Regional Exploration Proposal (G-4 level) forBasemetal and Gold in Mohar Cauldron Area (Block-ID CR-MP-08), in an area of 100 Sq. Km., District: Shivpuri, (Madhya Pradesh)

1.0.0. Introduction:

1.1.1 Mohar collapse granite breccia is alkaline in nature which is part of alkali granite of Bundelkhand granite. Geological Survey of India concluded that Structural and tectonic settings are favorable for hydrothermal activity and due to Hydro-thermal activity elements mobilized and deposited in the deeper part of cauldron. The occurrence of Gold, Uranium and Base metal in the area warrant further follow up action for exploration, in the Mohar Cauldron area occurrences of Au, Uranium and base metals have been reported. Their extension / new zones can be identified for similar type of Mineralisation, in this block area, which is western continuity of the Mohar Cauldron block studied earlier. India is deficient in the production of Gold, Uranium and Base metals. The increasing demand of base metals has been accorded high priority in the XIIth Plan document.

1.1.2 During the last three decades, no large base metal, gold and uranium deposit 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, Mineral (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, Government 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 Basemetal and Gold in Mohar Cauldron Area (Block-ID CR-MP-08), District: Shivpuri, (Madhya Pradesh) 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 located 60 km South-eastfrom district headquarter Shivpuri by road and from Jhansi 66 km due South-west. The Shivpuri-Pichor road passes through the north eastern portion of the block. There are few roads and tracts motorable in dry season in the block area. The block is located in Survey of India Toposheet No. 54 K/3. The Co-ordinates of the corner points of the block area are given below and covers 100 sq. km. area.

A) $25^0$15’ 00” N -- $78^0$00’ 00”E,B) $25^0$20’ 00” N -- $78^0$00’ 00”E
C) $25^0$20’ 00” N -- $78^0$07’ 00”E,D) $25^0$15’ 00” N -- $78^0$07’ 00”E

1.3.0 **Physiology and Drainage:**

1.3.1 The area of the block is of undulating terrain with isolated hillocks. The North-western and South-eastern portion of the block area is under forest cover. The highest peak of 385 m from mean sea level is in the North-western portion of the block. The general ground level is 316 m to 320 m from mean sea level.

1.3.2 The streams of the block area showsdendritic drainage pattern forming Nalas and in turnforming tributary network system of Mahuar Nadi in the western part and Paronch Nadi in the eastern part of the block area. Both of the rivers are flowing North to South in the block. The Paronch reservoir is in the south-eastern corner of the block area.

2.0.0 **Previous work:**

2.1.1 Since 1859 various workers had been engaged in their work in Bundelkhand massifs, Murray W. Hitzman, Naomi Oreskes and Marco T, Einadi, 1992 have submitted paper on “Geological characteristics and Tectonic Setting of Proterozoic Iron Oxide (Cu-U-Au-REE) deposits. Bhatacharya D., Parihar P.S., Sinha R.M. and Sen D.B. (2006) have worked on Geochemical approach for exploration in Mohar collapsed Cauldron for the study for potential Fe oxide breccias hosted U-Cu mineralisation, GSI have done 1:25,000 scale mapping of the area.

2.1.2 Jayanta K. Pati, WalfUweReimold, ChristionKoelberl and Punitipati studied the Dhala structure (Mohar Cauldron 2007-08) and reported that the structure is not a collapse cauldron but a impact structure and submitted paper, “The Dhala structure, BundelkhandCraton, Central India-Eroded remnant of a large Paleo-Proterozoic impact structure.”

3.0.0 Geology and Structure:

3.1.0 Regional Geology and Structure of the area.

3.1.1 The lithounits exposed in and around the block area belongs to Bundelkhand gneissic complex group of rocks belonging to Archaean to Paleo-Proterozoic age overlain by Kaimur group of rocks of Vindhyan Super Group belonging to the Meso-Neo-Proterozoic age.

3.1.2 On the Eastern block boundary margin Mohar Cauldron developed as collapse Breccia. The outer ring of breccia extends into the block area on the eastern boundary of the block area. The foliation & Bedding planes are trending NW-SE dipping westerly. The Regional Stratigraphic Sequence of lithounits exposed is given below (after to GSI).

Regional Stratigraphic Sequence of the lithounits of the Area (after GSI)			
Age	**Super Group**	**Group**	**Lithounits**
Recent			Alluvium
Meso-Neo Proterozoic	Vindhyan	Kaimur	Shale, Sandstone
			Siltstone (Pre Kaimur formation)
Archaean to Paleo-Proterozoic	-	Bundelkhand Gneissic Complex	Quartz reef, Basic dykes, Diorite
			Monomictgranitoid Breccia, Granitoids (Fine, medium, coarse) calc-silicate rocks, Tonalite-Trondhjemite-Granodiorite

3.2.0 **Geology and structure of the Block:**

3.2.1 The lithounits exposed in the block are of Bundelkhand Gneissic Complex group of rocks belonging to Archaean to Paleo-Proterozoic age. The block area isa western continuity of the surrounding area of Mohar Cauldron. The Stratigraphic Sequence of the lithounits exposed in the block area is given below (after GSI).

Stratigraphic Sequence of the lithounits in block area (after GSI)			
Age	**Super Group**	**Group**	**Lithounits**
Recent			Alluvium
Archaean to Paleo-Proterozoic	-	Bundelkhand Gneissic Complex	Quartz reef, Basic dykes, Diorite
			Monomictgranitoid Breccia, Granitoids (Fine, medium, coarse) calc-silicate rocks, Tonalite-Trondhjemite-Granodiorite

4.0.0 **Objective of the proposed exploration programme:**

4.1.1 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 Base metals and Gold-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 Au, Cu, Pb & Zn and associated elements and decide further course of exploration programme.

iii) In case, surface samples give positive results supported by Remote sensing studies for mineral targeting for the extension of the ore body then5 no's scout boreholes shall be drilled in the Mohar Cauldron Area and other mineralized patches in 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 Gold and Basemetals 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 Content) 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 Remote Sensing:

5.1.1 The entire 100 sq km area will be subjected for remote sensing studies to identify the lineaments and other structural features and the mineral potential zones by mineral targeting process.

5.2.0 **Geological mapping:**

5.2.1 Geological Mapping will be done on 1:12,500 scale. 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. Surfacesamples of various litho-units for petrological studies and from ore bodies for Au, Cu, Pb, & Zn assay with accessory minerals will be taken during the course of geological mapping. The radioactivity in the lithounits will be traced by G.M. Counter and if it gives signal of required level, sample will be taken for Uranium.

5.3.0 Geo-Chemical sampling

5.3.1 Surface sampling (Bed Rock Sample/ Soil Sample):

During the course of Geological mapping the Bed rock and Soil samples 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, Cu,Pb, Zn assay

and 30 nos bed rock samples will be subjected to analysis of Au & Ag by fire assay.20 nos samples will be analyzed for REE & Uranium.

5.3.2. Stream Sediment Sampling:

The soil and stream sediment samples shall be collected from the entire study area of 100 sq. km. The samples shall be collected depending upon the forest cover and accessibility of the area. A total of 100 soil and stream sediment samples shall be collected from the study area and will be analyzed for, Cu, Pb, Zn assay and 30 nos stream samples will be subjected to analysis of Au & Ag by fire assay. 20 nos samples will be analyzed for REE & Uranium.

5.4.0 **Surveying:**

5.4.1 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. Rock types, their contact, structural features 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.

5.5.0 Exploratory Mining

5.5.1 **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 of Cu, Pb, Zn assay and 35 nos of samples will be subjected to analysis of Au & Ag by fire assay. The pit & trench walls will be mapped on 1:200 scale.

5.6.0 **Core Drilling:**

5.6.1 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.

5.7.0 **Drill Core Logging:**

5.7.1 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 designation will also be undertaken.

5.8.0 **Drill Core Sampling:**

5.8.1. During the geological logging of drill core, samples in mineralized zones will be marked on concentration wise and lithology wise. 200no's of samples (primary) will be analyzed for Cu, Pb, Zn assay, 10%primary samples will be given for check. 30 no's primary samples will be subjected for Au by fire assay.15 no's composite samples will be analyzed for Cu, Pb, Zn, Co & Ni assay and also for Au and Ag by Fire Assay.

5.10.0 **Whole Rock Analysis:**

5.10.1 5 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.

5.11.0 Petrological Studies:

5.11.1 During the course of core logging& mapping 20 samples from various lithounits intersected will be studied for petrography and 20 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc. in polished sections.

5.12.0 Specific gravity Determination:

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

5.13.0 **XRD studies:**

5.13.1 From the composite samples, 15Nos of samples shall be subjected to XRD studies to know the mineral phase of rock types.

5.14.0 Spectroscopy studies

5.14.1 15Nos of samples shall be subjected for Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals) (12 elements Cd, Sn, W, Sb, Mo, Ce, Nb, Ba, La, Bi, Co & Ni)for trace elements.

5.15.0 Quantum of Work Proposed

5.15.1 The detail of proposed quantum of work is given in the table below:

1. Reconnaissance Survey (G-4 level) for Base metals and Gold in Mohar Cauldron, (Block-ID CR-MP-08), in an area of 100 sq. km., District: Shivpuri (Madhya Pradesh)			
Sl. No.	**Item of work**	**Unit (m)**	**Proposed Quantum of Work**
1	**ASTER Data Analysis (Remote Sensing Studies)** (on 1: 50000 Scale)	Scene	1 Scene 100 sq. km.
2	**Geological Mapping** (on 1:12,500 Scale)	Sq. Km	100 sq. km.
3	**Topographical Survey** (on 1:12,500 Scale in potential Zone Areas)	Sq. Km	As per requirement
	Bore Hole Fixation (Scout Boreholes)*	Nos	5 Nos
	& Coordinate Determination*	Nos	5 Nos
4	**Geochemical Sampling**		
	a) Bed Rock Sampling	Nos.	100 Nos
	b) Soil Sampling & Stream Sampling	Nos.	100 Nos
5	Excavation (Trenching /Pitting)*	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.)
9	**Laboratory Studies**		
	I) Surface Sampling (Primary samples)		
	i) Bed Rock samples		
	a) For Cu, Pb & Zn b) For Au & Ag by Fire Assay c) REE d) Uranium	Nos Nos. Nos Nos	100 Nos 30 Nos 20 Nos 20 Nos
	ii)) Soil Samples & Stream Sediment Samples		
	a) For Cu, Pb & Zn b) REE & Uranium c) For Au & Ag by Fire Assay	Nos. Nos Nos	100 Nos. 20 Nos 30 Nos
	iv) Check Samples (Bed Rock / Soil & Stream sediment)		
	a) For Cu, Pb & Zn b) For Au & Ag by Fire Assay c) REE & Uranium	Nos Nos Nos	20 Nos 6 Nos 6 Nos
	v) Pit & Trench Primary & Check Samples*		
	a) For Cu, Pb & Zn b) For Au & Ag by Fire Assay c) REE & Uranium	Nos Nos Nos	110 Nos 33 Nos 10 Nos
	vi) Drill Core Primary Samples *		
	a) For Cu, Pb & Zn b) For Au & Ag by Fire Assay	N0s N0s	220 Nos 30 Nos
	vii) Composite Samples *		
	a) For 5 radicals (Cu, Pb, Zn, Co & Ni) b) Au & Ag (By Fire Assay)	Nos Nos	15 Nos 15 Nos

10	**Physical Studies** a) XRD – Studieson Composite samples	Nos.	15 Nos
	b) Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals)	Nos.	15 Nos
11	**Petrological Samples (Surface & Bh Core Samples***		
	a) Preparation of Thin Section b) Study of Thin Section	Nos Nos	20 Nos 20 Nos
12	**Mineragraphic Studies (Surface & Bh Core Samples)***		
	a) Preparation of Polished Section b) Study of Polished Section	Nos Nos	20 Nos 20 Nos
13	**Whole Rock Analysis -**		
	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.	Nos	5Nos
14	**Specific gravity Determination***	Nos.	10 Nos
15	**Report Preparation [As per Minerals (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 as new prospective areas. The details are indicated in bar chart given below.

Time schedule (in months) forRegional Exploration Proposal (G-4 level) for Base metals and Gold in Mohar Cauldron, (Block-ID CR-MP-08), in an area of 100 sq. km., District: Shivpuri (Madhya Pradesh)												
Item of Work	1	2	3	4	5	6	7	8	9	10	11	12
ASTER Data Analysis (Remote Sensing Studies) (on 1:50000 Scale)with Ground Check	←	—	→									
Remote sensing report				←	—	→						
Geological Mapping (2 Party Days)	←	—	—	—	→							
Bed Rock Sampling	←	—	—	—	→							
Soil Sampling / Stream Sediment Sampling		←	—	—	→							
Surveying (1 Party Days) for Sampling etc	←	—	—	→								
Sample Preparation Bed Rock / Soil / Stream (2 Party Days)			←	—	→							
Analytical Work				←	—	→						
Exploratory mining (Trenching / Pitting)						←	—	→				
Geologist Party days for Trenching / Pitting work						←	—	→				
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 **Rs202.12 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.)**
1	Remote Sensing & Report	20,00,000/
2	Geological, Survey & Sampling Work	62,43,900/-
3	Exploratory Mining	1,85,300/-
4	Drilling	97,20,866/-
5	Laboratory Studies	18,61,558/-
	Subtotal	**2,00,11,624/-**
6	Report	**2,00,116/-**
	Total	**2,02,11,740/-**

Or Say Rs. 202.12Lakhs (Rs. 2.02Crore)

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,there is possibility of getting few prospects in the strike or in any concealed shears. The Geophysical surveys and Remote sensing studies will add to the Geological mapping for targeting the mineralized zone

iii) The exploration will be helpful in estimation of reconnaissance resources of Au, Base metalsand accessory Uranium 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 Base metals and Gold in Weslo / Mohar Cauldron, (Block-ID CR-MP-08), District: Shivpuri (Madhya Pradesh)						
Sl. No.	**Item of Work**	**Unit**	**Base Rate 01-04-1990**	**Rates (2016-17)**	**Qty.**	**Amount**
A	**ASTER Data Study (REMOTE SENSING Studies) & REPORT (1 BLOCK)**	**Nos**		**20,00,000.00**	**1**	**2000000**
B	**GEOLOGICAL WORK**					
1	Survey Party days					
	a) Survey Party days (1party) For Sampling etc	days	1180	6,146	120	737520
	b) Survey Party days (1 party) For Drilling	days	1180	6,146	90	553140
2	Geologist Party days					
	a) Geological Party days (2 Party) For Geological Mapping etc in an area of 100 Sq. Km	days	1541	8,021	240	1925040
	b) Geological Party days (1 Party) For Pitting/Trenching	days	1541	8,021	90	721890
	c) Geological Party days (1 Party) For Drilling, Core Sampling	days	1541	8,021	90	721890
3	Sampling Party days					
	a) Sample Preparation for Bed Rock, Soil & Stream samples (2 Partys)	days	525	2,945	150	441750
	b) Sample Preparation Pits/Trenches (1 Party)	days	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 B					**6243900**
C	**EXPLORATORY MINING**					
1	Excavation (Trenching/Pitting)	Cu. m	395	1,853	100	185300
	Sub-Total C					**185300**
D	**CORE DRILLING (5 BH)**					
1	Surface Drilling (2 rigs)	m	2551	11,597	600	6958200
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	15	305520
6	GI Core Boxes	Nos	Lumpsum	2,000	150	300000
7	Transportation Charges of Core Boxes	Km	8.8	34	800	27200
	Sub Total D					**9720866**
E	**LABORATORY STUDIES**					
1	**Chemical Analysis**					
	i) Surface sampling (Bed Rock Samples)					
	a) Cu, Pb, Zn	Nos.	110 + (76*2) =262	1,443	100	144300
	b) Au & Ag (By fire Assay)	Nos.	268	1,127	30	33810
	c) REE *	Nos.	3300	4290	20	85800
	d) Uranium *	Nos.	3500	4,550	20	91000
	ii) Soil Samples & Stream Sediment Samples					
	a) Cu, Pb & Zn	Nos.	110 + (76*2) =262	1,443	100	144300
	b) Au & Ag (By fire Assay)	Nos.	268	1,127	30	33810
	c) REE *	Nos.	3300	4290	20	85800
	d) Uranium *	Nos.	3500	4,550	20	91000
	iii) Check Samples (Bed rock/ soil/ stream)					
	a) Cu, Pb & Zn	Nos	110 + (76*2) =262	1,443	20	28860
	b) Au & Ag (By fire Assay)	Nos.	268	1,127	6	6762
	c) REE*	Nos	3300	4290	6	25740
	d) Uranium*	Nos.	3500	4,550	6	27300
	iv) Pit & Trench, Primary & Check Samples					
	a) Cu, Pb & Zn	No	110 + (76*2) =262	1,443	110	158730
	b) Au & Ag (By fire Assay)	Nos.	268	1,127	33	37191
	c) REE*	Nos	3300	4290	10	42900
	d) Uranium*	Nos.	3500	4,550	10	45500
	ii) BH Core Sampling, Primary & Check samples					
	a) Cu, Pb & Zn,	Nos.	110 + (76*2) =262	1,443	220	317460
	b) Au & Ag (By fire Assay)	Nos.	268	1,127	30	33810
	iii) Composite Samples					

	a) for five Radicals Cu, Pb, Zn, Co & Ni	Nos	110 + (76*4) =414	2,287	15	34305
	b) Au & Ag (Fire assay)	Nos	268	1,460	15	21900
2	**Physical Analysis**					
	i) Petrographic Studies (BH core + Surface Samples)					
	a) Preparation of thin section	Nos	100	545	20	10900
	b) Study of thin section	Nos	228	1,495	20	29900
	ii) Mineragraphic Studies (BH core + Surface Samples)					
	a) Preparation of polished section	Nos	100	583	20	11660
	b) Study of polished section	Nos	364	2,118	20	42360
	iii) Whole rock analysis	Nos	1316	6,386	5	31930
	iv) Specific Gravity Determination (BH)	Nos	32	198	10	1980
	v) XRD & Spectroscopic Studies					
	a) X-RD Studies on composite	Nos	1137	5,900	15	88500
	b) Trace Element Studies by ICPMS Studies for the full spectrum of 48 Elements*	Nos	7900	10,270	15	154050
	Sub-Total E					**1861558**
	Total (A+B+C+D+E)					**20011624**
F	**EXPLORATION REPORT - 1% of (A+B+C+D+E)**					**200116**
	GRAND TOTAL (A+B+C+D+E+F)					**20211740**
					Say Rs.202.12 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.					