EXPLORATION PROPOSAL (G-3/G-2) FOR LIMESTONE IN DONDAPADU BLOCK (TSSPTLST-11), CHINTALAPALEM 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 Donadapadu 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 Southeast of Dondapadu village, Chintalapalem Mandal, Suryapet District. Chintalapalem Mandal is located Southeast 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.65D/1. The geo-coordinates of the corner points of the block are given below alongwith area covered therein.

TSSPTLST-11: Dondapadu Block

Point	Latitude	Longitude	Proposed Area in Ha.
A	16°48'31.435"N	80°2'8.118"E	451.597
B	16°48'37.955"N	80°3'1.755"E	
C	16°47'11.438"N	80°3'15.573"E	
D	16°47'2.505"N	80°2'18.006"E	

III. PHYSIOGRAPHY, DRAINAGE & CLIMATE:

Physiographically, the proposed block is mostly a plain area with highest elevation **40m** above MSL and drains towards North East. 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) alongwith 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 (G3 exploration) 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 600 meterage with 50 meters depth at 12 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 1400M at 28 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 600 Nos primary samples and 60Nos Check samples (10% of Primary sample). In addition 5% of primary samples i.e. 30 Nos check samples will be prepared as External Check samples and will be sent to NABL Labs for analysis of 6 radicals. Around 60 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 100 Nos of composite samples. These samples will be analyzed for 12 radicals.

G2 exploration: This will generate about 1400 Nos primary samples and 140 Nos Check samples (10% of Primary sample). In addition 5% of primary samples i.e. 70 Nos check samples will be prepared as External Check samples and will be sent to NABL Labs for analysis of 6 radicals. Around 140 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 234 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 2000 and check samples 200 (10% of primary samples) will be analyzed for 6 radicals. Cao, MgO, Al_2O_3, SiO_2, Fe_2O_3, and LOI . Around 200 samples will be analyzed for 2 additional radicals- SO_3 & P_2O_5. 5% of primary samples (100 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 334 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 85 Nos of composite samples to know the presence of trace elements and 85 Nos of composite samples for minerals phase studies (XRD studies) respectively.

(ii) Petrological Studies: Petrological studies will be done on around 85 Nos of drill core specimen.

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

(iv) Quantum of work proposed:

G3 Exploration

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.51
2	Drilling (800m x 800m grid) (Core bore hole)	m.	600m (12 BHs)
3	Topographical Survey Work (1:5000 Scale)	Sq. Km	4.51
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.	600 Primary + 60Check = 660
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	60
	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.	30
	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.	100
	a) Physical Studies		
6	a) Trace Element Study By ICPMS (10 elements)	Nos.	25
	b) XRD studies	Nos	25
	c) Petrological Studies (Petrographic Studies)	Nos	25
7	Specific Gravity Determinations	Nos	40
8	Report Preparation (Digital format)	Nos.	1 No.

G2-Exploration

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.51
2	Drilling (400m x 400m grid) (DTH filling borehole)	m.	1400m (28 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.	1400 Primary + 140 Check = 1540
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	140
	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.	70
	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.	233
	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. 295.408 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	6334010	3872900	10206910
3	Laboratory Studies	2650235	6203806	8854041
4	Preservation of Cores	255500	575500	831000
5	Exploration Report	50000	50000	100000
6	Peer review	10000	10000	20000
7	Environmental Studies	0	1807284	1807284
	Total	11560125	13474480	25034605
	18% GST	2080822.5	2425406.4	4506228.9
	Grand total	**13640947.5**	**15899886.4**	**29540833.9**

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 Ne 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. It is nothing but the southern extension of existing leased areas. 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

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

Point_Id	Latitude	Longitude	Area (in hectares)
A	16° 48' 31.435" N	80° 2' 8.118" E	451.597
B	16° 48' 37.955" N	80° 3' 1.755" E	
C	16° 47' 11.438" N	80° 3' 15.573" E	
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TSSPTLST-11

Legend

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

Scale 1:50,000

1 0.5 0 1 2 Kilometers

GUNTUR,KHAMMAM, KRISHNA & NALGONDA DISTRICTS, ANDHRA PRADESH

LEGEND

		FORMATION	GROUP	SUPERGROUP	AGE
Q_2kgasd	Sand	Avanigadda	Krishna-Godavari		Holocene
$Q_2kgaslcl$	Silty clay				
Pt_3knlsf	Flaggy limestone	Narji	Kumool		Neoproterozoic
Pt_3knlsm	Massive limestone				
Pt_3kbs	Shale	Banganapalle			
Pt_3kbq	Quartzite				
Pt_2cncq	Quartzite	Cumbum	Nallamalai	Cuddapah	Mesoproterozoic
Pt_2cncph	Phyllite				
Pt_2cncdo	Dolomite				
β Pt_1d	Dolerite	Basic intrusives			Palaeoproterozoic
γAp_3afg	Alkali feldspar granite		Peninsular Gneissic Complex-II	Peninsular Gneissic Complex	Archaean
γAp_3gbg	Grey biotite granite				
γAp_3ghbg	Grey hornblende biotite granite				
γAp_3pbg	Pink biotite granite				
γAp_3phbg	Pink hornblende biotite granite,				
Ap_3ghbgn	Grey hornblende biotite gneiss				

STRUCTURAL INDEX

30 Bedding (inclined) — Foliation (vertical) — F F Fault

45 Foliation (inclined) — Thrust

GEOLOGY

The area lies between N latitudes 16°45' - 17°00' and E longitudes 80°00' - 80°15'. The area lying to the north of the Krishna river falls in Krishna district whereas the area south of the river falls in Guntur district with small parts falling in Khammam and Nalgonda districts. It has a good network of roads connecting the major towns as well as the smaller settlements. The important villages in the area are Jaggayapeta, Makkapeta and Gokavaram.

The area is gently undulating in the northern and eastern part whereas in the southwestern part it is slightly rugged with quartzite ridges rising to a maximum elevation of 195m above msl. The relief in the area is around 45m. It is characterised by hogbacks of quartzites and residual hills of granites which standout prominently within a vast pediment-pediplain complex. The area is drained by Krishna river and its drainage network. It experiences tropical climate with temperatures ranging from 12°C(min) in December to 45°C (max) in May and receives rainfall from southwest and northeast monsoons. The average rainfall ranges from 1200 to 1300mm.

The area is characterised by lithotypes ranging in age from Archaean to Proterozoic, the latter belonging to the Cuddapah Supergroup and the Kurnool group of rocks. A major part of the area is occupied by Archaean granite gneisses whereas the entire southwestern part exposes Proterozoic platformal sediments. The northern and the eastern part is characterised by the granite gneisses with small enclaves of older metamorphics and traversed by numerous dolerite dykes. The contact between the Cuddapah and Archaean granite gneisses is faulted. The Cuddapah Supergroup is represented by Cumbum formation overlain by the Kurnool group represented by Banganapalle and Narji Formations. The contact between Cumbum and Narji is generally marked by a thrust. A narrow discontinuous floodplain is seen bordering the Krishna river which forms an inverted 'U' in this part.

Undigested remnant of the older metamorphics which has escaped migmatisation. The granite gneiss is grey, migmatitic in nature with enclaves of amphibolite seen at places in the form of bands, lenses, schleiren. This gneiss is traversed by a number of dolerite dykes criss-crossing in different directions. The major directions are N-S, NE-SW, E-W and NW-SE Porphyritic variety of this is also seen in the northern part. Small lamproite body in the form of dykes ranging in strike length upto 600m and in width from 1 m to 20m are recorded on Tirumalagiri hill, SE of Vedadri, Sher Mohammadpeta and other places. Most of these are associated with dolerite dykes. They contain diopside, olivine, phlogopite, richterite and fine spinels. Presence of chrome-diopside and pyrope gamet is also known from some of these bodies.

The Cumbum formation of Cuddapah Supergroup is represented by the quartzite, shale/phyllite and dolomite. The quartzites are seen as prominent strike ridges amidst a flat terrain constituted of phyllites with occasional dolomite. The phyllites exhibit colour banding and the strike of the bedding ranges from NNW-ESE to NNE-SSW with 30° to 50° northerly and easterly dips.

The Kurnool group is represented by Banganapalli and Narji Formations. The Banganapalli Formation is mainly quartzite unit. It generally shows a low dip ranging from 5 ° to 10° towards WSW and ESE. Its width ranges from 50m to about 2km. This Formation is overlain by the shales/slates and limestone of Narji Formation ranging in width from 0.5 km to 2km. It narrows down towards east. However the lowest unit is seen to occupy a larger area in the southwestern part between Krishna river and the shale unit of this Formation. It has a general trend of NE-SW with varying dip but on an average it is 30° to 45° due SE in most places. The contact between this unit and the Cumbum Formation is marked by a thrust. The Formations belonging to the Kurnool group are generally not folded.

The Quaternary fluvial landforms in the area are mainly the floodplain. Active channel and active channel bars of Krishna river. The floodplain seen as discontinuous patches bordering the active channels of Krishna river. The active channel of the Krishna river seen in the southern part forms an inverted 'U'. These fluvial sediments of the area are grouped under the Krishna-Godavari Formation of the Holocene age. The floodplain deposit is composed mainly of brown silty clay. The active channel deposit comprised coarse sand with rock fragments and the active channel bar deposit contained coarse to medium sand.

The granites and dolerites can be used as building stones, and road metal. The quartzites of the Cuddapah also can be used for construction purposes. Some of the conglomerates(particularly Banganapalli) and Quaternary gravels are known to be diamondiferous. The silty clay of floodplain deposit can be used for brick manufacturing and the sand of Krishna also can be used for construction purposes.

Index to Quadrangle

56 O	65 C	65 G
56 P	65 D	65 H
57 M	66 A	66 E

Index to Sheet

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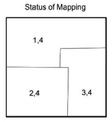
3	7	11	15
4	8	12	16

Administrative Index

1. Guntur, A.P
2. Khammam, A.P
3. Nalgonda, A.P

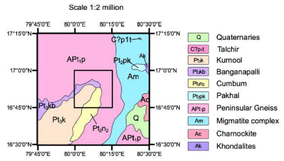
Status of Mapping



Geology compiled from the maps of :
1. Md. Ziauddin (1:63,360)
2. G. Ramalinga Swamy (1:50,000)
3. Srihari et al (1:25,000)
4. T. A. K. Reddy et al (1:50,000)

Regional Geological Map

Scale 1:2 million



Q	Quaternaries
C?p1t	Talchir
Pt₃k	Kurnool
Pt₃b	Banganapalli
Pt₃r₁	Cumbum
Ptpk	Pakhal
APt₁p	Peninsular Gneiss
Am	Migmatite complex
Ac	Charnockite
As	Khondalites

LOCATION MAP

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

65D/1

TSSPTLST-11

A
B
C
D

0 0.5 1 2 3 4 Kilometers

N

Point_Id	Latitude	Longitude	Area (in hectares)
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Telangana State

Suryapet District

Legend

Lat , Long Point

Existing Boundary

Proposed Block Boundary

TELANGANA STATE REMOTE SENSING APPLICATIONS CENTRE

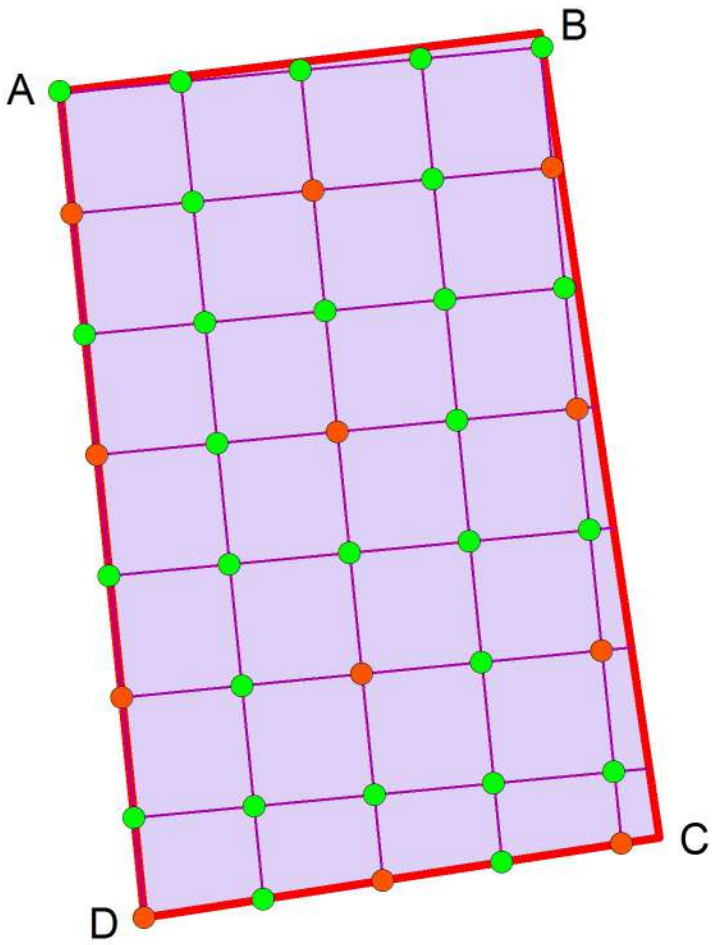
BOREHOLE GRID MAP

N

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

0 300 600 1,200 Meters

TSSPTLST-11



Area = 451.59 Ha or 4.51 Sq. Km.

Legend

- Proposed Block Boundary
- 400X400 DTH = 28 (G2- Exploration)
- 800X800 CBH = 12 (G3- Exploration)

ANNEXURE-I

Quantum of Work for TSSPTLST-11 (G-3) Exploration:

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.51
2	Drilling (800m x 800m grid) (Core bore hole)	m.	600m (12 BHs)
3	Topographical Survey Work (1:5000 Scale)	Sq. Km	4.51
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.	600 Primary + 60Check = 660
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	60
	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.	30
	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.	100
	a) Physical Studies		
6	a) Trace Element Study By ICPMS (10 elements)	Nos.	25
	b) XRD studies	Nos	25
	c) Petrological Studies (Petrographic Studies)	Nos	25
7	Specific Gravity Determinations	Nos	40
8	Report Preparation (Digital format)	Nos.	1 No.

ANNEXURE-IV

Quantum of Work for TSSPTLST-11 (G-2) Exploration:

Sl. No.	Item of Work	Unit	Quantum of work proposed
1	Geological Mapping (on 1:5000 scale).	Sq. Km.	4.51
2	Drilling (400m x 400m grid) (DTH filling borehole)	m.	1400m (28 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.	1400 Primary + 140 Check = 1540
	ii)Chemical Analysis Primary for 2 radicals (10%) i.e. SO_3 & P_2O_5	Nos.	140
	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.	70
	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.	233
	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
8	Environmental Studies	Nos.	1No.
9	Report Preparation (Digital format)	Nos.	1 No.

ANNEXURE-VII

Cumulative project Cost for Mellacheruvu Block

Sl. No.	Item	Total estimated Cost (Rs)		Total
		G3	G2	
1	Survey+ Geology+ Sampling	2260380.00	954990.00	3215370
2	Drilling	5748825.00	3760400.00	9509225
3	Laboratory Studies	2268935.00	5620666.00	7889601
4	Preservation of Cores	215500.0	515500.00	731000
5	Exploration Report	104936.00	108516.00	213452
6	Peer review	10000.00	10000.00	20000
7	Environmental Studies	0	1807284.00	1807284
	Total	10608576.00	12777356.00	23385932
	18% GST	1909544.00	2299924.00	4209467.76
	Grand total	**12518120**	**15077279**	**27595399.00**

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 – 5E/1/G2/1

ANNEXURE-III

Table:6.2 COST ESTIMATE FOR (G-2) EXPLORATION OF LIMESTONE, TSSPTLST-11

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 (2 Rigs) (DTH)	m.		750	1000	750000	0		0	1000	750000
2	Transportation	Km.	8.8	31	2500	77500	31		0	2500	77500
3	Accomodation	One time / Drill	185925	663715	2	1327430	663715		0	2	1327430
4	Camp Winding	Drill/ month	68606	244910	4	979640	244910		0	4	979640
5	Road Making (Flat Terrain)	Km	7800	18563	10	185630	18563		0	10	185630
	Sub Total A					3320200			0		3320200
B	**GEOLOGICAL WORK**										
1	Survey Party Days (1 party)	day	1180	5840	30	175200	5840		0	30	175200
2	Geologist Party days (1 party)	day	1541	7802	90	702180	7802		0	90	702180
3	Core Sampling Party days(1 parties)	day	525	2809	90	252810	2809		0	90	252810
	Sub-Total B					1130190			0		1130190
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	1100	2838000	2580		0	1100	2838000
	ii) for 2 radicals SO_3 & P_2O_5	Nos	186 (76+110)	972	100	97200	972		0	100	97200
	iii) External Check Samples for 6 radicals(CaO, MgO, SiO_2 , Al_2O_3 , Fe_2O_3 & LOI)	Nos	490 (76x5+110)	2580	50	129000	2580		0	50	129000
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	125	624000	4992		0	125	624000
b	**Physical Analysis**										
3	Preparation of thin section	Nos	100	538	10	5380	538		0	10	5380
4	Petrographic Studies	Nos	228	1436	10	14360	1436		0	10	14360
5	Specific Gravity determination	Nos	32	188.5	25	4712.5	188.5		0	25	4712.5
	Sub-Total C					3712652.5			0		3712653
D	**Preservation of Core**										
i)	GI Core boxes	Nos.		2000	250	500000	2000		0	250	500000
ii)	Transportation of Core Boxes	Km	8.8	31.0	650	20150	31		0	650	20150
	Sub-Total D					520150					520150
	Total A+B+C+D					8683193			0		8683193
E	**EXPLORATION REPORT - 1.5% of (A+B+C+D) or 120000 whichever is more**				0	133539			0	1	133539
F	**PEER REVIEW OF DGR (Lump Sum)**	Nos		10000	1	10000	10000		0	1	10000
G	**Environmental Studies**										
1	**Satelite Imagery Study**	**Scene**	**99697**	**457948.2**	1	457948.1998	**457948.2**		0	1	457948
2	**Base line Data Collection**	**(10 km radius area)**	**151273**	**694857.4**	1	694857.3982	**694857.4**		0	1	694857
3	**Chemical Analysis**	**Nos**	**257400****	**604478**	1	604478	**604478**		0	1	604478
4	**Report Writing**	**Nos**	**50000**	**50000**	1	50000	**50000**		0	1	50000
	Sub Total G					1807284			0		1807284
	TOTAL A to H					10634015					10634015
	GST 18%										1914123
	Grand Total : with GST 18%										12548138
						Total					Says 125.48 Lakhs

Note:

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	Phoshphorite rates have been considered as there is no rates for Limestone in Revised Rates of Promotional Work of MoM Schedule of Rates.
3	**Nityanad Committee Rates with actual escalation as per RBI index as on 31.3.2017 and the same for subsequent year.
4	*** As approved in the 12th meeting of Technical Committee & th meeting of Executive Committe of NMET.
5	**** Rate has taken from Schedule of Charges of differen activities of GSI as on 2014-15 and 40% escalation on the same has been considered for FY 2018-19.

Mineral Exploration and evaluation 18%(SAC Code: 998343)

BP Ratnoo

ANN – 5F/1/62/2

ANNEXURE-II

Table:6.1 TIME SCHEDULE FOR G-2 Exploration for TSSPTLST-11

Sl. No.	Activities	Unit	MONTHS Financial Year -2018-19							Total
			1	2	3	4	5	6	7	
1	Camp Setting	Month	←	→						1 Month
2	Surface Drilling(DTH) (2 rig)(500m/1 rig/Month)	m.		←	–	→				1000 m (in 20 BHs)
3	Survey Party days (1 Party)	day		←	→					30
4	Geologist Party days (1 Partie)	day		←	–	→				90
5	Sampling Party days, (1 Parties)	day		←	–	→				90
6	Laboratory Studies	Nos.			←	–	→			1420 No
7	Camp Winding	Month				←	→			1 Month
8	Environmental Studies			←	–	–	–	–	→	6 months
8	Report Writing (including peer review)	Month					←	–	→	3 months

Baturs

(BP. Baturs)