PROPOSAL FOR PRELIMINARY EXPLORATION (G-3 STAGE) FOR COAL

EAST OF CHUPERBHITA BLOCK

NMET FUNDED PROJECT

RAJMAHAL COALFIELD

DISTRICT–GODDA, JHARKHAND

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोन्दवाना प्लेस, काँके रोड, राँची - 834 031, झारखंड (भारत)
Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi - 834 031, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER - U14292JH1975GOI001223
क्षेत्रीय संस्थान-१, वेस्ट एण्ड, जी.टी. रोड, आसनसोला-७१३३०४
Regional Institute-1, West End, G.T. Road, Asansol-713304

NOVEMBER- 2021

1.0 INTRODUCTION

During the course of exploration in Chuperbhita OCP and Simlong OCP, it was decided to explore the possibility of occurrence of older seams in the north eastern part of the Chuperbhita OCP, where the seams were expected to be repeated due to major faults. MECL proposed 4 scout boreholes for this purpose.

In the Mid-term-review meeting held on 20.09.88, CMPDIL requested MECL to submit an updated regional geological map of the Chuperbhita Coalfield. As such a regional geological map on RF 1:25000 was prepared covering an area of about 100 sq.km of Chuperbhita Coalfield which consists of Chuperbhita OCP, Chuperbhita Under Ground, Simlong OCP, Simlong South-East Extension and Jitpur OCP Blocks and their peripheral areas.

A scheme for exploration on regional basis to find out the development of seams in the area adjoining the Chuperbhita OCP to the east was prepared and submitted to CMPDIL by MEC of Chuperbhita Peripherial area. This areas are along the periphery of Chuperbhita OCP, Chuperbhita Underground, Simlogn OCP, Simlong South-East Extension and Jitpur OCP blocks of Chuperbhita Coalfield, part of Rajmahal Group of Coalfields. The proposed block is part of Chuperbhita Peripherial area.

A total 5 no of boreholes viz. RCH-38, RCH-64, RCH-91, RCH-149 and RCH-151 have been drilled by MECL outside the eastern boundary of the Chuperbhita OCP, Chuperbhita Underground, Simlong OCP Block areas. Out of these 5 boreholes, only 02 boreholes i.e. RCH-38 and RCH-64 falls just within the Northern boundary of the proposed block, while, RCH-91 is located at the northern boundary. Borehole no. RCH-149 and RCH-151 are just at the outside of eastern boundary of the proposed area.

2.0 OBJECTIVE

The G3 stage of Exploration in the block is proposed to fulfill following objectives-

1. To establish the existence and continuity of coal seams occurring in the block as significant coal resources are present in adjoining block such as Chuperbhita and Simlong Block.
2. To establish the lay, disposition and potentiality of coal seams in the area.
3. To assess the coal resource by G3 stage of exploration in the block.

3.0 LOCATION, COMMUNICATION & ACCESSIBILITY:

The block covers an area of 20.66 sq.km. It is included in the Survey of India Toposheet No.72 P/5, P/6, P/9 & P/10 and lies between the latitudes 24°43'45.689" N to 24°48'39.661" N and longitudes 87°27'16.033" E to 87°31'32.739" E. Major part of the block falls under the administrative jurisdiction of Godda & Sahibganj district, Jharkhand.

The block is connected by all-weather metalled roads to such places as Godda, Sahibganj, Barharwa and Pakur. Godda-Sahibganj metalled road, via Sunderpahari, Dharampur and Berhait passes through the southern part of the block. The road to Pakur bifurcates from Godda-Sahibganj road at Dharampur more via Litipara. The block is about 50 km. from Pakur Railway Station on the Kiul-Barddhaman loop line of the Eastern Railway. Barharwa Railway Station on the same line is also at a distance of 50 km. east of the block.

Important Towns like Bhagalpur, Deoghar, Asansol and Dhanbad are connected by road at a distance of about 100 km., 110 km., 218 km. and 275 km. respectively from southern fringe of the block. The two Super Thermal Power Stations i.e. Farakka and Kahalgaon are 75 km. (via Barharwa) and 120 km. (via Lalmatia) away from the block respectively.

The nearest air strip is located at Banka (latitude 24°55' and longitude 87°0') which is about 20 km. south-west from the Chuperbhita Underground Block.

The cardinal points of block boundary of East of Chuperbhita Block is presented in Table-I.

Table-I

CARDINAL POINT OF EAST OF CHUPERBHITA BLOCK, RAJMAHAL COALFIELD, , JHARKHAND IN WGS84			
Sl. No.	**CARDINAL POINT No.**	**Longitude**	**Latitude**
1	1	87° 29' 4.041" E	24° 48' 17.943" N
2	2	87° 30' 13.254" E	24° 48' 29.198" N
3	3	87° 31' 20.227" E	24° 48' 39.661" N
4	4	87° 31' 32.739" E	24° 47' 2.313" N
5	5	87° 30' 46.780" E	24° 47' 2.573" N
6	6	87° 30' 0.448" E	24° 47' 2.831" N
7	7	87° 30' 0.179" E	24° 45' 55.622" N
8	8	87° 29' 59.954" E	24° 44' 59.573" N
9	9	87° 29' 1.334" E	24° 45' 1.011" N
10	10	87° 29' 1.188" E	24° 44' 23.447" N
11	11	87° 29' 1.045" E	24° 43' 46.490" N
12	12	87° 28' 54.428" E	24° 43' 45.689" N
13	13	87° 28' 36.372" E	24° 44' 12.947" N
14	14	87° 28' 21.774" E	24° 44' 35.003" N
15	15	87° 28' 27.147" E	24° 44' 34.972" N
16	16	87° 28' 6.484" E	24° 44' 50.811" N
17	17	87° 27' 51.403" E	24° 45' 2.481" N
18	18	87° 27' 35.995" E	24° 45' 9.811" N
19	19	87° 27' 21.119" E	24° 45' 18.364" N
20	20	87° 27' 21.132" E	24° 45' 20.118" N
21	21	87° 27' 19.199" E	24° 45' 23.257" N
22	22	87° 27' 18.779" E	24° 45' 25.672" N
23	23	87° 27' 17.030" E	24° 45' 28.210" N
24	24	87° 27' 16.080" E	24° 45' 30.118" N
25	25	87° 27' 16.875" E	24° 45' 32.622" N
26	26	87° 27' 16.936" E	24° 45' 33.718" N
27	27	87° 27' 16.033" E	24° 45' 36.840" N
28	28	87° 27' 16.380" E	24° 45' 37.987" N
29	29	87° 27' 20.242" E	24° 45' 42.687" N
30	30	87° 27' 21.030" E	24° 45' 41.195" N
31	31	87° 27' 43.605" E	24° 45' 41.105" N
32	32	87° 28' 0.801" E	24° 45' 40.834" N
33	33	87° 28' 20.449" E	24° 45' 55.501" N
34	34	87° 28' 58.923" E	24° 45' 57.287" N
35	35	87° 29' 31.244" E	24° 46' 28.489" N
36	36	87° 29' 32.505" E	24° 46' 50.251" N
37	37	87° 29' 25.765" E	24° 47' 23.136" N
38	38	87° 29' 20.076" E	24° 47' 51.951" N

4.0 PHYSIOGRAPHY AND DRAINAGE:

The Chuperbhita Coalfield is exposed along the valleys formed by the Gumani River and its tributaries. The area shows undulating topography. The general slope of the valley is towards east. To the north and south of this valley high hills of Traps are noticed, however, in the eastern part the Traps are deposited at the valley level (about 85m Level). The highest point on the Traps hill is 485m in the southern part of the area (Topo No.72P/6), while the lowest point is 85.38m RL near borehole RCH-26.

The Gumani River flows through the block almost east-west and provides the main drainage channel to the area. This is a perennial river and its catchment area is spread over about 1096 sq.km. A number of seasonal nalas flowing from the trap hills feeds the Gumani River. RL of the Gumani Barrage is 50.63m (As per Gumani Barrage Project, Irrigation Department Report).

Artesian flow of water at high pressure was encountered in borehole Nos. RJC-2, RJC-3, RJC-4 and RJC-8. The borehole RJC-1 at Simlong drilled earlier also encountered artesian conditions at depths of 87 m. and 106m. Artesian conditions were noticed at a depth of 303 m. in RJC-2 and at 360 m. in RJC-3. In borehole RJC-8, artesian condition was recorded at 106 m. and 184m depth. Evidently, the major aquifer was a medium to coarse grained sandstone unit underlying the seam III. The gentle inclination of the beds coupled with adequate re-charge possibilities from the surrounding trappean hillocks have contributed to the unique geo-hydrological conditions in the basin. Locally other aquifers have also given rise to artesian conditions, as in the case of RJC-4 where the roof sandstone of seam XII acted as the main water-bearing strata.

5.0 CLIMATE AND VEGETATION

The area under investigation experiences a typical tropical weather. During summer (May-June), the temperature sometimes rises above 42°C and in winter the mercury drops down to a level as low as 4°C. The average annual rainfall is 134 Cm. (Source Gumani Barrage Project booklet) in the area. During monsoon maximum rainfall is experienced from June to September.

There different water bodies like river, nallas, ponds etc.; data available from the adjoining area indicate that the water table in this region varies from 1.50 m. to 12.00 m. Artesian conditions have not been observed in any of the boreholes drilled in the block.

Vegetative cover is confined to the slopes of the trap hills located in the northern part of the block. Trees commonly found to occur are Sal, Mahua, Asan etc. A small population of bears, wild boars, rabbits and snakes are found inthe sparse jungles.

6.0 GEOLOGY

6.01 Regional Geology

A group of detached coal prospects occurring between the latitudes 24°15'00"(N) to 25°17'23"(N) and longitudes 87°18'00" E to 87°34'30" E have been referred to as the Rajmahal Coalfields. These coal prospects are aligned in a north-south direction with the Pirpainti-Barahat occurring in the northernmost part followed successively southward by the Hura, Chuperbhita, Panchwara, Mahuagarhi and Brahmani Coal basins. Vast expanses of Gondwana sediments underlie the Rajmahal Trap/Gangetic Alluvium of the region. The south-western extension of the Gondwana basin has been established as far away as Galsi and longitude, where the coal bearing Barakars have been countered in deep boreholes drilled by the G.S.I. In the east, the extension of the Rajmahal Trap overlying Triassic sequence has been established by geophysical survey and exploratory drilling by the G.S.I, however the exact limit of the Rajmahal basin still unknown. In the Trans-Ganga area, near the Gondwanas have been intersected in a borehole drilled by the Oil and Natural Gas Commission (ONGC) 1600 m. below the surface (GSI Buletin, Sr. A, No. 45, Vol.-IV, Part I, 1987; Coal Resources of Bihar by C.S. Raja Rao). Purnea Gondwanas may be the continuity of the Rajmahal basin.

The generalized geological sequence (after GSI, referred to above) as manifested in the Rajmahal Coalfields is presented in Table-II.

TABLE – II: Generalised Geological Sequence in Rajmahal Group of Coalfields (After G.S.I., 1987)

Age	Formation	Lithology	Thickness
Recent to Sub-Recent	Alluvium		Upto 80 m.
Upper Tertiary		Friable, immature co-arse to medium grai-ned sandstone, gravel, pebble beds, subordi-nate greenish silt and clay.	107 m.
----------	----------	--------Unconformity----------	----------
Lower Cretaceous	Rajmahal Traps and Intertra-ppeans.	Flows of basalt, pit-chestone and inter-trappean beds (sand-stone, shale and ash)	600 m.
----------	----------	--------Unconformity----------	----------
Upper Triassic	Dubrajpur	Pebbly sandstone, coarse to medium grained sandstone, red silt-stone.	60-250 m.
----------	----------	--------Unconformity----------	----------
Lower Triassic	Panchet	Green and purple clay and soft fine grained sandstone.	+ 900 m.
----------	----------	--------Unconformity----------	----------
Lower P ermian	Barakar	Coarse to medium gra-ined sandstone, pebbly sandstones,grey shales, clay and coal seams.	250-550 m.
----------	----------	--------Unconformity----------	----------
Upper Carbo-niferous to Lower Permian	Talchir	Tillite, fine to medium grained sandstone, olive green shale.	
----------	----------	--------Unconformity----------	----------
Precambrian		Basic rocks, amphiboli-tes, bands of quartzite, limestone, gneisses and granites.	

6.02 GEOLOGY OF THE BLOCK

East of Chuperbhita Block is located in the east-central part of the Chuperbhita Basin. As such many of the lithounits of Chuperbhita Basin are found to be present within the block.

The generalized geological sequence of East of Chuperbhita Block are established on the basis of geological mapping as well as sub surface data obtained by drilling in the area is as follows (as in Table III).

TABLE –III: Generalised Geological Sequence in East of Chuperbhita Block

Lithology	Formations	Age
Soil, sand and clay	Alluvium/soil	Recent to Sub-recent.
Basalts, shalaes and sandstones	Rajmahal Traps and intertrappeans	Lower Cretaceous
Medium to coarse grained sandstones and clays	Dubrajpur	Lower Triassic
Medium to coarse grained .sandstones, shales and coal seams.	Barakar	Lower Permian
Greenish sand-stones and shales.	Talchir	Late Carboniferous to Early Permian.
Amphibolite, bands of quartzites, gneisses, schists and granites	Metmorphic	Pre cambrian

6.03 GEOLOGICAL STRUCTURE

On the basis of sub-surface data and geological mapping structure of Chuperbhita Coalfield has been deciphered. The strike of the formation is almost N-S in the major part of the basin, but in Jitpur OCP strike of formation varies from NE-SW to NW-SE. In the Simlong OCP Blocks NW-SE strike is observed. On the basis above observation on adjacent blocks, it can be inferred that the strike of the coal seams in the central and northern part of the block is almost N-S with dip towards East, whereas the strike swings to NW-SE direction at the southern part

of the identified block with dip towards NE. The dip of the formation varies from 5° to 15° towards east in the majority of the block area and NE at the south.

Chuperbhita basin is structurally a less disturbed. Two sets of faults are observed in Chuperbhita basin. One set of faults is trending E-W to NW-SE, while the other set is trending NNW-SSE to N-S. Faults trending EW to NW-SE are major in magnitude while the other set of faults is minor.

7.00 COAL SEAMS

On the basis of exploration carried out in the Chuperbhita Block twenty two (22) persistent coal seams have been identified. In general, seams XV, XIV, XIII, L-5, XII, XI , X, L-4, IX, VIII, VII, VI, V, IV(TOP), IV(BOT), III(TOP), III(BOT), L-3, II, L-2, L-1 and I. Except seams L-1, L-2, L-3,L-4,L-5 & IV(TOP) ; all the seams are quite consistent.

The range of variation in thickness of coal seams and their intervening parting as encountered in the boreholes have been furnished in Table III:

TABLE – III: Details of Coal Seam to be encountered in East of Chuperbhita block, Rajmahal Coalfield

SEAM NO	ROOF DEPTH OF OCCURANCE (m)		THICKNESS (m)
	FROM	TO	
XV	70.45	107.52	0.14-1.90
			26.10-27.33
XIV	101.00	136.85	2.00-4.45
			29.35-35.30
XIII	134.95	176.95	4.60-4.80
			24.64-27.30
L-5			1.06-2.31
			32.23-35.05
XII	200.91	245.26	6.39-7.41
			2.70-2.80
XI	208.11	252.98	4.50-4.74
X			0.46
L-4			0.55-1.24
			5.60-6.25
IX	294.65	352.34	0.3-1.39
VIII	318.25	378.33	6.75-8.19
			27.56-31.26

VII	85.64	418.44	3.15-8.55
			14.44-26.59
VI	106.30	442.56	0.85-4.29
			7.34-14.53
V	194.71	458.32	3.10-5.88
			33.41-46.69
IV(TOP)	155.04	506.20	0.19-3.13
			0.61-8.29
IV(BOT)	160.05	511.06	0.30-4.02
III(TOP)			0.15
			12.00
III(BOT)	461.10	537.87	0.45-2.50
			21.43-28.30
L-3	183.00	559.14	0.29-1.25
			8.68-12.14
II	194.13	570.04	1.29-2.22
			10.38-17.94
L-2	519.80	580.50	0.08-0.10
			3.90
L-1		584.80	
			33.20
I		560.00	7.00

The dominant grade of coal in the block is likely to be in G8 to G10 range.

8.00 EXPLORATION SCHEME:

8.01 Drilling:

Drilling of approximately 5900 m in 11 boreholes has been proposed in 1600x1600 m grid for the East of Chuperbhita Block. The depth of intersection for Seam I/Metamorphic has been proposed from 260 m to 690 m at minimum to maximum range. (Table IV)

TABLE-IV:
Depth of Proposed Boreholes in East of Chuperbhita block, Rajmahal Coalfield

APPROXIMATE METERAGE OF PROPOSED BOREHOLE POINTS IN EAST OF CHUPERBHITA BLOCK, RAJMAHAL COALFIELD			
S. NO.	**P. POINT NO**	**APPROXIMATE DEPTH**	**REMARKS**
1	PBH-001	540	
2	PBH-002	560	
3	PBH-003	550	
4	PBH-004	590	
5	PBH-005	640	
6	PBH-006	560	

7	PBH-007	600	
8	PBH-008	690	
9	PBH-009	360	
10	PBH-010	260	
11	PBH-011	550	
		5900.00	
Grand Total		**5900.00m in 11 Boreholes**	

In view of the unconsolidated nature of Tertiary sediments and the extremely hard Rajmahal Trap which causes problem in the drilling, appropriate technology & combination of drilling method to be adopted to complete the project within the time schedule.

Time Schedule of Completion of Project- 16 Months from sanction of project.

10.3 Laboratory Studies:

Band by Band Analysis, overall analysis, special tests, & Petrographic are proposed to be carried out on coal samples.

10.4 Quantum of Work Proposed:

Details of proposed work for detailed exploration for coal in East of Chuperbhita block is given below in Table-V

TABLE-V
Quantum of Work

S.No.	Activity	Quantity
1.	Geological Mapping	20.66 sq.km
2.	Drilling:	
	i) No of Boreholes	11 BHs.
	ii) Meterage	5900
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	11 BHs.
4.	Drill Core Logging	5900 m
5.	Geophysical Logging	11 boreholes; 5900m
6.	Chemical Analysis:	
	i) Band by Band	1100 Samples
	ii) Overall	250 Samples
	iii) Calorific Value	250 Samples
7.	Special Tests	25 Samples
8.	Petrographic Studies	25 Samples
8.	Time Schedule	16 months

9.0 LIMITATIONS

1. Out of the Total area 20.66 Sq km (approx.) under exploration 40% is Forest area.
2. Some of the boreholes may require shifting due to non-approachability due to hills/ gullies/ villages/ forest cover, geological structure etc.
3. As the proposed meterage is based on the tentative structure as per Regional reports and data of adjoining blocks, actual meterage may vary during course of exploration.
4. The tentative R.L. of every proposed borehole point was taken from Google earth i.e. tentative and may change at the time of actual survey.

10.0 LIST OF PLATES

Following plates are enclosed with the proposal:

1. Block location plan with cardinal points
2. Borehole location plan with tentative floor contour plan (tentative) of Seam I
3. Graphic logs of boreholes drilled by MECL
4. Block location plan on Topographical map.

Location Plan of East of Chuperbhita Block, Rajmahal Coalfield on Toposheet

87°28'0"E 87°30'0"E 87°32'0"E

24°48'0"N 24°46'0"N 24°44'0"N

Open mixed jungle
Kudigora
PF
Jawardaha
Metur Garha Nala
Chhota Puro
Garidih
(Dāmin)
Dhamni
Bara Puro
GUMANI NADI
Marchaitari
Hot Spring
Market (Sat)
Ford (Oct to Jun)
Ford
Spring
Pokharia
Tuartok Pahar
Jordina
CHUPERBHITA
Bara Chatkam
Chhota Murjora
Haripur
Bara Murjora
Bānsbhita
Margo
Amarbhita
Tetli
Pāngdo
Behra
Hāpāni
Gāmdiong
Tatbhita
Simaldhāp
Ghāghri
Sahāpi
Jagatpur
Dāmro
Dāmro Nala
Kotābhita
Lilātari
Kusbila
Garau
Kumārkata
Garsu
Market (Thurs)
Mohanpur
Sādhutari
Musābil
Anibhita
Katlopahār
Open jungle
Open mixed jungle mainly sāl
EAST OF CHUPERBHITA

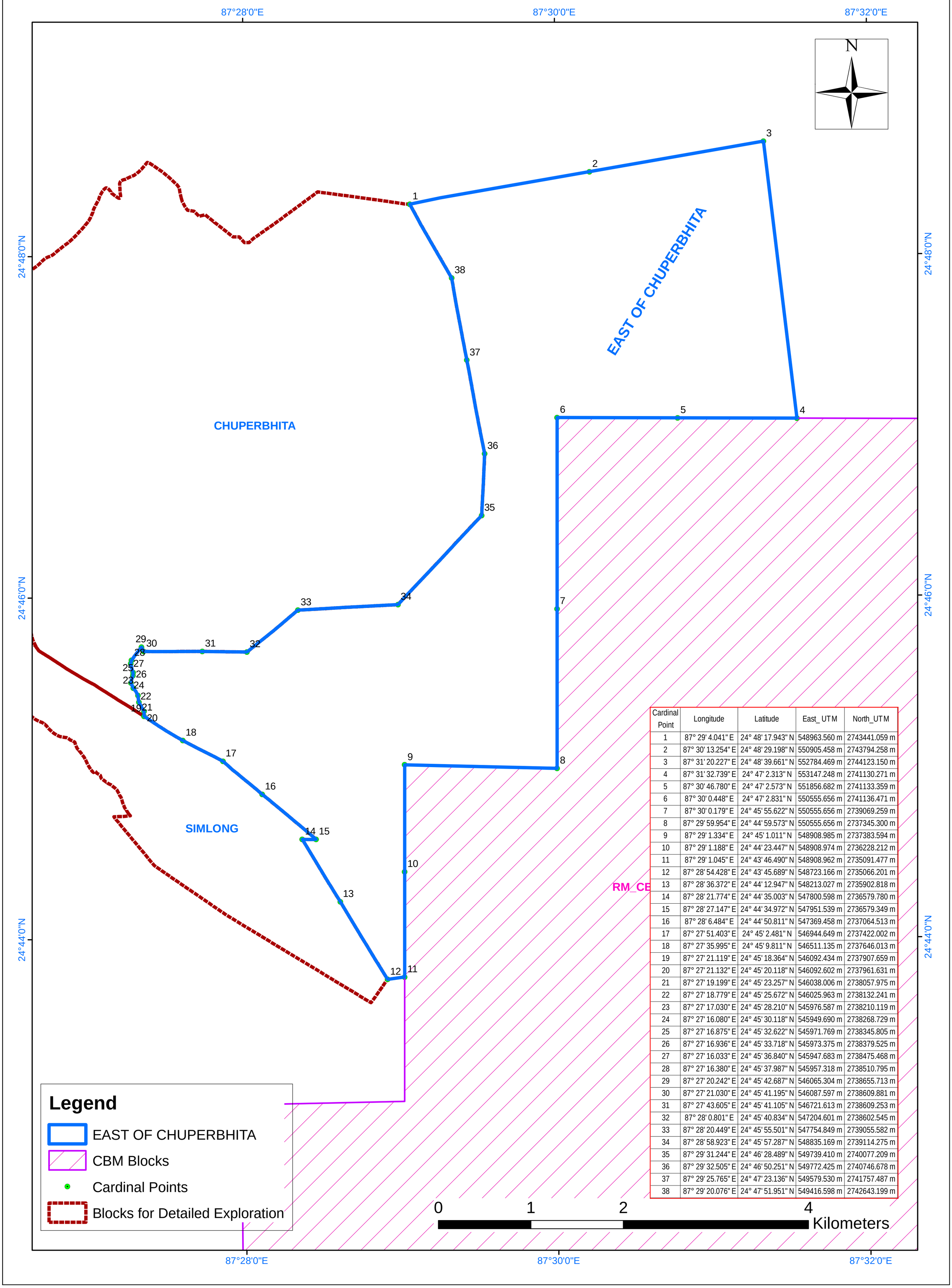
Metur
Mugdi
Rājāpāni
Ford (Oct to May)
Darradar
Chhota Katlu
Raro Nala
Mahuātānr
Pakaria
Kāicam Santāli
Bara Katlu
Bargaonpahār
Sonājori
Kāldampaha
Dāxikuria
Dandakuria
Newādih
Ketokuria
Pasharbhitha
Chālbhitha
Kāsigora
Tongi
Jāni
Palamp
HOULTON P F
Tongi Pahār
Daldali
Sākla
Chhota Sāklāpahār
Chhota Mālgo
Kasripahār
RM_CBM_2005_III

Legend

- EAST OF CHUPERBHITA
- CBM Blocks
- Blocks for Detailed Exploration

0 1 2 4 Kilometers

Location Plan of East of Chuperbhita Block, Rajmahal Coalfield with Cardinal Points



Cardinal Point	Longitude	Latitude	East_ UTM	North_UTM
1	87° 29' 4.041" E	24° 48' 17.943" N	548963.560 m	2743441.059 m
2	87° 30' 13.254" E	24° 48' 29.198" N	550905.458 m	2743794.258 m
3	87° 31' 20.227" E	24° 48' 39.661" N	552784.469 m	2744123.150 m
4	87° 31' 32.739" E	24° 47' 2.313" N	553147.248 m	2741130.271 m
5	87° 30' 46.780" E	24° 47' 2.573" N	551856.682 m	2741133.359 m
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7	87° 30' 0.179" E	24° 45' 55.622" N	550555.656 m	2739069.259 m
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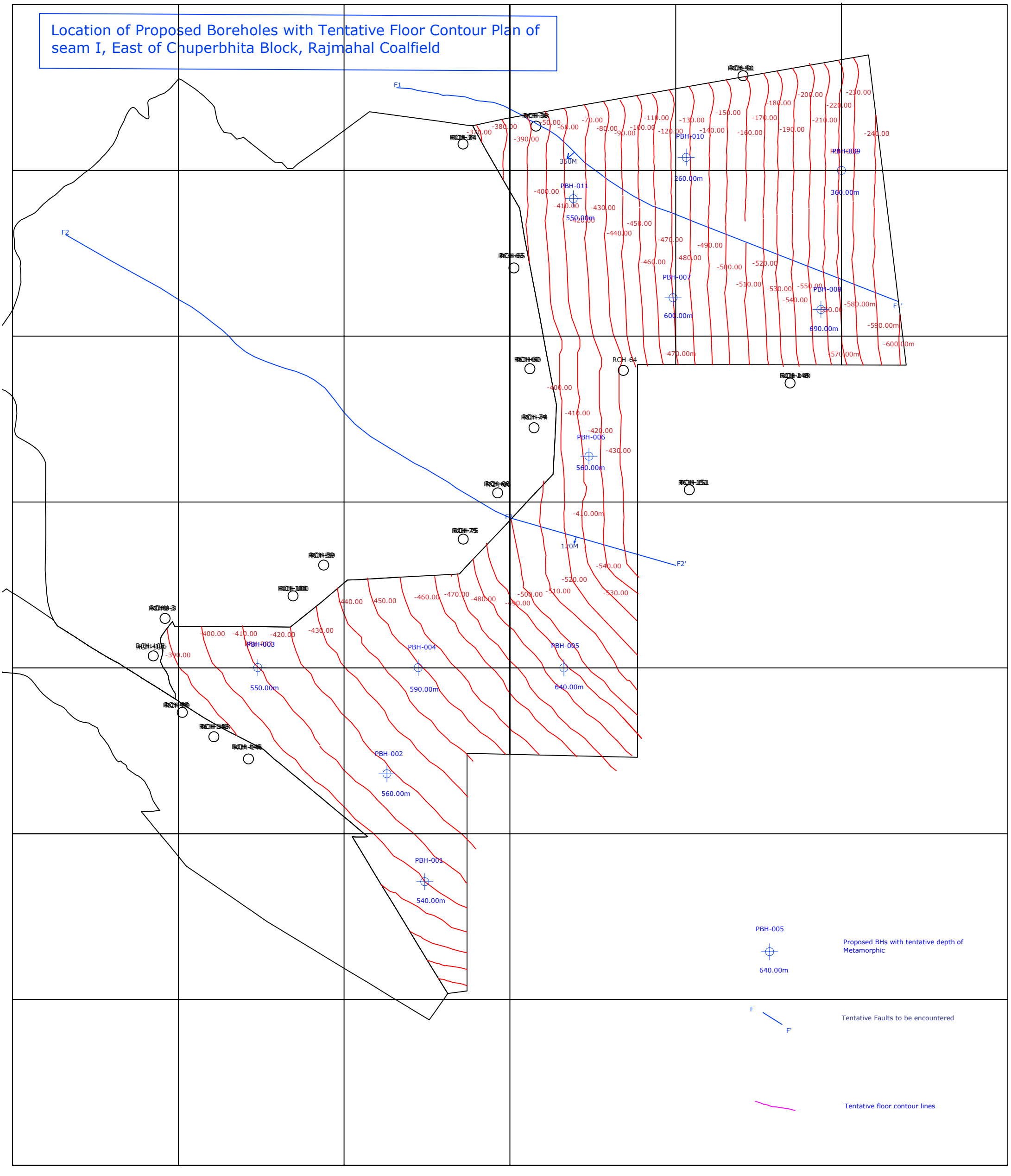
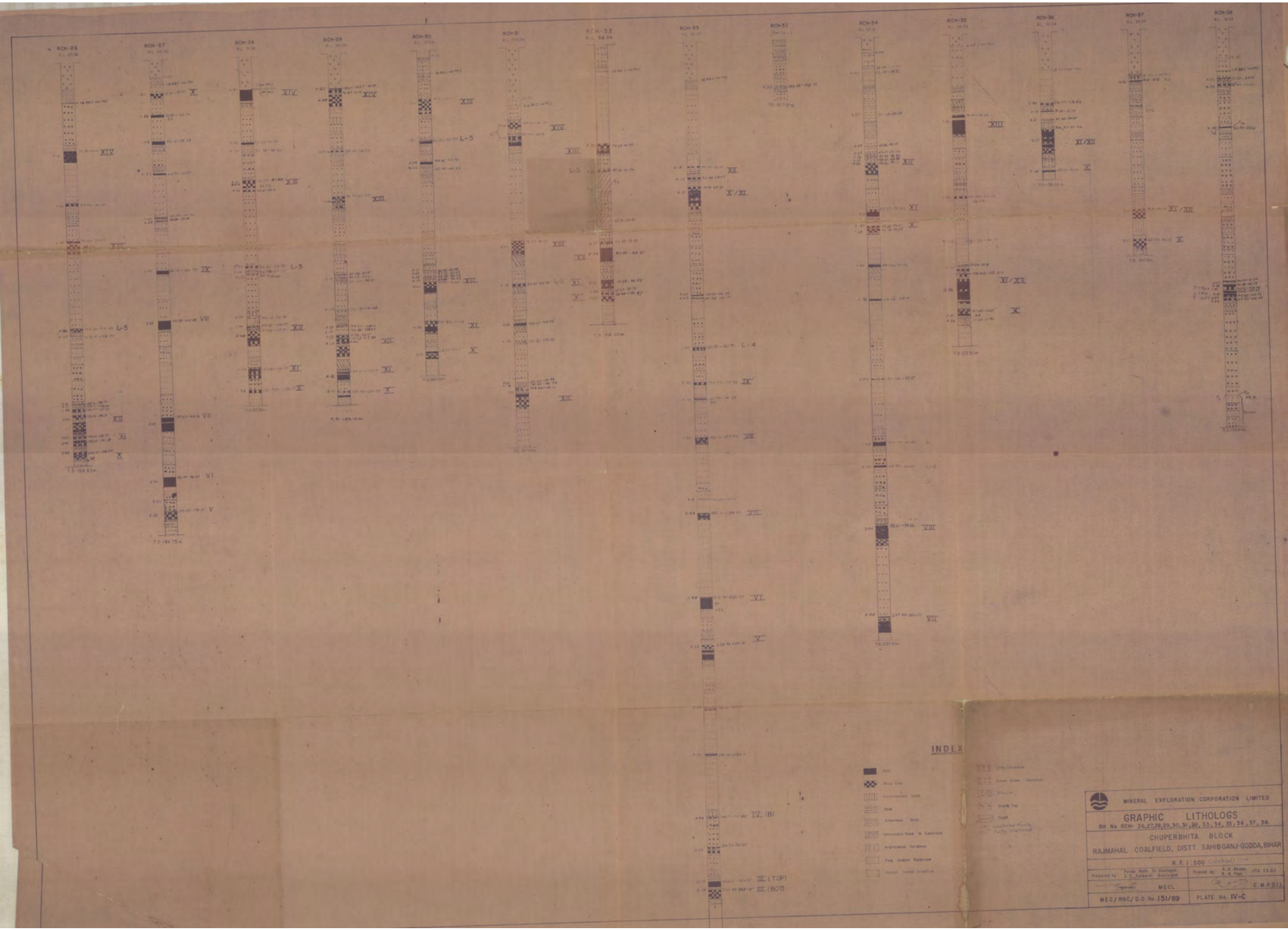
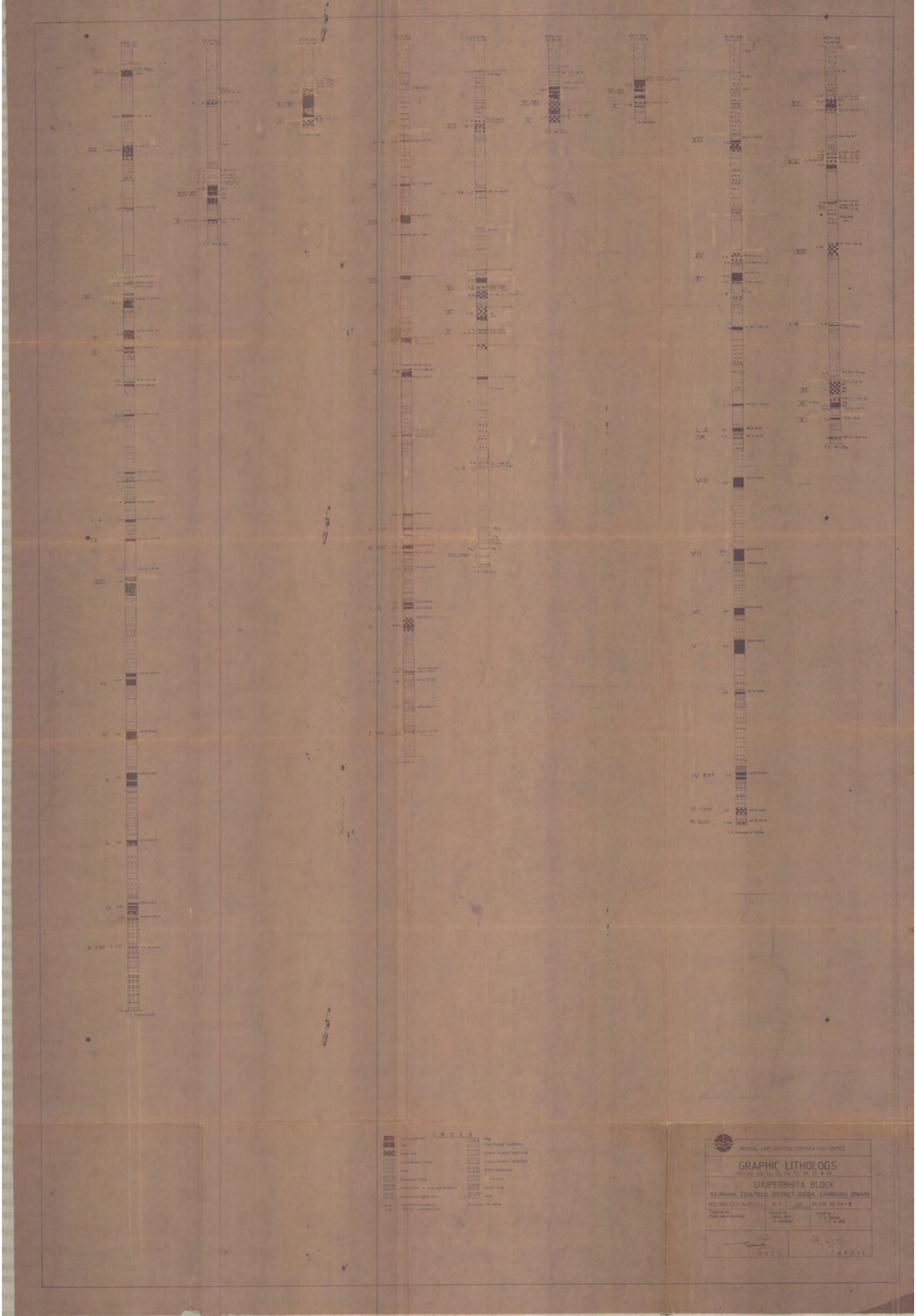
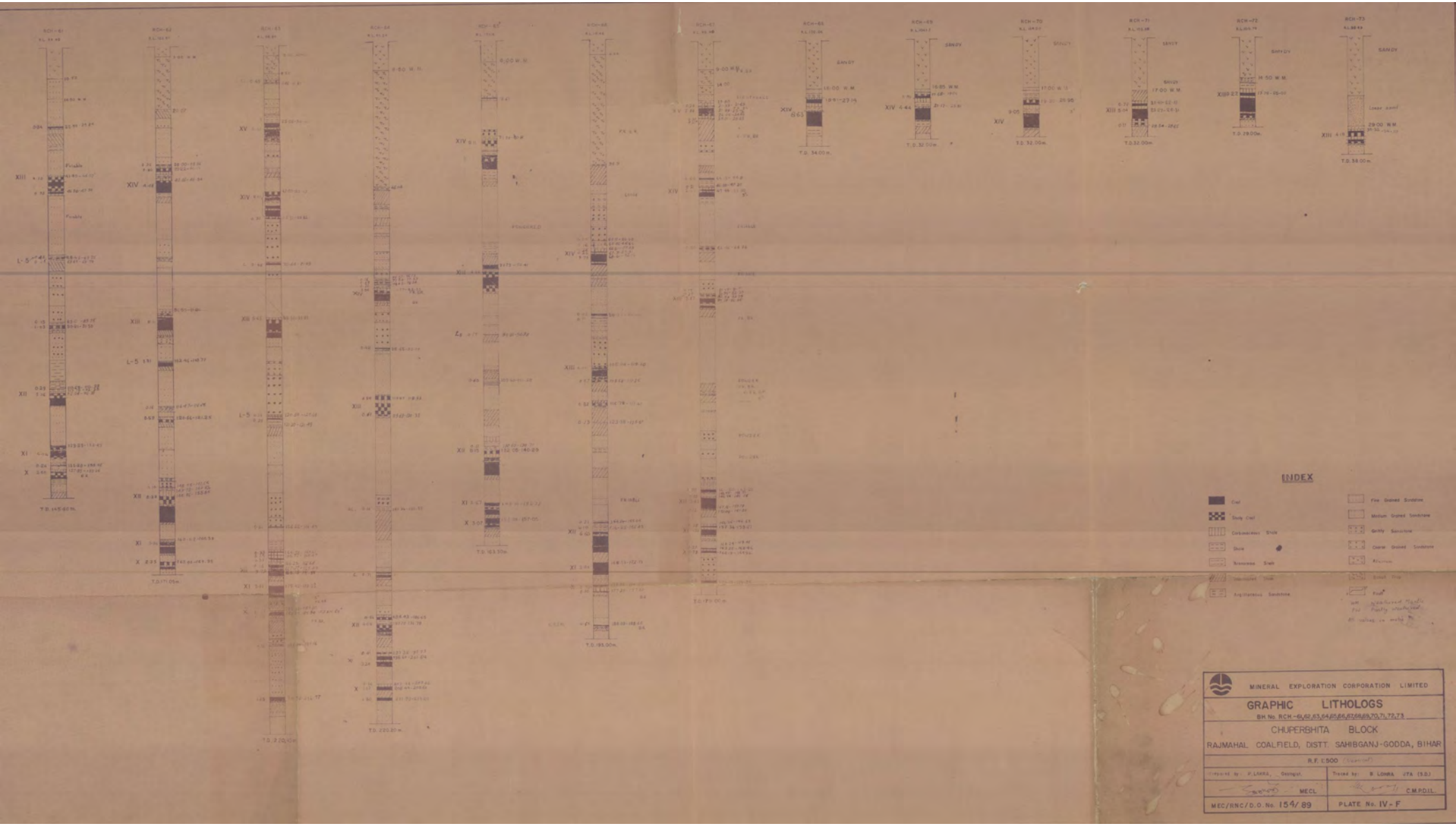
9	87° 29' 1.334" E	24° 45' 1.011" N	548908.985 m	2737383.594 m
10	87° 29' 1.188" E	24° 44' 23.447" N	548908.974 m	2736228.212 m
11	87° 29' 1.045" E	24° 43' 46.490" N	548908.962 m	2735091.477 m
12	87° 28' 54.428" E	24° 43' 45.689" N	548723.166 m	2735066.201 m
13	87° 28' 36.372" E	24° 44' 12.947" N	548213.027 m	2735902.818 m
14	87° 28' 21.774" E	24° 44' 35.003" N	547800.598 m	2736579.780 m
15	87° 28' 27.147" E	24° 44' 34.972" N	547951.539 m	2736579.349 m
16	87° 28' 6.484" E	24° 44' 50.811" N	547369.458 m	2737064.513 m
17	87° 27' 51.403" E	24° 45' 2.481" N	546944.649 m	2737422.002 m
18	87° 27' 35.995" E	24° 45' 9.811" N	546511.135 m	2737646.013 m
19	87° 27' 21.119" E	24° 45' 18.364" N	546092.434 m	2737907.659 m
20	87° 27' 21.132" E	24° 45' 20.118" N	546092.602 m	2737961.631 m
21	87° 27' 19.199" E	24° 45' 23.257" N	546038.006 m	2738057.975 m
22	87° 27' 18.779" E	24° 45' 25.672" N	546025.963 m	2738132.241 m
23	87° 27' 17.030" E	24° 45' 28.210" N	545976.587 m	2738210.119 m
24	87° 27' 16.080" E	24° 45' 30.118" N	545949.690 m	2738268.729 m
25	87° 27' 16.875" E	24° 45' 32.622" N	545971.769 m	2738345.805 m
26	87° 27' 16.936" E	24° 45' 33.718" N	545973.375 m	2738379.525 m
27	87° 27' 16.033" E	24° 45' 36.840" N	545947.683 m	2738475.468 m
28	87° 27' 16.380" E	24° 45' 37.987" N	545957.318 m	2738510.795 m
29	87° 27' 20.242" E	24° 45' 42.687" N	546065.304 m	2738655.713 m
30	87° 27' 21.030" E	24° 45' 41.195" N	546087.597 m	2738609.881 m
31	87° 27' 43.605" E	24° 45' 41.105" N	546721.613 m	2738609.253 m
32	87° 28' 0.801" E	24° 45' 40.834" N	547204.601 m	2738602.545 m
33	87° 28' 20.449" E	24° 45' 55.501" N	547754.849 m	2739055.582 m
34	87° 28' 58.923" E	24° 45' 57.287" N	548835.169 m	2739114.275 m
35	87° 29' 31.244" E	24° 46' 28.489" N	549739.410 m	2740077.209 m
36	87° 29' 32.505" E	24° 46' 50.251" N	549772.425 m	2740746.678 m
37	87° 29' 25.765" E	24° 47' 23.136" N	549579.530 m	2741757.487 m
38	87° 29' 20.076" E	24° 47' 51.951" N	549416.598 m	2742643.199 m

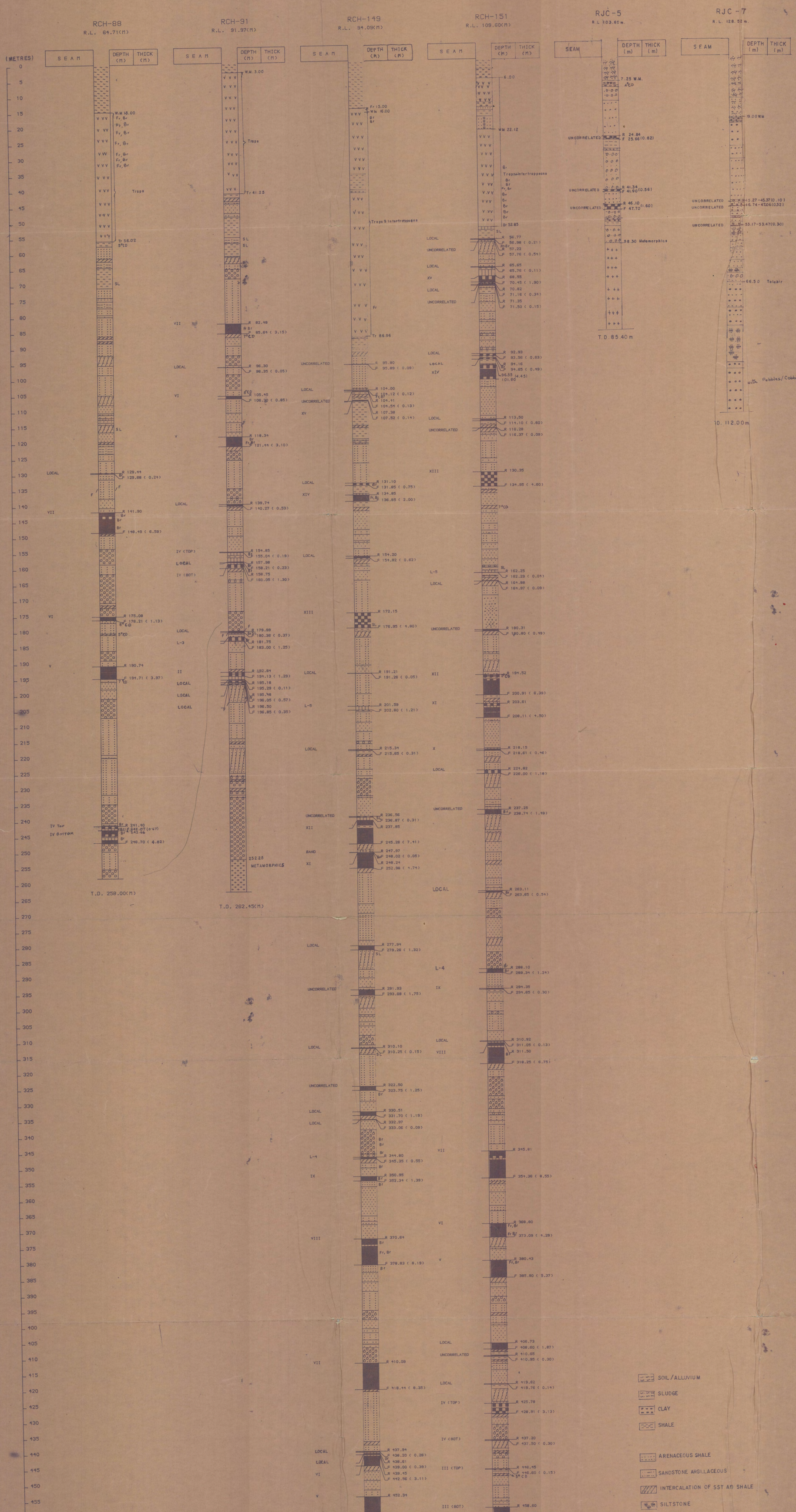
Location of Proposed Boreholes with Tentative Floor Contour Plan of seam I, East of Chuperbhita Block, Rajmahal Coalfield




RCH-26
RCH-27
RCH-28
RCH-29
RCH-30
RCH-31
RCH-32
RCH-33
RCH-34
RCH-35
RCH-36
RCH-37
RCH-38
L-5
L-4
T.D 154.63m
T.D 184.75m
T.D 137.00m
T.D 116.00m
T.D 237.50m
T.D 122.50m
T.D 155.60m
INDEX
MINERAL EXPLORATION CORPORATION LIMITED
GRAPHIC LITHOLOGS
BH. No. RCH- 26,27,28,29,30,31,32,33,34,35,36,37,38.
CHUPERBHITA BLOCK
RAJMAHAL COALFIELD, DISTT. SAHIBGANJ-GODDA, BIHAR
R.F. 1:500
Prepared by Paras Nath Sr. Geologist, S.S. Kulkarni Geologist
Traced by A.K. Ghosh, R.K. Paul, JTA 18-83
MECL
C.M.P.D.I.I.
MEC/RNC/D.O. No. 151/89
PLATE No. IV-C


INDEX
GRAPHIC LITHOLOGS
RDH-52, 53, 54, 55, 56, 57, 58, 59 & 60
CHUPERBHITA BLOCK
RAJMAHAL COALFIELD, DISTRICT-GODDA, SAHIBGANJ (BIHAR)
PLATE No. IV-E
MINERAL EXPLORATION CORPORATION LIMITED
L-5
L-4
L-3
L-2
L-1
TALCHIR
IV BOT.
III TOP
III BOT.


INDEX
Coal
Shaly Coal
Carbonaceous Shale
Shale
Limestone Stone
Intermediate Strata
Argillaceous Sandstone
Fine Grained Sandstone
Medium Grained Sandstone
Gritty Sandstone
Coarse Grained Sandstone
Alluvium
Sandy Clay
Sand
MINERAL EXPLORATION CORPORATION LIMITED
GRAPHIC LITHOLOGS
BH No. RCH-61,62,63,64,65,66,67,68,69,70,71,72,73
CHUPERBHITA BLOCK
RAJMAHAL COALFIELD, DISTT. SAHIBGANJ-GODDA, BIHAR
R.F. 1:500
Prepared by P. LAKRA, Geologist.
Traced by B. LOHRA JTA (S.D.)
MECL
C.M.P.D.I.L.
MEC/RNC/D.O. No. 154/89
PLATE No. IV-F



INDEX

- SANDSTONE,VFGD — VFGD — VERY FINE GRAINED
- SANDSTONE FGD — FGD — FINE GRAINED
- SANDSTONE,FGD-MGD — MGD — MEDIUM GRAINED
- SANDSTONE,MGD — CGD — COARSE GRAINED
- SANDSTONE MGD.CGD — SST — SAND STONE
- SANDSTONE,CGD
- SANDSTONE cgd gritty
- SANDSTONE GRITTY
- SST,PEBBLY
- MGD-GRIT

- SOIL/ALLUVIUM
- SLUDGE
- CLAY
- SHALE
- ARENACEOUS SHALE
- SANDSTONE ARGILLACEOUS
- INTERCALATION OF SST AND SHALE
- SILTSTONE
- MUD STONE

- CARBONACEOUS SHALE
- SHALY COAL
- COAL
- METAMORPHICS
- TRAPS
- R— ROOF OF THE SEAM
- F— FLOOR OF THE SEAM
- R.L. REDUCED LEVEL
- FAULT
- RUNNING SAND
- W.M WEATHERED MANTLE
- Tr TRAPS

Fr Fractured
SL SLICKEN SIDE
Br BROKEN
CD CORE DIP

MINERAL EXPLORATION CORPORATION LIMITED

GRAPHIC LITHOLOGS

B.H.Nos - RCH-88, 91, 149, 151 & RJC-5, 7

CHUPERBHITA- PERIPHERAL AREA
RAJMAHAL COALFIELD
DISTRICT: SAHIBGANJ & GODDA, STATE: BIHAR

R.F. 1:500 VERTICAL

PROCESSED BY : COMPUTER SERVICE DIVISION M.E.C.L. AGPUR	DATA PREPARED & CHECKED BY PARAS NATH, SR GEOL & S. GHOSH GEOL. DEEP PRAKASH, ACG. APPROVED BY: S.A. ABBAS DY C.G.
M.EC/RAO/DO-536/93	PLATE NO. III

Project Cost Estimate for Preliminary Exploration (G3 Stage) in East of Chuperbhita Block, Rajmahal Coalfield

Sl. No	Item Work	Item no in Soc	Unit	Rates as per SoC of NMET	Rate (Rs)	Qty.	Amount (Rs)
	I- Field operations (Outsourcing)						
A	**DRILLING**						
1	Drilling (As per MoC Rate 2020-21)	2.2.1.1b	m	5619	5619	5900	33152100
B	**GEOPHYSICAL STUDIES**						
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	656	697	5900	4112300
	Field operations Total (A+B)						**37264400**
	II- Field Work (In House)						
A	**GEOLOGICAL WORK**						
1	Survey Work -1 Surveyor	1.6.1a	Day	8300	8300	60	498000
2a	Geological Party days-Field - 1 Geologist	1.5.1b	Day	11000	11000	180	1980000
2b	Geological Party days-HQ (Data processing & Report Preparation)-1 Geologist	1.5.1b	Day	9000	9000	60	540000
	Sub Total A						**3018000**
B	**GEOPHYSICAL STUDIES**						
3a	Geophysict Party days-Field (Field Work) - 1 Geologist	3.19	Day	11000	11000	22	242000
3b	Geophysicst Party days-HQ (Data processing & Report Preparation)-- 1 Geologist	3.19	Day	9000	9000	15	135000
	Sub Total B						**377000**
	Field Work Total (A+B)						**3395000**
	III-Laboratory Studies (In House)						
1	***Band By Band Analysis***						
a	Ash+Moisture	4.2.6	per sample	700	700	1100	770000
b	House Keeping	4.2.1	per sample	115	115	1100	126500
2	***Overall analysis***						
a	Proximate analysis	4.2.7	per sample	935	935	250	233750
b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	250	252500
c	GCV	4.2.11	per sample	1505	1505	250	376250
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	250	198750
3	***Special Test***						
a	Ultimate analysis	4.2.17	per sample	9945	9945	25	248625
b	Total Sulphur	4.2.14	per sample	1900	1900	25	47500
c	Distribution of Sulpher	4.2.15	per sample	3695	3695	25	92375
d	HGI including sample preparation	4.2.18	per sample	3805	3805	25	95125
e	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	25	68625
f	Ash analysis	4.2.25	per sample	325	325	25	8125

4	**Petrographic analysis**						
a	Pellet preparation	4.3.14a	per sample	1160	1160	25	29000
b	Maceral Analysis (with photomicrography)	4.3.14e	per sample	25000	25000	25	625000
c	Microlithotype Analysis (with photomicrography)	4.3.14g	per sample	25000	25000	25	625000
d	Mean Ro%	4.3.14j	per sample	16345	16345	25	408625
	Laboratory Studies Total						**4205750**
	IV. Miscellaneous Charges (In House)						
a	Preparation of Exploration Proposal	5.1	lump sum	380000	380000		380000
b	Outsourcing process cost	2.3	lump sum	500000	500000		500000
c	Operational charges for CMPDI	Point 3 of SOC			1500000		1500000
d	DGPS Survey of bundary, borehole points (11 boreholes & 20 boundary point)	1.6.2	per point	19200	19200	31	595200
e	Borehole pillaring	2.2.7	Per bh	2000	2000	11	22000
f	Land crop compensation	5.6	Per bh	20000	20000	11	220000
g	Geological Report preparation (3% or 2000000 Max)	5.2					1442771
h	Peer review			10000	10000		10000
	Miscellaneous Charges Total						**4669971**
	Total (I- Field op +II- Field work+III- Lab+ IV -Misc)						49535121
	GST (@18%)						8916322
	Grand Total						58451442
							5.845144219

Note- 1) Above rate of drilling, GPL, Chemical, are budgeted rates.

2) There are numerous items in chemical anlysis.The CIMFR rates will be applied for actual payment.

3)For Drilling & Geophysical the approved rates of MoC for FY 2020-21 has been taken other rates are as per approved SoC rates.

4) The Drilling rate for coal is Rs 5619/- is as per approved rate of Promotional exploration MoC.

5) GPL rates is Rs 697/- per meter of minimum 8 parameters, the break up is as follow

	Probe	SoC item No	Rate 2020-21 (in Rs)
1	Base Log	3.11a	162
2	Dual Density	3.11d	110
3	Natural Gamma	3.11h	96
4	Caliper	3.11g	20
5	SPR	3.11i	41
6	Sonic	3.11k	131
7	Deviation	3.11m	96
8	Resistivity	3.11c	41
	Total		**697**

6) Rs 10000/- for Peer review is budgeted rate.

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Time Schedule/Action Plan for East of Chuperbhita Block, Rajmahal Coalfield																		
S. No	**Activities**																	**Remarks**
		Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Outsourcing	Months	<------>																3 Months
2	Mobilising	Months				↔													1 months
3	Drilling (Nos of rigs-3 rigs)	Months					<---------->												5915 in 11 Bh
4	Borehole Geophysical logging	Days					<---------->												5915 in 11 Bh
5	Survey Party days (1 Party)	Days					<---------->												60 Days
6	Geologist Party days, Field (1 Party)	Days					<---------->												180 Days
7	Geophysict Party days, Field (1 Party)	Days					<---------->												22 Days
8	Laboratory Studies (Band By Band)	Nos.						<---------->											1100 sample
9	Laboratory Studies (Overall)	Nos.								<---------->									250 Sample
10	Laboratory Studies (Special)	Nos.								<---------->									25 Sample
11	Laboratory Studies (Petrography, Trace element &	Nos.										↔							1 month
12	Geologist Party days, HQ (1 Party)	Days											<------>						60 Days
13	Geophysict Party days, HQ (1 Party)												<------>						15 Days
14	Report Writing & Peer Review	Months											<----------						6 Months

Note: Please add activities accordingly and timelime (months)

Total Time Period of Completion of Project- *16 months from Sanction of Project*