

Projects approved by TCC-2

**11. Reconnaissance Survey (G-4) for Bauxite and associated minerals in Ratnal Area
(44.00 sq. km), Districts Kachchh, Gujarat**

Implementing Agency: MECL

Features	Details
Block ID	Ratnal Area (44sq km)
Exploration Agency	Mineral Exploration & Consultancy Limited (MECL)
Commodity	Bauxite & Associated Minerals (Titanium, Vanadium, Gallium, REE)
Mineral Belt	Matanomadh Formation of Paleocene
Completion period with entire Time schedule to Complete the project	10 months with Rs.118.31 Lakhs cost.
Objectives	The present exploration programme at G-4 stage has been formulated to fulfill the following objectives: i) Preparation of Large scale Geological map at 1:12500 scale to demarcate various lithounits like Bauxite, laterite, basalt (deccan volcanics), shale, limestone etc. with their structural manifestation. ii) Collection of 80 bedrock/chip samples from bauxite/ aluminous Laterite bearing zones. iii) Pitting for delineating the bauxite/ aluminous Laterite zones prior to scout borehole drilling. iv) To prove the occurrences of Bauxite zone(s) and to delineate the depth continuity of it by planning systematic scout boreholes according to the MEMC norms. v) To assess the quality and the thickness of Bauxite horizons in order to delineate the Bauxite resources at G-4 (334) level in the block as per UNFC norms. vi) Along with Bauxite, resources of Titanium, Gallium, Vanadium and Associated Minerals will also be reported if encouraging values are

		encountered. vii) To carry out exploration as per Minerals (Evidence of Mineral Contents) Rules, 2015, Mineral Auction Rule–2015 and MMDR Act–2015 as to facilitate the Government of Gujarat for auctioning of the Bauxite Block.																		
	Whether the Work will be carried out by the proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsource agency	Work will be carried out by MECL.																		
	Name/Number of Geoscientists	Two Geoscientist (Field+HQ)																		
	Expected Field days (Geology, surveyor)	Geologist Party days:150days																		
1	Location	The Ratnal area falls in the Survey of India Toposheet No.41E16 & 41I04 and covers a total area of 44sq.km. The block area falls in and around the villages Ratnal, Modsar, Khokhra in Bhuj and Anjar tehsil of Kachchh district, Gujarat.																		
	Latitude and Longitude	<u>Corner points of Ratnal area G-4 Block (44 sq km)</u> <table border="1"> <thead> <tr> <th>Name</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>K</td><td>23° 11' 59.98" N</td><td>069° 52' 38.31" E</td></tr> <tr> <td>L</td><td>23° 14' 17.72" N</td><td>069° 58' 1.54" E</td></tr> <tr> <td>M</td><td>23° 14' 1.7" N</td><td>070° 00' 34.75" E</td></tr> <tr> <td>N</td><td>23° 13' 10.26" N</td><td>070° 00' 15.23" E</td></tr> <tr> <td>O</td><td>23° 10' 9.34" N</td><td>069° 52' 57.85" E</td></tr> </tbody> </table>	Name	Latitude	Longitude	K	23° 11' 59.98" N	069° 52' 38.31" E	L	23° 14' 17.72" N	069° 58' 1.54" E	M	23° 14' 1.7" N	070° 00' 34.75" E	N	23° 13' 10.26" N	070° 00' 15.23" E	O	23° 10' 9.34" N	069° 52' 57.85" E
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	Villages	Ratnal, Modsar, Khokhra																		
	Tehsil/Taluk	Bhuj & Anjar																		

	District	Kachchh
	State	Gujarat
2	Area (hectares/ sq.km)	
	BlockArea	44sq.km
	ForestArea	Area is devoid of any forests
	Government Land Area (Bilanam)	Data not available
	Charagaha	Data not available
	Private Land Area	Data not available
3	Accessibility	
	Nearest Rail Head	Bhuj Railway Station (28 Kms).
	Road	All the villages in the area are well connected to each other and to the highways by motorable roads and tracks. NH-341 connecting Bhimsar to Bhuj passes through the block through Ratnal village.
	Airport	Bhuj airport is around 30 kms from the block.
4	Hydrography	
	Local Surface Drainage Pattern (Channels)	Most of the streams passing though the area are seasonal and fed by monsoon rains. They remain dry, with little amount of underflow, for greater part of the year.
	Rivers/Streams	The area is mainly drained by the tributaries of the Churwa nadi, Song nadi and Sarkar nadi.
5	Climate	

	Mean Annual Rainfall	The average annual rainfall ranges from 25 cm to 40 cm and is mostly received between July and September months.
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum temperatures is around 5-7°C (Nov-Jan) Maximum temperatures reaches upto 42-45°C(March-June)
6	Topography	
	Toposheet Number	41E16 & 41I04
	Morphology of the Area	The area shows almost flat topography. The average elevation of the area is around 130 m. The physiography of the area is controlled by lithology and structure.
7	Availability of baseline Geoscience data	
	Geological Map (1:50K/25K)	Regional Geological map, sourced from GSI (1:50000), available.
	Geochemical Map	Not applicable.
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	Not applicable.
8	Justification for taking up Preliminary Exploration	i) The lithology of the area includes Bauxite/Laterite associated with Deccan Trap Volcanics. The bauxites of Matanomadh formation have been formed by supergene alteration of the pyroclastic facies of Deccan basalts. It consists of ferruginous laterite which rest on the

Deccan traps and, in turn, are covered by the Eocene Gypseous shale beds.

- ii) In this area, the bauxite deposits are associated with the laterites of the Matanomadh formation of rocks. The area is explored by CGM, Gujarat (1974) through pitting. The chemical analysis results show a good percentage of Al_2O_3 , averaging 44.77% with SiO_2 percentage of 8.52%. They reported a reserve of 0.11 m.t of bauxite in the area. CGM recommended continuing exploration in this area in details.
- iii) In the vicinity of this block, there are leases of bauxite and active exploration of bauxite is on going in the matanomadh formation. Thus the block is proposed for G-4 level exploration.
- iv) Geological mapping of Mesozoic and Tertiary rocks of Kachchh (FSP-1981-82 & 1984-85) of the area reveals presence of Bauxite. The rocks belonging to the supra-trappean formation is represented by oolitic and pisolitic, at times conglomeratic (re-worked) bauxite and laterites of varied colour along with ash/shale beds, lithomarge aluminous grit, felspathic sandstone and aluminous clays. The supra-trappean sediments form hard compact, low ridges and plateau above Deccan Trap Mesozoic rocks. It is suggested that in-situ lateritization and bauxitization of Deccan Traps and associated pyroclastic materials have resulted in the formation of these bauxite.
- v) The bauxite in the study area has formed by the in-situ alteration of underlying Deccan traps. Bauxite over basalt parent rock has higher titania compared to the bauxite from Khondalite-Charnockite. Based on that, prospecting of titania is also kept under the proposed exploration scheme.
- vi) MECL team also conducted field visit and identified bauxite associated with Laterite in and around the proposed block. The following table depicts the chemical values of the collected samples:

Sample No.	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	LOI%	V PPM	Ga PPM
RL-04	42.17	10.34	19.94	1.13	12.25	173	13

		RL-05	1.75	34.84	39.54	3.44	18.21	166 3	51
		RL-06	26.47	20.96	39.83	1.84	9.50	237 7	34
		RL-07	4.53	36.69	24.08	3.54	24.55	111 1	55