

**Regional Exploration Proposal (G-4 level) for Gold and Base metals in
Bachkakocha and Tankocha area (Block-ID ER-JH-06) in an area of 100 sq.km
District: Saraikela-Kharsawan, (Jharkhand)**

1.0.0 Introduction:

- 1.1.1 In India production of Gold has declined and demand has increased drastically. In India, largely the demand is met through imports. The increasing demand of base metals and gold has been accorded high priority in the XIIth Plan document for their exploration.
- 1.1.2 During the last three decades, no large gold and base metal deposit has been discovered in India. However, the possibility of working of small mineral bodies in proximity to each other, through technological advances and increased operational efficiency, cannot be ruled out. Therefore, it is necessary to locate and explore such small size deposits in clusters.
- 1.1.3 In view of the MMDR amendments act – 2015, Mineral (Evidence of Mineral Contents) Rule 2015 and Mineral Auction Rule – 2015, Ministry of Mines, GSI identified the block for exploration & MECL decided to take up the block for G-4 level of exploration under NMET funding. MECL requested Ministry of Mines, Government of India to reserve the block to carry regional exploration.
- 1.1.4. Ministry of Mines, Government of India allotted 30 Regional Mineral Exploration Blocks for G-4 exploration from the 100 Reports handed over by GSI to MoM. The Regional Exploration for Gold and Base metals in Bachkakocha and Tankocha area (Block-ID ER-JH-06) District: Saraikela-Kharsawan, (Jharkhand) Accordingly MECL prepared proposal for regional exploration and put up for approval of Technical Committee of NMET.

1.2.0 Location of the Block:

- 1.2.1 Chandil is the major town just 1 km from the northern boundary of the block at North-western portion and is 25 km from Saraikela. Chandil is the sub divisional head quarters of Saraikela-Kharsawan district. The national highway NH-33 passes through this town connecting Ranchi. The NH-33 highway passes through the block area diagonally NW-SE. The rail Route of South-Eastern Railway passes N-S through the western portion of the block. There are few cross roads in the block. The block is located in the Survey of India Toposheet No. 73 J/1. The Co-ordinates of the corner points of the block is given below and covers an area of 100 sq km.

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|-----------------------------------|-----------------------------------|
| A) 22° 52' 00" N and 86° 03' 00"E | B) 22° 57' 00" N and 86° 03' 00"E |
| C) 22° 57' 00" N and 86° 10' 00"E | D) 22° 52' 00" N and 86° 10' 00"E |

1.3.0 Physiology and Drainage:

- 1.3.1 There are high ridges in the block area, one E-W in the Northern part, second in is in the middle of the Eastern part up to central part and Third trending SSW-SSE in the southern portion of the block. The highest peak is in the second ridge having a reduced level of 535 m from mean sea level. The rest about 50% area

is of undulating terrain with average reduced level of around 150 m from mean sea level. The hill range is covered by dense mixed jungle mainly by Sal trees.

- 1.3.2 The Subarnarekha River passes from the centrally western boundary flowing eastward crossing the southern boundary of the block in the South-eastern portion of the block. The streams form dendritic drainage pattern in majority of the area forming Nalas which are in turn are the part of tributary system of Subarnarekha river.

2.0.0 Previous work:

- 2.1.1 During the field Season 1992-93, 1994-98 field work was carried out in the part of North Singhbhum mobile Belt (NSMB); ie Rudiya-Largadih, Pata, Ichagarh, Khokro and Lawa areas to trace the Gold mineralisation, in which promising Gold values were recorded in auriferous brecciated quartzite unit (1000 ppb – 3500 ppb). The brecciated quartzite / cherty quartzite unit shows angular class of quartz in siliceous matrix which is hard and crystalline. The cavity in these contains spherulites (radiating crystals of kaolinised materials).
- 2.1.2 During the F.S. 2010-12. Gold exploration in Largadih and Balidih blocks has been executed, targeting the brecciated quartzite-I occurring within the carbonaceous phyllite while brecciated quartzite-II occurring within siliceous tuffs. The distribution of brecciated quartzite-II is not continuous, rather it is highly sheared and drag folded with en echelon pattern of disposition. The shearing activity is evidenced by silicification, mylonitization, ferrugination and emplacement of smoky quartz vein along N-S foliation. Some of the samples of brecciated quartzite and banded carbonaceous chert show high LREE values (La, Ce and Pr elements). With this background this block is chosen for exploration for Gold, Base metals and REE-RM mineralisation.
- 2.1.3 These two bands of brecciated quartzite contain numerous gossanised features and at places shallow to deep old workings. More than 15 old workings were recorded with distinct panning and muck heaps. Profuse stains of malachite and azurite have been recorded in some of the old workings in Tankocha area.

3.0.0 Geology and Structure:

3.1.0. Regional Geology and structure of the Area.

- 3.1.1 The lithounits exposed in and around the area are of Singhbhum group. The Dalma volcanic group of rocks overlies over the Singhbhum group of rocks. The Regional stratigraphic sequence of lithounits (after GSI, District Resource map).

Regional stratigraphic Sequence of the lithounits of the Area (after GSI)

Age	Group	Lithounits
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Recent		Soil
Lower Proterozoic	Dalma Volcanics	Epidiorites, Hornblende schist
		(Talc) sericite chlorite phyllite/ schist (schistose basic tuff)
		Shale, phyllite, mica schist/chlorite phyllite/carbon phyllite, quartzite/cherty quartzite
	Singhbhum	Chlorite phyllite/chlorite schist/muscovite schist
		Tuff, tuffaceous psammopelite.
		Mica schist with hornblende schist

3.2.0 Geology and Structure of the Block:

3.2.1 The lithounits exposed in the area are of Singhbhum group of rocks. The Singhbhum groups of lithounits are overlain by the Dalma volcanic group of Volcano-Sedimentary rocks. The stratigraphic sequence of lithounits exposed within the block area (after GSI) is given below.

Stratigraphic Sequence of the lithounits in the Block Area (after GSI)

Age	Group	Lithounits
Recent		Soil
Lower Proterozoic	Dalma Volcanics	Epidiorites, Hornblende schist, metabasalt, tuffaceous sediment/chlorite schist.
		Shale, phyllites, mica schist/ chlorite phyllites/carbon phyllite, quartzite
	Singhbhum	Mica schist with hornblende schist

4.0.0 Objective of the proposed exploration programme

4.1.1 The basic Geoscience data provided by GSI has been studied and evaluated. Based on the evaluation the present exploration programme has been formulated to fulfill the following objectives.

- i) To carry out geological mapping on 1:12,500 scale and demarcate the rock types of Gold, Base metals and associated elements bearing formations with the structural features to identify the surface manifestations and lateral disposition of the ore body.
- ii) To collect surface samples to analyze them for Au, Cu, Pb, & Zn and REE and decide further course of exploration programme.
- iii) In case, surface samples give positive results supported for mineral targeting and Geophysical survey giving sub-surface positive details for the extension of the ore body then 5 no's scout boreholes shall be drilled in Bachkakocha and Tankocha area to intersect mineralized zones in the proposed study area which in turn will decide the future course of exploration programme at G-3/G-2 category of UNFC.

- iv) To estimate reconnaissance Gold, Base metals and REE resources along with accessory elements as per UNFC norms and Mineral (Evidence of Mineral Contents) Rule-2015 at G-4 level.

5.0.0 Proposed scheme of Exploration:

- 5.0.1 In accordance to the objective set for the block, the exploration programme is proposed. The exploration shall be carried out as per Mineral (Evidence of Mineral Content) Rule-2015. Accordingly, the following scheme of exploration is formulated in order to achieve the objective. The details of different activities to be carried out are presented in subsequent paragraphs.

5.1.0 Geological mapping:

- 5.1.1 Geological Mapping in an area of 100 sq. Km. will be done on 1:12,500 scales. Rock types, their contact, structural features will be mapped. Surface manifestations of the ore bodies available along with their surface disposition will be marked on map. Surface samples of various litho-units for petrological studies and from ore bodies for Au, Cu, Pb, Zn and REE assay with accessory minerals will be taken during the course of geological mapping.

5.2.0. Geochemical Sampling

5.2.1. Surface Sampling (Bed Rock Sample / Soil Sample)

During the course of Geological mapping the Bed rock and Soil samples shall be collected from the out crops and soil covered area respectively. A total of 100 no's bed rock samples (for Au, Ag, Cu, Pb, Zn & REE) and 100 nos soil samples shall be collected, prepared and analyzed for Au, Ag, Cu, Pb & Zn assay.

5.2.2 Stream Sediment Sampling

The stream sediment samples shall be collected from the entire study area of 100 sq. km. The samples shall be collected depending upon the Forest cover and accessibility of the area. A total of 50 Nos. stream sediment samples shall be collected from the study area for the assay of Au, Ag, Cu, Pb, & Zn.

5.3.0 Surveying:

- 5.3.1 The block boundary will be surveyed by DGPS and total station in WGS-84 datum for demarcation of block boundary points. Survey party will be associated with stream sediment sample and Bed rock sample collection by taking up the points and plotting its location on map for proper interpretation of the sample data. Survey party will also be associated with Geological Mapping will be observed during Geological mapping and the Litho-contacts will be plotted for finalization of Geological map on 1:12,500 scale. During drilling scout borehole fixation and determination of reduced level and Co-ordinates of the boreholes only will be undertaken. If mineralized zones are identified, contouring of the surrounding areas of ore bodies would be done on 5 m contour intervals along with survey of surface features.

5.4.0 Surface Geophysical Survey:

- 5.4.1 The area of the block is nearly 100 sq.km. the lithounits hosting mineralization are brecciated quartzite / cherty quartzite will be occupying hill top portion or the

slope of hills covered mostly by rubble & soil. Hence, to assess the strike of the sub-surface ore body continuation need of Geophysical survey is felt. Based on the results of Geological Mapping and Geochemical sampling, Surface Geophysical survey will be carried out. 30 Km line is split in profile lines Gravity, Magnetic, Self Potential, Resistivity and Induced Polarisation will be carried out in the Geophysical survey.

5.5.0 Exploratory Mining

5.5.1 Trenching /Pitting

Shallow Trenching / Pitting (Excavation)

Trenching and pitting shall be carried out in the potential zones identified based on the results of Geological Mapping & Geochemical sampling. A provision of shallow trenching of 100 Cu. m. is kept. Pitting shall be done for correlation of mineralised zones on surface upto a depth of 1m after removal of soil/ weathered column in the area. Locations of the pits & trenches on ground will be decided by field geologist based on field observations. A provision of 100 number of primary & Check trench / pit samples is kept for analysis of Cu Au, Ag, Cu, Pb, Zn & REE assay.

The trench & pit walls will be mapped on 1:200 Scale.

5.6.0 Core Drilling:

5.6.1 The Geological Mapping, Geochemical sampling and Geophysical survey will be helpful in adding new area in the block in the strike continuity. Hence 5 scout boreholes involving 600 m of drilling will be undertaken for upper level of intersection.

5.7.0 Drill Core Logging:

5.7.1 The drill core will be logged for rock types, structural features, textures, intersection of ore zones, type of mineralization and occurrence of various ore minerals. The logging for determining the Rock quality determination will also be undertaken.

5.8.0 Drill Core Sampling:

During the geological logging of drill core samples in the mineralized zones will be marked on concentration wise and lithology wise. 200 no's of samples (primary) will be analyzed for Cu, Pb, Zn, Au & Ag assay and 100 nos of samples for REE assay. 10% primary samples will be given for check. 20 no's composite samples will be analyzed for Au, Ag, Cu, Pb, Zn & REE assay.

5.9.0 Whole Rock Analysis

5.9.1 Whole Rock analysis for SiO_2 , Al_2O_3 , Fe_2O_3 , TiO_2 , MnO , CaO , Na_2O , $\text{K}_2\text{O}+\text{H}_2\text{O}$, H_2O , P_2O_5 , CO_2 , & S radicals will be carried out on 10 samples to check the rock types, their variation in chemical composition.

5.10.0 Petrological Studies:

5.10.1 During the course of core logging & mapping 40 samples from various lithounits intersected will be studied for petrography and 30 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc. in polished sections.

5.11.0 Specific gravity Determination:

5.11.1 For the specific gravity determination 20 samples from the mineralized zones intersected in the boreholes will be sent to lab.

5.12.0 XRD studies:

5.12.1 From the composite samples, 10 samples shall be subjected for XRD studies.

5.13.0 Trace Element Study by LA MC-ICPMS Method/ Spectroscopic studies:

5.13.0 15 No. samples for the study of trace elements (48 Elements) by La MC- ICP- MS Method spectroscopic studies.

5.14.0 Quantum of Work Proposed

5.14.1 The details of proposed quantum of work is given below:-

Quantum of work Proposed for G-4 Level of Exploration for Au, Base metal, REE in Bachkakocha & Tankocha (100 sq. km.) area (Block-Id ER-JH-06) Distt. Saraikela-Kharsawan, (Jharkhand)			
Sl. No.	Item of work	Unit (m)	Proposed Quantum of Work
1	Geological Mapping (on 1:12500 Scale)	Sq. Km	100 sq.km
	Topographical Survey (on 1: 12500 Scale in the Potential Zone Area)	Sq. Km	As per requirement
	Bore Hole Fixation (Scout Boreholes)	Nos	5 Nos
	RL & Coordinate Determination	Nos	5 N0s
2	Geochemical Sampling		
	a) Bed Rock Sampling (only in anomalous zone areas)	N0s.	100Nos
	b) Soil Sampling (only in anomalous zone areas)	N0s.	100 N0s
	c) Stream Sediment Sampling	N0s.	50 N0s
3	Surface Geophysical Survey (Work will be carried out after Geological Mapping in Anomalous zones)		
	a) Gravity Survey & Magnetic Survey	No of Sts.	1530 N0s
	b) Self Potential	No of St.	1530 N0s
	d) Resistivity	Line Km	30 Line Km
	c) Induced Polarisation Survey	Line Km	30 Line Km
4	Exploratory Mining		
	Excavation (Trenching /Pitting in Potential Zone Areas)	Cu. m.	100 Cu m
5	Drilling (coring)	m	600m (5 Bhs)
	Geological work		
6	a) Geological Core Logging	m	600m (5 Bhs.)
7	Laboratory Studies		
	I) Surface Sampling (Primary samples) Bed Rock		
	a) For Cu, Pb & Zn b) For REE by ICP MS	Nos Nos.	100 Nos 100 Nos

	c) Au & Ag by Fire Assay	Nos	100 Nos
	ii)) Soil Samples		
	a) For Cu, Pb & Zn	Nos.	100 Nos.
	b) For Au & Ag by Fire Assay	Nos	100 Nos
	iii) Stream Sediment Samples		
	a) For Cu, Pb & Zn	Nos	50Nos
	b) For Au & Ag by Fire Assay	Nos	50Nos
	iv) Check Samples (Bed Rock / Soil/ Stream sediment)		
	a) For Cu, Pb & Zn	Nos	25 Nos
	b) For Au & Ag by Fire Assay	Nos	25 Nos
	v) Pit & Trench Primary & Check Samples		
	a) For Cu, Pb & Zn	Nos	100 Nos
	b) For Au & Ag by Fire Assay	Nos	100 Nos
	c) For REE by ICP MS	Nos	100 Nos
	vi) Drill Core Primary & Check Samples		
	a) For Cu, Pb & Zn	Nos	200 Nos
	b) For Au & Ag by Fire Assay	Nos	200 Nos
	c) For REE by ICP MS	Nos	100 Nos
	vii) Composite Samples for 7 radicals		
	a) For Cu, Pb, Zn, Co, Ni, Mo & Se	Nos	20 N0s
	b) For Au & Ag by Fire Assay	Nos	20 Nos
	c) For REE by ICP MS	Nos	20 Nos
	Physical Studies		
8	a) XRD – Studies on Composite samples	Nos.	10 Nos
	b) Trace Element Studies by ICPMS Studies for full spectrum of 64 elements	Nos.	15 Nos
9	Petrological Samples (Surface & Bh Core Samples)		
	a) Preparation of Thin Section	Nos	40 Nos
	b) Study of Thin Section	Nos	40 Nos
10	Mineragraphic Studies (Surface & Bh Core Samples)		
	a) Preparation of Polished Section	N0s	30 Nos
	b) Study of Polished Section	N0s	30 Nos
11	Whole Rock Analysis		
	For (SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , TiO ₂ , MnO, CaO, Na ₂ O, MgO, H ₂ O, P ₂ O ₅ , CO ₂ , & S)	Nos	10 Nos
12	Specific gravity Determination	Nos.	20 Nos
13	Report Preparation [As per Mineral (Evidence of Mineral Contents) Rule-2015]	N0s	1

6.0.0 Time schedule and cost Estimate:

6.1.0 Time schedule

6.1.1 The proposed block area is nearly of 100 sq. km. There is possibility of getting sub-surface extension of the ore body already recognized two no's of areas and some new prospective areas. The details are indicated in bar chart given below.

Time schedule (in months) for Exploration Programme in Bachkakocha & Tankocha Area (Block-ID, ER-JH-06), District: Saraikela-Kharsawan, (Jharkhand)												
Item of Work	1	2	3	4	5	6	7	8	9	10	11	12
Geological Mapping (2 Party Days)	←			→								
Bed Rock Sampling/ Soil Sampling	←	→										
Stream Sediment Samplings	←	→										
Surveying (1 Party Days) for Sampling etc	←			→								
Sample Preparation Soil/Bed Rock/Stream (2 Party Days)		←		→								
Analytical Work				←	→							
Geophysical Survey					←		→					
Geophysical Report								←	→			
Surveying in Geophysical Survey (2 Party's)					←		→					
Exploratory mining (Trenching /Pitting)					←		→					
Drilling (600 m)								←	→			
Surveying (2 Party) for drilling, contouring and surface features								←		→		
Sample Preparation (Drill Core) Party Days (1 Party)									←	→		
Geologist Party days for Drilling and Sampling work & report work (1 Party)								←		→		
Analytical Work Drill Core Samples										←	→	
Geological Report										←		→

6.2.0 Cost Estimate:

The Project cost with provisional escalation is estimated at say **Rs. 348.22 Lakhs**. The details of item wise cost estimate with inbuilt actual escalation as on 31.3.2016 is given below.

Sl. No.	Item	Total Estimated Cost (Rs.)
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1	Geological, Survey & Sampling Work	81,71,670/-
2	Geophysical Survey & Report	1,26,79,320/-
3	Exploratory Mining (Pitting & Trenching)	1,85,300/-
4	Drilling	98,65,826/-
5	Laboratory Studies	35,75,310/-
	Subtotal	3,44,77,426/-
6	Report	3,44,774/-
	Total	3,48,22,200/-

Or Say Rs. 348.22 Lakhs (Rs. 3.48 Crore)

7.0.0 Justification:

- i) In view of MMDR Amendment & Mineral Auction Rule, 2015, GSI has identified this block for exploration MECL decided to take up the work under NMET funding.
- ii) In the proposed study area, two nos known prospect are to be explored for & their sub-surface continuation in strike & dip directions. Apart from these there is possibility of getting few more prospects in the strike or in any concealed shears. The Geophysical surveys and Remote sensing studies will add to the Geological mapping for targeting the mineralized zone
- iii) The exploration will be helpful in estimation of reconnaissance resources of Gold, Base metals and accessory minerals in block area.
- iv) The Regional Exploration will help in planning of detailed exploration programme which in turn will facilitate the State govt. for auctioning of block.

Cost Estimate for G-4 Level of Exploration for Au, Base metal, REE in Bachkakocha & Tankocha area (Block-Id ER-JH-06) District: Sraikela - Kharsawan, (Jharkhand)					
Sl. No.	Item of Work	Unit	Rates(2016-17)	Qty.	Amount
A	REMOTE SENSING & REPORT (1 BLOCK)	Nos	2,000,000.00	1	2000000.00
B	GEOLOGICAL WORK				
1	Survey Party days				
	a) Survey Party days (2party) For Sampling etc	days	6,146.00	120	737520.00
	b) Survey Party days (2 party) For Geophysical Survey etc	days	6,146.00	180	1106280.00
	b) Survey Party days (2 party) For Drilling	days	6,146.00	180	1106280.00
2	Geologist Party days				
	a) Geological Party days (2 Party) For Geological Mapping etc	days	8,021.00	240	1925040.00
	b) Geological Party days (1 Party) For Drilling, Core Sampling	days	8,021.00	90	721890.00
3	Sampling Party days	day			
	a) Sample Preparation for Bed Rock, Soil , Stream samples (2 Partys)	days	2,945.00	180	530100.00
	b) Sample Preparation Drill Cores (1 Party)	days	2,945.00	60	176700.00
4	Transportation (Light Vehicles, 2 nos)	day	1,500.00	420	630000.00
	Sub-Total B				6933810.00
C	GEOPHYSICAL SURVEY & REPORT				
	Magnetic Stations	Nos.	482.00	1530	737460.00
	Self Potential Stations	Nos.	2,997.00	1530	4585410.00
	Resistivity	L. km	18,710.00	30	561300.00
	Induced Potential	L. km	217,505.00	30	6525150.00
4	Transportation (Light Vehicles, 2 nos)	day	1,500.00	180	270000.00
	Sub-Total C				12679320.00
D	CORE DRILLING (5 BH)				
1	Surface Drilling (2 rigs)	m	11,601.00	600	6960600.00
2	Transportations (2 Rigs)	Km	34.00	4000	136000.00
3	Accommodation (One time/ Drill)	Nos	728,250.00	2	1456500.00
4	Camp Setting / Winding	Nos	268,723.00	2	537446.00
5	Road Making (Hilly Terrain)	Km	30,552.00	15	458280.00
6	GI Core Boxes	Nos	2,000.00	150	300000.00
7	Transportation Charges of Core Boxes	Km	34.00	500	17000.00
	Sub Total D				9865826.00
E	LABORATORY STUDIES				
1	Chemical Analysis				
	<i>i) Surface sampling (Bed Rock Samples)</i>				
	a) Au (By fire assay)	Nos.	1127.00	100	112700.00
	b) Cu, Pb, Zn	Nos.	1,443.00	100	144300.00
	c) REE by ICP MS	Nos.	4,870.00	100	487000.00
	<i>ii) Soil Samples</i>				
	a) Cu, Pb, Zn	Nos.	1,443.00	100	144300.00
	b) Au (By fire assay)	Nos.	1,127.00	100	112700.00
	<i>iii) Stream Sediment Samples</i>				
	a) Cu, Pb, Zn	Nos.	1,443.00	100	144300.00
	b) Au (By fire assay)	Nos	1,443.00	100	144300.00
	<i>d) Check Samples (Bed rock/ soil/ stream)</i>				
	a) Au (By fire assay)	Nos.	1127.00	30	33810.00
	b) Cu, Pb, Zn	Nos	1,443.00	30	43290.00
	<i>ii) BH Core Sampling, Primary & Check samples</i>				
	a) Cu, Pb, Zn	Nos	1,443.00	30	43290.00
	b) Au (By fire assay)	Nos	1,127.00	30	33810.00
	<i>iii) Composite Samples for 7 radicals</i>				
	a) Cu, Pb, Zn, Co, Ni, Mo	Nos	2,709.00	20	54180.00
	b) Au & Ag (By fire assay)	Nos	1,460.00	20	29200.00
2	Physical Analysis				
	<i>i) Petrographic Studies (BH core + Surface Samples)</i>				
	a) Preparation of thin section	Nos	545.00	40	21800.00
	b) Study of thin section	Nos	1,495.00	40	59800.00
	<i>ii) Mineragraphic Studies (BH core + Surface Samples)</i>				
	a) Preparation of polished section	Nos	583.00	30	17490.00
	b) Study of polished section	Nos	2,118.00	30	63540.00
	<i>iii) Whole rock analysis</i>				
	iv) Specific Gravity Determination (BH)	Nos	6,386.00	10	63860.00
	<i>v) XRD & Spectroscopic Studies</i>				
	a) X-RD Studies on composite	Nos	198.00	20	3960.00
	b) Spectroscopic studies (12 elements-Cd,Sn,W,Sb,Mo,Ce,Nb,Ba,La,Bi,Co & Ni)	Nos	5,900.00	10	59000.00
			6,274.00	15	94110.00
	Sub-Total E				1910740.00
	Total (A+B+C+D+E)				33389696.00
F	EXPLORATION REPORT - 1% of (A+B+C+D+E)				333897.00
	GRAND TOTAL (A+B+C+D+E+F)				33723593.00
					Say Rs. 3.37 crores
Note	Rates of Goel Committee based on actual escalation as per RBI indices as on 31.3.16 and provisional escalation of @15% points for drilling and 25% points for Geological & Laboratory Studies for subsequent year.				

Cost Estimate for G-4 Level of Exploration for Au, Base metal, REE in Bachkakocha & Tankocha area (Block-Id ER-JH-06) in area of 100 sq.Km. District: Sraikela-Kharsawan, (Jharkhand)						
Sl. No.	Item of Work	Unit	Base Rate 01-04-1990	Rates (2016-17)	Qty.	Amount
A	GEOLOGICAL WORK					
1	Survey Party days					
	a) Survey Party days (2party) For Sampling etc	days	1180	6,146	120	737520
	b) Survey Party days (2 party) For Geophysical Survey etc	days	1180	6,146	180	1106280
	b) Survey Party days (2 party) For Drilling	days	1180	6,146	180	1106280
2	Geologist Party days					
	a) Geological Party days (2 Party) For Geological Mapping etc	days	1541	8,021	240	1925040
	b) Geological Party days for Trench/Pit (1 Party)	days	1541	8,021	90	721890
	c) Geological Party days (1 Party) For Drilling, Core Sampling	days	1541	8,021	90	721890
3	Sampling Party days	day				
	a) Sample Preparation for Bed Rock, Soil , Stream samples (2 Partys)	days	525	2,945	180	530100
	b) Trench/Pit Sampling Party Days (1 Party)	day	994	5,733	90	515970
	b) Sample Preparation Drill Cores (1 Party)	days	525	2,945	60	176700
4	Transportation (Light Vehicles, 2 nos)	day	Lumpsum	1,500	420	630000
	Sub-Total A					8171670
B	Surface Geophysical Survey					
1	Gravity & Magnetic Stations	Nos.	107	482	1530	737460
2	Self Potential Stations	Nos.	639	2,997	1530	4585410
3	Resistivity	L. km	4168	18,710	30	561300
4	Induced Potential	L. km	7860	2,17,505	30	6525150
5	Transportation (Light Vehicles, 2 nos)	day	Lumpsum	1,500	180	270000
	Sub-Total B					12679320
C	EXPLORATORY MINING					
1	Excavation (Trenching/Pitting)	Cu. m	345	1,853	100	185300
	Sub-Total C					185300
D	CORE DRILLING (5 BH)					
1	Surface Drilling (2 rigs)	m	2551	11,601	600	6960600
2	Transportations (2 Rigs)	Km	8.8	34	4000	136000
3	Accommodation (One time/ Drill)	Nos	185925	7,28,250	2	1456500
4	Camp Setting / Winding	Nos	68606	2,68,723	2	537446
5	Road Making (Hilly Terrain)	Km		30,552	15	458280
6	GI Core Boxes	Nos	Lumpsum	2,000	150	300000
7	Transportation Charges of Core Boxes	Km		34	500	17000
	Sub Total D					9865826
E	LABORATORY STUDIES					
1	Chemical Analysis					
	<i>i) Surface sampling (Bed Rock Samples)</i>					
	a) For Cu, Pb & Zn	Nos.	262	1,443	100	144300
	b) For Au & Ag (By fire assay)	Nos.	268	1,460	100	146000
	c) For REE by ICP MS	Nos.		4,870	100	487000
	<i>ii) Soil Samples</i>					
	a) For Cu, Pb & Zn	Nos.	262	1,443	100	144300
	b) For Au & Ag (By fire assay)	Nos.	268	1,460	100	146000
	<i>iii) Stream Sediment Samples</i>					
	a) For Cu, Pb & Zn	Nos.	262	1,443	50	72150
	b) For Au & Ag (By fire assay)	Nos	268	1,460	50	73000

	iv) Check Samples (Bed rock/ soil/ stream)					
	a) For Cu, Pb & Zn	Nos	262	1,443	25	36075
	b) For Au & Ag (By fire assay)	Nos.	268	1,460	25	36500
	v) Pit & Trench Samples					
	a) For Cu, Pb & Zn	Nos	262	1,443	100	144300
	b) For Au & Ag (By fire assay)	Nos.	268	1,460	100	146000
	c) For REE by ICP MS	Nos.		4,870	100	487000
	vi) BH Core Sampling, Primary & Check samples					
	a) For Cu, Pb & Zn	Nos	262	1,443	200	288600
	b) For Au & Ag (By fire assay)	Nos.	268	1,460	200	292000
	c) For REE by ICP MS	Nos.		4,870	100	487000
	vii) Composite Samples for 7 radicals					
	a) Cu, Pb, Zn, Co, Ni, Mo & Se	Nos	110 + (76*6)=566	3,131	20	62620
	b) Au & Ag (By fire assay)	Nos		1,460	20	29200
	c) REE by ICP MS	Nos.		4,870	20	97400
2	Physical Analysis					
	i) Petrographic Studies (BH core + Surface Samples)					
	a) Preparation of thin section	Nos	100	545	40	21800
	b) Study of thin section	Nos	228	1,495	40	59800
	ii) Mineragraphic Studies (BH core + Surface Samples)					
	a) Preparation of polished section	Nos	100	583	30	17490
	b) Study of polished section	Nos	364	2,118	30	63540
	iii) Whole rock analysis	Nos	1316	6,386	10	63860
	iv) Specific Gravity Determination (BH)	Nos	32	198	20	3960
	v) XRD & Spectroscopic Studies					
	a) X-RD Studies on composite	Nos	1137	5,900	10	59000
	b) Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals or 12 elements)	Nos	6100	7,381	15	110715
	Sub-Total E					3575310
	Total (A+B+C+D+E)					34477426
F	EXPLORATION REPORT - 1% of (A+B+C+D+E)				1	344774
	GRAND TOTAL (A+B+C+D+E+F)					34822200
						Say Rs. 348.22 lakhs
Note	Revised rate of promotional work by MECL on behalf of Govt. of India vide letter no. 37(I)/2006-MI dated 02.07.2014 and based on actual escalation as per RBI indices as on 31.3.16 and provisional escalation of @15% points for drilling and 25% points for Geological & Laboratory Studies for subsequent year.					