%)—indicating suitability for cement manufacturing. Surface exposures along the northern bank of the Krishna River and towards Virappagudem suggest good lateral continuity. The agency informed that the subsurface continuity, thickness, and grade variation are yet to be established. Hence, systematic G3 stage core drilling is required to delineate limestone geometry, classify grade zones, and establish UNFC-compliant resources.

d) The committee observed that the proposed block lies just adjacent in SE of already discussed Adividevulapalli block for the same commodity of almost same area (5 sq. km) for same commodity. The Committee kept this proposal on hold, as approval for the adjacent Adividevulapalli block has already been granted.

Recommendation TCC

The Committee deferred (kept on hold) the proposal till the review of the results of the Adjacent Adividevulapalli block for the Limestone commodity.

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Annexure -1

List of participants attended 27th meeting of Technical-cum-Cost Committee - II (TCC - II) of NMEDT held on 13th and 23rd April 2026 through video conferencing mode

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