Proposal for Reconnaissance Survey (G-4 stage) for Tin, RM - REE Mineralization in Bande-Saver Area (129 sq km), District: Uttar Bastar Kanker, Chhattisgarh, [Toposheet-65A/05 & 09], [Under NMET funding].

Commodity: TIN, RM – REE MINERALIZATION

BY

GEMCO KATI EXPLORATION PRIVATE LIMITED

Plot No-34, Postal Colony, Bapat Nagar, Chandrapur-442401, Maharashtra

Place: Chandrapur
Date: 10th July 2025

FORMAT FOR SUBMITTING PROPOSAL FOR UNDERTAKING EXPLORATION

Chandrapur, dated the 10th July 2025

From	To
Subrata Sarkar	The Director,
Vice President (Projects & Planning)	NMET Secretariat, Room No. 114- F Wing, First Floor
Gemco Kati Exploration Private Limited	Dr. Rajendra Prasad Road
E-77, MIDC Road, Chandrapur-442406.	New Delhi- 110001.

Madam/Sir,

I am submitting the following details for granting 'in-principle' approval' by NMET on the proposal of reconnaissance or prospecting surveys to NMET under the "Scheme for Engagement of Notified Private Exploration Agencies in Mineral Exploration directly through National Mineral Exploration Trust issued by Ministry of Mines vide OM No.F.No.6/3/2015- NMET/176, New Delhi, dt 27th June'2024.

1.Name and Address of the Applicant:

(a) Name of NPEA	**GEMCO KATI EXPLORATION PRIVATE LIMITED**
(b) Name of Authorized Signatory	Subrata Sarkar, Vice President (Projects & Planning)
(c) Postal address:	E-77, MIDC Road, Chandrapur-442406.
(d) Telephone Number (Office):	07172-287200
(e) Fax number (Office):	07172-287200/230562
(f) Mobile No:	(+) 91 7044208900
(g) Telephone Number (Residence):	(+) 91 7044208900
(h) E-mail address:	subrata.sarkar@gemcokati.com

2. Details of Accreditation as Private Exploration Agency and Notification under the proviso to Section 4(1) of the MMRD Act:

(a) Date of accreditation by QCI-NABET	16th March'2022
(b) Date of expiry of accreditation	6th March'2025
(c) Date of Re-accreditation	23rd April'2025.
(d) Date of expiry of Re-accreditation	22nd April'2028
(e) Date of Notification under the proviso to Section 4 (1) of the MMDR Act.	7th April'2022
(f) Date of expiry of notification	6th March'2025
(g) Date of Re-notification	18th July 2025
(h) Date of expiry of Re-notification	22nd April 2028

PLOT NO. 34, POSTAL COLONY, BAPAT NAGAR, CHANDRAPUR 442401, MAHARASHTRA
www.gemcokati.com Ph no: 07172-287200 Mail: subrata.sarkar@gemcokati.com

(i) Category of the Exploration agency (Category A or B) under Notification	Under category 'A' Exploration Agency.

3. Location Details of the Area Proposed:

(a) State	Chhattisgarh
(b) District (s)/ Taluka(s)/ Block(s) Nearby Village (s)	District: Uttar Baster Kanker, Taluka-Banapur. Villages: Bhabanipur, Marora,Bande, Shantipur, Karakoda, Gattapalli, Saver, Pindkasa, Haridaspur, Radhapur.
(c) Survey of India (SOI) Toposheet (s) No. Area in sq. km.	**65A/05 & 09** **129 Sq.km.**
(d) Boundary coordinates of the proposed block (in Decimal degree)	

	Longitude			Latitude		
(A)	80^0	33'	00.55"	19^0	58'	22.00"
(B)	80^0	36'	44.43"	19^0	58'	26.37"
(C)	80^0	36'	38.78"	19^0	51'	31.71"
(D)	80^0	30'	26.46"	19^0	51'	35.23"
(E)	80^0	30'	22.92"	19^0	54'	12.02"
(F)	80^0	28'	16.09"	19^0	54'	43.50"
(G)	80^0	28'	29.21"	19^0	55'	55.82"
(H)	80^0	31'	46.19"	19^0	55'	24.03"

4. Mineral Potential of the Area:

a) Name of Mineral(s) identified/ expected in the area/ block	**TIN, OTHER RM & ASSOCIATED MINERALIZATION**
b) Title of the Project with name of the block	Reconnaissance Survey (G-4 stage) for TIN, other RM & associated mineralization in Bande-Saver Block (129 Sq km), District: Uttar Baster Kanker, Chhattisgarh [Topo-65A/05 & 09]
c) Stage of Exploration	G4
d) Basis on which mineral potential in the area has been identified	Available geoscience data accessed from the GSI's baseline geoscience database available in the NGDR/ Bhukosh portal of GSI: (Mainly mapping reports). Recently concluded 5 [G4] Reports in adjacent area of Maharashtra by Gemco Kati, under NMET funding were also been consulted.

PLOT NO. 34, POSTAL COLONY, BAPAT NAGAR, CHANDRAPUR 442401, MAHARASHTRA
www.gemcokati.com Ph no: 07172-287200 Mail: subrata.sarkar@gemcokati.com

Proposal for Reconnaissance Survey (G-4 stage) for TIN, RM -REE mineralization in Bande-Saver Area (129 sq km), District: Uttar Bastar Kanker, Chhattisgarh, [Toposheet-65A/05 & 09], [Under NMET funding].

Commodity: TIN, RM – REE Mineralization

BY

GEMCO KATI EXPLORATION PRIVATE LIMITED

Plot No-34, Postal Colony, Bapat Nagar, Chandrapur-442401, Maharashtra

Place: Chandrapur
Date: 10th July 2025

Summary of the Reconnaissance Survey (G-4 stage) for TIN, other RM & associated mineralization in Bande-Saver Block (129 sq km), District: Uttar Bastar Kanker, Chhattisgarh, [Toposheet-65A/05 & 09]	
Features.	**Descriptions.**
Block ID.	**Bande- Saver Block (129 sq km).**
Exploration Agency.	Gemco Kati Exploration Pvt. Ltd.
Commodity.	**TIN, OTHER RM & ASSOCIATED MINERALIZATION**
Mineral Belt.	The supracrustal belts and other tectono metamorphic provinces of Central India have been divided into two crustal provinces viz. Southern Central Province (SCP) and North Central Province (NCP). Southern Central Province is further divided into two parts namely Sakoli Fold Belt (SFB) and the **Bastar Craton.** The proposed block is falling within the **Bastar Craton.**
Time Schedule to complete the Project.	12 months.
Objectives.	Investigation entitled ''Reconnaissance Survey (G-4 stage) for Tin (Sn), REE & associated mineralization **i**n "Bande- Saver Block (129 sq km), District: Uttar Bastar Kanker, Chhattisgarh, [Toposheet-65A/09]'' is proposed primarily based on reported occurrences of Tin and Niobium in bed rock and panned concentrate of drainage sediments within the block areas viz, **Havalbaras, Karakoda, Saver and Bande** during in FS-1979-80 by GSI. Besides, similar work has been carried out extensively by GSI with positive outcome in identical geological set up in parts of **Tongpal, Pushpal & Govindpal** areas, in adjacent Chhattisgarh State [Toposheets No- 65F/09/13 & 14]. As per available data in public domain the further follow up of above occurrences has not been validated yet in this part of Chhattisgarh. Moreover, Mission-I activities viz. STM, NGCM, NGPM and NAGMP were not been attempted so far, in this highly mountainous forest and inaccessible OGP areas of the Uttar Bastar Kanker District, Chhattishgarh State, bordering Maharashtra in the west. In order to confirm the reported occurrences from bed rock, Heavies and colluvium placers and to scan more areas, the following NQT is proposed to identify the target areas for further exploration, preliminary assessment surveys for colluvial

<table>
<tr><td></td><td>placers of cassiterite and associated Nb, Ta & W minerals, if any.
1) To carry out Geological Mapping on 1:12,500 scale of the block area (129 Sq. Km) to assess various litho units using field equipment's, recording of linear and planar structural features like shear zones, fracture zones and lineaments, looking for Niobium (Nb), Tin (Sn), Tungsten (W) and associated Rare Metal (RM) mineralization's, if any, and to assess the geological potentiality of the block.
2) To carry out few trenches to expose the mineralized zone
3) To carry out systematic grab/channel sampling of bed rocks.
4) To carry out systematic panned sediments sampling (Heavies) from the drainage network passing through the block area.
5) To carry out pit sampling from colluvial placers if any, on grid pattern within the block area.
6) To carry out few stream sediments sampling from the first, second and higher order streams.
7) Petrological/Mineralogical studies of possible host rock and their chemical analysis (PCS).
8) XRD/SEM EDX analysis for identification of minerals.
9) Finally, to brought out G4 report as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules 2015.</td></tr>
<tr><td>Whether the work is to be carried out by the proposed agency or through outsourcing and details thereof.</td><td>The work will be carried out by the proposed agency ie. Gemco Kati Exploration Pvt. Ltd., Chandrapur.</td></tr>
<tr><td>Components to be outsourced and name of the outsourced agency.</td><td>Not applicable.</td></tr>
<tr><td>Name /Number of Geoscientists.</td><td>Two Geologists (2G).</td></tr>
<tr><td>Expected Field Days</td><td>Geologist- 240 days:</td></tr>
<tr><td>1-Location.</td><td></td></tr>
<tr><td>Co-ordinates of the proposed block.</td><td>
<table>
<tr><th></th><th colspan="3">Longitude</th><th colspan="3">Latitude</th></tr>
<tr><td>(A)</td><td>80^0</td><td>33'</td><td>00.55"</td><td>19^0</td><td>58'</td><td>22.00"</td></tr>
<tr><td>(B)</td><td>80^0</td><td>36'</td><td>44.43"</td><td>19^0</td><td>58'</td><td>26.37"</td></tr>
<tr><td>(C)</td><td>80^0</td><td>36'</td><td>38.78"</td><td>19^0</td><td>51'</td><td>31.71"</td></tr>
<tr><td>(D)</td><td>80^0</td><td>30'</td><td>26.46"</td><td>19^0</td><td>51'</td><td>35.23"</td></tr>
<tr><td>(E)</td><td>80^0</td><td>30'</td><td>22.92"</td><td>19^0</td><td>54'</td><td>12.02"</td></tr>
<tr><td>(F)</td><td>80^0</td><td>28'</td><td>16.09"</td><td>19^0</td><td>54'</td><td>43.50"</td></tr>
<tr><td>(G)</td><td>80^0</td><td>28'</td><td>29.21"</td><td>19^0</td><td>55'</td><td>55.82"</td></tr>
<tr><td>(H)</td><td>80^0</td><td>31'</td><td>46.19"</td><td>19^0</td><td>55'</td><td>24.03"</td></tr>
</table>
</td></tr>
</table>

Villages.	Bhabanipur, Marora, Bande, Shantipur, Karakoda, Gattapalli, Saver, Pindkasa, Haridaspur, Radhapur,..
Tehsil/Taluk.	Banapur
District.	Uttar Bastar, Kanker.
State.	Chhattisgarh.
2-Area (hectares/sq,km)	
Block Area.	**129 Sq. Km.**
Forest Area.	The area is covered by open mixed dense Forest.
Government Land Area.	----------
3-Accessibility.	
Nearest Rail Head.	Bhanupratappur (CG) is the nearest Railway Station at 65 Km distance. The Chandrapur (MS) is 183 Km away and Raipur is 200 Km away from the Block area.
Road.	The study area is well connected with Nagpur/Chandrapur towns by State Highway and accessible throughout the year via Khutgaon, Gadchiroli and Mul, which is about 183 km from Chandrapur and 340 Km from Nagpur Town.
Airport.	Raipur Airport: 217 km from Block area.
4-Hydrography	
Rivers and Streams.	The first/second order streams of the area display dendritic pattern and are controlled by both lithology and structure of the rocks. The area is drained by Sohagaon-Dodgi Nala, Gattadara Nala & Vergal Nala flowing towards west, Bethia & Soda Nalas flowing towards east and Kudal Nala flowing towards south.
5-Climate.	
	The area is having dry and partly humid climate. The southwest monsoon commences from June and continuous till September. The winter starts from late October/early November and continue to February.
Mean Annual Rainfall.	The area experiences an annual average rainfall of about 150 cm during monsoon between June to October. A thick soil cover aided by a good rainfall has given rise to moderately thick vegetation forming deciduous type of forests.
Temperature.	The highest and lowest temperatures of the area vary between 43°C and 12°C. May is the hottest month of the season whereas December is the coldest month.
December (Minimum).	12^0C
May (Maximum).	40^0 - 43^o C [Average varies from 22°C to 35°C]

6-Topography.	
	The proposed block area represents a low lying highly peneplained terrain having gentle slopes towards south & west. Isolated small spurs and hummocky grounds occur here and there. The general ground level lies at about 300 m M.S.L. It attains a maximum height of 351 m above M.S.L. in the north of Bhabanipur followed by minimum height of 306 m above M.S.L in the east of Karakoda..
Toposheet No.	**65A/ 05 & 09.**
Morphology of the area.	The area exhibits a matured topography having attained peneplanation and surrounded by high linear ridges.
7- Availability of Baseline Geoscience Data.	
Geological Map (1:50K/1:25K).	1:50,000 Scale Geological Map is available and was downloaded from GSI Portal (Bhukosh)/NGDR.
Geochemical Data.	Area is not been covered yet by STM, National Geochemical Mapping (NGCM).
Geophysical (Aeromagnetic, ground geophysical, Regional and local GP maps).	Area is not covered yet by National Geophysical Mapping (NGPM) and National Aero-Geophysical Mapping (NAGMP).
8-Justification for taking up Reconnaissance Survey.	
	Reported occurrences: • Bed rock samples with Sn values ranging from 10 ppm to 30 ppm and Nb values ranging from 50 ppm to 100 ppm have been reported by S. S Jain and S.K. Pattnaik, Geologists (Jr.) during FS 1979-80. • The analytical results of panned samples collected from the streams/nadi, in and around **Havalbaras, Karakoda, Saver and Bande** indicate Sn values ranging from 10 ppm to 75 ppm and Nb values ranging from 75 ppm to 200 ppm. The Ta and W values have been shown less than 500 ppm and 100 ppm respectively been reported by S. S Jain and S.K. Pattnaik, Geologists (Jr.) during FS 1979-80. • The similar work has been carried out previously in the adjacent Eastern part, in an identical geological set up, where too the analytical results of bed rock and colluvium placers from Katekalyan, Dumam Nadi, Rani Nala Block, Bodavada Block, Bodenar Block, Kapanar area, Kaklur Block,Marjun-Ellingnar area and Bothapara Block, Katekalyan area, indicate "Sn values ranging from 10 ppm to 100 ppm and Nb values ranging from 50 ppm to 1000 ppm & Ta values ranging from 500-700 ppm".(GSI Reports) • The average abundance of Sn, W and Nb in granitic rocks is 3 ppm, 2 ppm and 20 ppm respectively

<table>
<tr>
<td></td>
<td>(Krauskopf, 1967). The average abundance of Sn in ore bearing granites is 15+4 ppm (Beus- XXIII I.G.C.)

• The Geologists of the Exploration Wing of Gemcokati Exploration Pvt Ltd. have visited the area twice on 10-10-2024 to 12-10-2024 & 07-04-2025 to 08-04-2025. During their visit few grab & stream sediment samples were drawn from the block areas for chemical analysis, analysed for Trace elements, REE's and Major oxides. The analytical results are given in the table below.

<table>
<tr><th></th><th>Sn(ppm)</th><th>REE (ppm)</th><th>Nb (ppm)</th></tr>
<tr><td>BRS</td><td>6-85 ppm</td><td>67-1215 ppm</td><td>9-88 ppm</td></tr>
<tr><td>SSS</td><td>BDL</td><td>96-110 ppm</td><td>15-1052 ppm</td></tr>
</table>

• The results are encouraging and the area deserve reconnaissance survey through mapping, regional geochemical and stream sediment sampling, in order to locate significant zones of Tin and rare metal mineralization, if any.
• Apparently, no work has been carried out in this area, for last 40 years, since 1987 by any agencies.</td>
</tr>
<tr>
<td>Enclosures:</td>
<td>(i) Base map showing the Block area.
(ii) Location of the proposed block demarcated on Survey of India (SOI) Toposheet No-65A/05&09.
(iii) Location of the proposed block demarcated on Goggle map.
(iv) Location of the proposed block demarcated on 50 K Geological map.</td>
</tr>
</table>

Place: - Chandrapur

Date – 15.06.2025

GEMCO KATI

Signature of the applicant

1. BLOCK SUMMARY:

1.1.1. Physiography: -

The area proposed for exploration (G4) represents the undulatory plain with low hills and low linear ridges having gentle slopes towards south & west. The area form part or the Indravati basin (draining: into the Godavari River) and includes the Kotri, the waler, and the Bande rivers. The general ground level lies at about 300 m M.S.L. It attains a maximum height of 351 m above M.S.L. in the north of Bhabanipur followed by minimum height of 306 m above M.S.L in the east of Karakoda. Dense forest covers all parts of the area except for cultivated patches of land near the villages.

1.1.2. Back Ground Geology & Regional Geology of the Block:

Regional Geology

Geologically, Uttar Baster Kanker district presents a variety of geological units right from Archean to Recent. The area systematically mapped on 1:50,000 scale as per 1981-1982 Field Season Programme of the Geological survey of India. The area. mapped is covered in Survey of India Toposheet Nos. 65A/05 & 65A/09. The rocks of the area have been classified into five groups, based on the type of lithological association, structural characters, and other features.

The Bengpal Group comprises metasedimentary, ultramafic-gabbro anorthosite suite of rocks and granite occurring in a predominantly gneissic area. The rocks have been repeated1y deformed and metamorphosed to upper amphibolite and granulite assemblages.

The Bailadila Group comprises metasediments dominated by banded iron formation, metabasics and granite which have been involved in polyphase deformation and green-schist to lower amphibolite grade metamorphism.

The Dongargarh Supergroup comprises a folded volcano-sedimentary sequence of rocks, including both acid and basic volcanic types, and the Dongargarh granite.

The Nandgaon Group is the oldest component of the Dongargarh Supergroup and Includes the Bijli Rhyolite overlain by the Pitepani volcanics, the latter dated by Rb/Sr method to have evolved about 2200 Ma ago (Sarkar et.al., 19129). The Nandgaon Group is intruded and metamorphosed at the contacts by coarse grained Dongargarh granite suite of rocks.

The Khairagarh Group comprises alternating volcanic and sedimentary rocks which may be correlated with the Narainpur (Abujmar) Group. The Indravati Group has been correlated with the Chhattisgarh Group.

The regional stratigraphic frame work given below is after Crookshank (1963), partly modified with additional data collected by the work of V.P Mishra et.al (1981) and Sarkar et al (19129).

<table>
<tr><td colspan="5">TABLE – 1.1</td></tr>
<tr><td rowspan="6">P
R
E
C
A
M
B
R
I
A
N</td><td colspan="4">Recent</td></tr>
<tr><td colspan="2">Indravati Group</td><td colspan="2">= Chhattisgarh Group</td></tr>
<tr><td rowspan="3">D
O
N
G
A
R
G
A
R
H</td><td rowspan="3">S
U
P
E
R
G
R
O
U
P</td><td>Khairagarh Group</td><td>= Narainpur Group</td></tr>
<tr><td colspan="2">1534 Ma – 900Ma</td></tr>
<tr><td>Dongargarh Group</td><td>2200 Ma</td></tr>
<tr><td colspan="2" rowspan="3">Bailadila group</td><td rowspan="3">Nandgaon Group</td><td>Pitepani Volcanics</td></tr>
<tr><td>Bijli Rhyolites</td></tr>
<tr><td>2200 Ma</td></tr>
<tr><td>Archaean</td><td colspan="2">Bengpal Group</td><td colspan="2">Older rocks, undated</td></tr>
</table>

1.1.3 Geology of the block:

Block proposed for the exploration is falls under the toposheet no 65A/05 & 65A/09, Uttar Baster Kanker district, Chhattisgarh, geologically presents a variety of the litho units from Archean to recent. The study has brought the presence of distinct lithological and structural association in the area. These can be conveniently placed in the comparatively high grade (Meta-Bodeli and Sangam-Benur group), medium to low grade (Toka-Javeli and Latmarka and possibly Kotri super group) and unmetamorphosed groups.

The Toka-Javeli Group of rocks (exposed in Toposheet No. 65A/05) includes meta-ultramafic-meta-sediment and gneiss-association and forma the northern continuation of the Surjagarh green stone belt, correlated with the Bailadila Group. The rocks show polyphase deformation generally along north-south direction and complex fold features. This group shows mineral assemblages of lower to middle amphibolite grade of metamorphism and resembles the granite-greenstone association of Precambrian terrains.

Latmarka Group, Kotri Supergroup, Meta Bodeli and Sangam-Benur Groups, exposed in 65A/09. The Latmarka Group of rocks is exposed in toposheet Nos. 65A/09 includes banded iron formation-tuffite-sandstone association. The rocks are metamorphosed to very low grades. This group is correlated with the Bailadila Group. This group has intricate lithological and structural relations with rocks of the Kotri Super group.

The Kotri Supergroup of rocks includes sedimentary and igneous rock types. The sedimentary rocks includes conglomerate-sandstone and shale trending generally north-east with southeasterly dip. The igneous rocks include acid volcanics and porphyry and basalt and gabbro associations. Rock of this group show varying degree of deformation arid may have had similar tectono magmatic history characteristic of the later stages of evolution of Latmarka Group association.

Coarse grained, pink or grey granites (named the **Bande Granite**) intrude the above groups of rocks. All these groups of rocks are overlain by the Abujmar Group of rocks, consisting of a lower sedimentary (conglomerate-shale-sandstone) and an upper igneous (basalt-gabbro) association. They generally trend N-S or NE-SW with low south or southeasterly dips and are undeformed except at their western contact.

Table 1.2 Lithostratigraphic Succession in Bande Area, Bastar District, Chhattisgarh

(Parts of Toposheet No.65A/05 & 65A/09)

Recent to sub-Recent		Laterite, Iron Ore		Regional Co	
Quartz veins. Mafic dykes.					
		ABUJMAR GROUP(III)	Basalt, gabbro Shale, sandstone, & conglomerate.	KHAIRAGARH GROUP	
PRE CAMBRIAN	KOTRI SUPER GROUP (III)	BANDE GRANITE	Granite	DONGARGARH GRANITE	NANDGAON GROUP
		HAMMAT WAHI GROUP	Basalts, gabbro, gabbroic anorthosite.	Pitepani Volcanics	
		PACHANGI-KURSE KORHI GROUP	Acid volcanics (rhyolite, porphyry)	Bijli Rhyolite	
		DARGARH GROUP	Shale sandstone, conglomerate		
		LATMARKA GROUP (IIB)	Banded iron formation, altered tuffites, sandstone, conglomerate, sheared mafics.	SURAJGARH GROUP	BAILADILA GROUP
		TOKA-JAVELI GROUP (IIA)	Metaultra mafites & mafics, metasediments, banded iron formation, gneisses.		
		SANGAM-BENUR GROUP (I B)	Bandesd magnetite quartzite, quartzite amphibiotite, metaultramafite, gneisses.		BAILADILA GROUP
		META-BODELI GROUP (I A)	Banded magnetite quartzite, metaultramafite, quartzite, amphibolite, gneisses.		

1.1.4 Mineral potentiality based on geology

Systematic geological mapping in parts of Chandrapur and Bastar districts of Maharashtra & Madhya Pradesh in FS-1979-1980, TS- 65A/05 had been carried out by S.S. Jain & S. K. Pattnaik, Geologists (Jr.). Stream sediments analytical results indicating Sn values ranging from 10 ppm to 75 ppm, Nb values ranging from 75 ppm to 200 ppm. Besides this composite bed rock samples representing different varieties of granites. indicate Sn values ranging from 10 ppm to 30 ppm and Nb values ranging from 50 ppm to 100 ppm. The average abundance of Sn, W and Nb in granitic rocks is 3 ppm, 2 ppm and 20 ppm respectively

The Geologists of the Exploration Wing of Gemco Kati Exploration Pvt Ltd. have visited the area twice on 10-10-2024 to 12-10-2024 & 07-04-2025 to 08-04-2025. During their visit few grab & stream sediment samples were drawn from the block areas for chemical analysis, analysed for Trace elements, REE's and Major

oxides. The analytical results of 9 BRS collected during first field visit yielded Sn 6 – 85 ppm, Nb 9 – 88 ppm, total REE ranges from 67 - 1215 ppm with TLREE (La-Eu) ranges from 32-1082 ppm and THREE ranges 13-156 ppm. The analytical results of the 3 SSS, yielded Nb 15 – 1052 ppm, total REE ranges from 96 – 110 ppm.

Chemical Analysis Results

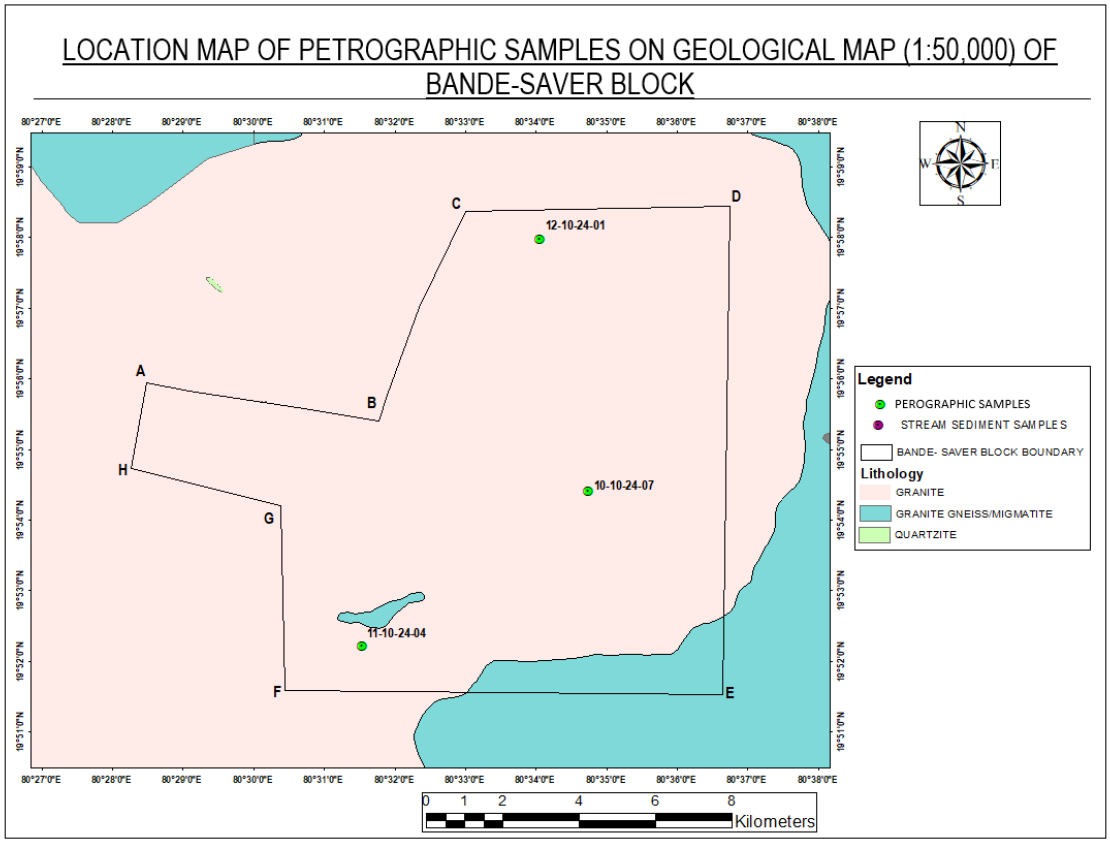
RARE METALS												
Sl. No.	Sample ID	Sample type / Block Name	Sn	Mo	Nb	Rb	Sr	Be	Ta	W	Cs	Li
1	10-10-24-04	BRS	<50	<0.5	28.02	153.90	88.88	1.39	1.80	0.99	1.21	6.71
2	10-10-24-07	BRS	<50	1.07	9.38	162.33	171.36	3.04	2.53	0.60	1.10	20.97
3	11-10-24-04	BRS	<50	1.02	25.76	229.14	79.74	4.67	2.90	1.04	1.15	4.94
4	12-10-24-01	BRS	<50	0.96	<5	163.88	108.52	4.05	2.38	4.39	0.89	23.22
5	BS-BRS-01	BRS	12.87	0.50	17.00	8.33	-	0.77	<0.5	1.34	<0.5	25.45
6	BS-BRS-02	BRS	84.64	<0.5	42.00	154.90	-	2.90	1.02	1.01	2.57	6.13
7	BS-BRS-03B	BRS	3.81	<0.5	88.00	219.12	-	2.75	5.14	4.49	1.31	9.80
8	BS-BRS-04	BRS	5.77	<0.5	35.00	151.63	-	2.03	<0.5	0.75	1.91	13.46
9	BS-BRS-05	BRS	27.66	0.54	38.00	212.11	-	2.86	0.19	1.63	3.94	27.72
10	10-10-24-05	SS	<50	1.06	15.48	240.11	78.90	1.93	4.92	0.87	1.44	3.40
11	11-10-24-01	SS	<50	<0.5	1025.10	118.24	50.44	2.09	17.80	1.84	0.98	9.43
12	11-10-24-11	SS	<50	<0.5	35.59	211.54	81.75	1.67	2.36	0.68	1.76	4.64

Rare Earth Elements

Sl. No.	Sample ID	Sample type / Block Name	La	Ce	Pr	Nd	Sm	Eu	Sc	TLREE
1	10-10-24-04	BRS	25.12	46.22	4.31	14.27	3.25	1.17	3.02	97.35
2	10-10-24-07	BRS	113.54	213.03	20.49	65.35	10.50	1.53	4.84	429.28
3	11-10-24-04	BRS	207.67	346.92	40.19	131.03	23.01	1.41	6.21	756.43
4	12-10-24-01	BRS	286.89	516.21	55.88	181.67	27.37	3.98	10.42	1082.42
5	BS-BRS-01	BRS	84.54	91.01	15.96	53.26	8.08	1.12	2.56	267.05
6	BS-BRS-02	BRS	78.77	168.84	16.58	60.62	10.90	2.46	4.76	338.17
7	BS-BRS-03B	BRS	7.64	14.90	1.47	5.41	2.14	<0.5	2.05	31.56
8	BS-BRS-04	BRS	110.15	321.18	21.05	71.67	12.90	1.80	4.32	538.75
9	BS-BRS-05	BRS	67.28	295.10	14.54	46.44	8.90	1.12	2.88	433.38
10	10-10-24-05	SS	17.60	33.65	2.68	9.40	2.63	1.09	3.53	70.57
11	11-10-24-01	SS	55.64	148.88	12.61	47.28	13.12	3.16	8.16	288.84
12	11-10-24-11	SS	11.27	28.26	2.15	7.67	2.90	1.05	7.84	61.14

Sl. No.	Sample ID	Sample type / Block Name	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y	THREE	TREE
1	10-10-24-04	BRS	4.75	0.55	2.78	0.57	1.63	<0.5	1.44	<0.5	13.73	25.45	122.80
2	10-10-24-07	BRS	16.57	1.61	6.86	1.36	3.98	0.52	3.14	<0.5	31.46	65.50	494.78
3	11-10-24-04	BRS	32.37	3.55	16.79	3.37	9.47	1.29	7.77	1.08	80.11	155.78	912.21
4	12-10-24-01	BRS	40.52	3.75	14.21	2.65	7.52	0.88	5.74	0.85	56.15	132.27	1214.70
5	BS-BRS-01	BRS	6.89	0.70	2.81	<0.5	1.44	<0.5	1.24	<0.5	9.99	13.08	267.05
6	BS-BRS-02	BRS	12.01	1.40	7.08	1.27	4.04	<0.5	3.47	0.55	34.08	29.82	367.99
7	BS-BRS-03B	BRS	5.24	1.05	9.16	1.96	7.73	1.05	8.16	1.19	68.08	35.54	67.10
8	BS-BRS-04	BRS	14.03	1.64	8.20	1.45	4.59	0.53	3.80	0.53	38.14	34.77	573.52
9	BS-BRS-05	BRS	9.20	1.16	6.33	1.12	3.84	<0.5	3.57	<0.5	29.30	25.22	458.60
10	10-10-24-05	SS	3.37	0.64	2.51	0.60	1.88	<0.5	1.95	<0.5	14.02	24.98	95.55
11	11-10-24-01	SS	18.08	2.67	16.38	3.53	11.36	1.85	11.52	1.90	88.25	155.55	444.40
12	11-10-24-11	SS	3.93	0.70	4.73	1.17	3.71	0.67	4.53	0.72	29.17	49.34	110.48

Petrographic study of the grab samples collected during field visit is attached below.



Sample ID 12-10-24-01

Petrographic study of the granite shows the presence of dominant K-feldspar and quartz with subordinate plagioclase as essential minerals. Allanite, epidote, monazite, zircon, apatite, titanite and magnetite are the accessory minerals. K-feldspar occur as dominant phase over plagioclase and quartz. Feldspars are subhedral in shaped and shows deformed nature. Development of perthite intergrowth texture is noticed. Perthite is dominating phase in the rock. The perthite comprises of thin strings of albite within the host K-feldspar. K-feldspar also show relict tartan or cross hatch twining. Polysynthetic twining is very common in the plagioclase feldspar. They are also untwined at places due to deformation. The rock shows sausuritization with development of epidote and zoisite grains. Epidotes are dominating in accessary shows metamict allanite core preserved at places. Likewise, the euhedral zoned allanite also common shows development of radiating cracks. Apatite occurs as prismatic, colourless crystals. Subhedral monazite grains are also preserved at places. Overall, the rock shows hypidiomorphic granular texture.

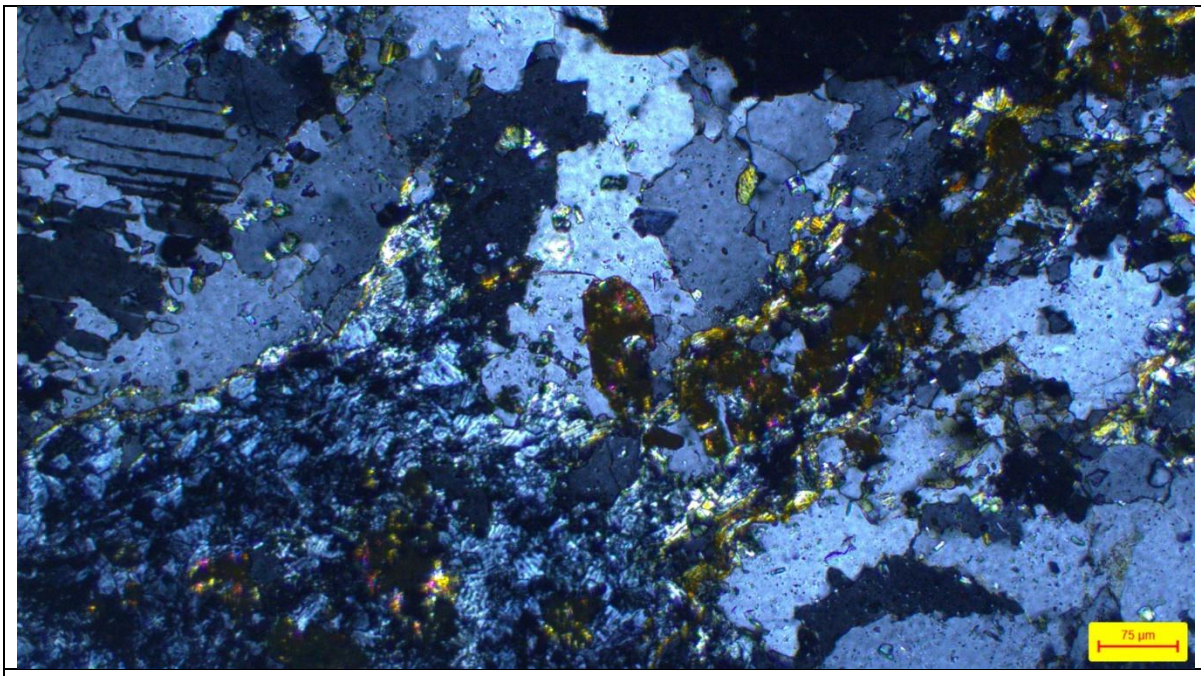


Figure 1:- The photomicrograph of granite shows presence of monazite and chlorite in association with quartz and feldspar (Cross Polarized Light; 5X).

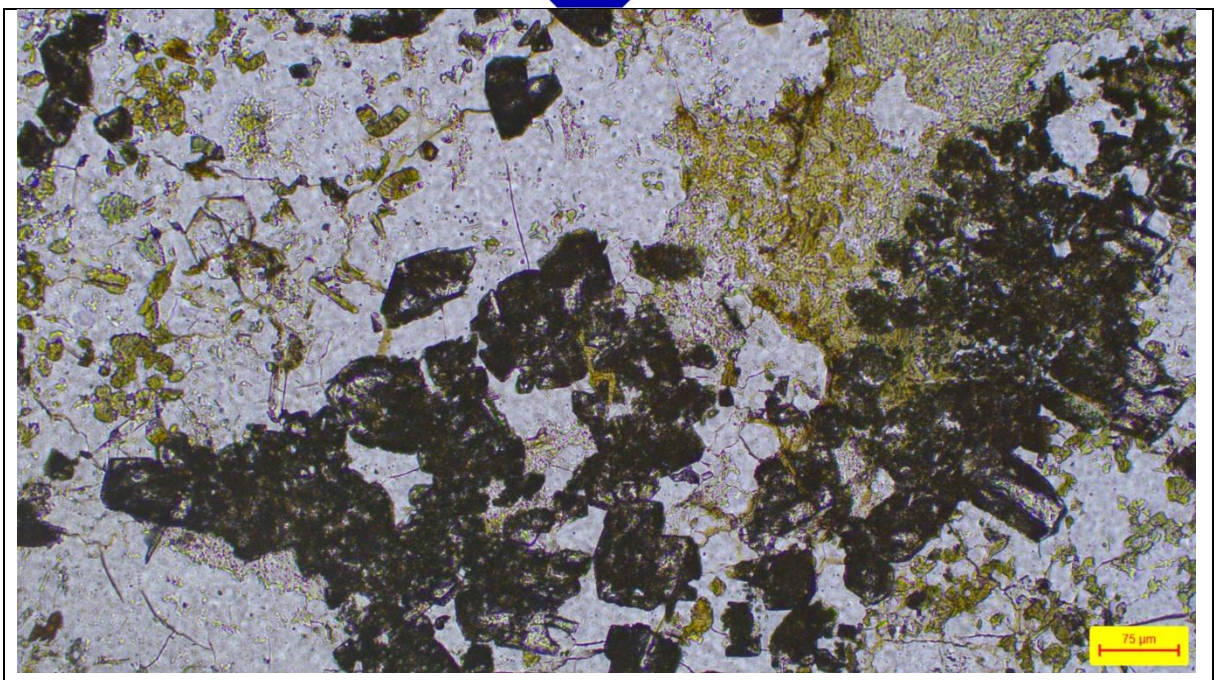


Figure 2:- The photomicrograph of granite shows presence of epidote and monazite in association with quartz and feldspar (Plane Polarized Light; 5X).

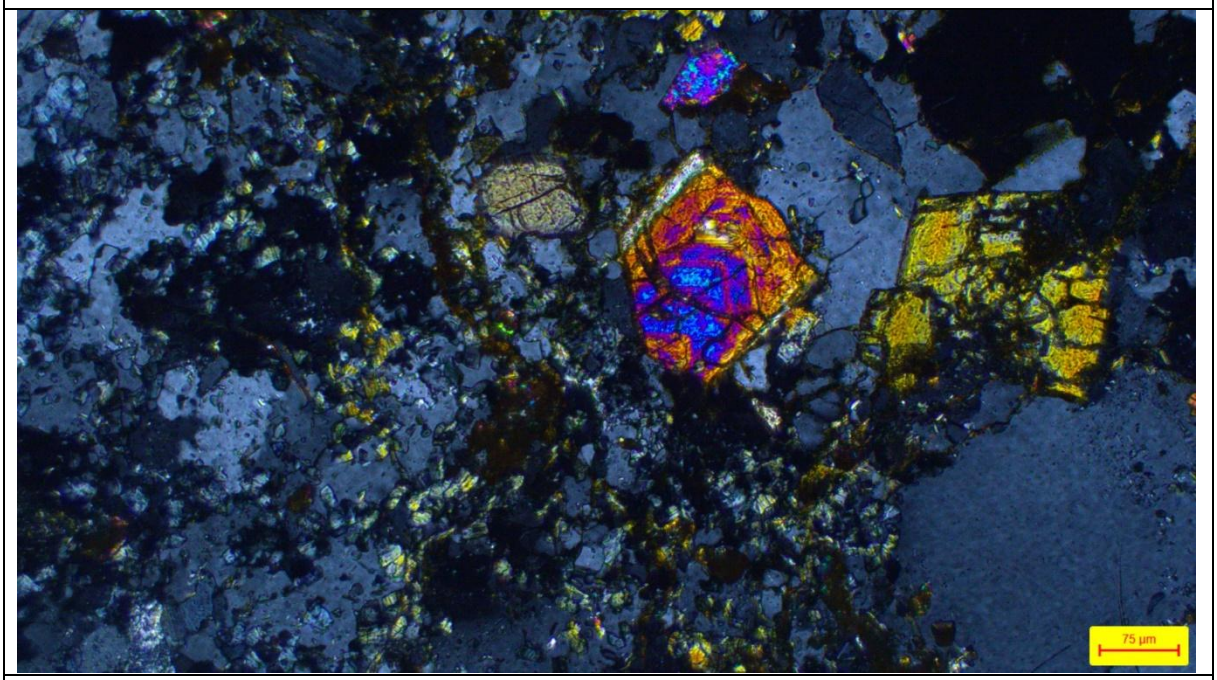


Figure 3:- The photomicrograph of granite shows subhedral zoned epidote and radiating crack development in allanite (Cross Polarized Light; 10X).

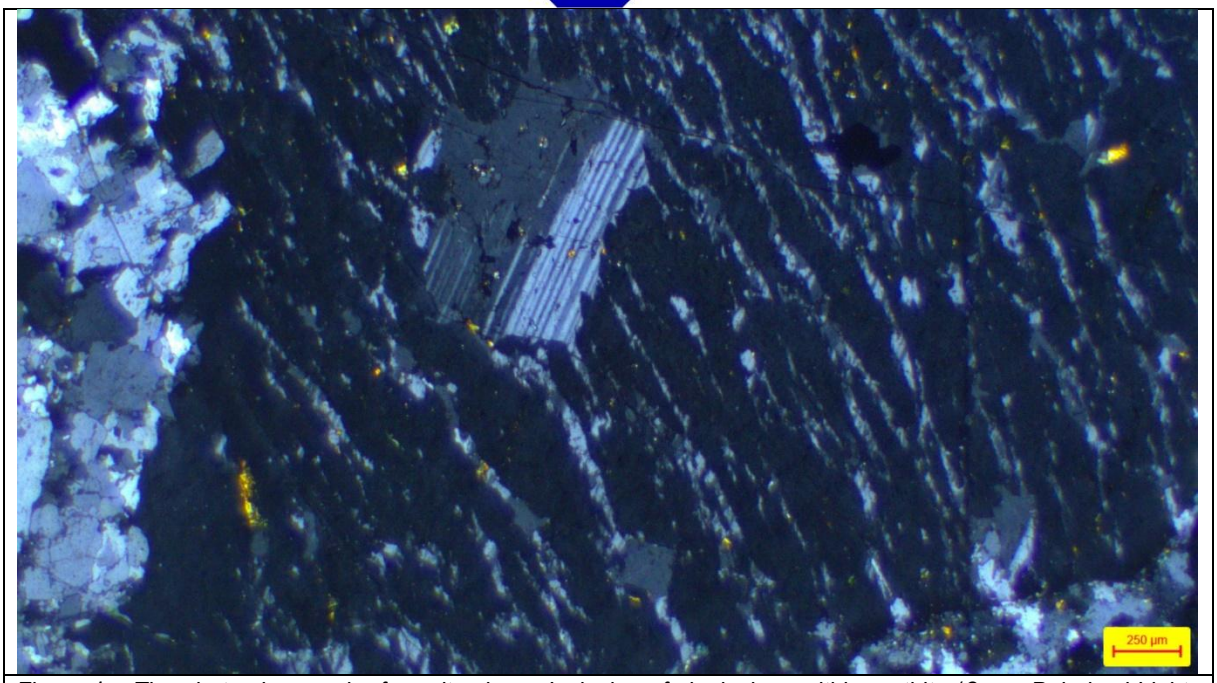


Figure 4:- The photomicrograph of granite shows Inclusion of plagioclase within perthite (Cross Polarized Light; 10X).

Sample ID 10-10-24-07

Petrographic study of the granite shows the presence of dominant K-feldspar and quartz with subordinate plagioclase as essential minerals. The chlorite occur as common mafic mineral phase. Allanite, epidote, zircon, apatite, and titanite are the accessory minerals. K-feldspar occur as dominant phase over plagioclase and quartz. Feldspars are subhedral in shaped and shows deformed nature. Development of perthite intergrowth texture is noticed. Perthite is dominating phase in the rock. The perthite comprises of thin strings of albite within the host K-feldspar. K-feldspar also show relict tartan or cross hatch twining. Polysynthetic twining is very common in the plagioclase feldspar. They are also untwined at places due to deformation. Epidotes are dominating in accessary shows metamict allanite core preserved at places. Likewise, the euhedral zoned allanite also common shows development of radiating cracks. Also zircon shows common oscillatory zoning. Apatite occurs as prismatic, colourless crystals. Subhedral monazite grains are also preserved at places. Overall the rock shows hypidiomorphic granular texture.

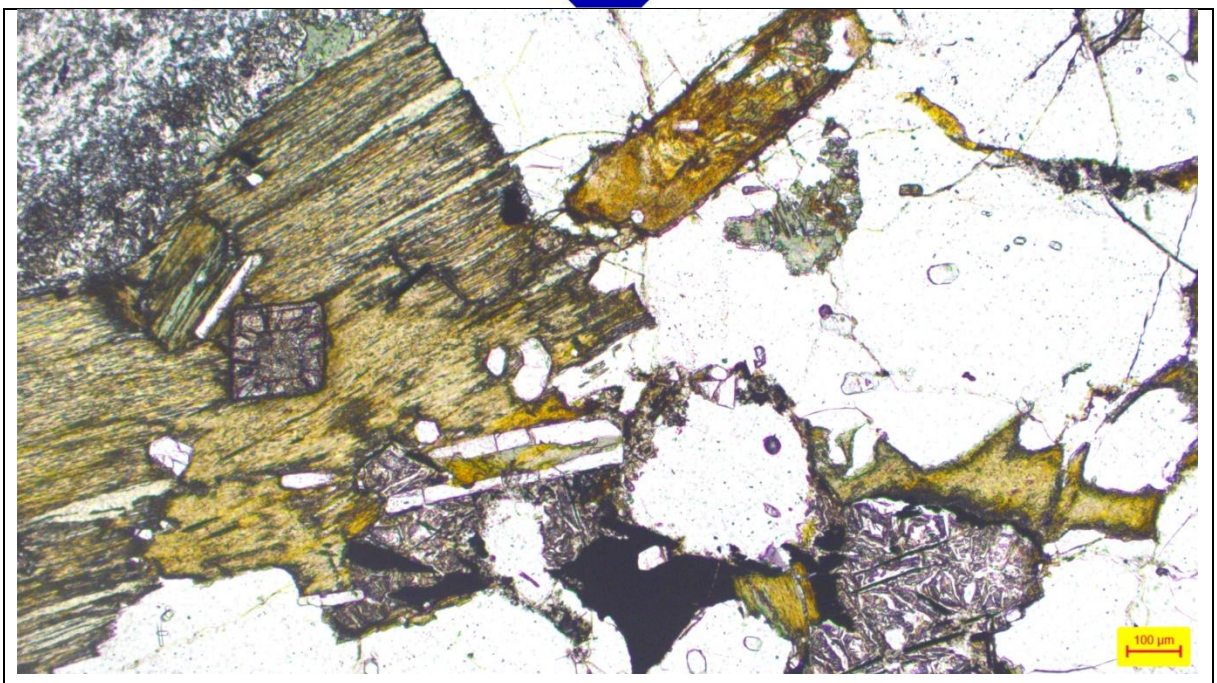


Figure 1:- The photomicrograph of granite shows presence of chlorite in association with monazite, allanite and oxide (Plane Polarized Light; 5X).

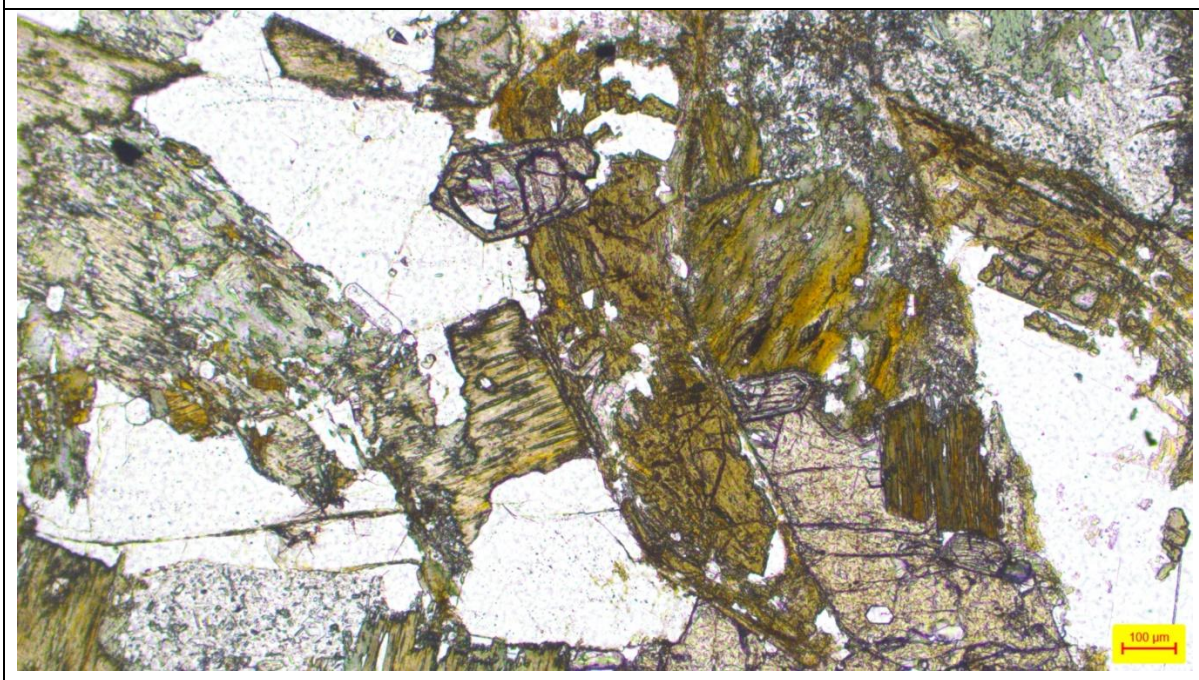


Figure 2:- The photomicrograph of granite shows presence of chlorite in association with zircon, allanite and sphene (Plane Polarized Light; 10X).

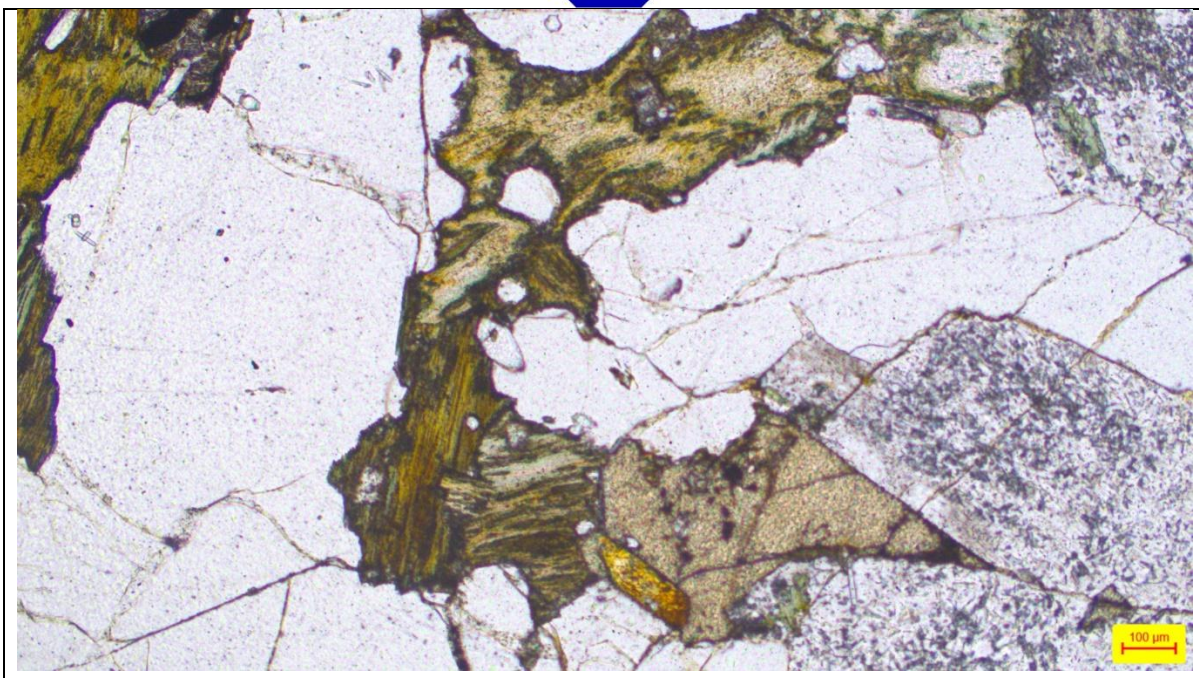


Figure 3:- The photomicrograph of granite shows presence of chlorite in association with apatite, allanite and sphene (Plane Polarized Light; 5X).

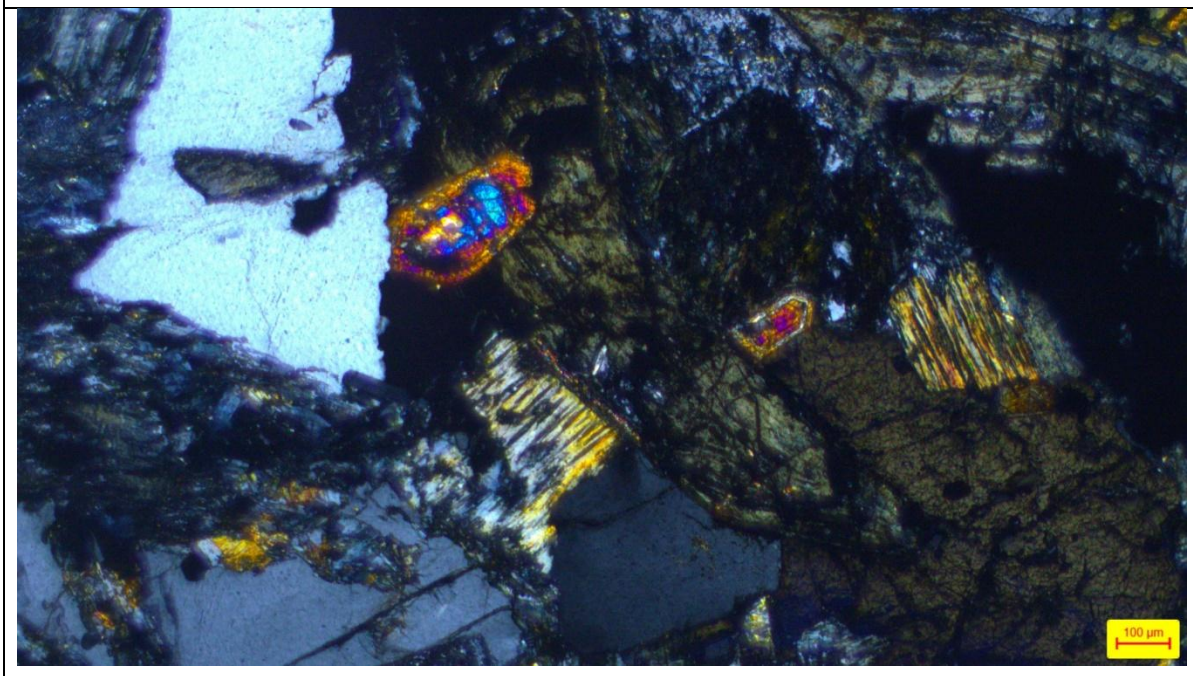


Figure 4:- The photomicrograph of granite shows presence of zoned zircon in association with apatite, and chlorite (cross Polarized Light; 5X).

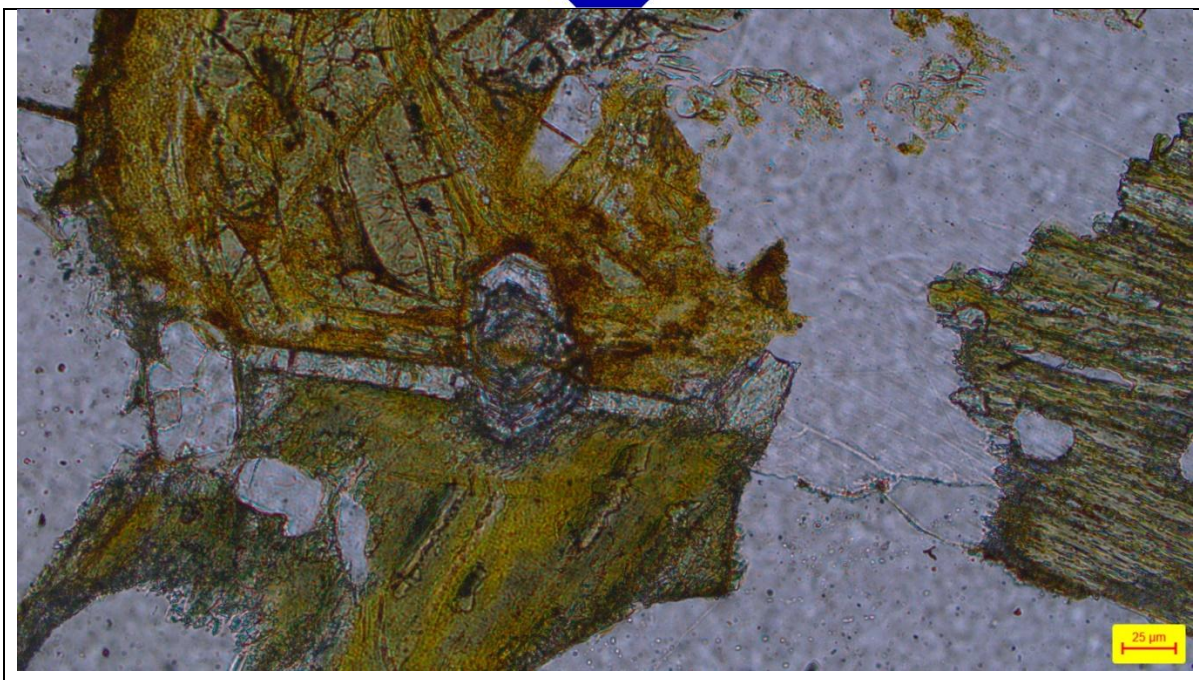


Figure 5:- The photomicrograph of granite shows presence of zoned zircon in association with apatite, and chlorite (cross Polarized Light; 10X).

Sample ID 11-10-24-04

Petrographic study of the granite shows the presence of dominant K-feldspar and quartz with subordinate plagioclase as essential minerals. The amphibole occurs as common mafic mineral phase and altered to chlorite at places. Epidote, zircon, and apatite are the accessory minerals. K-feldspar occur as dominant phase over plagioclase and quartz. Feldspars are subhedral in shaped and shows deformed nature. Development of perthite intergrowth texture is noticed. Perthite is dominating phase in the rock. The perthite comprises of thin strings of albite within the host K-feldspar. Polysynthetic twining is very common in the plagioclase feldspar. They are also untwined at places due to deformation. Epidotes are dominating in accessary shows metamict allanite core preserved at places. Likewise, the euhedral zoned allanite also common shows development of radiating cracks. Also, zircon shows common oscillatory zoning. Apatite occurs as prismatic, colourless crystals. Subhedral monazite grains are also preserved at places. Overall, the rock shows hypidiomorphic granular texture.

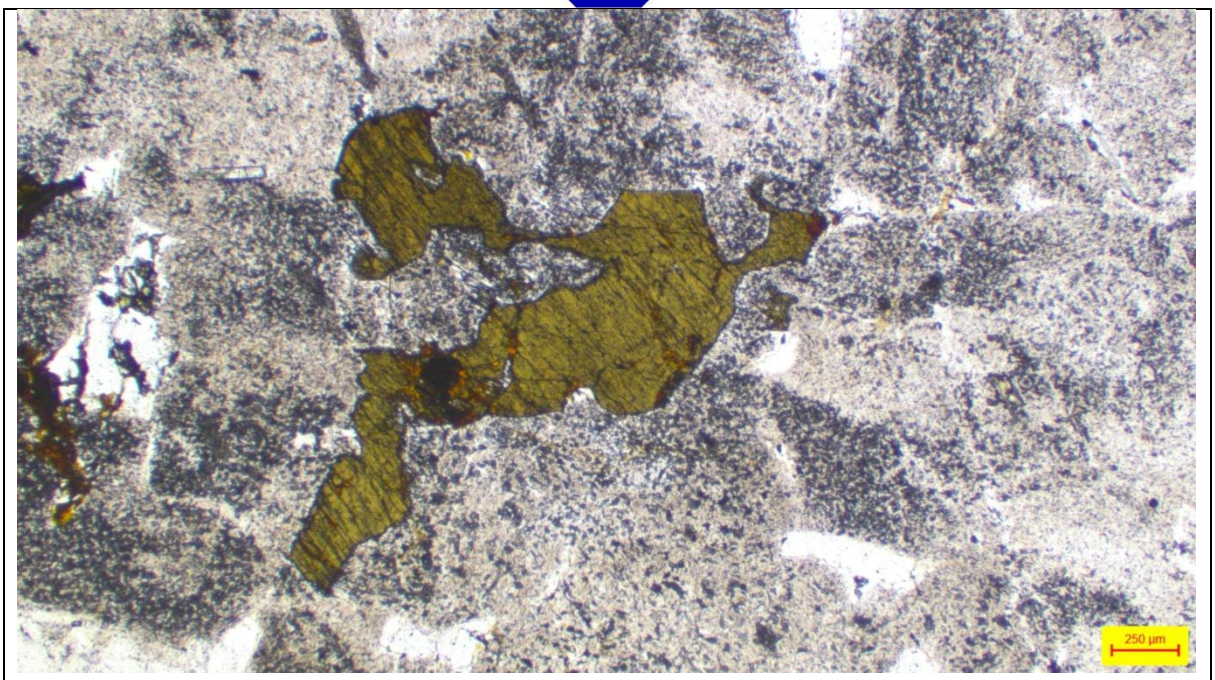


Figure 1:- The photomicrograph of granite shows presence green color amphibole with iron oxide (Plane Polarized Light; 5X).

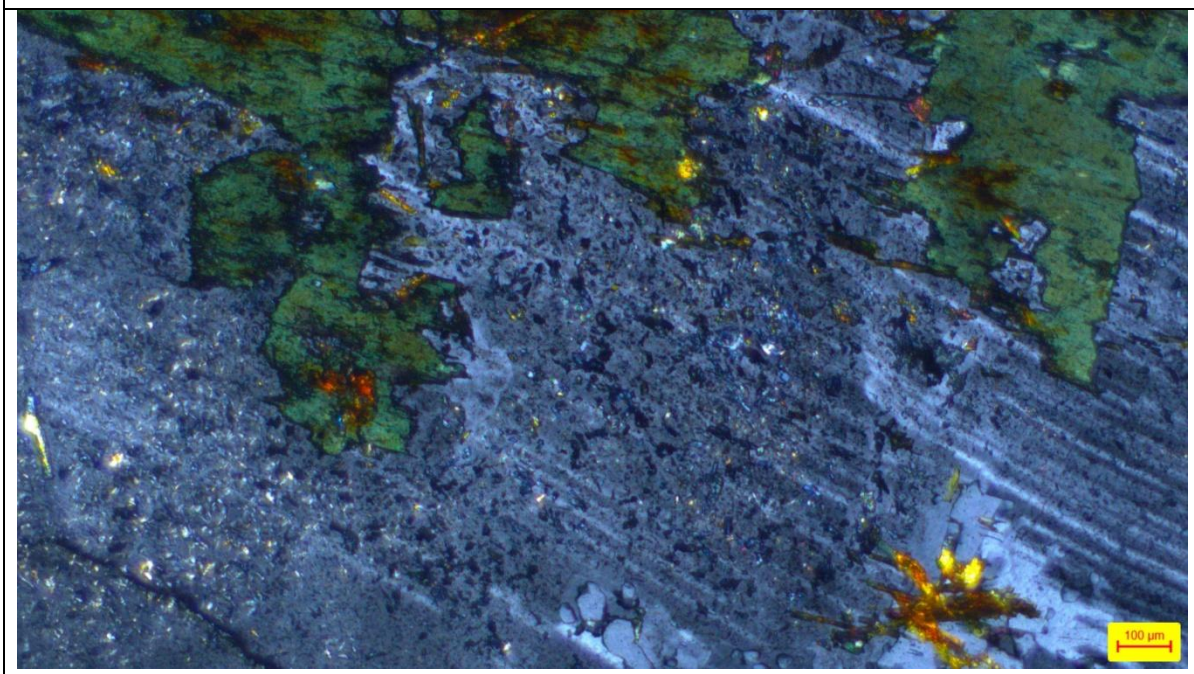


Figure 2:- The photomicrograph of granite shows presence green color chlorite in association with plagioclase (Plane Polarized Light; 10X).

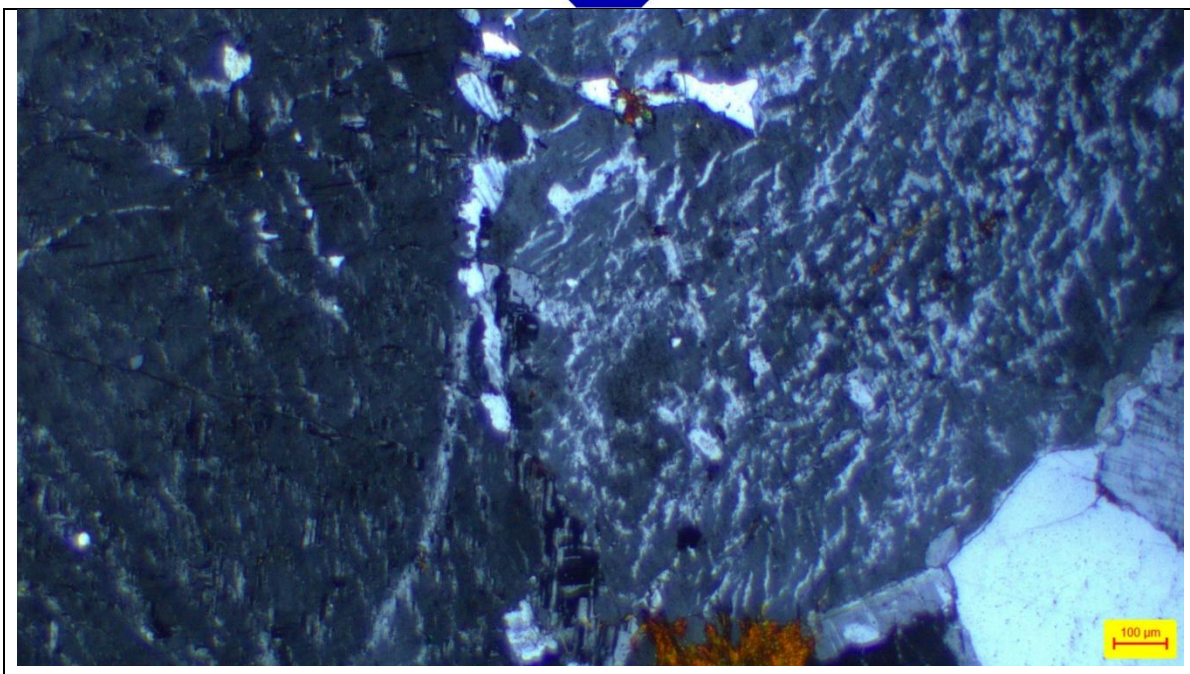


Figure 3:- The photomicrograph of granite show presence perthite (Cross Polarized Light; 10X).

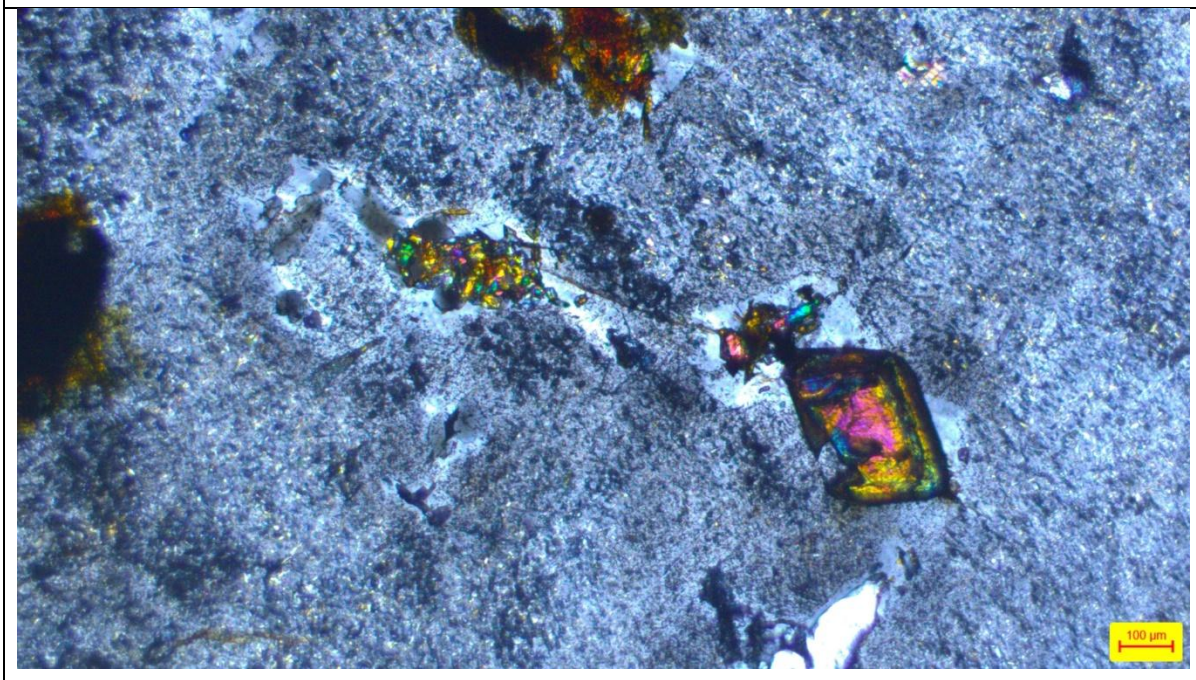


Figure 4:- The photomicrograph of granite shows presence of zoned zircon in association with epidote in feldspar (cross Polarized Light; 10X).

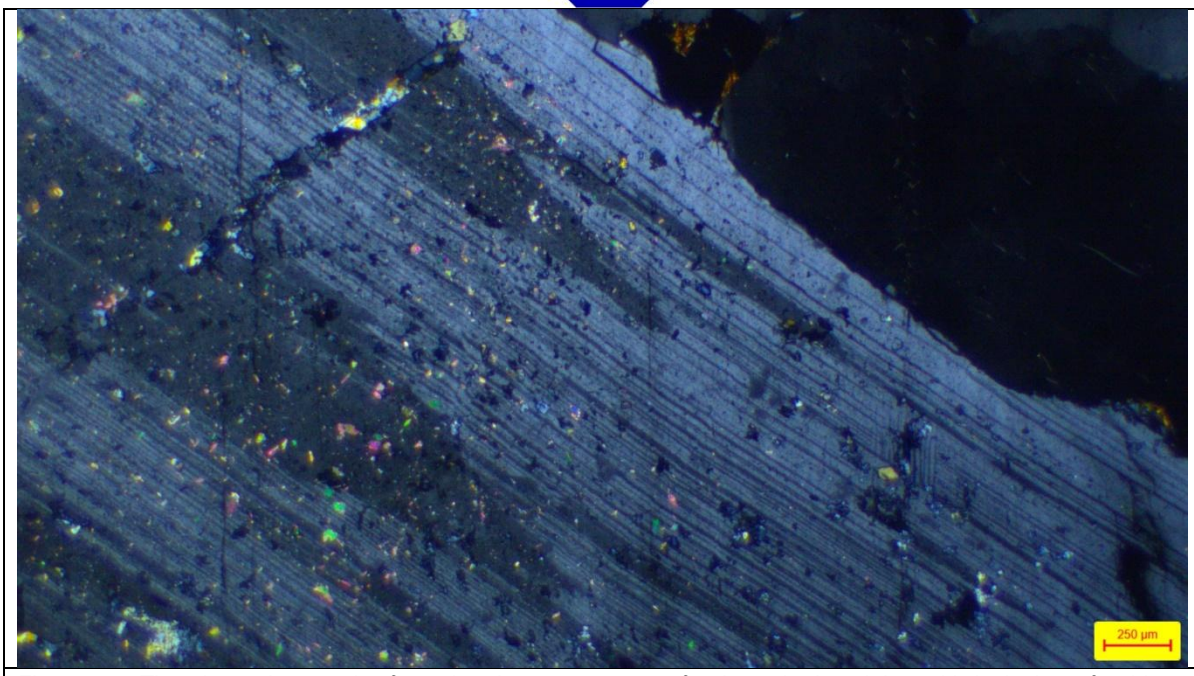


Figure 5:- The photomicrograph of granite shows presence of polysynthetic twining with inclusion of epidotes (cross Polarized Light; 10X).

Above results confirmed the presence of the area seems to be promising for exploration and reconnaissance survey under G4 stage.

1.2 Scope for proposed exploration

Sr.No	Nature of Work	Proposed Work
1	Large scale mapping (1:12,500)	129 sq km
2	Trenching	200 cu.m
3	Bed Rock Samples	100
4	Stream sediment samples	30
5	Trench samples	200 (Including colluvial samples)
6	Chemical Analysis (Major Oxide)	363 (330+33 check)
7	Chemical Analysis (Minor & trace elements by ICP)	220 (200+20 check samples)
8	Period of Scheme	12 months

1.3 Recommendations

- Based on positive field validation for Tin,REE and associated mineralization twice from the area along with

positive confirmation of ground situation, it is our opinion that the area can be taken for G4 stage of exploration.

Objectives

- To map the block area of 129 sq.km in 1:12500 scale.
- To carry out systematic grab /channel/grove sampling of bed rocks from the potential mineralized zones.
- To asses G4 category (334) Tin, REE & RM prospect in the Block, as per UNFC norms and Minerals (Evidence of mineral contents) Rules.
- To delineate the potential area for next level (G-3) level of exploration
- Carry out mineral exploration as per Minerals (Evidence of Mineral Contents) Rule-2015, Mineral (Auction) Rules-2015 and MMDR Amendment act- 2015, which in turn to facilitate the Government of Chhattisgarh for auctioning of the block.

2.0 PREVIOUS WORK:

A perusal of GSI, NGDR & NMET portal for relevant reports for the toposheet 64C/11 yielded only 5 reports including one report on investigation for dimension stone.

1- The area in the toposheet has been part of the studies: S.S Jain and S.K Pattanaik, 1979-19129: Geology of parts of Chandrapur and Baster Tehsil, Chandrapur and Baster District in parts of Toposheet No-65A/05,09. Report Acc No-:CR-215422.

2- S.S Jain and S.K Pattanaik, 1978-79: Geology of parts of Sironcha Tehsil, Gadchiroli District in parts of Toposheet No-65A/06,65A/07 & 65A/11. Report Acc No-: - CR-014572.

3- T.M. Babu Geologist (Jr.) FS 1981-1982: Progress report on the work carried out for Tin and associated Rare Metal Minerals in Katekalyan area, Bastar District, Madhya Pradesh in parts of Toposheet No-65F/09.Report Acc No-:-CR-000884 & FS- 1982-83 : Preliminary assessment surveys for colluvial Tin mineralization in Katekalyan area, Bastar District, (Madhya Pradesh) in parts of Toposheet No-65F/09. Report Acc No-:-CR-015892.

4- R. Choubey, T.M. Babu and S. N. Upadhye Geologists (Jr.) (Field Season 1982-83) : Preliminary assessment surveys for colluvial Tin mineralization in Katekalyan area and Dumam Nadi, Rani Nala Blocks, Bastar District, in parts of Toposheet No-65F/09. Report Acc No-:-CR-015892.

5- T.B. Mahapatra, Geologist (Jr.) (Field Season 1982-1983) : Preliminary assessment for primary Tin in the Pegmatites of Bodavada Block, Bastar District, Madhya Pradesh in parts of Toposheet No. 65F/13. Report Acc No-:-CR-015893.

6- R. Choubey, Geologist (Sr.) (Field Season 1983-84) : A report on Preliminary Assessment for Colluvial tin mineralization in Katekalyan area (Bodenar Block), Bastar District, Madhya Pradesh in parts of Toposheet No 65 F/09. Report Acc No-:-CR-017452

7- A.K. Saha, Geologist (Jr.) (Field Season 1983-1984) : Report on preliminary assessment of colluvial Tin ore in Kapanar area, Rani nala – Kaklur Block, Bastar District, Madhya Pradesh in parts of Toposheet No 65 F/09. Report Acc No-:-CR-018396.

8- Late T.B.Mahapatra (Field Season 1985-1986) : A note on Preliminary assessment for primary Tin in Pegmatites of Marjun-Ellingnar area, District Bastar, Madhya Pradesh in parts of Toposheet No-65 F/14 & 13. Report Acc No-:-CR-119402.

9- Dr. T.M. BABU Geologist (Jr.) (Field Season 1984 - 1987): Report on preliminary assessment for primary Tin in the Pegmatites of Bothapara Block, Katekalyan area, Bastar District, Madhya Pradesh in parts of Toposheet No. 65 F/13 and 14. Report Acc No:CR-019269.

10- Subrata Sarkar et al. [Project -ID: 375/EC-39/G4/2023]: Report on reconnaissance Survey (G-4 Stage) for Iron ore in "Murwada-Tumarikodi Block" District-Gadchiroli, Maharashtra (Toposheet No-65A/10, F.S-2023-24) E.C- OM No- F. No. 23/372/2023-NMET/129, dated, 26th June 2023. [NMET funded Project vide ID: 375/EC-39/G4/2023].

3.0 BLOCK DESCRIPTION:

	Longitude			Latitude		
(A)	80^0	33'	00.55"	19^0	58'	22.00"
(B)	80^0	36'	44.43"	19^0	58'	26.37"
(C)	80^0	36'	38.78"	19^0	51'	31.71"
(D)	80^0	30'	26.46"	19^0	51'	35.23"
(E)	80^0	30'	22.92"	19^0	54'	12.02"
(F)	80^0	28'	16.09"	19^0	54'	43.50"
(G)	80^0	28'	29.21"	19^0	55'	55.82"
(H)	80^0	31'	46.19"	19^0	55'	24.03"

4.0 PLANNED METHODOLOGY

- **Large Scale Mapping:** Large scale geological mapping on a 1:12500 scale is to be carried out in and around 129 sq km area by taking traverses. The geological map would be prepared by adding geological features, attitudes of beds, structural features etc. to be picked up and plotted during mapping.
- **Pitting & Trenching**- Few trenches will be excavated at selected locale to expose the mineralize zone.
- **Chemical Analysis:** The collected samples shall be analyzed by WD XRF through Borate Fusion Bead for radicals like Fe (Total), SiO2, Al2O3, S, P, MnO, P2O5, TiO2, MgO, CaO, Na2O, K2O, Fe2O3, SO3, BaO, V2O5, SrO, LOI (18 Radicals) and radicals to be analysed through **ICPMS (REE &Trace elements**) are Al, Ba, Ca, Fe, K, Mg, Mn, Na, P, S, Ti, Ag, As, B, Be, Si, Bi, Cd, , Co, Cr, Cs, Cu, Ga, Ge, In, Li, Mo, Nb, Ni, Pb, Rb, Sb, Sc, Se, Sn, Sr, Ta, Te, Tl, V, W, Y, Zn, Zr. La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Th, U (61 Radicals**).**
- **Exploration Report:** Generate a detailed report (Final G4 stage Report) along with a Geological Map identifying and establishing the deposit with quantity and quality of resources worthy of being raised to a G-3 scheme of exploration as per MEMC-2015. Data generated from G-4 level works, shall be presented in the Report as per the guidelines laid down in provisions of MINERAL (EVIDENCE OF CONTENTS) RULES-2015 in the NMET prescribed format for Peer Review.

5.0 NATURE, QUANTUM AND TARGET:

Estimated cost for Reconnaissance Survey (G-4) for TIN, RM & REE mineralisation in Bande-Saver Block (129 sq. km), Uttar Bastar Kanker, Chhattishgarh. Schedule timeline- 12 months [Review: After 4 Months & 8 Months]

S. No.	Item of Work *	Unit *	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item No. *	Rates as per SoC * (a)	Qty. (b)	Total Amount (Rs) (a*b)	
A	**Geological mapping, (1:12,500 scale) & Trenching , drilling work**						
i	a. Charges for Geologist per day (Field) for geological mapping & trenching work, drilling work	day	1.3	11000	240	2640000	
ii	b. Labours Charges; Base rate	day	5.7	541	480	259680	
	c. Charges for one Sampler per day (1 Party)	one sampler per day	1.5.2	5100	12	61200	
	d. Labours (4 Nos)	day	5.7	541	48	25968	
	Sub Total- A					**29,86,848**	
B	**Ground Geophysical Survey**						
1	Geophysical logging-Sonic/Density	per m		460	122	56120	
3	Geophysicist party days (Field)	per day	1.3	11000	15	165000	
4	c. Labours Charges	day	5.7	541	30	16230	
	Sub Total- B					**2,37,350**	
C	**Survey work**						
a	DGPS Survey for BH fixation & RL determination	Per Point of observation	1.6.2	19200	15	288000	
b	Charges of Surveyor (1 party) for Geophysical survey layout work & Block boundary demarcation	one surveyor per day	1.6.1a	8300	10	83000	
c	Labours Charges for survey work;	day	5.7	541	40	21640	
	Sub-Total C					**3,92,640**	
D	**Trenching/Pitting**						

	Excavation of Trench	per cu.m	2.1.1	3300	200	660000	
E	**DRILLING (after review)**						
1	Drilling up to 300m (Hard Rock)	m	2.2.1.4	11,500	460	5290000	(6 BHs X 60m =360m, 1 BH X 100m =100m)
2	Land / Crop Compansation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	3	60000	
3	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	7	14000	
4	Borehole plugging by cement	per borehole	2.2.7b	150	-	0	
5	Transportation of Drill Rig & Truck associated per drill (2 rigs)	Km	2.2.8	36	400	14400	To and Fro
6	Monthly Accomodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	1	50,000	
7	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	1	2,50,000	
8	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	1	2,50,000	
9	Road Making (Flat Terrain)	Km	2.2.10a	22,020	3	66,060	
	Sub Total E					**59,94,460**	
TOTAL A to E						**1,02,71,298**	
As the the block is in LWE affected area						**1,28,39,123**	
F	**Geological & Geophysical activities in the Head quarter**						
	c. Charges for Geologist per day (HQ)	day	1.3	9000	60	540000	
	Geophysicist party days (HQ)	per day	1.3	9000	15	135000	
	Drill Core Preservation	per m	5.3	1,590	460	7,31,400	
	Sub total F					**14,06,400**	
G	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i)	**Geochemical Sampling- Surface samples (Bedrock/Channel /Soil/Stream sediment)**						
	a. Au by Fire Assay	Nos					

	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by AAS Method	Nos					
	c.ICPMS for 34 elements	Nos	4.1.14	7731	320	24,73,920	100 BRS + 100 Trench Samples + 90 Core Samples + 30 Soil Samples
ii)	**Surface Check samples (10% External)**					-	
	a. Au by Fire Assay	Nos				-	
	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by AAS Method	Nos				-	
	c.ICPMS for 34 elements(Check)	Nos	4.1.14	7731	32	2,47,392	10 BRS + 10 Trench Samples + 19 Core Samples+ 3 Soil Samples
iii)	**Trench & Check Samples from Trench**					-	
	Trench samples						
	a. Au by Fire Assay	Nos				-	
	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by AAS Method	Nos				-	
	c. For PGE	Nos				-	
iv)	**Trench Check samples (10% External)**						
	a. Au by Fire Assay	Nos				-	
	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by AAS Method	Nos				-	
	c. For PGE	Nos				-	
v)	**Stream sediment samples**						
	a. Au by Fire Assay	Nos				-	
	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by ICPMS-34 elements	Nos	4.1.14	7731	30	2,31,930	
	c. For PGE	Nos				-	
vi)	**Stream sediment samples (10%External)**						

	a. Au by Fire Assay	Nos				-	
	b. For Ag, Ni, Co, Cr, Cu, Pb, Zn, V, Ti by ICPMS-34 elements	Nos	4.1.14	7731	3	23,193	
	c. For PGE	Nos				-	
vii)	**Major Oxide Analysis**					-	
	a) Estimation of major oxides by XRF/whole rock analysis for primary samples (CaO, MgO, SiO2, Al2O3, LOI, Na2O, Fe2O3, MnO, K2O, TiO2, SO3, P2O5, Cr203, ZnO, V2O5)	per sample	4.1.15a	4200	50	2,10,000	30 BRS + 15 Trench Samples + 5 SSS
	Estimation of major oxides by XRF/whole rock analysis for check samples	per sample	4.1.15a	4200	5	21,000	3 BRS + 1 Trench Samples + 1 SSS
	Determination of insitu Bulk Density		4.10	3,540		-	
2	**Physical & Petrological Studies**						
i	Preparation of thin section	Nos	4.3.1	2353	30	70,590	
ii	Study of thin section	Nos	4.3.4	4232	30	1,26,960	
iii	Preparation of polish section	Nos	4.3.2	1,549	20	30,980	
iv	study of polished section	Nos	4.3.4	4,232	20	84,640	
v	Digital Photographs	Nos	4.3.7	280	60	16,800	
vi	XRD Studies	Nos.	4.5.1	4,000	15	60,000	
vii	Sp. Gravity	Nos				-	
viii	SEMEDX Studies	per hour				-	
ix	EPMA studies	per hour				-	
						35,97,405	
H	**Total A to G**					**1,78,42,928**	

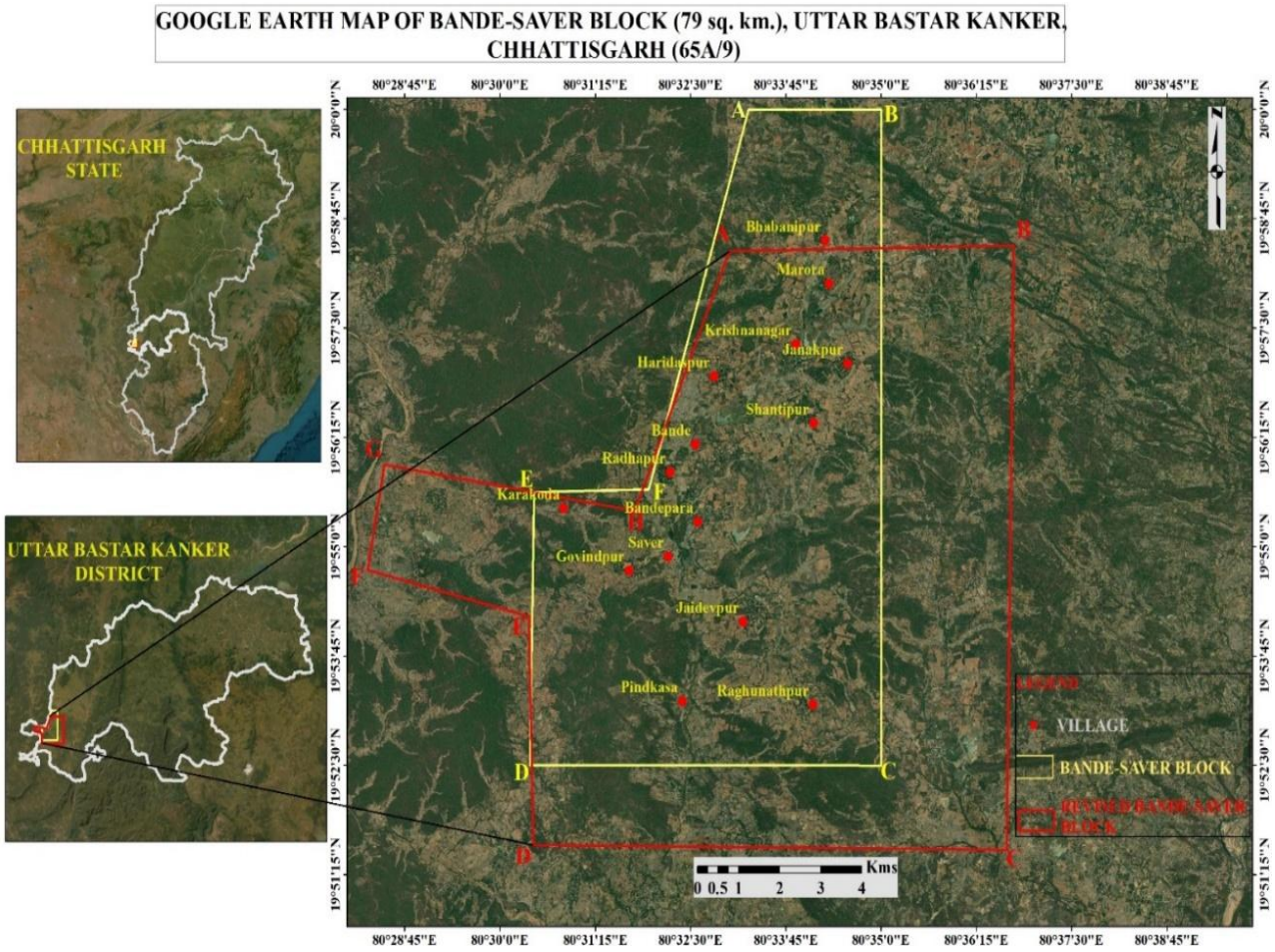
I	**Geological Report Preparation**	**5 Hard copies with a soft copy**	**5.2**	**5.2 (i/ii/iii/iv)**		**8,92,146**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
J	**Peer review Charges**		**As per EC decision**			**30,000**	
K	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	**5 Hard copies with a soft copy**	**5.1**	2% of the Cost or Rs. 5.0 Lakhs whichever is less		**3,56,859**	EA will be reimbursed after submission of the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
L	**Total Estimated Cost without GST**					**1,91,21,932**	
M	**Provision for GST (18% of J)**					**34,41,948**	GST will be reimbursed as per actual and as per notified prescribed rate
N	**Total Estimated Cost with GST**					**2,25,63,880**	
				or Say Rs. In Lakhs		**225.64**	
Note:							
1	**Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.**						
2	**In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.**						
3	**If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execution of the project by NEA on its own, a Certificate regarding non outsourcing of any component/project is required.**						
4	**Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.**						
5	**Any item of work not mentioned above shall be added as per SoC.**						
*	**SoC Item No, Unit and Rate for each item of work must be as mentioned in the SoC.**						

6.0 TIME SCHEDULE

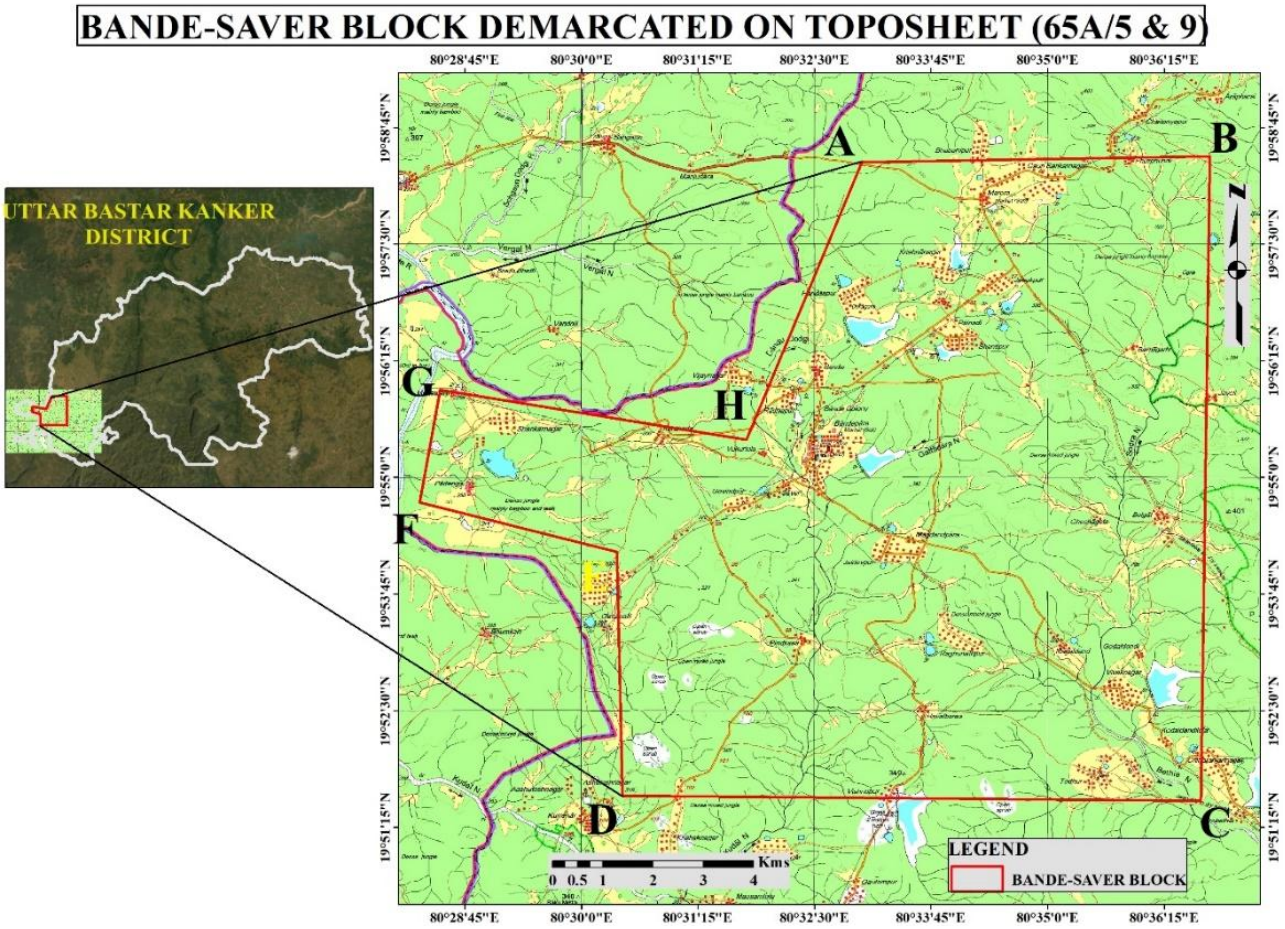
Time Schedule/Action plan for Reconnaissance Survey (G-4) for TIN, RM & REE mineralisation in Bande-Saver Block (129 sq km), Uttar Bastar Kanker, Chhattishgarh. Schedule timeline- 12 months [1st Review: After 4 Months & 2nd Review: After 8 months]																
S. No.			**1**	**2**	**3**	**4**		**5**	**6**	**7**	**8**		**9**	**10**	**11**	**12**
1	Camp Setting	**Months/Days**														
2	Geological Mapping & Sampling	**days**														
3	Pitting/Trenching	**cu.m**														
4	Drilling	**m**														
5	Survey Party days	**days**														
6	Sampler Man days	**days**														
7	Laboratory Studies	**Nos.**														
8	Camp Winding	**months**														
9	Report Writing with Peer Review	**months**														

1st Review **2nd Review**

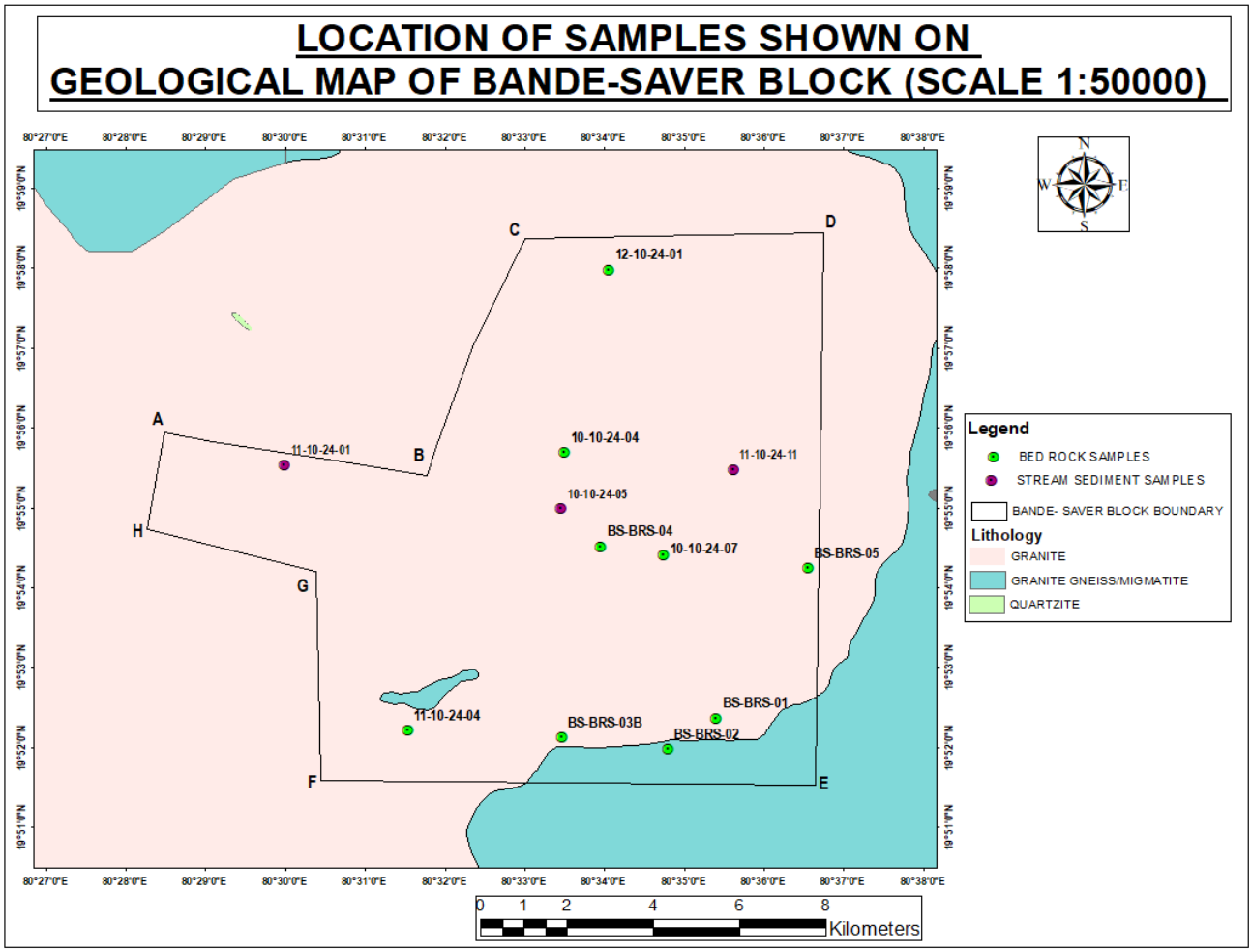
1. Google map of Block area.



2. Block area on SOI TS 65A05 & 09



3. Geological map of the block area



FIELD VALIDATION THROUGH SURFACE SAMPLING – REE

REE																					HYDROTHERMAL MINERAL
Sl. No.	Sample ID	Sample Type	Latitude	Longitude	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Sc	Y	TREE	
1	10-10-24-04	BRS	19° 55' 41.4" N	80° 33' 31.08" E	25.12	46.22	4.31	14.27	3.25	1.17	4.75	0.55	2.78	0.57	1.63	<0.5	1.44	<0.5	3.02	13.73	122.81	
2	12-10-24-01	BRS	19° 57' 58.89" N	80° 34' 4.18" E	286.9	516.2	55.88	181.7	27.37	3.98	40.52	3.75	14.21	2.65	7.52	0.88	5.74	0.85	10.42	56.15	1214.69	ALLANITE, TITANITE, MONAZITE
3	10-10-24-07	BRS	19° 54' 24.21" N	80° 34' 45.48" E	113.54	213.03	20.49	65.35	10.5	1.53	16.57	1.61	6.86	1.36	3.98	0.52	3.14	<0.5	4.84	31.46	495	ALLANITE, ZIRCON, TITANITE
4	11-10-24-04	BRS	19° 52' 12.82" N	80° 31' 32.94" E	207.7	346.9	40.19	131	23.01	1.41	32.37	3.55	16.79	3.37	9.47	1.29	7.77	1.08	6.21	80.11	912.24	ALLANITE, ZIRCON
5	BS-BRS-01	BRS	19°52'22.11"N	80°35'25.04"E	84.54	91.01	15.96	53.26	8.08	1.12	6.89	0.70	2.81	<0.5	1.44	<0.5	1.24	<0.5	2.56	9.99	279.60	
6	BS-BRS-02	BRS	19°51'58.57"N	80°34'48.68"E	78.77	168.84	16.58	60.62	10.90	2.46	12.01	1.40	7.08	1.27	4.04	<0.5	3.47	0.55	4.76	34.08	406.83	
7	BS-BRS-03B	BRS	19°52'7.60"N	80°33'28.91"E	7.64	14.90	1.47	5.41	2.14	<0.5	5.24	1.05	9.16	1.96	7.73	1.05	8.16	1.19	2.05	68.08	137.23	
8	BS-BRS-04	BRS	19°54'31.03"N	80°33'58.09"E	110.15	321.18	21.05	71.67	12.90	1.80	14.03	1.64	8.20	1.45	4.59	0.53	3.80	0.53	4.32	38.14	615.98	
9	BS-BRS-05	BRS	19°54'14.68"N	80°36'33.89"E	67.28	295.10	14.54	46.44	8.90	1.12	9.20	1.16	6.33	1.12	3.84	<0.5	3.57	<0.5	2.88	29.30	490.78	
10	10-10-24-05	SS	19° 54' 59.44" N	80° 33' 28.09" E	17.60	33.65	2.68	9.40	2.63	1.09	3.37	0.64	2.51	0.60	1.88	<0.5	1.95	<0.5	3.53	14.02	95.55	
11	11-10-24-01	SS	19° 55' 32.33" N	80° 30' 0.53" E	55.64	148.9	12.61	47.28	13.12	3.16	18.08	2.67	16.38	3.53	11.36	1.85	11.52	1.9	8.16	88.25	444.39	
12	11-10-24-11	SS	19° 55' 28.63" N	80° 35' 37.85" E	11.27	28.26	2.15	7.67	2.90	1.05	3.93	0.70	4.73	1.17	3.71	0.67	4.53	0.72	7.84	29.17	110.48	

FIELD VALIDATION THROUGH SURFACE SAMPLING – RM

RM																HYDROTHERMAL MINERAL
Sl. No.	Sample ID	Sample Type	Latitude	Longitude	Sn	Mo	Nb	Rb	Sr	Be	Ta	W	Cs	Li	Zr	
1	10-10-24-04	BRS	19° 55' 41.4" N	80° 33' 31.08" E	<50	<0.5	28	153.9	89	1.39	1.8	0.99	1.21	6.71	65	
2	12-10-24-01	BRS	19° 57' 58.89" N	80° 34' 4.18" E	<50	0.96	<5	163.88	109	4.05	2.38	4.39	0.89	23.22	155	ALLANITE, TITANITE, MONAZITE
3	10-10-24-07	BRS	19° 54' 24.21" N	80° 34' 45.48" E	<50	1.07	9	162.33	171	3.04	2.53	0.6	1.1	20.97	138	ALLANITE, ZIRCON, TITANITE
4	11-10-24-04	BRS	19° 52' 12.82" N	80° 31' 32.94" E	<50	1.02	26	229.14	80	4.67	2.9	1.04	1.15	4.94	205	ALLANITE, ZIRCON
5	BS-BRS-01	BRS	19°52'22.11"N	80°35'25.04"E	12.87	0.50	17	8.33	-	0.77	<0.5	1.34	<0.5	25.45	66	
6	BS-BRS-02	BRS	19°51'58.57"N	80°34'48.68"E	84.64	<0.5	42	154.90	-	2.90	1.02	1.01	2.57	6.13	112	
7	BS-BRS-03B	BRS	19°52'7.60"N	80°33'28.91"E	3.81	<0.5	88	219.12	-	2.75	5.14	4.49	1.31	9.80	24	
8	BS-BRS-04	BRS	19°54'31.03"N	80°33'58.09"E	5.77	<0.5	35	151.63	-	2.03	<0.5	0.75	1.91	13.46	103	
9	BS-BRS-05	BRS	19°54'14.68"N	80°36'33.89"E	27.66	0.54	38	212.11	-	2.86	0.19	1.63	3.94	27.72	133	
10	10-10-24-05	SS	19° 54' 59.44" N	80° 33' 28.09" E	<50	1.06	15	240.11	79	1.93	4.92	0.87	1.44	3.40	328	
11	11-10-24-01	SS	19° 55' 32.33" N	80° 30' 0.53" E	<50	<0.5	1025	118.24	50	2.09	17.8	1.84	0.98	9.43	767	
12	11-10-24-11	SS	19° 55' 28.63" N	80° 35' 37.85" E	<50	<0.5	36	211.54	82	1.67	2.36	0.68	1.76	4.64	885	

FIELD VALIDATION THROUGH SURFACE SAMPLING – OXIDES

OXIDES																	HYDROTHERMAL MINERAL
Sl. No.	Sample ID	Sample Type	Latitude	Longitude	Na	Al	Ba	Ca	Cr	Fe	Mn	Mg	Si	K	P	S	
1	10-10-24-04	**BRS**	19° 55' 41.4" N	80° 33' 31.08" E	14612	47707	421	3439	311	7794	<100	388	284020	35992	328	<100	
2	12-10-24-01	**BRS**	19° 57' 58.89" N	80° 34' 4.18" E	25681	70462	779	2486	386	36015	818	2088	305843	35643	363	<100	ALLANITE, TITANITE, MONAZITE
3	10-10-24-07	**BRS**	19° 54' 24.21" N	80° 34' 45.48" E	20016	62428	534	8055	551	23514	318	2355	322694	35470	302	<100	ALLANITE, ZIRCON, TITANITE
4	11-10-24-04	**BRS**	19° 52' 12.82" N	80° 31' 32.94" E	21690	61847	362	2857	274	17746	241	584	316045	43815	170	<100	ALLANITE, ZIRCON
5	BS-BRS-01	BRS	19°52'22.11"N	80°35'25.04"E	0.08	7.11	<0.05	0.09	62	3.29	<0.05	<0.05	86.11	0.13	<0.05	<0.05	
6	BS-BRS-02	BRS	19°51'58.57"N	80°34'48.68"E	3.23	14.11	0.11	0.99	158	3.57	<0.05	0.19	70.48	5.28	<0.05	<0.05	
7	BS-BRS-03B	BRS	19°52'7.60"N	80°33'28.91"E	5.28	14.11	<0.05	0.71	33	0.75	<0.05	<0.05	75.13	3.22	<0.05	<0.05	
8	BS-BRS-04	BRS	19°54'31.03"N	80°33'58.09"E	3.70	14.64	0.09	1.29	77	3.38	<0.05	0.40	69.67	5.19	<0.05	<0.05	
9	BS-BRS-05	BRS	19°54'14.68"N	80°36'33.89"E	3.22	12.75	<0.05	0.74	31	2.59	<0.05	0.14	74.34	5.05	<0.05	<0.05	
10	10-10-24-05	SS	19° 54' 59.44" N	80° 33' 28.09" E	4078	50867	710	578	363	13079	181	324	335605	56299	<100	<100	
11	11-10-24-01	SS	19° 55' 32.33" N	80° 30' 0.53" E	5482	36948	784	1242	288	117869	6001	413	217527	34191	<100	<100	
12	11-10-24-11	SS	19° 55' 28.63" N	80° 35' 37.85" E	13556	55911	554	1592	207	12071	268	421	324391	48760	<100	<100	

FIELD VALIDATION THROUGH SURFACE SAMPLING – TRACE ELEMENTS

TRACE ELEMENTS																						HYDROTHERMAL MINERAL
Sl. No.	Sample ID	Sample Type	Latitude	Longitude	Ag	As	Bi	Ti	V	B	Ga	Ge	Se	Cd	In	Sb	Te	Cs	Hf	Tl	Th	U	
1	10-10-24-04	BRS	19° 55' 41.4" N	80° 33' 31.08" E	<1	<5	<5	566	5	<5	12.57	<0.5	1.59	<0.5	<0.5	<0.5	<0.5	1.21	2.33	0.61	11.53	6.32	
2	12-10-24-01	BRS	19° 57' 58.89" N	80° 34' 4.18" E	<1	9	6	2954	15	<5	36.67	0.87	2.16	<0.5	<0.5	0.67	<0.5	0.89	4.73	0.65	47.96	6.74	ALLANITE, TITANITE, MONAZITE
3	10-10-24-07	BRS	19° 54' 24.21" N	80° 34' 45.48" E	<1	<5	<5	2089	15	<5	22.57	<0.5	0.9	<0.5	<0.5	2.41	<0.5	1.1	0.77	0.66	32.55	4.41	ALLANITE, ZIRCON, TITANITE
4	11-10-24-04	BRS	19° 52' 12.82" N	80° 31' 32.94" E	<1	6	<5	1314	<5	<5	32.32	0.66	4.07	<0.5	<0.5	<0.5	<0.5	1.15	3.61	0.96	41.2	8.9	ALLANITE, ZIRCON
5	BS-BRS-01	BRS	19°52'22.11"N	80°35'25.04"E	<1	6	<5	-	-	<0.5	9.33	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.02	<0.5	12.31	2.30	
6	BS-BRS-02	BRS	19°51'58.57"N	80°34'48.68"E	<1	<5	<5	-	-	<0.5	22.70	<0.5	1.03	<0.5	<0.5	<0.5	<0.5	2.57	4.32	1.76	30.55	2.25	
7	BS-BRS-03B	BRS	19°52'7.60"N	80°33'28.91"E	<1	<5	<5	-	-	<0.5	18.73	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.31	1.29	0.87	16.98	9.32	
8	BS-BRS-04	BRS	19°54'31.03"N	80°33'58.09"E	<1	11	<5	-	-	<0.5	21.60	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.91	2.59	0.70	41.98	2.68	
9	BS-BRS-05	BRS	19°54'14.68"N	80°36'33.89"E	<1	<5	<5	-	-	<0.5	20.74	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.94	3.84	0.84	50.66	3.93	
10	10-10-24-05	SS	19° 54' 59.44" N	80° 33' 28.09" E	<1	<5	<5	2629	17	<5	12.37	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.44	3.72	0.96	32.54	4.01	
11	11-10-24-01	SS	19° 55' 32.33" N	80° 30' 0.53" E	<1	<5	<5	101583	31	<5	17.98	<0.5	8.29	0.69	<0.5	<0.5	1.39	0.98	6.22	<0.5	643.82	46.52	
12	11-10-24-11	SS	19° 55' 28.63" N	80° 35' 37.85" E	<1	<5	<5	5421	26	<5	11.97	<0.5	1.76	0.92	<0.5	<0.5	<0.5	1.76	6.55	0.88	51.46	7.64	

FIELD VALIDATION THROUGH SURFACE SAMPLING – BASE METAL

BASE METAL										HYDROTHERMAL
Sl. No.	Sample ID	Sample Type	Latitude	Longitude	Cu	Pb	Zn	Ni	Co	MINERALS
1	10-10-24-04	BRS	19° 55' 41.4" N	80° 33' 31.08" E	7	33	22	<5	0.64	
2	12-10-24-01	BRS	19° 57' 58.89" N	80° 34' 4.18" E	145	55	73	15	10.37	ALLANITE, TITANITE, MONAZITE
3	10-10-24-07	BRS	19° 54' 24.21" N	80° 34' 45.48" E	<5	33	83	7	5.01	ALLANITE, ZIRCON, TITANITE
4	11-10-24-04	BRS	19° 52' 12.82" N	80° 31' 32.94" E	<5	48	72	<5	1.88	ALLANITE, ZIRCON
5	BS-BRS-01	BRS	19°52'22.11"N	80°35'25.04"E	7	15	<5	<5	1.41	
6	BS-BRS-02	BRS	19°51'58.57"N	80°34'48.68"E	22	43	70	<5	1.82	
7	BS-BRS-03B	BRS	19°52'7.60"N	80°33'28.91"E	<5	55	12	<5	<0.5	
8	BS-BRS-04	BRS	19°54'31.03"N	80°33'58.09"E	34	39	55	5	3.20	
9	BS-BRS-05	BRS	19°54'14.68"N	80°36'33.89"E	17	43	50	<5	1.53	
10	10-10-24-05	SS	19° 54' 59.44" N	80° 33' 28.09" E	<5	27	14	7	1.56	
11	11-10-24-01	SS	19° 55' 32.33" N	80° 30' 0.53" E	8	36	147	8	5.66	
12	11-10-24-11	SS	19° 55' 28.63" N	80° 35' 37.85" E	5	23	14	<5	1.97	

7.0 REFERENCES

1- S.S Jain and S.K Pattanaik, 1979-19129: Geology of parts of Chandrapur and Baster Tehsil, Chandrapur and Baster District in parts of Toposheet No-65A/05,09. Report Acc No-: - CR-215422.

2- S.S Jain and S.K Pattanaik, 1978-79: Geology of parts of Sironcha Tehsil, Gadchiroli District in parts of Toposheet No-65A/06,65A/07 & 65A/11. Report Acc No-: - CR-014572.

3- T.M. Babu Geologist (Jr.) FS 1981-1982: Progress report on the work carried out for Tin and associated Rare Metal Minerals in Katekalyan area, Bastar District, Madhya Pradesh in parts of Toposheet No-65F/09.Report Acc No-:-CR-000884 & FS- 1982-83 : Preliminary assessment surveys for colluvial Tin mineralisation in Katekalyan area, Bastar District, (Madhya Pradesh) in parts of Toposheet No-65F/09.Report Acc No-:-CR-015892.

4- R. Choubey, T.M. Babu and S. N. Upadhye Geologists (Jr.) (Field Season 1982-83) : Preliminary assessment surveys for colluvial Tin mineralization in Katekalyan area and Dumam Nadi, Rani Nala Blocks, Bastar District, in parts of Toposheet No-65F/09.Report Acc No-:-CR-015892.

5- T.B. Mahapatra, Geologist (Jr.) (Field Season 1982-1983) : Preliminary assessment for primary Tin in the Pegmatites of Bodavada Block, Bastar District, Madhya Pradesh in parts of Toposheet No. 65F/13. Report Acc No-:-CR-015893.

6- R. Choubey, Geologist (Sr.) (Field Season 1983-84) : A report on Preliminary Assessment for Colluvial tin mineralization in Katekalyan area (Bodenar Block), Bastar District, Madhya Pradesh in parts of Toposheet No 65 F/09. Report Acc No-:-CR-017452

7- A.K. Saha, Geologist (Jr.) (Field Season 1983-1984) : Report on preliminary assessment of colluvial Tin ore in Kapanar area, Rani nala – Kaklur Block, Bastar District, Madhya Pradesh in parts of Toposheet No 65 F/09. Report Acc No-:-CR-018396.

8- Late T.B.Mahapatra (Field Season 1985-1986) : A note on Preliminary assessment for primary Tin in Pegmatites of Marjun-Ellingnar area, District Bastar, Madhya Pradesh in parts of Toposheet No-65 F/14 & 13. Report Acc No-:-CR-119402.

9- Dr. T.M. BABU Geologist (Jr.) (Field Season 1984 - 1987): Report on preliminary assessment for primary Tin in the Pegmatites of Bothapara Block, Katekalyan area, Bastar District, Madhya Pradesh in parts of Toposheet No. 65 F/13 and 14. Report Acc No:CR-019269.

10- Subrata Sarkar et al. [Project -ID: 375/EC-39/G4/2023] : Report on reconnaissance Survey (G-4 Stage) for Iron ore in “Murwada-Tumarikodi Block” District-Gadchiroli, Maharashtra (Toposheet No-65A/10, F.S-2023-24) E.C- OM No- F. No. 23/372/2023-NMET/129, dated, 26th June 2023. [NMET funded Project vide ID: 375/EC-39/G4/2023].