

4. Preliminary Exploration (G3) for Aluminous Laterite, Vanadium and associated minerals (V, Ga & REE) in Kallar Block (6.33 sq. km), Kasaragod District, Kerala

Implementing Agency: MECL

Features	Details
Block ID	KALLAR BLOCK
Exploration Agency	Mineral Exploration and Consultancy Limited (MECL)
Commodity	Aluminous Laterite, Vanadium and Associated Minerals
Mineral Belt	In proposed exploration block, chief rocks types are charnockites and pyroxene granulite of the Charnockite Group with relatively younger granite gneiss of the Peninsular Gneissic Complex intruded by numerous quartz veins. Kallar Block falls in the Survey of India Toposheet no. 48P/03.
Completion period with entire Time schedule to complete the project	12 Months (Review- After 4 & 8 months)
Objectives	The present exploration program (G3) has been formulated on the basis of the outcomes of previous work to fulfill the following objectives: • Geological mapping on 1:4000 scale for demarcation of Aluminous Laterite, Vanadium and Associated Minerals bearing horizons with the structural features to identify the surface manifestations along with the lateral and vertical disposition of the mineralized zones. • Topographical Contouring on 1:4000 scale, by means of surface contouring at 2 m interval. • To assess the quality of the Aluminous Laterite, Vanadium and Associated Minerals bearing horizons surficial by collecting surface samples (bedrock, channel and Trench) which will further shape up the future course of exploration. • After the positive outcomes of the above activities drilling will be carried out to intersect the Aluminous Laterite, Vanadium and Associated Minerals mineralization at 800m spacing or closure interval. • Assessment of quality and quantity of the resources (333) as per UNFC norms & Minerals (Evidence of Mineral Contents) Rules- 2015.

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 the proposed agency.		
Number of Geoscientists	Nos. of Geoscientists: 2		
Expected Field days (Geology, Geophysics, surveyor)	Geologist Party days: 140 (At field) & 30 at HQ		
	Survey Party days: 45 days (for Topographical Survey)		
Location			
Latitude - Longitude	POINT	GCS WGS-1984 (DMS)	
		LATITUDE	LONGITUDE
		A	12° 29' 3.54" N 075° 12' 59.97" E
		B	12° 29' 9.09" N 075° 14' 40.05" E
		C	12° 28' 26.41" N 075° 14' 33.68" E
		D	12° 27' 47.93" N 075° 14' 55.78" E
		E	12° 27' 30.07" N 075° 13' 55.37" E
Villages	Kallar, Kuttikole and Karivedakam		
Tehsil/Taluk	Kasaragod and Vellarikkundu		
District	Kasaragod		
State	Kerala		
Area (hectares/ square kilometres)			
Block Area	6.332 sq.km		
Forest Area	The block area is free from Forest Area.		
Government Land Area	Data not available		
Charagaha	Data not available		
Private Land Area	Data not available		
Accessibility			
Nearest Rail Head	Nearest railway station to the study area is Kotikulam at about 10 km.		
Road	The North-western part of the block area is on the outskirts of the Kasaragod Township on Eastern and Southern side. The South-western side of the block area is 5 km from Hosdurg town. The national highway		

	NH-17 and Rail route of Southern Railway passes from the western side of the block area.
Airport	The nearest airport is Mangalore International Airport (Approximately 55 kms).
Hydrography	
Local Surface Drainage Pattern (Channels)	The streams of the area show dendritic drainage pattern forming Nalas contributing to the tributary system of the westerly flowing Chandragiri River falling into the Laksha Dweep Sea at the western boundary of the block.
Rivers/ Streams	
Climate	
Mean Annual Rainfall	The district receives an average of about 3500 mm rainfall annually. The major source of rainfall is southwest monsoon from June to September which contributes nearly 85.3% of the total rainfall of the year. The northeast monsoon contributes nearly 8.9% and balance of 5.8% is received during the month of January to May as pre monsoon showers. Out of the 106 rainy days in a year, 87 rainy days occur during southwest monsoon season.
Temperatures	
Topography	
Toposheet No.	The block is located in the survey of India Toposheet No. 48 P/3.
Morphology of the Area	The block area exhibits an elevation range from a minimum of 50 meters to a maximum of 250 meters above mean sea level (MSL).
Availability of baseline geoscience data	Geological Map is available at 1:12500 scale.
Geochemical Map	Available
Geophysical Map	Not Available
Justification for taking up Exploration	1. India is experiencing a surge in demand for vanadium due to its critical role in strengthen steel alloys, enhancing durability in tools, construction materials, and automotive components. It's also utilized in vanadium redox flow batteries for large-scale energy storage, offering scalability and long lifespans. 2. Mineral Exploration Corporation Limited conducted a G-4 level exploration for bauxite in the Kasaragod East Block (291.00 sq km; Block-ID SR-KRL-03) in Kasaragod District, Kerala. The exploration involved geological mapping at a 1:12,500 scale, geochemical sampling, and subsequent analysis. The geological report concluded: a) Bauxite Deposits: High-alumina bauxite occurs as isolated patches or lenses with irregular distribution. Due to a total silica content exceeding 8%, further bauxite exploration is not recommended.

	b) Vanadium and Gallium Potential: Elevated concentrations of vanadium (up to 1,019.7 ppm) and gallium (up to 46.7 ppm) were detected in surface bedrock samples, particularly in the central and southeastern parts of the block. Further investigation through pit channel sampling in the laterite profile is recommended. c) Rare Earth Elements (REE): Higher values of Light Rare Earth Elements (LREE) in the laterite suggest potential sources of REE. Further investigation along the laterite profile is recommended to understand REE fractionation and vertical movement during laterization. 3. According to the geological report, five bedrock samples and two pit samples from the proposed Kallar Block exhibit alumina (Al_2O_3) content varying from 23.85% to 30.62%, vanadium concentrations ranging from 434.7 ppm to 531.9 ppm and gallium levels between 31.4 ppm and 32.60 ppm. 4. Recently, representative from the MECL conducted a site visit to the proposed block area, collecting five samples for preliminary analysis. The results revealed that the Al_2O_3 content ranged from 25.57% to 30.89%, Vanadium (V) concentrations varied between 417 ppm and 678 ppm, and Gallium (Ga) levels were found to be between 34 ppm and 51 ppm. 5. Based on prior exploration activities conducted by the MECL and recent field visits, including sample collection, anomalous concentrations of aluminous laterite and vanadium have been identified within the designated block area. Consequently, a Preliminary Exploration (G-3) is proposed in carved out area named as Kallar Block is to assess aluminous laterite, vanadium, and associated minerals, aiming to establish the vertical and lateral continuity of this mineralization. This will enhance resource estimation and make the block suitable for auction.
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