Regional Exploration Proposal (G-4 level) for Dunite in Andipatti - Jambumadai-Urakari Sector (Block ID-SR TN-05) in an area of 100 sq km, District: Namakkal, Perambalur, (Tamil-Nadu)

SYNOPSIS

<table>
<tr><td>Mineral</td><td>Dunite</td></tr>
<tr><td>Location</td><td>The block is 15 km South East of Namakkal District Township. The roads traversing the block are motorable, no major town ship falls within the block area. Two state highways Namakkal to Mettupatti and Pairtram passes touching the South-western and Northern portion of the block respectively. The block is located in Survey of India Toposheet No. 58 I/8. The Co-ordinates of the corner points of the block is given below and covers an area of 100 sq km.</td></tr>
<tr><td>Bounding coordinates</td><td>The corner points of the block are as below
<table>
<tr><th></th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>A)</td><td>11^0 5’ 00” N</td><td>78^0 15’ 00”E</td></tr>
<tr><td>B)</td><td>11^0 8’ 54” N</td><td>78^0 15’ 00”E</td></tr>
<tr><td>C)</td><td>11^0 8’ 54” N</td><td>78^0 24’ 33”E</td></tr>
<tr><td>D)</td><td>11^0 5’ 00” N</td><td>78^0 24’ 33”E</td></tr>
</table>
(Survey of India Toposheet No. 58 I/8.)</td></tr>
<tr><td>Total area</td><td>100 Sq. Km</td></tr>
<tr><td>Background information</td><td>B. V. Srinivasan (1986-87) has done large scale Geological mapping in parts of Namakkal, Musiri and Karur taluks.
During the F.S. 2014-15 GSI have traced the dunite as discontinuous band between Ichchavari in the west and Urakarai in the east over a cumulative strike length of about 20 km. Altered / weathered dunite with magnesite veins occurs as a linear body trending ENE-WSW with 65^o-75^o northerly dip over a strike length of 6 km between Andipatti and Urakarai. The weathered Dunite shows pinching and swelling nature flanked by hornblende gneiss in the north and garnetiferous pyroxene granulite in the south. The inferred out-crop width of weathered dunite varies from 50-125m.
The litho-units exposed in and around the area are Bhawani and Charnockite group of rocks belonging to the Archaean age intruded by Basic dykes, ultramafics and Tiruchengudu granite. A NE-SW trending shear is in the northern portion of the block area. Magnesite& Iron ore have been reported from the area.
The Dunite may also be associated with PGE, Ni and Chromium. The Stratigraphic sequence of the litho-units (after GSI) is given below.</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><th colspan="3">Stratigraphic Sequence of lithounits exposed in the block(after GSI)</th></tr>
<tr><th>Age</th><th>Group</th><th>Lithounits</th></tr>
<tr><td>Recent</td><td></td><td>Alluvium</td></tr>
<tr><td rowspan="6">Archaen</td><td rowspan="4">Charnockite</td><td>Magnetite quartzite</td></tr>
<tr><td>Ultramafics / Pyroxenite</td></tr>
<tr><td>Pyroxene granulite</td></tr>
<tr><td>Charnockite</td></tr>
<tr><td rowspan="2">Bhawani</td><td>Pink migmatite</td></tr>
<tr><td>Hornblende Biotite gneiss</td></tr>
</table>
</td></tr>
<tr><td>Objectives</td><td>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 Magnesite, Ni, Cr & PGE group 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 Magnesite, Ni, Cr and associated Platinum elements and decide further course of exploration programme.
iii) In case, Geochemical samples give positive results then 5 no’s scout boreholes shall be drilled in the mineralized patches within the 100 sq.km. area which in turn will decide the future course of exploration programme at G-3/G-2 category of UNFC.
iv) To estimate reconnaissance Magnesite resources along with accessory elements as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules-2015 at G-4 level.</td></tr>
<tr><td>Time schedule</td><td>12 months</td></tr>
<tr><td>Cost estimate</td><td>Rs. 191.78 Lakhs</td></tr>
<tr><td>Exploration agency</td><td>MECL</td></tr>
<tr><td>Date of commencement</td><td>Yet to Commence</td></tr>
</table>

Quantum of work of Reconnaissance Survey for Dunite in Andipatti-Jambumadai-Urakarai Sector, (Block ID-SR-TN-05), in an area of 100 Sq Km,Distt: Namakkal, Perambalur (Tamil Nadu)			
Sl. No.	**Item of work**	**Unit (m)**	**Proposed Quantum of Work**
1	**Geological Mapping** (on 1:12,500 Scale)	Sq. Km	100 sq.km
2	**Topographical Survey*** (on 1:12,500 Scale in potential Zone Areas)	Sq. Km	As per requirement
3	Bore Hole Fixation* (Scout Boreholes)	Nos	5 Nos
	RL & Coordinate Determination*	Nos	5 N0s
4	**Geochemical Sampling** (Taken up in Anomalous areas)		
	a) Bed Rock Sampling	N0s.	100Nos
5	**Exploratory Mining**		
	Trenching	Cu. m.	100 Cu m
6	**Drilling (coring)***	**m**	**600m (5 Bhs)**
7	**Geological work***		
	a) Geological Core Logging, Sample Preparation etc.*	m	600m (5 Bhs.)
8	**Laboratory Studies**		
	I) Surface Sampling (Primary samples)		
	i) Bed Rock samples		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO& LOI	Nos	100 Nos
	b) For Ni & Cr	Nos	20 Nos
	c) For PGE	Nos	20 Nos
	ii) Check Samples (Bed Rock)		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO& LOI	Nos	10 Nos
	b) For Ni & Cr	Nos	2 Nos
	c) For PGE	Nos	2 Nos
	iii) Trench Primary & Check Samples		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO& LOI	Nos	…110 Nos
	b) For Ni & Cr	Nos	…22 .Nos
	c) For PGE	Nos	…22 Nos
	iv) Drill Core Primary Samples*		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO& LOI	Nos	165 Nos
	b) For Ni & Cr	Nos	165 Nos
	c) For PGE	Nos	55 Nos
	v**) Composite Samples***		

	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO& LOI	Nos	15 Nos
	b) For Ni & Cr	Nos	15 Nos
	c) For PGE	Nos	5 Nos
9	**Physical Studies**		
	a) XRD – Studieson Composite samples	Nos.	10Nos
	b) Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals)	Nos.	10 Nos
10	**Petrological Samples (Surface &Bh Core Samples)**		
	a) Preparation of Thin Section b) Study of Thin Section	Nos Nos	10 Nos 10 Nos
11	**Mineragraphic Studies (Surface &Bh Core Samples)**		
	a) Preparation of Polished Section b) Study of Polished Section	Nos Nos	10 Nos 10 Nos
12	**Whole Rock Analysis**		
	ForSiO_2, Al_2O_3, Fe_2O_3, TiO_2, MnO, CaO, Na_2O, K_2O+H_2O, MgO, P_2O_5, CO_2, & S.	Nos	10 Nos
13	**Specific gravity Determination**	Nos.	10 Nos
14	**Report Preparation [As per Mineral (Evidence of Mineral Contents) Rule-2015]**	**Nos**	1
*** The 2nd Level of work to be decided after Review of Geological Mapping & Geochemical Sampling**			

Regional Exploration Proposal (G-4 level) for Dunite in Andipatti-Jambumadai-Urakari Sector (Block ID-SR TN-05) in an area of 100 sq km,District: Namakkal, Perambalur, (Tamil-Nadu)

1.0.0 Introduction:

1.1.1Dunite as industrial mineral utilized in metallurgy as flux in sintering, fertilizer etc. has played a vital role in the industrial growth of nation. The increasing demand of Dunite as replacement to Dolomite has been accorded high priority in the XIIth Plan document.

1.1.2 During the last three decades, no large deposit of Magnesite 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 sized deposits in clusters.

1.1.3 In view of the MMDR amendments act – 2015, Minerals (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, Govt. 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 Diamond in Andipatti-Jambumadai-Urakari sector (Block ID-SR TN-05) in 100 Sq. Km., District-Namakkal, Perambalur (Tamil Nadu) is one of the blocks allotted to MECL. Accordingly MECL prepared proposal for regional exploration and being put up for approval of Technical Committee of NMET.

1.2.0 Location of the Block:

1.2.1 The block is 15 km South East of Namakkal District Township. The roads traversing the block aremotorable, no major town ship falls within the block area. Two state highways Namakkal to Mettupattiand Pairtram passes touching the South-western and Northern portion of the block respectively. The block is located in Survey of India Toposheet No. 58 I/8. The Co-ordinates of the corner points of the block is given below and covers an area of 100 sq km.

A) 11^0 5’ 00” N and 78^0 15’ 00”EB) 11^0 8’ 54” N and 78^0 15’ 00”E

C) 11^0 8’ 54” N and 78^0 24’33”ED) 11^0 5’ 00” N and 78^0 24’33”E

1.3.0 Physiology and Drainage:

1.3.1 The area of the block is undulating terrain with few isolated hillocks in general. The Talamalai hill is at the mid portion of the Southern boundary of the block having altitude 777 meters from mean sea level, whereas the general reduced level of the undulating terrain is about 153 m from mean sea level.

1.3.2 The streams of the block area forms the dendritic drainage pattern forming nalas which in turn part the tributary system to Cauvery river flowing on the South-western direction of the block.

2.0.0 Previous work:

2.1.1 B. V. Srinivasan (1986-87) has done large scale Geological mapping in parts of Namakkal, Musiri and Karur taluks.

2.1.2 During the F.S. 2014-15 GSI have traced the dunite as discontinuous band between Ichchavari in the west and Urakarai in the east over a cumulative strike length of about 20 km. Altered / weathered dunite with magnesite veins occurs as a linear body trending ENE-WSW with 65^{o}-75^{o} northerly dip over a strike length of 6 km between Andipatti and Urakarai. The weathered Dunite shows pinching and swelling nature flanked by hornblende gneiss in the north and garnetiferous pyroxene granulite in the south. The inferred out-crop width of weathered dunite varies from 50-125m.

2.1.3 The bulk chemical data of 356 nos of core samples indicates the presence of MgO averaging 39.74% in dunite. The average analysis for different rock types in the area is given below for comparison.

	SiO_2% (Av)	MgO % (Av)	Al_2O_3 % (Av)	CaO % (Av)	Fe_2O_3 % (Av)	LoI % (Av)
Dunite	34.24	39.74	0.90	2.09	7.58	14.29
Peridotite	38.79	33.48	1.40	3.35	8.93	12.62
Pyroxenite	39.83	24.44	2.15	6.48	8.37	16.70

3.0.0 Geology and Structure:

3.1.0 Regional Geology and Structure of the area.

3.1.1 The litho-units exposed in and around the area are Bhawani and Charnokite group of rocks belonging to the Archaean age intruded by Basic dykes, ultramafics and Tiruchengudu granite. A NE-SW trending shear is in the northern portion of the block area. Magnesite&Iron ore have been reported from the area. The Regional Stratigraphic Sequence of the litho-units (after GSI, District Resource map) is given below.

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

Age	Group	Lithounits
Recent		Alluvium, gravel etc.
Proterozoic	Intrusive	Granite (Tiruchengodu granite)
	Alkali	Ultramafics
	Intrusive	Basic dykes
Archaen	Charnockite	Magnetite quartzite
		Ultramafics / Pyroxenite
		Pyroxene granulite
		Charnockite
	Bhawani	Pink migmatite
		Hornblende Biotite gneiss

3.2.0 Geology and Structure of the Block:

3.2.1 The lithounits exposed in the block area are Bhawani and Charnockite group of rocks belonging to the Archaean age. The litho units are trending E-W. Iron ore and Magnesite have been reported in the area. The Dunite may also be associated with PGE, Ni and Chromium. The Stratigraphic sequence of the litho-units (after GSI) is given below.

Stratigraphic Sequence of lithounits exposed in the block(after GSI)		
Age	**Group**	**Lithounits**
Recent		Alluvium
Archaen	Charnockite	Magnetite quartzite
		Ultramafics / Pyroxenite
		Pyroxene granulite
		Charnockite
	Bhawani	Pink migmatite
		Hornblende Biotite gneiss

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 ofMagnesite, Ni, Cr & PGE groupbearing 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 Magnesite, Ni, Cr and associated Platinum elements and decide further course of exploration programme.

iii) In case, geochemical surface samples give positive results then 5 no's scout boreholes shall be drilled in the mineralized patches within the 100 sq.km. area which in turn will decide the future course of exploration programme at G-3/G-2 category of UNFC.

iv) To estimate reconnaissance Magnesite resources along with accessory elements as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules-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 Minerals (Evidence of Mineral Contents) Rules-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 will be done in the total area of 100 Sq. Km. 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 Magnesite, Ni, Cr & PGE 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)

During the course of Geological mapping the Bed rock shall be collected from the out crops and soil covered area respectively. A total of 100 no's bed rock samples shall be collected, prepared and analyzed for Ni, Cr, MgO, Al_2O_3, SiO_2 CaO, Fe_2O_3& LoI assay. 20 nos samples each will be analyzed Ni & Cr and PGE.

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 2 m contour intervals along with survey of surface features.

5.4.0 Exploratory Mining

5.4.1 Trenching / Pitting:

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 mineralized zones on the surface up to a depth of 1 m 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 110 no primary & check trench/pit samples is kept for analysis.110 nos samples each shall be analyzed for MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO , LOI and 22 samples each shall be analyzed for PGE& Ni & Cr. The pit & trench walls will be mapped on 1:200 scale. Thus 100 cu. M. of shallow trenching & pitting work along with associated geological and laboratory studies have to be carried out.

5.5.0 Core Drilling:

5.5.1 The remote sensing studies 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.

5.6.0 Drill Core Logging:

5.6.1 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 designationwill also be undertaken.

5.7.0 Sampling:

5.7.1 **Drill core sampling:** During the geological logging of drill core, samples in mineralized zones will be marked on concentration wise and lithology wise. 165nos of samples (primary + check) will be analyzed for Ni, Cr, MgO, Al_2O_3, SiO_2 CaO, Fe_2O_3,LoI& for Ni, Cr assay and 55 nos primary & check samples shall be analyzed for PGE.15 no's composite samples will be analyzed forNi, Cr, MgO, Al_2O_3, SiO_2 CaO, Fe_2O_3& LoI assay and 5 nos samples will be analyzed for PGE.

5.8.0 Whole Rock Analysis

5.8.1 10 No of samples shall be subjected to whole rock analysis to check the rock types, their variation in chemical composition, will be done for SiO_2, Al_2O_3, Fe_2O_3, TiO_2, MnO, CaO, Na_2O, K_2O+H_2O, MgO, P_2O_5, CO_2, & S Analysis.

5.9.0 Petrological Studies:

5.9.1 During the course of Geological mapping and drill core logging 10 samples from various litho-units from surface and intersected in boreholes will be studied for petrography and 10 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc in polished sections.

5.10.0 Specific gravity Determination:

5.10.1 For the specific gravity determination 10 samples from the mineralized zones intersected in the boreholes will be sent to lab.

5.11.0 XRD Studies

5.11.1 From the composite samples, 10 samples shall be subjected to XRD studies

5.12.0 Spectroscopic (Trace Element Study) Studies

5.12.1 Ten (10) Nos of samples shall be subjected for Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals) or (12 elements Cd, Sn, W, Sb, Mo, Ce, Nb, Ba, La, Bi, Co & Ni) for trace elements.

5.13.0 Proposed Quantum of Work:

5.14.1 The detail of proposed work is given in the table below**:**

Quantum of work of Reconnaissance Survey for Dunite in Andipatti-Jambumadai-Urakarai Sector, (Block ID-SR-TN-05), in an area of 100 Sq Km, Distt: Namakkal, Perambalur (Tamil Nadu)			
Sl. No.	**Item of work**	**Unit (m)**	**Proposed Quantum of Work**
1	**Geological Mapping** (on 1:12,500 Scale)	Sq. Km	100 sq.km
2	**Topographical Survey*** (on 1:12,500 Scale in potential Zone Areas)	Sq. Km	As per requirement
3	Bore Hole Fixation* (Scout Boreholes)	Nos	5 Nos
	RL & Coordinate Determination*	Nos	5 N0s
4	**Geochemical Sampling** (Taken up in Anomalous areas)		
	a) Bed Rock Sampling	N0s.	100Nos
5	**Exploratory Mining**		
	Trenching	Cu. m.	100 Cu m
6	**Drilling (coring)***	**m**	**600m (5 Bhs)**
7	**Geological work***		
	a) Geological Core Logging, Sample Preparation etc.*	m	600m (5 Bhs.)
8	**Laboratory Studies**		
	I) Surface Sampling (Primary samples)		
	i) Bed Rock samples		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO & LOI	Nos	100 Nos
	b) For Ni & Cr	Nos	20 Nos
	c) For PGE	Nos	20 Nos
	ii) Check Samples (Bed Rock)		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO & LOI	Nos	10 Nos
	b) For Ni & Cr	Nos	2 Nos
	c) For PGE	Nos	2 Nos
	iii) Trench Primary & Check Samples		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO & LOI	Nos	…110 Nos
	b) For Ni & Cr	Nos	…22 .Nos
	c) For PGE	Nos	…22 Nos
	iv) Drill Core Primary Samples*		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO & LOI	Nos	165 Nos
	b) For Ni & Cr	Nos	165 Nos
	c) For PGE	Nos	55 Nos
	v**) Composite Samples***		
	a) For MgO, Al_2O_3, Fe_2O_3, SiO_2, CaO & LOI	Nos	15 Nos
	b) For Ni & Cr	Nos	15 Nos
	c) For PGE	Nos	5 Nos
9	**Physical Studies**		
	a) XRD – Studieson Composite samples	Nos.	10Nos
	b) Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals)	Nos.	10 Nos

10	**Petrological Samples (Surface & Bh Core Samples)**		
	a) Preparation of Thin Section b) Study of Thin Section	Nos Nos	10 Nos 10 Nos
11	**Mineragraphic Studies (Surface & Bh Core Samples)**		
	a) Preparation of Polished Section b) Study of Polished Section	Nos Nos	10 Nos 10 Nos
12	**Whole Rock Analysis**		
	ForSiO_2, Al_2O_3, Fe_2O_3, TiO_2, MnO, CaO, Na_2O, K_2O+H_2O, MgO, P_2O_5, CO_2, & S.	Nos	10 Nos
13	**Specific gravity Determination**	Nos.	10 Nos
14	**Report Preparation [As per Mineral (Evidence of Mineral Contents) Rule-2015]**	**Nos**	1
*** The 2nd Level of work to be decided after Review of Geological Mapping & Geochemical Sampling**			

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. The details are indicated in bar chart given below.

Time schedule (in months) for Regional Exploration for Dunite in Andipatti-Jambumadai-Urakarai Sector, (Block ID-SR-TN-05), in an area of 100 Sq Km, Distt: Namakkal, Perambalur (Tamil Nadu)												
	1	2	3	4	5	6	7	8	9	10	11	12
Geological Mapping (2 Party Days)	←	—	—	—	→							
Bed Rock Sampling		←	—	→								
Surveying (1 Party Days) for Sampling etc		←	—	—	→							
Sample Preparation Bed Rock (1 Party Days)			←	—	→							
Analytical Work					←	—	→					
Exploratory mining (1Party) for Trenching /Pitting						←	—	→				
Sample Preparation Trenching & Pitting (1 Party Days)						←	—	→				
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										←	→	
Camp winding										←	→	
Geological Report										←	—	→

6.2.0 Cost Estimate:

The Project cost with provisional escalation is estimated at say **Rs. 191.78 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.)
2	Geological, Survey & Sampling Work	65,48,460/-
4	Exploratory Mining	1,85,300/-
5	Drilling	96,04,426/-
6	Laboratory Studies	26,49,654/-

	Subtotal	**18987840/-**
7	Report	189878/-
	Total	**19177718/-**

Or Say Rs. 191.78Lakhs (Rs. 1.92 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,Iron ore and Magnesite have been reported and 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.

iii) The exploration will be helpful in estimation of reconnaissance resources of Magnesite, PGE, Ni & Cr with otherand 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 Dunite in Andipatti-Jambumadai-Urakarai Sector						
(Block ID-SR-TN-05) Distt: Namakkal, Perambalur (Tamil Nadu)						
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 (1party) For Sampling etc	days	1180	6,146	120	737520
	b) Survey Party days (2 party) For Drilling	days	1180	6,146	90	553140
2	Geologist Party days					
	a) Geological Party days (2 Party) For Geological Mapping etc	days	1541	8,021	300	2406300
	b) Geological Party days for Trench/Pit (1 Party)	days	1541	8,021	90	721890
	b) 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 samples (1 Partys)	days	525	2,945	90	265050
	b) Trench/Pit Sampling Party Days (1 Party)	day	994	5,733	90	515970
	c) Sample Preparation Drill Cores (1 Party)	days	525	2,945	60	176700
4	Transportation (Light Vehicles, 2 nos)	day	Lumpsum	1,500	300	450000
	Sub-Total A					**6548460**
B	**EXPLORATORY MINING**					
1	Excavation (Trenching/Pitting)	Cu. m	395	1,853	100	185300
	Sub-Total B					**185300**
C	**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 (Flat Terrain)	Km	5200	20,368	10	203680
6	GI Core Boxes	Nos	Lumpsum	2,000	150	300000
7	Transportation Charges of Core Boxes	Km	8.8	34	300	10200
	Sub Total C					**9604426**
D	**LABORATORY STUDIES**					
1	**Chemical Analysis**					
	i) Surface sampling (Bed Rock Samples)					
	a) For MgO, SiO_2, Al_2O_3 Fe_2O_3, CaO, LoI	Nos.	110+(76*5)	2,709	100	270900
	b) For Ni, Cr	Nos.	110 + 76 = 186	1,121	20	22420
	c) For PGE	Nos.	Rates of Shiva Lab	10,000	20	200000
	d) Check Samples (Bed rock)					
	a) For MgO, SiO_2, Al_2O_3 Fe_2O_3, CaO, LoI	No.	110+(76*5)	2,709	10	27090
	b) For Ni, Cr	No	110 + 76 = 186	1,121	2	2242
	c) For PGE	No	Rates of Shiva Lab	10,000	2	20000
	iv) Pit & Trench, Primary & Check Samples					
	a) For MgO, SiO_2, Al_2O_3 Fe_2O_3, CaO, LoI	Nos.	110+(76*5)	2,709	110	297990
	b) For Ni, Cr	Nos.	110 + 76 = 186	1,121	22	24662
	c) For PGE	Nos.	Rates of Shiva Lab	10,000	22	220000
	ii) BH Core Sampling, Primary & Check samples					
	a) For MgO, SiO_2, Al_2O_3 Fe_2O_3, CaO, LoI	Nos.	110+(76*5)	2,709	165	446985
	b) For Ni, Cr	Nos.	110 + 76 = 186	1,121	165	184965
	c) For PGE	Nos.	Rates of Shiva Lab	10,000	55	550000
	iii) Composite Samples	Nos				
	a) MgO, SiO_2, Al_2O_3 Fe_2O_3, CaO, LoI	Nos	110+(76*5)	2,709	15	40635
	b) Ni, Cr	Nos	110 + 76 = 186	1,121	15	16815
	c) PGE	Nos	Rates of Shiva Lab	10,000	5	50000
2	**Physical Analysis**					
	i) Petrographic Studies (BH core + Surface Samples)					
	a) Preparation of thin section	Nos	100	545	10	5450

	b) Study of thin section	Nos	228	1,495	10	14950
	ii) Mineragraphic Studies (BH core + Surface Samples)					
	a) Preparation of polished section	Nos	100	583	10	5830
	b) Study of polished section	Nos	364	2,118	10	21180
	iii) Whole rock analysis	Nos		6,386	10	63860
	iv) Specific Gravity Determination (BH)	Nos	32	198	10	1980
	v) XRD & Spectroscopic Studies					
	a) X-RD Studies on composite	Nos	1137	5,900	10	59000
	b) Trace Element Studies by ICPMS Studies for the full spectrum of 48 Elements *	Nos	7900	10,270	10	102700
	Sub-Total D					**2649654**
	Total (A+B+C+D)					**18987840**
E	**EXPLORATION REPORT - 1% of (A+B+C+D)**					**189878**
	GRAND TOTAL (A+B+C+D+E)					**19177718**
					Say Rs. 191.78 Lakhs	
Note	1- 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.					
	2- * Rate taken from GSI Schedule of rates as the same are not available in Goel Committee					