

**REGIONAL EXPLORATION PROPOSAL FOR MANGANESE ORE
IN MANDRI-PANCHALA BLOCK, RAMTEK TEHSIL
DISTRICT- NAGPUR, MAHARASHTRA**

SYNOPSIS

1 Mineral : Iron

2 Location : The Jumka- Pathariposhi Pahar Block is situated 20 kms south of Koira town, the block head quarter in Sundargarh district of Odisha. The proposed investigation area falls in Survey of India Toposheet No 73G/1 and the area is bounded by coordinates North Lat $21^{\circ}47'32.594''$ – $21^{\circ}48'54.71''$ and East Long. $85^{\circ}12'13.855''$ – $85^{\circ}13'25.484''$.

Koira town lies by the side of National Highway No. 215 connecting Panikoili- Rajamunda passing through Keonjhar & Joda towns. This Highway connects the N.H NO.5 (Kolkata- Chennai) at Panikoili. The State capital Bhubaneswar is at a distance of 360 kms by road from Koira.

The working area is connected by kachha hilly forest roads, which passes through steep slopes, & rugged terrain of iron ore range, often crosscut by perennial streams. The nearest railway station is Barsuan, mainly haulage raw materials (iron ore) and local passengers. It is connected with Rourkella by a 22kms long broad gauge railway link of south eastern railway.

3 Exploiting Agency : National / Private

4 Background : The Banded Iron formation (B.I.F.) and associated volcano-sedimentary sequence of Iron ore group of Bonai-Kendujhar belt, North Odisha, received attention of geoscientists and mining agencies as early as 1930's. Geological Survey of India has been carrying Iron ore exploration work in this belt since 1980's. In addition, several Iron ore bodies also occur within the synclinal valley, which are mostly associated with the upper shale formation of Koira group of rocks.

In view of MMDR Amendment Act 2015 & Mineral Auction Rule 2015 Government of Odisha requested MECL to carry out exploration for Iron & Limestone in the state for auctioning of Blocks. MECL submitted Cost estimates to DMG Odisha for exploration of Iron, Bauxite Limestone & Manganese for a total of 11 Blocks. On examination of exploration data DMG suggested four Blocks for which detailed exploration is to be taken up. Jhumka Pathirposi Block for detailed exploration for Iron is one of the Block for which exploration proposal is prepared and is put up for approval of Technical Sub-Committee of NMET.

Geological Survey of India started their exploration work in the area during field season 1997-2000. GSI, excavated nine trenches around Jumka – Pathiriposhi Pahar, both on the iron ore band and scree zone to examine the nature of ore body, grade as well as

depth of overburden.

Geological Survey of India drilled a total of twenty nine vertical boreholes in the Jumka-Pathiriposhi Pahar area for a total drilling meterage of 1395.50 meters.

In the first phase GSI planned boreholes at an interval of 400 m strike length, and subsequently the boreholes interval was brought down to 200m owing to thickness variation of the ore body at shorter interval. The drilling was carried out both by dry and wet methods to intersect both the iron ore zone and the bottom BHJ & BHQ units in this area.

GSI estimated Iron ore resources in the Jumka –Pathiriposhi Pahar block at 88,407,057.3 metric tonnes, **i. e 88.4 million tonnes**, with average Fe content of 62.35%. The resource has been placed under UNFC 333 category.

DGM Odisha handed over four reports to MECL to upgrade the resources to G-2 level to facilitate the State Government for Auction of Blocks as per the Mineral (Evidence of Mineral contents) Rule-2015 & Mineral Auction Rule -2015.

Accordingly MECL formulated exploration scheme for detailed exploration and put up for approval of Technical Committee of NMET. The proposal was discussed & deliberated in the 1st Meeting of National Mineral Exploration Trust (NMET) held on 01-04-2016 & 02-04-2016 at GSI, Central Region Nagpur. The committee after detailed discussion & deliberations recommended G-4 Boreholes Level of exploration (Geological Mapping, Surface Rock Samples and Scout drilling). MECL attended the suggested modifications and after incorporating the modifications the proposal is put up for approval of Executive Committee of NMET.

5	Objectives	:	The present exploration programme has been formulated to fulfil the following objectives:-
		i.	To carry out Geological Mapping on 1:2000 Scale and demarcate the rock types of Manganese bearing Mansar Formation with the structural features i.e. strike, dip, lineations / foliations etc.
		ii.	To collect surface samples and analysed them for Mn content in the host rock and decide further course of exploration programme.
		iii.	In case the surface samples gives +ve results then plan scout boreholes (5 Numbers) which in turn will decide the future of exploration programme.
		iv.	To estimate reconnaissance Manganese resources in the block as per UNFC norms & Minerals (Evidence of Mineral Contents) Rules- 2015.

Table: 5.1 Proposed Quantum of work in Mandri- Panchala Block			
Sl. No.	Item of work	Unit (m)	Proposed quantum of Work
1	a) Topographic Survey & surface feature (1:2000 Scale)	Sq. Km.	2.50
	b) Contouring (2m Contour Interval)	Sq. Km	2.50
	c) Geological Mapping (1:2000 Scale)	Sq. Km	2.50
	d) Survey work as per ME & MC Rule-2015 by Total Station & DGPS	Sq. Km	2.50
2	Surface bedrock/ outcrop samples collection during Geological Mapping from Manganese bearing host rocks	Nos	50
3	Drilling (Scout Boreholes)	m	600m (5 Bhs)
4	Geological work		
	a) Geological Core Logging	m	600m (5 Bhs)
	Sample Preparation b) Drill Core Sampling (Primary + Check)	Nos.	200 Primary + 20Check = 220 N0
	c) Surface Bed Rock out crop Samples	Nos.	50
	c) Composite sample Preparation	Nos.	30 N0
5	Chemical Analysis		
	a) Primary + Check samples for 6 radicals i.e. Mn, SiO ₂ , P ₂ O ₅ , Fe ₂ O ₃ , MnO ₂ and Insolubles	Nos.	200 Primary + 20Check = 220 N0
	b) Surface Bed Rock out crop Samples for 6 radicals i.e. Mn, SiO ₂ , P ₂ O ₅ , Fe ₂ O ₃ , MnO ₂ and Insolubles	Nos	50 No
	b) Composite sample for 6 radicals i.e. Mn, SiO ₂ , P ₂ O ₅ , Fe ₂ O ₃ , MnO ₂ and Insolubles	Nos.	25 N0
	c) External Check Samples (5% of Primary Samples) 6 radicals i.e. Mn, SiO ₂ , P ₂ O ₅ , Fe ₂ O ₃ , MnO ₂ and Insolubles	Nos.	10 No
6	Physical Studies		
	a) XRD – Studies	Nos.	10
	b) Spectroscopic Studies (15 elements)	Nos.	15
7	Petrological Samples	N0s	20
8	Mineragraphic Studies	N0s	20
9	Specific gravity Determination	Nos.	25
10	Report Preparation [As per Mineral (Evidence of Mineral Contents) Rule-2015]	N0s	1

**7 Time Schedule & : 20 Months; Rs 749.03 lakhs
Cost Estimate**

8	Justification	i	In view of MMDR Amendment Act and Mineral Auction Rule 2015 DMG Maharashtra requested MECL to take up the exploration in this block .MECL decided to take up the work under NMET funding.
		ii	The proposed study area falls in the nearby Manganese Mining areas.
		iii	The exploration will be helpful in estimation of Reconnaissance Resources of Manganese in the Block.
		iv	The Regional exploration will help in planning of detailed exploration programme which in turn will facilitate the Maharashtra State Govt. for Auctioning of Block

Table-7.2 Cost Estimate for Manganese Ore Mineralisation in Mandri-Panchala Block, District-Nagpur,Maharashtra								
SL. NO.	Item of Work	Unit	Base Rate	Escalated rates (2016-17)			Grand Total	
				Esc. Rate	Qty.	Amount	Qty.	Amount
			1.4.90	(Rs)		(Rs)		(Rs)
A	GEOLOGICAL WORK							
1	Survey Party days (1 party)	day	1180	6197	180	1115460	180	1115460
2	Geologist Party days (1 party)	day	1541	8267	300	2480100	300	2480100
3	Core Sampling Party days (2 party)	day	525	2967	240	712080	240	712080
	Sub-Total A					4307640	0	4307640
B	DRILLING						0	
1	Surface Drilling (1 rigs)	m	2035	9496	600	5697600	600	5697600
2	Transportation	Km	8.8	34.0	1200	40800	1200	40800
3	Accomodation (One time/ Drill)		185925	709899	1	709899	1	709899
4	Camp Setting / Winding	- do-	68606	261951	2	523902	2	523902
5	Road Making (Flat Terrain)	Km	5200	19855	10	198550	10	198550
	Sub Total B					7170751		#REF!
C	LABORATORY STUDIES							
1	Chemical Analysis							
	i) Primary & Check samples							
	a) Surface samples for 5 radicals (Mn, SiO2, P2O5, Fe2O3, MnO2)		414 (110 +76x4)	2304	50	115200	50	115200
	b) Drill Core Primary For 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	490 (110 +76x5)	2742	200	548400	200	548400
	c) Check Samples for 6radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	490 (110 +76x5)	2742	20	54840	20	54840
	d) External Check Samples from NABL Labs for 6 radical (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles)	Nos	490 (110 +76x5)	2742	10	27420	10	27420
	ii) Composite Samples						0	0
	a) Composite Samples for 6 Radicals (Mn, SiO2, P2O5, Fe2O3, MnO2 and Insolubles).	Nos	490 (110 +76x5)	2742	30	82260	30	82260
2	Physical Analysis						0	0
	i) a) X-RD Studies on composite	Nos	1137	5980	10	59800	10	59800
	ii) b) Spectroscopic studies (15 elements- Cd,Sn,W,Sb,Mi,Ce,Nb,Ba,La,Bi,Co & Ni	Nos	1173	6358	15	95370	15	95370
	iii) Preparation of thin section	Nos	100	570	20	11400	20	11400
	iv) Petrographic Studies	Nos	228	1512	20	30240	20	30240
	v) Preparation of polished section	Nos	100	570	20	11400	20	11400
	vi) Mineragraphic Studies	Nos	364	2134	20	42680	20	42680
	vii) Specific Gravity determination	Nos	32	200	25	5000	25	5000
	Sub-Total C					1084010		1084010
	Total A+B+C					12562401		#REF!
D	EXPLORATION REPORT - 1% of (A+B+C+D)					125624	1	#REF!
E	a) Core Preservation Charges in GI Sheets Core Boxes (@ RS 2000 Core Box GI 22 gauge)	Nos	2000	2000	150	300000	150	300000
	b) Transportation Charges of Core Boxes	Km	8.8	34	250	42680	250	42680
	Total E					342680		342680
	Grand Total : A to E					13030705		#REF!
						Say Rs 130.31Lakhs		
Note:								
1	Goel Committee rates for Manganese ore are not available, hence Gold rates are taken on actual escalation as per RBI Indices as on 31-03-2015 and provisional escalation of@ 20% points for drilling and 25% points for Geological & Laboratory Studies for subsequenet years.							
			12					

**TABLE- 7.1 TIME SCHEDULE / ACTION PLAN FOR EXPLORATION PROPOSAL FOR MANGANESE ORE IN
MANDRI-PANCHALA BLOCK, DISTRICT - NAGPUR, MAHARASHTRA**

Sl. NO.	Activities	Unit	Financial Year 2016-17									Total
			1	2	3	4	5	6	7	8	9	
			05 /16	06 /16	07 /16	08 /16	09 /16	10 /16	11 /16	12 /16	01 /17	
1	Camp Setting	Month	←→									1 month
2	Geological Mapping			←→								2.50 sq. Km.
3	Survey Party days (1 Party)	day		←→								180
4	Geologist Party days (2 Party)	day		←→								300
5	Drilling (1 rigs)	m.				←→						600m (in 5 Boreholes)
6	Sampling (Surface Bed Rock & Drill Core Sampling) Party days, (2 party)	day			←→							240
7	Laboratory Studies	Nos.				←→						395
8	Camp Winding	Months							←→			1 month
9	Report Writing	Months							←→			3 months
				11								

Government of India
Ministry of Mines
National Mineral Exploration Trust

F.No. 6/1/NMET-2015

New Delhi, 16th August, 2016

OFFICE MEMORANDUM

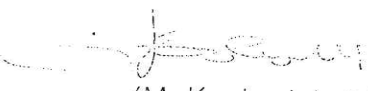
Sub: - Approval of mineral exploration projects in 13 blocks

On the recommendations of the Technical Committee of NMET, the Executive Committee in its second meeting held on 9.5.2016 has approved thirteen (13) mineral exploration projects in six states at a cost of Rs. 2292.16 lakhs.

2. Consequent to dropping of one project of bauxite in Jharkhand on the request of State Government, the number of approved projects under NMET now stands at twelve (12) in five states, at a cumulative cost of Rs. 21,61,29,777.00 (Rupees twenty one crore, sixty one lakhs, twenty nine thousand, seven hundred seventy seven paise).

3. The above exploration projects will be funded by NMET as per the plan recommended by the Technical Committee and approved by the Executive Committee. MECL will undertake exploration in these twelve blocks under Tripartite Agreement among (Ministry of Mines (NMET), MECL and the respective State Governments) and complete the same as per the approved work plan and time schedule.

5. The execution of work will be continuously monitored and periodically reviewed by the NMET Technical Committee and MECL will submit monthly progress report to NMET Secretariat.


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To

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List of Mineral Exploration Projects approved in the 2nd meeting of the Executive Committee held on 09.05.2016

Sl. No.	Name of the Block	Mineral	Area of the Block	Work already done in the block	Work proposed in the block	Estimated cost of the project in Rs. lakh
1.	Jumka-Pathriposhi Block, Distt. Sundargarh, Odisha	Iron	1.71 Sq. Km.	G-3	G-2	772.68
2.	Purheibahal-Chandiposhi Block, Distt. Sundargarh, Odisha	Iron	1.35 Sq. Km.	G-3	G-2	265.33
3.	Mandri-Panchala Block, Distt. Nagpur, Maharashtra	Manganese	2.50 Sq. Km.	Virgin Area	G-4	130.31
4.	Lanjera-Futala Block, Distt. Nagpur, Maharashtra	Manganese	8.00 Sq. Km.	Virgin Area	G-4	148.98
5.	Ranigaon-Gondaiya Block, Distt. Bilaspur, Chhattisgarh	Limestone	5.00 Sq. Km.	G-4	G-3	100.52
6.	Nahardih-Madhaipur Block, Distt. Raipur, Chhattisgarh	Limestone	5.45 Sq. Km.	Virgin Area	G-4	27.89
7.	Sendurkhar Block, Distt. Kabirdham (Kawardha), Chhattisgarh	Bauxite	2.90 Sq. Km.	Virgin Area	G-4	45.13
8.	Saraipani-Dadar Block, Distt. Kabirdham (Kawardha), Chhattisgarh	Bauxite	0.80 Sq. Km.	Virgin Area	G-4	44.66
9.	Ghumchihi Block, Distt. – Satna, Madhya Pradesh	Limestone	5.00 Sq. Km.	Virgin Area	G-4	57.75
10.	Naubasta-Kolard Block, Distt. Satna, Madhya Pradesh	Limestone	15.00 Sq. Km.	Virgin Area	G-4	59.49
11.	Jamodi-Mahanna Block, Distt. Satna, Madhya Pradesh	Limestone	30.00 Sq. Km.	Virgin Area	G-4	65.36
	Total cost					1718.10