EXPLORATION PROPOSAL (G-3/G-2) FOR LIMESTONE IN MATTAMPALLI BLOCK-1, MATTAMPALLI MANDAL, SURYAPET DISTRICT, TELANGANA.

I. INTRODUCTION

Telangana is the 29th State of India which has come into existence from 2nd June, 2014 with (10) districts covering an area of 1,12,955 Sq. KM bounded by North latitudes of $15^0$46' and $19^0$47'and East longitudes $77^0$16' and $81^0$43. It is bordered by Maharashtra in the north, Chhattisgarh, and parts of Andhra Pradesh in the east, Karnataka in the west and Andhra Pradesh to the south. The State Government reorganized (10) districts into (31) districts w.e.f. 11.10.2016 for the administrative and public convenience.

The Mines & Minerals (Development & Regulation) Amendment Act, 2015 envisages that all the major minerals both notified and non-notified shall be allotted by way of auction as per Mineral (Auction) Rules 2015 after assessment of minerals in accordance with the Mineral (Evidence of Mineral Content) Rules 2015.

As per the Fourth Schedule of Mines & Minerals (Development & Regulation) Amendment Act, 2015, the notified minerals are Bauxite, Iron Ore, Limestone & Manganese Ore. The Telangana State is having rich source for Limestone, modest occurrences of Iron Ore and Manganese Ore and there is no occurrences of Bauxite.

To achieve the above, a Regional Exploration Committee (REC) has been shaped with amalgamation of officers from DMG, IBM, GSI, MECL and NCBM. After a series of meetings and the suggestions by the Regional Screening Committee NMET headed by Dy. DG., RMH-II, SR, GSI, Hyderabad and Deliberations and Consultations with MECL identified (12) prospective limestone blocks in Suryapet District and (3) in Vikarabad District, in which Mattampalli block is one of the prospective limestone block proposed for G-3/G-2 exploration.

II. LOCATION OF THE BLOCK AND ACCESSIBILITY

The major portion of the present block is located in SE of Mattampalli village and Mattampalli Mandal, Suryapet District. Mattampalli Mandal is located nearly 65 Km. SE of District headquarters and accessible by well connected roads in all seasons. The block is located in the Survey of India Toposheet Nos.56P/13. The geo-coordinates of the corner points of the block are given below alongwith area covered therein.

TSSPTLST-4 : Mattampalli Block-1

Point_Id	Latitude	Longitude	Area (in hectares)
A	16° 46' 18.499" N	79° 52' 52.687" E	**452.46**
B	16° 46' 31.960" N	79° 52' 54.438" E	
C	16° 46' 40.727" N	79° 53' 15.571" E	
D	16° 47' 2.540" N	79° 53' 29.149" E	
E	16° 46' 32.044" N	79° 54' 25.480" E	
F	16° 45' 35.001" N	79° 54' 8.841" E	
G	16° 45' 31.623" N	79° 53' 58.842" E	
H	16° 45' 35.657" N	79° 53' 55.988" E	
I	16° 45' 35.149" N	79° 53' 50.470" E	
J	16° 45' 25.454" N	79° 53' 45.137" E	

III. PHYSIOGRAPHY, DRAINAGE & CLIMATE:

Physiographically, the proposed block is mostly a plain area with highest elevation **100m** above MSL and drains towards West. The Suryapet district is mainly drain by Krishna River and its tributary Vemuleru River. A few nalas originates in the block and meet Krishna River in the south. The area experiences tropical wet and dry climate. During dry spells, a maximum temperature often exceeds 45° C in May and June. In winter the temperature comes down to 9-11° C in December and January. The average annual rainfall in the area is 821mm.

IV. PREVIOUS WORK

The proposed block area not thoroughly explored by either State DMG or GSI except conventional geological mapping. But, the proposed area is a part of the Palnadu a Sub- Basin. William King (1872) documented the earliest geological account of Planad basin.

Ramalingaswamy, G. (1976-77) has mapped area in parts of Toposheet No. 56P/10. Krupanidhi (1966-67), Nagaeswara Rao and Varaprasada Rao (1967-68), Chakradhar et al, (1980-83), Ravindra Babu et al, (1989), Ramakrishnaiah et al, (2012-13), JagadishwarBabu. K and Tirumurugan. M. (2013) and Sugathan & Rimpalkar (2013) have carried out investigation for limestone in parts of Palnad sub-basin.

V. GEOLOGY OF THE AREA

(i) Regional Geology of the area:

The proposed area is a part of Palnad Sub-Basin and is located in the northeast part of the Cudappah Basin. The major portion of the basin is occupied by Kurnool Group of rocks of Neo Proterozoic age. The basement comprising Peninsular Gneissic Complex (PGC) rocks are exposed in the north and northwest direction of the Palnad Sub-Basin. The PGC consisting of Biotite Gneissic Granite, Pink Granite and Leuco Granite. A number of quartz veins trending NNE-SSW are seen traversing the PGC. It also observed Swarms of dolerite dykes trending NW-SE, NE-SW etc., are also exposed in the area.

Conglomerate, Quartzite and Shale of Banaganapalli quartzite, and massive and flaggy limestone of Narji formations are exposed and deposited on the basement.

(ii) Geology of the block area

The major portion of the block are occupied by massive and flaggy limestone belonging to Narji formation. Limestone is massive in nature and grey, white, pale green, brown or purple in color with 5 to 10° SE dipping. The general Stratigraphic sequence is as below:

Recent	Soil/
Kurnool Group of Rocks	Shale
	Flaggy Limestone
	Massive Limestone
	Quartzite

VI. OBJECTIVES: The following are the objectives of the proposed exploration.

(i).Establishment of Limestone continuity in the extension area of the existing Limestone mining concession areas qualitatively and quantitatively.

(ii).To differentiate and arrive the Limestone occurrence in the block area by drilling boreholes at 800x800m grid interval in G-3level of exploration, followed by 400x400m grid interval in G-2 level of exploration.

(iii). To find out strike continuity, thickness, depth and quality and grade of Limestone.

(iv). To carryout exploration as per Mineral (Evidence of Mineral Contents) Rules2015, Mineral (Auction) Rules-2015 and MMDR Amendment Act-2915 in turn to facilitate the Government of Telangana in Auctioning of the block.

VII. METHODOLOGY OF EXPLORATION

(i) Topographic Survey

The boundary will be arrived and demarcated with GPS/DGPS and Total Station in WGS-84 datum for fixing of the block boundary points. Initially, the small scale i.e., 1:12500 maps will be generated for entire area followed by large scale on 1:5000 for detailed mapping (DM). Contouring will be done on 1:5000 scale at 5m contour intervals. Pick up the altitudes of the area to arrive the digital elevated model (DEM) along with reduced levels of proposed borehole points. As the proposed area is a plain land and low dipping it is to take up the required topographical surveys only to fix the RLs of the Boreholes locations.

(ii) Geological Mapping

The base geological map enclosed with the proposal will be used for regional geological recconatory surveys to ascertain and understand the geological set-up of the area.

Further, a Detailed Geological Mapping will be done on 1:5000 scale. All the geological features will be recorded. Litho contacts of different rock types and their structural features will be demarcated on the map. Surface manifestations and disposition of the mineral will be marked on map. Surface samples of different litho units will be collected during the course of mapping wherever the exposures are available on the surface and also in stream cuttings etc.,

The Survey party will be associated with collection of bed rock samples. Essentially, demarcate the litho-units in different locations with the help of hand held GPS and structural elements i.e., strike, dip, plunging, joints, altitude of faults their orientation and relationship etc., will be taken with the help of Brunton Compass and demarcated on map. After plotting of the litho-units and structural parameters, the cross-sections will be prepared to know the sub-surface extension and altitude of different litho-units.

(iii) Trenching / Pitting

During the geological mapping and surveying if needed the trenching and pitting will be taken up based on the field conditions.

(iv) Geo Physical surveys

During the geological mapping and surveying if needed the Geo physical surveys will be taken up based on the field conditions.

(v) Surface Drilling

It is proposed to take up G-3 level of investigation and G-2 level of exploration simultaneously during 2018-19 on detailed geological map of 1:5000 scale.

(i) Core Bore Hole (CBH):

The drilling is planned in 800x800m grid plan (for G-3 exploration) with CBH in the periphery as well as in the central part and Down the Hole Drill (DTH) in 400x400m grid plan in the remaining parts as to fill the gaps (for G-2 exploration). The CBH data would be corroborated with DTH in arriving the thickness of Limestone beds used in reserve estimation.

The drilling is planned in such a grid as one core bore hole for every 800m covering the entire block area. From the CBH logging the structural features, textures, intersections of different rock types and thickness of the various litho units will be known. The CBH drilling is planned for 400 meterage with 50 meters depth at 8 CBH points covering the entire block area as it anticipated and arrived during the geological mapping**.**

(ii) Down the Hole Drill (DTH):

The DTH drilling is planned in such a grid (400x400m) (G-2 exploration)as one DTH bore hole for every 400m in between two CBH points in-filling boreholes covering the entire block area. From the DTH logging, the structural features, textures, intersections of different rock types and thickness of the various litho units will be recorded. The DTH drilling is planned for 1200M at 24 DTH points@ 50M depth covering entire block area as anticipated and arrived during the geological mapping.

(vi). Drill Core Logging and Sampling

Detailed drill core logging will be done with consideration of weathering, grain size, fossil contents, colour of various formations, intercalation/parting of shale, shale, stylolite and structure. On the basis of these parameters, grade of limestone can be broadly presented and it will also be helpful in sampling.

Primary samples will be drawn at 1m interval subject to change in lithology and core recovery. The following parameters will be considered while sampling the drill cores.

1) Colour, grain size.
2) Fossil variation.
3) Thin intercalations of shale/siltstone.
4) Partially weathered zone.

For preparation of samples the boreholes core will be splitted into two equal halves by using core splitter. One half will be powdered to (-) 100 mesh size and the other half will be kept for future studies. The powdered material will be mixed throughly and about 100 gram of samples will be taken for chemical analysis by successive coning and quartering as primary samples and rest of of the material (-100 mesh size) will be kept as duplicate for future reference.

G3 exploration: This will generate about 400 Nos primary samples and 40 Nos Check samples (10% of Primary sample). In addition 5% of primary samples i.e. 20 Nos check samples will be prepared as External Check samples and will be sent to NABL Labs for analysis of 6 radicals. Around 40 numbers of primary samples will be prepared for analysis of two radicals i.e. SO_3 & P_2O_5.

Composite samples will be prepared borehole wise based on primary sample data at every 6m interval (6m bench height). Composite samples shall be prepared from the entire zone of limestone bands intersected in the boreholes. This will generate about 70 Nos of composite samples. These samples will be analyzed for 12 radicals.

G2 exploration: This will generate about 1200 Nos primary samples and 120 Nos Check samples (10% of Primary sample). In addition 5% of primary samples i.e. 60 Nos check samples will be prepared as External Check samples and will be sent to NABL Labs for analysis of 6 radicals. Around 120 numbers of primary samples will be prepared for analysis of two radicals i.e. SO_3 & P_2O_5.

Composite samples will be prepared borehole wise based on primary sample data at every 6m interval (6m bench height). Composite samples shall be prepared from the entire zone of limestone bands intersected in the boreholes. This will generate about 200 Nos of composite samples. These samples will be analyzed for 12 radicals.

VIII. LABORATORY STUDIES

(i) Chemical Analysis: (for Both G-3 & G-2)

a. **Primary Samples -** All the primary total samples of 1600 and check samples 160 (10% of primary samples) will be analyzed for 6 radicals. Cao, MgO, Al_2O_3, SiO_2, Fe_2O_3, and LOI . Around 160 samples will be analyzed for 2 additional radicals- SO_3 & P_2O_5. 5% of primary samples (80 Nos) will be sent to NABL external labs as check samples for analysis of 6 radicals CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, and LOI.

b. **Composite Samples -** Around 270 composite samples will be analyzed for 12 radicals Cao, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3 & P_2O_5, MN_2O_3, TiO_2, K_2O, Na_2O and LOI. Spectroscopic studies will be done on 20 Nos of composite samples to know the presence of trace elements and 20 Nos of composite samples for minerals phase studies (XRD studies) respectively.

(ii) Petrological Studies: Petrological studies will be done on around 20 Nos of drill core specimen.

(iii) Specific Gravity Determination: Specific Gravity will be determines on 140 drill core specimen.

(iv) Quantum of work proposed:

(G-3) Exploration

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.52
2	Drilling (800m x 800m grid) (Core bore hole)	m.	400m (8 BHs)
3	Topographical Survey Work (1:5000 Scale)	Sq. Km	4.52
4	Laboratory Studies		
5	i) Chemical Analysis (Primary + internal Check (10%))for 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI	Nos.	400 Primary + 40Check = 440
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	40
	iii) External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI (5%)	Nos.	20
	iv) Composite Samples For 12 radicals (CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3,P_2O_5 , LOI, MnO_2, K_2O, Na_2O and TiO_2)	Nos.	70
	a) Physical Studies		
6	a) Trace Element Study By ICPMS (10 elements)	Nos.	20
	b) XRD studies	Nos	20
	c) Petrological Studies (Petrographic Studies)	Nos	20
7	Specific Gravity Determinations	Nos	40
8	Report Preparation (Digital format)	Nos.	1 No.

(G-2) Exploration

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.52
2	Drilling (400m x 400m grid) (DTH filling borehole)	m.	1200m (24 BHs)
3	Topographical Survey Work (1:5000)	Completed in G-3 level.	
4	Laboratory Studies		
5	i) Chemical Analysis (Primary + internal Check (10%))for 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI	Nos.	1200 Primary + 120 Check = 1320
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	120
	iii) External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI (5%)	Nos.	60
	iv) Composite Samples (1 Sample/ 6 Meter bench) For 12 radicals (CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3,P_2O_5 , LOI, MnO_2, K_2O, Na_2O and TiO_2)	Nos.	200
	b) Physical Studies		
6	d) Trace Element Study By ICPMS (10 elements)	Nos.	60
	e) XRD studies	Nos	60
	f) Petrological Studies (Petrographic Studies)	Nos	60
7	Specific Gravity Determinations	Nos	100
8	Environmental Studies	Nos.	1No.
9	Report Preparation (Digital format)	Nos.	1 No.

(v) Exploration Report: Data generated from proposed exploration G-3/G-2 and the earlier data if any will be utilized in Report preparation.

IX. TIME SCHEDULE AND COST ESTIMATES:

(i) Time Schedule: The proposed exploration programme work activities like camp setting, topographic survey, geological mapping, collection of surface samples and associated geological works, drilling, camp winding and laboratory work will be completed within 6 months time for G-3/G-2 exploration as both carrying out simultaneously. The report making and environmental studies will take another 4 months in time overlapping. Thus the total duration of the project for present exploration will be completed in 10 months from the date of commencement of the project. The details are given in the Annexure no. II & IV

(ii) Cost Estimate: Cost has been estimated based on actual and provisional escalation as per RBI indices as on 31-03-2016 and provisional escalation of @ 15% points for drilling work and 25% points for Geological and Laboratory Studies for the subsequent years. The total estimated cost for both G3 & G2 exploration is Rs. 258.016 Lakhs. The details of cost estimates are given in the Annexure-3 & 5 and summary is given below.

Summary of Cost Estimates

Sl.No.	**Item**	Total estimated Cost (Rs)		**Total**
		G3	**G2**	
1	Survey+ Geology+ Sampling	2260380	954990	3215370
2	Drilling	4978010	3722900	8700910
3	Laboratory Studies	1826640	5426230	7252870
4	Preservation of Cores	175500	495500	671000
5	Exploration Report	92405	105996	198401
6	Peer review	10000	10000	20000
7	Environmental Studies	0	1807284	1807284
8	Total	9342935	12522900	21865835
9	18% GST	1681728.3	2254122	3935850.3
	Grand total	**11024663.3**	**14777022**	**25801685.3**

X. JUSTIFICATION

The State is endowed with extensive deposits of Limestone. Significant deposits of cement and flux grade Limestone are confined to the Late Proterozoic to Neo-Proterozoic formations.

In the State, there are 16 major & 5 minor cement-manufacturing units in operation with an installed capacity of 29.50 million tonnes per annum.

All the existing cement plants are planning to enhance their installed capacity and new companies are showing much interest to establish new cement plants.

The state Govt. taken up the prestigious irrigation and drinking water and other infra structure projects like Mission Kakatiya, Mission Bhagiratha etc., requires huge quantities of Cement for the next 10 years and also huge demand from the neighboring states like TN, KN and MH.

Keeping in view of the demand, it is decided by the State govt. to evaluate the limestone resources qualitatively and quantitatively in the extended areas of existing mining leases and in the same geological stratigraphic horizons for sustainable development and better mineral conservation.

The block is having working mines on the western side for cement grade Limestone held by various Cement companies. Topographically the entire area comprising block and the surrounding working mine is a plan area with similar established geological set-up and Limestone mineralization extension.

The block area geologically belongs to Neo-proterozoic Palnadu basin and is equivalent to Narji Limestones of Kurnool Group stratigraphically and falling in the strike continuity of the Narji formations. The limestone of Narji is of bedded Stratiform and tabular type of deposit of regular habit.

Here the limestone formation is homogeneous in nature with 0 to 3 degrees dipping without any structural disturbance. There is a consistency in strike continuity, thickness and the quality of limestone.

The block area is falling in the vicinity of active Cement grade mining activity and in the Limestone proven geological stratigraphic horizon continuity without any structural disturbances. There is a demand from new entrepreneurs and existing cement manufacturing companies for enhancement.

By taking all, it is clear that the proposed block exploration will certainly helpful in estimation of Limestone resource which will in turn facilitate the Telangana State Government for Auctioning of Blocks.

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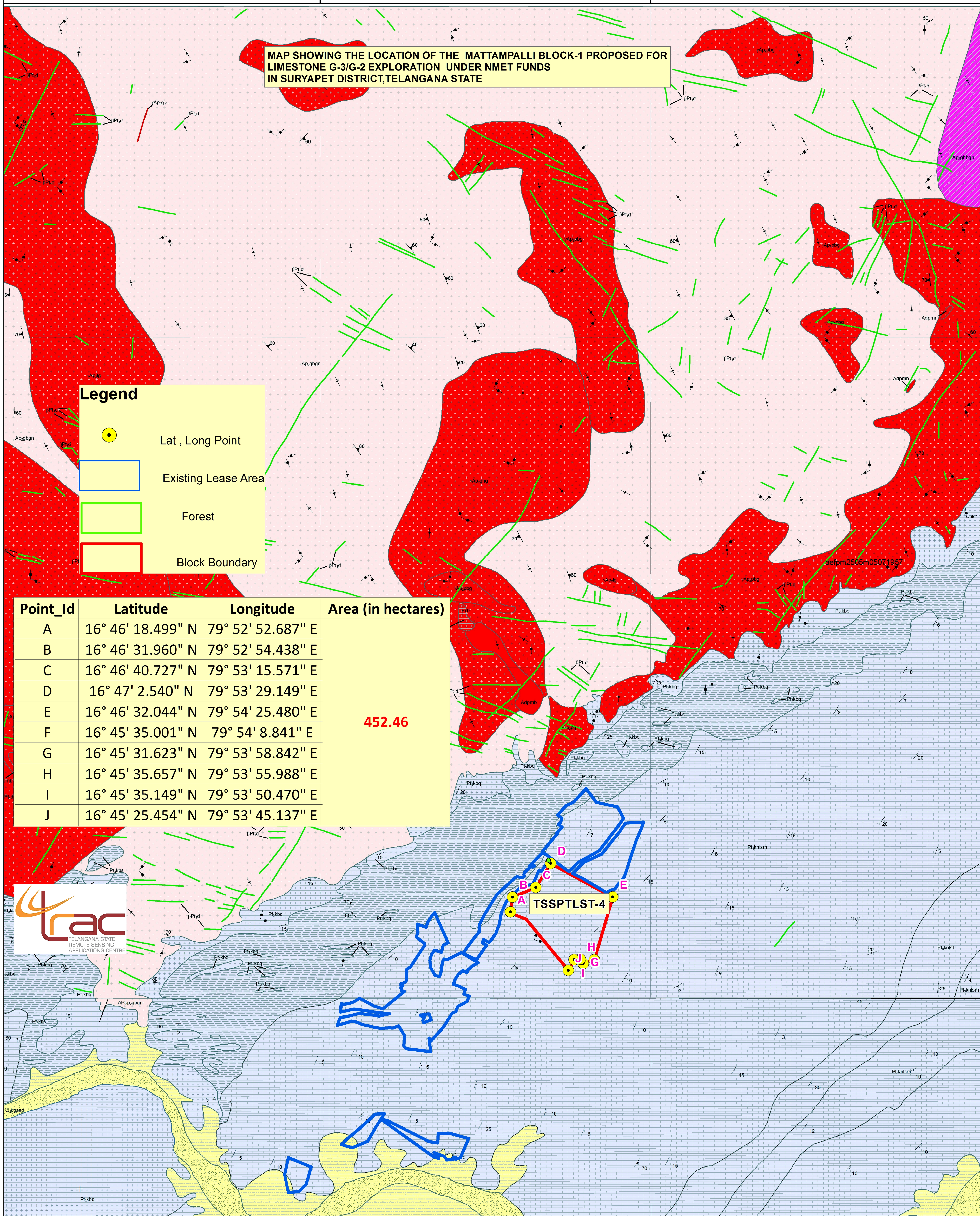
XI. ANNEXURES

(i) Quantum of work for G-3
(ii) Time Line for G-3
(iii) Cost Estimation sheet for G-3
(iv) Quantum of work for G-2
(v) Time line for G-2
(vi) Estimation sheet for G-2
(vii) Cumulative project Cost

XII. PLATES

(i) Location Map of the block
(ii) Geological map of the block
(iii) Borehole Grid Plan



Point_Id	Latitude	Longitude	Area (in hectares)
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**NALGONDA DISTRICT,
ANDHRA PRADESH**

LEGEND

LITHOLOGY	FORMATION	GROUP	SUPERGROUP	AGE
Flaggy limestone	Narji	Kurnool		Neoproterozoic
Massive limestone	Narji	Kurnool		Neoproterozoic
Shale	Banganapalli Quartzite	Kurnool		Neoproterozoic
Quartzite	Banganapalli Quartzite	Kurnool		Neoproterozoic
Dolerite	Basic Intrusive			Palaeoproterozoic
Quartz vein			PGC - II	Archaean to Palaeoproterozoic
Grey hornblende granite			PGC - II	Archaean to Palaeoproterozoic
Leuco granite			PGC - II	Archaean to Palaeoproterozoic
Pink biotite granite			PGC - II	Archaean to Palaeoproterozoic
Pink granite			PGC - II	Archaean to Palaeoproterozoic
Grey biotite gneiss			PGC - II	Archaean to Palaeoproterozoic
Grey hornblende biotite gneiss			PGC - II	Archaean to Palaeoproterozoic
Banded magnetite quartzite	Peddavuru Scist Belt		Dharwar	Archean
Meta-rhyolite	Peddavuru Scist Belt		Dharwar	Archean
Meta-basalt	Peddavuru Scist Belt		Dharwar	Archean

STRUCTURAL SYMBOLS

Foliation (Inclined) — Synform — Antiform
Bedding (Inclined) — Fault — Overturned isocline synform
Plunging anticline — Thrust fault — Dome

GEOLOGY

The area is bounded by N latitudes 16° 45' to 17° 00' and E longitudes 79° 45' to 80° 00' and forms the south-eastern part of Nalgonda district, Andhra Pradesh Mirialaguda-Huzurnagar-Kodad road passes through the northern part. Mirialguda is the nearest railhead on Bibinagar-Nadikudi Broad Guage Section of the South Central Railway. Kodad (16°59'55" : 79°57'50") is situated on the Hyderabad-Vijayawada National Highway-9 and is 180 km from Hyderabad.

The Peninsular Gneissic Complex-II (PGC-II) rocks in the north display an undulating topography with hummocky hills, tors, isolated hillocks and scattered ridges whereas the sedimentary rocks in the extreme south show a series of ENE-WSW trending ridges represented by thin quartzite bands. The highest elevation is 218 m above MSL and lies at 3 km SE of Betavolu (16° 53' 30" : 79° 50' 50") and general slope is towards south and south-east. Vemuleru River flows from north to south in the western part, whereas Antara Gangavagu flows from west to east in the east central part. The drainage pattern is dendritic to sub-parallel. Nagarjunasagar Left Bank Canal passes through the area.

The area is occupied in the north by PGC-II with enclaves of supracrustals of Dharwar Supergroup of Archaean age. These rocks are intruded by quartz veins and basic dyke swarms of dolerite. In the southern part, the PGC-II is overlain by Banaganapalle Quartzite and Narji Formation of Kurnool Group belonging to Neoproterozoic age.

The supracrustals of Peddavuru Schist Belt are represented by quartz sericite schist (metarhyolite), amphibolite and banded magnetite quartzite (BMQ). These rocks occur as enclaves/rafts and as narrow/linear patches in PGC-II trending in NW-SE and NE-SW direction. Enclaves of quartz-sericite schist are exposed as linear discontinuous patches 2-4 km NE of Ganapavaram (16°53'55" : 79°58'00"). Amphibolite enclaves are exposed upto a maximum of 2 km strike length at 1.75 km NE of Bokkamantulagudem (16°49'30" : 79°52'00") and 2 km SW of Hanumantulagudem (16°48'45" : 79°46'35"). The BMQ is exposed in the 144 m hill situated 2 km NNW of Bokkamantulagudem.

The area is occupied by biotite granite gneiss, hornblende granite, pink biotite granite, pink granite, and leuco granite belonging to PGC-II. The grey biotite gneiss is coarse grained, exhibits crude foliation and composed of quartz, plagioclase, orthoclase and biotite. Hornblende granite is (medium to coarse) composed of quartz, orthoclase, microcline, plagioclase and hornblende with accessory epidote, biotite and chlorite. Pink biotite granite is in juxtaposition with Banganapalli Quartzite near Kandibanda (16° 52' 00" : 79° 56' 50") and as plug like bodies within biotite granite gneiss. It is composed of K-feldspar (orthoclase and microcline), plagioclase and quartz with minor biotite and hornblende. It is exposed in the easternpart of the area and as patches in biotite gneiss.

Leuco granite trending in N-S direction is exposed between Narasimhulagutta (16°57':79°52') in the north and Ramaswamy gutta (16°54' : 79°54') in the south. It is medium to coarse grained and contains quartz, orthoclase, microcline and plagioclase. Pink granite comprises quartz, orthoclase, microcline and plagioclase.

A number of quartz veins trending NNE-SSW are seen traversing PGC-II, 1.5 km SW of Hanumantulagudem and 2.5 km NW and 2 km ENE of Ganapavaram.

Swarms of dolerite dykes trending NW-SE, NE-SW, WNW-ESE and ENE-WSW are exposed in the area. These are dark grey to black, fine to medium grained with pyrite disseminations and composed mainly of clinopyroxene and plagioclase with sub-ophitic to ophitic texture.

Conglomerate, quartzite and shale of Banganapalle Quartzite and massive and flaggy limestone of Narji Formation are exposed towards south and belong to Kurnool Group. They are deposited over granites and gneisses and the basal conglomerate is exposed as patches at 1.5 km NE of Chautpalli (16°48'00" : 79°52'45") and consists of angular to subangular pebbles of quartz, quartzite and chert cemented in siliceous and ferruginous matrix. Quartzite lies directly over granite/gneiss, or as intercalations within shale. The quartzite is white, grey, brown, medium grained, gritty and arkosic with sporadic pyrite. Shale overlies the quartzite. Shales are grey, khaki green, yellow, purple and reddish brown with/without pyrite crystals. They are succeeded conformably by massive and flaggy limestone belonging to Narji Formation and exposed at Yepal Madhavaram (16°41'40" : 79°56'00"). Limestone is massive and grey, white, pale green, brown or purple in colour. Flaggy limestone is argillaceous and is exposed at Mallareddigudem (16°45'30" : 79°59'00").

Kurnool Group of rocks trend NE-SW to ENE-WSW with gentle dips towards southeast. Banganapalle quartzite shows cross bedding and ripple marks. BMQ exhibits a N-S strike with steep dips towards east. Foliation in granites trend NW-SE with steep dips. All these rocks show joints trending N-S, E-W, ENE-WSW and WNW-SSE. A number of migmatitic structures and flow banding are noticed in the PGC rocks.

The dolerite dykes commercially known as Black Granite are quarried as dimension stone. Limestone belonging to Narji Formation is used in flooring as slabs/tiles because of its attractive colours. Gneiss, granite and quartzite are quarried locally for use as building material and road metal.

LOCATION MAP

MAP SHOWING THE LOCATION OF THE MATTAMPALLI BLOCK-1 PROPOSED FOR LIMESTONE G-3/G-2 EXPLORATION UNDER NMET FUNDS IN SURYAPET DISTRICT,TELANGANA STATE

N

0 0.5 1 2 3 4 Kilometers

56P/13

TSSPTLST-4

A
B
C
D
E
F
G
H
I
J

Legend

- Lat , Long Point
- Existing Boundary
- Forest Area
- Proposed Block Boundary

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E	16° 46' 32.044" N	79° 54' 25.480" E	
F	16° 45' 35.001" N	79° 54' 8.841" E	
G	16° 45' 31.623" N	79° 53' 58.842" E	
H	16° 45' 35.657" N	79° 53' 55.988" E	
I	16° 45' 35.149" N	79° 53' 50.470" E	
J	16° 45' 25.454" N	79° 53' 45.137" E	

Telangana State

Suryapet District

TELANGANA STATE REMOTE SENSING APPLICATIONS CENTRE

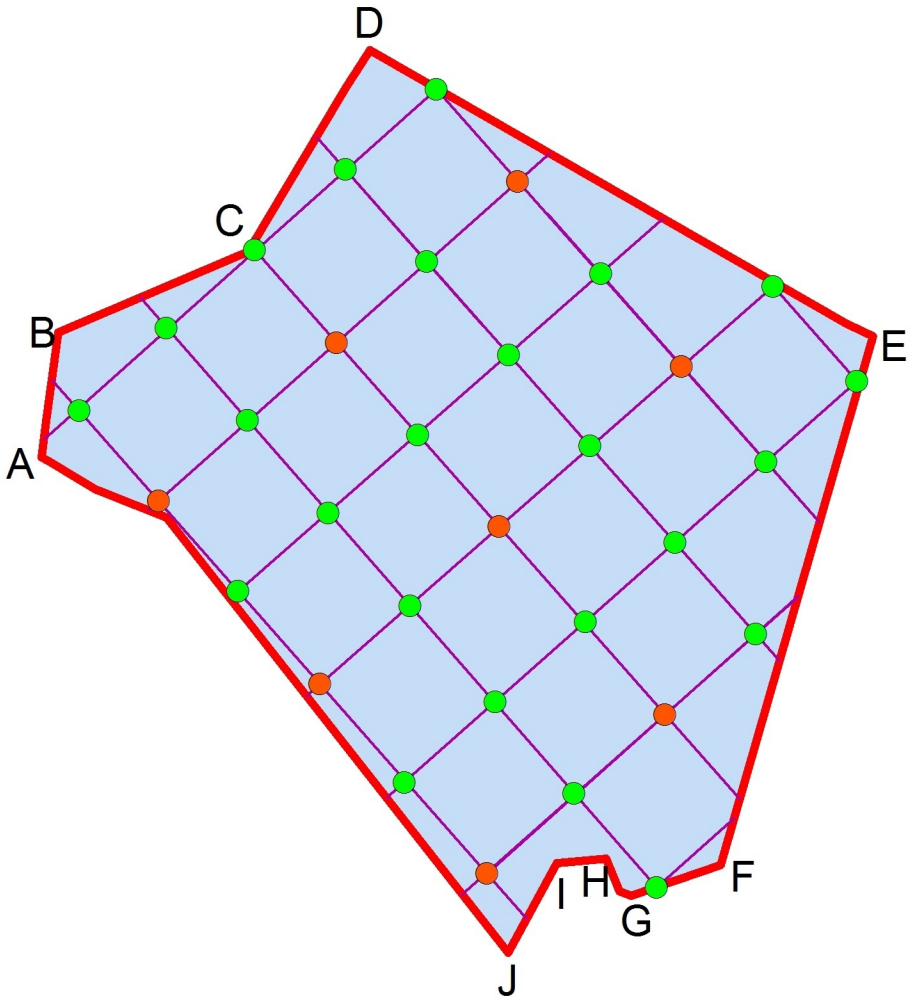
BOREHOLE GRID MAP

N

MAP SHOWING THE BOREHOLE GRID OF THE MATTAMPALLI BLOCK-1 PROPOSED FOR LIMESTONE G-3/G-2 EXPLORATION UNDER NMET FUNDS IN SURYAPET DISTRICT,TELANGANA STATE

0 300 600 1,200 Meters

TSSPTLST-4



Area = 452.46 Ha or 4.52 Sq. Km.

Legend

- Proposed Block Boundary
- 400X400 DTH = 24 (G2- Exploration)
- 800X800 CBH = 8 (G3- Exploration)

Annexure-I
Quantum of Work for TSSPTLST-4 (G-3) Exploration:

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.52
2	Drilling (800m x 800m grid) (Core bore hole)	m.	400m (8 BHs)
3	Topographical Survey Work (1:5000 Scale)	Sq. Km	4.52
4	Laboratory Studies		
5	i) Chemical Analysis (Primary + internal Check (10%))for 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI	Nos.	400 Primary + 40Check = 440
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	40
	iii) External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI (5%)	Nos.	20
	iv) Composite Samples For 12 radicals (CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3,P_2O_5 , LOI, MnO_2, K_2O, Na_2O and TiO_2)	Nos.	70
	a) Physical Studies		
6	a) Trace Element Study By ICPMS (10 elements)	Nos.	20
	b) XRD studies	Nos	20
	c) Petrological Studies (Petrographic Studies)	Nos	20
7	Specific Gravity Determinations	Nos	40
8	Report Preparation (Digital format)	Nos.	1 No.

Annexure-IV

Quantum of Work for TSSPTLST-4 (G-2) Exploration:

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.52
2	Drilling (400m x 400m grid) (DTH filling borehole)	m.	1200m (24 BHs)
3	Topographical Survey Work (1:5000)	Completed in G-3 level.	
4	Laboratory Studies		
5	i) Chemical Analysis (Primary + internal Check (10%))for 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI	Nos.	1200 Primary + 120 Check = 1320
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	120
	iii) External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3 and LOI (5%)	Nos.	60
	iv) Composite Samples (1 Sample/ 6 Meter bench) For 12 radicals (CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3,P_2O_5 , LOI, MnO_2, K_2O, Na_2O and TiO_2)	Nos.	200
	a) Physical Studies		
6	a) Trace Element Study By ICPMS (10 elements)	Nos.	60
	b) XRD studies	Nos	60
	c) Petrological Studies (Petrographic Studies)	Nos	60
7	Specific Gravity Determinations	Nos	100
9	Environmental Studies	Nos.	1No.
8	Report Preparation (Digital format)	Nos.	1 No.

Annexure-VII

Cumulative project Cost for Mattampalli Block

Sl.No.	Item	Total estimated Cost (Rs)		Total
		G3	G2	
1	Survey+ Geology+ Sampling	2260380	954990	3215370
2	Drilling	4978010	3722900	8700910
3	Laboratory Studies	1826640	5426230	7252870
4	Preservation of Cores	175500	495500	671000
5	Exploration Report	92405	105996	198401
6	Peer review	10000	10000	20000
7	Environmental Studies	0	1807284	1807284
8	Total	9342935	12522900	21865835
9	18% GST	1681728.3	2254122	3935850.3
	Grand total	**11024663.3**	**14777022**	**25801685.3**

F. No. 6/2/2015-NMET
Ministry of Mines
National Mineral Exploration Trust

New Delhi, the 21st June, 2018

OFFICE MEMORANDUM

Subject: Approval of mineral exploration projects in 15 blocks of DMG, Telangana.

On the recommendation of Technical-cum-Cost Committee (TCC) of NMET, the Executive Committee in its 8th meeting, held on 12th June, 2018 approved mineral exploration projects in 15 blocks DMG Telangana at an estimated cost of Rs. 2976.86 Lakh. The list of projects is enclosed as **Annexure-I**.

2. The mineral exploration projects in these 15 blocks for exploration up to G-2 Stage will be funded by NMET as per the costing recommended by the TCC and approved by the Executive Committee. The 15 blocks should be clubbed to make 8 clusters for G-4 level exploration. The next stage of exploration shall be decided after review by the TCC on completion of G4 & G3- stage exploration. The Implementing Agency shall complete the same as per the approved cost estimates and time schedule, enclosed in **Annexure II to XXXVIII**.

3. The work execution shall be monitored by DMG Telangana. The TCC, NMET shall review the progress of projects and provide update every six months to the Executive Committee. The Implementing Agencies shall submit progress on monthly basis to NMET.

21/6/2018

(Pradeep Singh)
Director, NMET

To
The Director,
Directorate of Mines & Geology,
Govt. of Telangana,
8th Floor, B.R.K.R. Bhawan,
Tankbund, Hyderabad- 500 063.

Copy for information to:

1. Sh. D. Mohanraj, ADG, NM-II & Chairman, NMET TCC, Geological Survey of India, Seminary Hills, Nagpur- 440 006
2. The Member Secretary, NMET TCC, MECL, Dr. Babasaheb Ambedkar Bhawan, Seminary Hills, Nagpur- 440 006.

Annexure-I

List of mineral blocks of DMG, Telangana approved in 8th Executive Committee on 12.06.2018

Sl. No.	Cluster Name	Block Name	G-4 (Rs. in Lakh)	G-3 (Rs. in Lakh)	G-2 (Rs. in Lakh)	Total (Rs. in Lakh)
1	Cluster-1	Mellacheruvu Block	63.32	73.30	125.58	655.82
2		Mallareddy Gudem Block		80.06	107.15	
3		Yepal Madhavaram Block		86.27	120.14	
4	Cluster-2	Mattampally Block- 1	47.90	72.61	120.04	394.23
5		Mattampally Block- 2		61.21	92.47	
6	Cluster-3	Raghunathapalem Block- 1	47.55	72.26	120.03	390.17
7		Raghunathapalem Block- 2		59.62	90.71	
8	Cluster-4	Wazigudem Block	43.72	77.68	129.81	430.37
9		Veerappagudem Block		70.68	108.48	
10	Cluster-5	Ramapuram Block	33.81	51.93	109.74	195.48
11	Cluster-6	Dondapadu Block	47.90	70.68	125.48	396.87
12		Kothagudem Block		51.93	100.88	
13	Cluster-7	Jiwangi- 1 Block	47.55	41.57	81.10	308.05
14		Jiwangi- 2 Block		47.96	89.87	
15	Cluster-8	Malkapur Block	34.31	47.26	124.31	205.88
		Total	**366.06**	**965.02**	**1645.79**	**2976.87**

ANNEXURE – 5B/1/GB/1

ANNEXURE-III

Table:6.2 COST ESTIMATE FOR (G-3) EXPLORATION OF LIMESTONE, TSSPTLST-4,

SL. No.	Item of Work	Unit	Base	Financial Year (2018-19)			Financial Year (2019-20)			Total	
			Rate	Esc.Rate	Qty.	Amount	Esc. Rate	Qty.	Amount	Qty	Amount
			1.4.90	(Rs)		(Rs)			(Rs)		(Rs)
A	DRILLING										
1	Surface Drilling (1 Rigs)	m	1714	6780	300	2034000	6780		0	300	2034000
2	Transportation	Km	8.8	31	1250	38750	31		0	1250	38750
3	Accomodation	One time / Drill	185925	663715	1	663715	663715		0	1	663715
4	Camp Setting / Winding	Drill/ month	68606	244910	1	244910	244910		0	1	244910
5	Road Making (Flat Terrain)	Km	7800	18563	5	92815	18563		0	5	92815
	Sub Total A					3074190			0		3074190
B	GEOLOGICAL WORK										
1	Survey Party Days (1 party)	day	1180	5840	50	292000	5840		0	50	292000
2	Geologist Party days (2 party)	day	1541	7802	90	702180	7802		0	90	702180
3	Core Sampling Party days(2 parties)	day	525	2809	90	252810	2809		0	90	252810
4	Bulk Sampling Party Days (1 Party)	day	2566	13439	30	403170					403170
	Sub-Total B					1650160			0		1650160
C	LABORATORY STUDIES										
a	Chemical Analysis										
1	Primary + Check Samples										
	i) for 6 radicals (CaO, MgO, SiO_2, Al_2O_3, Fe_2O_3 & LOI)	Nos	490 (76x5+110)	2580	330	851400	2580		0	330	851400
	ii) for 2 radicals SO_3 & P_2O_5	Nos	186 (76+110)	972	30	29160	972		0	30	29160
	iii) External Check Samples for 6 radicals(CaO, MgO, SiO_2, Al_2O_3, Fe_2O_3 & LOI)	Nos	490 (76x5+110)	2580	15	38700	2580		0	15	38700
2	Composite Samples										
	i) for 12 radicals (CaO, MgO, SiO_2, Al_2O_3, Fe_2O_3, LOI, SO_3, P_2O_5, MnO_2, K_2O, Na_2O, TiO_2	Nos	946 (76x11+110)	4992	40	199680	4992		0	40	199680
b	Physical Analysis										
1	Preparation of thin section	Nos	100	538	10	5380	538		0	10	5380
2	Petrographic Studies	Nos	228	1436	10	14360	1436		0	10	14360
3	Bulk Density	Nos	24	139	10	1390	188.5		0	10	1390
	Sub-Total C					1140070			0		1140070
D	Preservation of Core										
i)	GI Core boxes	Nos.		2000	60	120000	2000		0	60	120000
ii)	Transportation of Core Boxes	Km	8.8	31.0	1250	38750	31		0	1250	38750
	Sub-Total D					158750			0		158750
	Total A+B+C+D					6023170			0		6023170
E	EXPLORATION REPORT - 1.5% of (A+B+C+D) or 120000 whichever is more				0	120000			0	1	120000
F	PEER REVIEW OF DGR (Lump Sum)	Nos		10000	1	10000	10000		0	1	10000
	TOTAL A to F					6153170					6153170
	GST 18%										1107571
	Grand Total : with GST 18%										7260741
Note:						Total					Says 72.61 Lakhs
1	Revised Rates of Promotional Work done by MECL on behalf of Govt. of India Vide letter No. 37(I) /2006-M.I. dated- 02/07/2014 and based on actual escalation as per RBI indices as on 31-03-2017 and the same has been considered for subsequent year.										
2	Phoshphonite rates have been considered as there is no rates for Limestone in Revised Rates of Promotional Work of MoM Schedule of Rates.										

B.P. Ratan

ANN – 5B/1/G3/2

ANNEXURE-II

Table:6.1 TIME SCHEDULE FOR G-3 EXPLORATION for TSSPTLST-4

Sl. No.	Activities	Unit	MONTHS						Total
			1	2	3	4	5	6	
1	Camp Setting	Month	In continuation of G4						1 month
2	Surface Drilling (1 rig)(250meter/ rig/Month)	m.		←	→				300 (6 Bhs)
3	Survey Party days (1 Party)	day		←	→				50
4	Geologist Party days (1 Party)	day		←	→	→			90
5	Sampling Party days, (1 Party)	day		←	→	→			90
6	Bulk Dencity Party days, (1 Party)	day		←	→				30
7	Laboratory Studies	Nos.		←	→	→			445 No
8	Camp Winding	Month					↔		1 month
9	Report Writing (including peer review)	Month				←	→	→	3 months

Ratnam

BP. Ratnam