GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G3) FOR COPPER & ASSOCIATED MINERALS IN

THAKURDIH AREA-1 BLOCK (4.10 sq.km.)

SINGHBHUM COPPER BELT,

EAST SINGHBHUM DISTRICT, STATE – JHARKHAND

(Under NMET Programme)

(TEXT, ANNEXURES AND PLATES)

Copper mineralisation in Borehole Core sample (MTB-3, MTB-2 & MTB-5)

MINERAL EXPLORATION AND CONSULTANCY LTD.

(Formerly Mineral Exploration Corporation Ltd.)

मिनरल एक्सप्लोरेशन एंड कंसल्टेंसी लिमिटेड

(पूर्व में मिनरल एक्सप्लोरेशन कार्पोरेशन लिमिटेड)

खान मंत्रालय, भारत सरकार का उद्यम, मिनीरत्ना-I सीपीएसई

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GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G3) FOR COPPER ORE IN THAKURDIH-AREA-1 BLOCK, SINGHBHUM COPPER BELT BELT, EAST SINGHBHUM DISTRICT, STATE – JHARKHAND

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MECL

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5B(1)	VB(1)	Geological cross section along section lines S1-S1' to S14-S14' (Northern Band) showing Mineralised ore zones at 0.5% Cu Cut-off in Thakurdih Area – 1 Block, District-East Singhbhum, Jharkhand.	1:1000
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5C(1)	VC(1)	Geological cross section along section lines S2-S2' to S14-S14' (Northern Band) showing Mineralised ore zones at 1% Cu Cut-off in Thakurdih Area – 1 Block, District-East Singhbhum, Jharkhand.	1:1000
5C(2)	VC(2)	Geological cross section along section lines S15-S15' to S19-S19' (Southern Band) showing Mineralised ore zones at 1% Cu Cut-off in Thakurdih Area – 1 Block, District-East Singhbhum, Jharkhand.	1:1000
6A	VI.A	Level Plan at 1st level (30m RL) showing Mineralised ore zones at 0.2% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
6B	VI.B	Level Plan at 2nd level (-30m RL) showing Mineralised ore zones at 0.2% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
6C	VI.C	Level Plan at 3rd level (-90m RL) showing Mineralised ore zones at 0.2% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
7A	VII.A	Level Plan at 1st level (30m RL) showing Mineralised ore zones at 0.5% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
7B	VII.B	Level Plan at 2nd level (-30m RL) showing Mineralised ore zones at 0.5% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000

Sl. No.	Plate No.	Title	R.F.
7C	VII.C	Level Plan at 3rd level (-90m RL) showing Mineralised ore zones at 0.5% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
8A	VIII.A	Level Plan at 1st level (30m RL) showing Mineralised ore zones at 1.0% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
8B	VIII.B	Level Plan at 2nd level (-30m RL) showing Mineralised ore zones at 1.0% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
8C	VIII.C	Level Plan at 3rd level (-90m RL) showing Mineralised ore zones at 1.0% Cu Cut-off, Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.	1:4000
9A TO 9E	IX-A TO IX-E	Borehole Geophysical Log	1:500

तांबे और संबंधित खनिजों के लिए प्रारंभिक गवेषण पर भूवैज्ञानिक रिपोर्ट (G3)
ठाकुरडीह क्षेत्र-1 ब्लॉक (4.10 वर्ग किमी)
सिंहभूम कॉपर बेल्ट,
पूर्वी सिंहभूम जिला, राज्य – झारखंड
अध्याय-1बी

कार्यकारी सारांश

1.1.0 ठाकुरडीह क्षेत्र-1 ब्लॉक, पूर्व में गवेषित ठाकुरडीह-चरकमारा (G3) ब्लॉक का हिस्सा है और झारखंड के सिंहभूम ताम्र पट्टी के दक्षिण-पूर्वी छोर पर स्थित बहरागोड़ा ताम्र संभावना का हिस्सा है । इस क्षेत्र में ताम्र के लिए पुराने खनन (उथले गड्ढे) होने की सूचना पूर्व शोधकर्ताओं (स्टोहर 1870 और डन 1937) द्वारा दी गई थी। इससे पहले, भारतीय भू-वैज्ञानिक सर्वेक्षण (GSI) ने इस क्षेत्र में वेसमेटल खनिजीकरण के लिए तीव्र से मध्यम भू-रासायनिक और भूभौतिकीय विसंगतियों की सूचना दी थी। 2022-23 के दौरान, एमईसीएल ने ठाकुरडीह चरकमारा ब्लॉक में 10.0 वर्ग किलोमीटर क्षेत्र में चार उप-ब्लॉकों (ठाकुरडीह क्षेत्र-1 सहित) में ताम्र के लिए G3 चरण का गवेषण कार्य किया। एकीकृत भू-भौतिकीय विसंगतियों (कम रेस्टिविटी और उच्च चार्जेबिलिटी) के आधार पर, क्षेत्र में किए गए तीन स्काउट बोरहोलों से ठाकुरडीह क्षेत्र-1 उप-ब्लॉक में महत्वपूर्ण ताम्र खनिजयुक्त क्षेत्र प्राप्त हुए। ठाकुरडीह क्षेत्र-1 ब्लॉक में 3.23 मीटर की औसत मोटाई पर 0.39% Cu के औसत ग्रेड के साथ कुल 128689 टन (0.13 मिलियन टन) ताम्र अयस्क आवीक्षण संसाधन (UNFC-334) का अनुमान लगाया गया है और G3 चरण में आगे गवेषण की सिफारिश की गई है ।

1.1.2 पूर्वी सिंहभूम जिला, झारखंड में ठाकुरडीह क्षेत्र-1 ब्लॉक (4.10 वर्ग किमी क्षेत्र) में तांबा और संबंधित खनिजों के लिए G3 चरण में वर्तमान प्रारंभिक गवेषण में खनिजकरण की नतिलंब और गहराई की निरंतरता को साबित करने और एनएमईटी फंडिंग के तहत यूएनएफसी मानदंडों और एमईएमसी नियम 2015 (2021 तक संशोधित) के अनुसार G3 स्तर (अनुमानित श्रेणी) पर तांबा अयस्क संसाधनों का अनुमान लगाने के उद्देश्य से यह कार्य शुरू किया गया है।

1.1.3 वर्तमान G3 चरण गवेषण में 1:2000 पैमाने पर विस्तृत भूवैज्ञानिक मानचित्रण, 4.10 वर्ग किलोमीटर क्षेत्र में स्थलाकृतिक सर्वेक्षण, वेडरॉक नमूनों (26 नग) का संग्रह और विश्लेषण, Cu, Pb, Zn, Ni, Co, Mo और W के लिए खाई के नमूने (48 नग) और लगभग 200 मीटर के अंतराल पर 17 बोरहोल (चरण- I और II) में 2200 मीटर की गहराई तक गवेषणात्मक वेधन कार्य, साथ ही बोरहोल विचलन सर्वेक्षण, बोरहोल

भूभौतिकीय लॉगिंग और पेट्रोग्राफिक (10 नग), मिनराग्राफिक अध्ययन (10 संख्या) और विशिष्ट गुरुत्व निर्धारण आदि सहित संबंधित प्रयोगशाला अध्ययन की संबद्ध गतिविधियां शामिल हैं।

1.1.4 ब्लॉक क्षेत्र में मुख्य रूप से आर्कियन युग के ग्रेनाइट/ग्रेनाइट नीस, चाईबासा संरचना के पैलियोप्रोटेरोज़ोइक युग के क्वार्टजाइट और शिस्टोज़ चट्टानें , तृतीयक और नवीन जलोढ़क/मृदा आवरण पाए जाते हैं। अधिकांश क्षेत्र मृदा आवरण से ढका हुआ है और कुछ स्थानों पर कृषि योग्य भूमि भी है। क्वार्टजाइट और ग्रेनाइट को छोड़कर चट्टानों का प्रदर्शन सीमित है। खनिजयुक्त क्षेत्र की सतही अभिव्यक्ति खराब और अस्पष्ट है। क्षेत्र में कुछ पुराने कार्यशील गड्ढे देखे गए हैं। हालाँकि, भू-रासायनिक नमूनाकरण और आईपी, प्रतिरोधकता सर्वेक्षण से कुछ विसंगतियाँ सामने आई हैं, लेकिन भूविज्ञान और सल्फाइड खनिजीकरण की अधिकांश जानकारी वेधन छिद्रों से प्राप्त हुई है।

1.1.5 ठाकुरडीह क्षेत्र-1 ब्लॉक में , ताँबा खनिजीकरण दो क्षेत्रों, अर्थात् उत्तरी पट्टी और दक्षिणी पट्टी, में होता है। उत्तरी पट्टी में, खनिजीकरण मुख्यतः अप्रकाशित पोर्फिरोब्लास्टिक गार्नेटिफ़ेरस क्लोराइट माइका शिस्ट के साथ होता है, जो उत्तरी क्वार्टजाइट कटक के साथ अपने अवरोही भाग (क्वार्टजाइट कटक के उत्तर में) में क्रमिक रूप से प्रवाहित होता है। दक्षिणी पट्टी में, खनिजीकरण मुख्यतः ग्रेनाइटी चट्टानों और मेटा-बेसिक शिस्टोज़ चट्टानों के संपर्क में होता है। इसके अतिरिक्त, खनिजीकरण सिलिकायुक्त ब्रेकियेटेड चट्टानों में भी होता है, क्वार्टजाइट में कम बार। इस क्षेत्र में खनिजीकरण किसी विशेष स्तरीकृत क्षितिज या किसी विशेष लिथो-इकाई तक सीमित नहीं है। हालाँकि, कुछ लिथो-इकाइयाँ अन्य की तुलना में अधिक पसंद की जाती हैं। सामान्य तौर पर, खनिजीकरण उत्तरी बैंड में 55° से 80° एन और एनई नति के साथ ईडब्ल्यू से एनडब्ल्यू-एसडब्ल्यू तक होता है, जबकि दक्षिणी बैंड में 60° से 80° एनई नति के साथ एन 50° डब्ल्यू-एस 50° ई होता है।

1.1.6 तांबा और संबंधित खनिजीकरण लिथो-संरचना और शीयर नियंत्रित है। क्षेत्र में ताँबा और उससे संबंधित खनिजीकरण संरचनात्मक रूप से अपरूपण, वलन या बहुस्तरीय विरूपण द्वारा निर्मित छिद्रों द्वारा नियंत्रित होता है। सल्फाइड खनिजीकरण विदर शिरा (फिसर वेंन) के रूप में होता है जो निकट अंतराल वाले अपरूपणों से जुड़ा होता है, जो विभिन्न लिथोलॉजी में शल्कन के समानांतर से उप-समानांतर होता है। सल्फाइड मुख्य रूप से प्रसार, स्ट्रिंगर और पैच/स्ट्रीक्स, रिप्लेसमेंट पैच, मेटाबेसिक शिस्टोज चट्टानों, गार्नेटयुक्त क्लोराइट, अभ्रक शिस्ट और ग्रेनाइट से जुड़ी शीटयुक्त वेंस के रूप में पाए जाते हैं। चाल्कोपाइराइट मुख्य अयस्क खनिज है, इसके बाद मैग्नेटाइट, पाइराइट और पाइरोटाइट का स्थान आता है। अन्य सल्फाइड और ऑक्साइड अल्प या अल्प मात्रा में पाए जाते हैं।

1.1.7 भूवैज्ञानिक मानचित्रण के दौरान वेसमेटल की मात्रा जानने के लिए लक्षित लिथो-इकाइयों से वेडरॉक के नमूने एकत्र किए गए । 27 वेडरॉक नमूनों में से, उत्तरी बैंड में ट्रेंच MTB/TB के उत्तर से एकत्र किए गए मैलाकाइट स्टैंस वाले गार्नेटिफेरस माइका शिस्ट के एक नमूने (BR/21) में 8.07% Cu का उच्चतम Cu मान प्रदर्शित हुआ। अन्य नमूनों में Cu मान <0.01% Cu से 0.08% Cu तक पाया गया । क्वार्ट्ज़-फेल्डस्पैथिक शिस्ट से एकत्र किए गए एक नमूने (BR/01) में 0.02 % Cu मान के साथ 0.19% Mo मान प्रदर्शित हुआ। संबद्ध तत्वों (Pb, Zn, Co, Ni, Mo और W) का नमूना विश्लेषण उत्साहजनक नहीं है।

1.1.8 खनिजयुक्त क्षेत्रों के कंशील्ड एक्सटेंशन का पता लगाने के लिए क्षेत्र में सीमित खाई खोदने का काम किया गया। प्रोफ़ाइल S18-S18' पर दक्षिणी पट्टी में बनाई गई खाई MTB/T5 ने दो खनिजयुक्त क्षेत्रों का संकेत दिया, जिनमें ग्रेनाइट शैल पर 6 मीटर मोटाई पर औसतन 0.15% Cu और 3.0 मीटर मोटाई पर 0.11% Cu था। मोटी मृदा परत के कारण MTB/T5 को छोड़कर खनिजयुक्त अयस्क पिंडों के कंशील्ड एक्सटेंशन का पता नहीं लगाया जा सका। अन्य संबद्ध तत्वों Pb, Zn, Ni, Co, Mo और W के लिए खाई के नमूनों का विश्लेषण उत्साहजनक नहीं है।

1.1.9 ठकुरडीह क्षेत्र-1 ब्लॉक में किए गए कुल 17 बोरहोल (2200 मीटर) में से, उत्तरी बैंड में कुल 12 बोरहोल और दक्षिणी बैंड में 5 बोरहोल किए गए, जिससे तांबा युक्त अयस्क क्षेत्रों की नतिलंब और गहराई की दृढ़ता साबित हुई, जो ज्यादातर प्रथम स्तर (60 मीटर ऊर्ध्वाधर गहराई) और द्वितीय स्तर (120 मीटर ऊर्ध्वाधर गहराई) के प्रतिच्छेदनों के लिए थी। कुछ बोरहोल्स दूसरी स्तर के नीचे खनिजयुक्त क्षेत्रों से होकर गुज़रे

1.1.10 कुल 348 बोरहोल कोर नमूनों में Cu का मान न्यूनतम 0.2% Cu से अधिकतम 5.29% Cu तक, 122 नमूनों में न्यूनतम 0.51% Cu से 5.29% Cu तक और 50 नमूनों में 1.01% Cu से 5.29% Cu तक पाया गया। कुल 8 नमूनों (MTB/16) में एक बोरहोल (MTB/16) में Zn का मान 0.10% Zn से 0.28% Zn तक पाया गया। कुल 24 नमूनों में 11 बोरहोल में Ni का मान 0.10% Ni से 0.40% Ni तक पाया गया। कुल 43 नमूनों में 9 बोरहोल में Mo का मान 0.01% Mo से 0.39% Mo तक पाया गया। बोरहोल संख्या MTB-08 में 2 नमूनों में 0.11% Co और 0.13% Co के Co मान दर्शाए गए। कुछ स्पॉट मानों को छोड़कर, Pb, Zn, Ni, Co, Mo और W के लिए बोरहोल नमूनों का विश्लेषण उत्साहजनक नहीं है।

1.1.11 कुल 2467.50 मीटर ड्रिलिंग डेटा में वर्तमान ड्रिलिंग के 17 बोरहोल (2200 मीटर) और पिछले गवेषण (एमईसीएल) के 3 पुराने बोरहोल (267.50 मीटर) शामिल हैं, जिन्हें कट-ऑफ ग्रेड मानदंड मापदंडों के अनुसार संसाधन की भूवैज्ञानिक व्याख्या, सहसंबंध और मूल्यांकन के लिए ध्यान में रखा गया है।

1.1.12 व्यक्तिगत प्राथमिक नमूनों के विश्लेषणात्मक परिणामों के आधार पर, बोरहोल्स में 0.2% Cu, 0.5% Cu और 1.0% Cu कट-ऑफ पर प्रतिच्छेदित कई खनिज क्षेत्रों की पहचान की गई है। 0.2% Cu कट-ऑफ मान पर सभी 20 बोरहोल्स में कुल 85 खनिज क्षेत्र प्रतिच्छेदित हुए, जिनका ग्रेड 0.5 मीटर से 31.00 मीटर मोटाई पर 0.2% Cu से 1.8% Cu तक भिन्न था। 0.5% Cu कट-ऑफ पर, 16 बोरहोल्स में कुल 52 खनिज क्षेत्र प्रतिच्छेदित हुए और जिनका ग्रेड 0.40 मीटर से 7.50 मीटर मोटाई पर 0.5% Cu से 1.68% Cu तक भिन्न था। 1.0% Cu कट-ऑफ पर, 13 बोरहोलों में 30 खनिज क्षेत्र प्रतिच्छेदित हुए तथा 1.0% Cu कट-ऑफ मान पर 0.40 मीटर से 6.50 मीटर मोटाई पर ग्रेड 1.01% Cu से 2.72% Cu तक भिन्न है।

1.1.13 बोरहोल भूभौतिकीय लॉगिंग से सल्फाइड खनिजयुक्त क्षेत्रों को उनकी मोटाई और गहराई के साथ चित्रित करने में मदद मिली। भूभौतिकीय लॉगिंग ने बोरहोल से एकत्रित जानकारी के मूल्य को भी बढ़ाया।

1.1.14 ब्लॉक के ताम्र संसाधन का अनुमान "भूवैज्ञानिक क्रॉस-सेक्शन विधि" (मुख्य विधि) और "लेवल प्लान विधि" (जांच विधि) द्वारा देय ताम्र युक्त लोड्स के लिए 0.20% Cu, 0.5% Cu और 1.0% Cu कट-ऑफ पर लगाया गया है, जिसमें 2.00 मीटर न्यूनतम स्टॉपिंग चौड़ाई (MSW) को वास्तविक चौड़ाई और 3.00 मीटर गैर-अयस्क विभाजन माना गया है। ब्लॉक में ताम्र अयस्क संसाधन अनुमान के लिए औसत विशिष्ट गुरुत्व 3.00 लिया गया है।

1.1.15 ताम्र खनिजीकरण अनियमित प्रकृति का है और कुछ अलग-अलग खण्डों में ग्रेड में भिन्नता के साथ, नतिलंब और नति के साथ पिंच और स्वेल प्रकृति दिखाई देती है। खण्डों की चौड़ाई और ग्रेड, विभाजनों के कट-ऑफ ग्रेड, मोटाई और मजबूती पर निर्भर करते हैं।

1.1.16 0.2% तांबा कट-ऑफ पर, उत्तरी बैंड NB1, NB2, NB3, NB4, NB5, NB5A, NB6 से संबंधित कुल 7 खण्डों और दक्षिणी बैंड SBA, SB1A, SB3, SB4, SB5 से संबंधित 6 खण्डों को 16 बोरहोल (2.08-27.62 मीटर वास्तविक चौड़ाई पर 0.2%-1.21% तांबा) में चित्रित किया गया। 0.5% कट-ऑफ पर, उत्तरी बैंड के 3 लोड (NB1, NB3 और NB6) और दक्षिणी बैंड के 4 लोड (SB1, SB1A, SB3 और SB4) 9 बोरहोल (2.10 मीटर-5.57 मीटर वास्तविक चौड़ाई पर 0.50%-1.28% Cu) में चित्रित किए गए। 1.0% Cu कट-

ऑफ पर उत्तरी बैंड (NB6) का 1 लोड और दक्षिणी बैंड (SB1 और SB1A) के 2 लोड 3 बोरहोल (2.45-3.63 मीटर वास्तविक चौड़ाई पर 1.01%-1.41% Cu) में चित्रित किए गए।

1.1.17 0.5% Cu अयस्क क्षेत्रों से संबंधित ICP-MS विधि द्वारा 17 मिश्रित नमूनों के विश्लेषणात्मक परिणामों से पता चला कि ∑REE+Y+Sc मान 262.25 ppm से 4654.36 ppm तक थे, जिनका औसत 2.50 मीटर से 7.50 मीटर मोटाई पर 1087.81 ppm था। कुल 4 अयस्क क्षेत्रों (0.5% Cu कट-ऑफ क्षेत्र) ने ∑REE+Y+Sc मान >1000 ppm से 1105.30 से 4654.36 ppm तक थे, जिनका औसत मान 2462.37 ppm था।

1.1.18 इसी प्रकार, 0.2% Cu अयस्क क्षेत्रों से संबंधित ICP-MS विधि द्वारा 32 मिश्रित नमूनों के विश्लेषणात्मक परिणामों से पता चला कि ∑REE+Y+Sc मान 258.81 ppm से 3913.13 ppm तक थे, जिनका औसत मान 2.0 मीटर से 31.0 मीटर मोटाई पर 888.71 ppm था। कुल 8 अयस्क क्षेत्रों (0.2% Cu कट-ऑफ क्षेत्र) में ∑REE+Y+Sc मान >1000 ppm थे, जिनका औसत मान 1691.58 ppm था, जिनका औसत मान 1028.87 से 3913.3 ppm तक था। असामान्य REE मान ज्यादातर क्वार्ट्ज - K-फेल्डस्पार क्लोराइट - बायोटाइट स्किस्ट ± एम्फिबोल (सिलिकिफाइड और ग्रेनाइटाइज्ड), Gt. क्लोराइट स्किस्ट / मेटाबेसिक स्किस्ट, ग्रेनाइट और स्किस्ट और ग्रेनाइट के संपर्क क्षेत्रों में रिपोर्ट किए गए।

1.1.19 0.5% Cu कट-ऑफ पर, ताम्र क्षेत्रों (17नग) में Co का मान 57.56 ppm Co से 1300 ppm Co तक दर्शाया गया। कुल 11 अयस्क क्षेत्रों में Co का मान 2.50 मीटर से 7.50 मीटर तक 101.48 ppm Co से 288.03 ppm Co तक दर्शाया गया, जिसमें से एक क्षेत्र में 4.00 मीटर मोटाई पर 1300 ppm Co का उच्चतम Co मान दर्शाया गया (MTB-08)। केवल एक क्षेत्र में 7.50 मीटर मोटाई पर 192.97 ppm Mo का Mo मान दर्शाया गया (MTB-08)। अन्य तत्वों के लिए विश्लेषणात्मक परिणाम उत्साहजनक नहीं हैं।

1.1.20 0.2% Cu कट-ऑफ पर, ताँबा क्षेत्रों (32) ने Co का मान 38.97 ppm Co से 1220.33 ppm Co तक दर्शाया। कुल 18 क्षेत्रों ने कोबाल्ट का मान 102.79 ppm Co से 367.13 ppm Co तक दर्शाया, जिसमें एक क्षेत्र ने 3.50 मीटर मोटाई पर 1220.33 ppm का उच्चतम मान दर्शाया (MTB-08)। दो क्षेत्रों ने 8.0 मीटर पर 147.60 मीटर (MTB-08) और 13.23 मीटर पर 138.83 ppm Mo का मान दर्शाया (MTB-17)। अन्य तत्वों के लिए विश्लेषणात्मक परिणाम उत्साहजनक नहीं हैं।

1.1.21 तांबा युक्त क्षेत्रों से एकत्रित मिश्रित नमूनों (17) में, जिनकी Cu कट-ऑफ 0.5% से अधिक है, Au मान 32.81 ppb से 480.05 ppb तक और Ag मान <100 ppb से 414.80 ppb तक हैं। Au और Ag के विश्लेषण मान उत्साहजनक नहीं हैं।

1.1.22 ठाकुरडीह क्षेत्र-1 ब्लॉक में , भूवैज्ञानिक क्रॉस सेक्शन विधि द्वारा 0.20% Cu कट-ऑफ ग्रेड मानदंड पर अनुमानित कुल ताम्र अयस्क सकल संसाधन 4924418 टन (4.92 मिलियन टन) हैं। सकल संसाधनों में से 10% की कटौती के बाद, कुल शुद्ध भूवैज्ञानिक स्व-स्थाने संसाधन 4431977 टन (4.43 मिलियन टन) हैं, जिनका औसत ग्रेड 6.14 मीटर की औसत मोटाई पर 0.38% Cu है। यह संसाधन 2.6 किमी की संचयी नतिलंब लंबाई और जमीन की सतह से 180 मीटर की ऊर्ध्वाधर गहराई तक अनुमानित है।

1.1.23 0.5% Cu कट-ऑफ ग्रेड मानदंड पर, कुल सकल और शुद्ध भूवैज्ञानिक स्व-स्थाने संसाधन क्रमशः 1130244 टन (1.13 मिलियन टन) और 1017220 टन (1.02 मिलियन टन) हैं, जिनका औसत ग्रेड 3.45 मीटर की औसत मोटाई पर 0.70% Cu है। अनुमानित संसाधन 1.8 किमी की संचयी नतिलंब लंबाई और ज़मीन की सतह से 180 मीटर ऊर्ध्वाधर गहराई तक है ।

1.1.24 1.0% Cu कट-ऑफ ग्रेड मानदंड पर, कुल सकल और शुद्ध भूवैज्ञानिक स्व-स्थाने संसाधन क्रमशः 139996 टन (0.14 मिलियन टन) और 125997 टन (0.13 मिलियन टन) हैं, जिनका औसत ग्रेड 2.77 मीटर की औसत मोटाई पर 1.23% Cu है। संसाधन का अनुमान 600 मीटर की संचयी नतिलंब लंबाई और ज़मीन की सतह से 180 मीटर तक की ऊर्ध्वाधर गहराई पर लगाया गया है।

1.1.25 भूवैज्ञानिक क्रॉस सेक्शन विधि द्वारा अनुमानित संसाधन की विश्वसनीयता सुनिश्चित करने के लिए, लेवल प्लान विधि द्वारा 0.20% Cu, 0.5% Cu और 1.0% Cu कट-ऑफ ग्रेड का अनुमान लगाया गया है। ठाकुरडीह क्षेत्र-1 ब्लॉक में लेवल प्लान विधि द्वारा 0.20% Cu कट-ऑफ पर अनुमानित कुल सकल भूवैज्ञानिक स्व-स्थाने और शुद्ध संसाधन 4924995 हैं। टन (4.92 मिलियन टन) सकल संसाधन और 4432496 टन (4.43 मिलियन टन) शुद्ध स्व-स्थाने संसाधन, जिसका औसत ग्रेड 0.38% Cu है। 0.5% Cu कट-ऑफ पर, कुल 1068581 टन (1.07 मिलियन टन) सकल संसाधन और 961723 टन शुद्ध स्व-स्थाने संसाधन (0.96 मिलियन टन) अनुमानित है, जिसका औसत ग्रेड 0.69% Cu है। 1.0 Cu कट-ऑफ पर, कुल 141815 टन (0.14 मिलियन टन) सकल संसाधन और 127634 टन (0.13 मिलियन टन) शुद्ध स्व-स्थाने संसाधन, जिसका औसत ग्रेड 1.24% Cu है।

1.1.26 भूवैज्ञानिक क्रॉस सेक्शन विधि और लेवल प्लान विधि के संसाधनों और ग्रेड में भिन्नताएँ न्यूनतम हैं और स्वीकार्य सीमा (अर्थात <10%) के भीतर हैं। इसलिए, संसाधन आकलन की विश्वसनीयता स्थापित हो गई है और भूवैज्ञानिक क्रॉस सेक्शन विधि द्वारा अनुमानित संसाधन को सभी व्यावहारिक उद्देश्यों के लिए ध्यान में रखा गया है।

1.1.27 ठाकुरडीह क्षेत्र-1 ब्लॉक में कुल अनुमानित संसाधन यूएनएफसी प्रणाली की "अनुमानित खनिज संसाधन" श्रेणी 333 के अंतर्गत रखे गए हैं और खनिज (खनिज सामग्री का साक्ष्य) नियम-2015, 2021 तक संशोधित में दिए गए विनिर्देशों के अनुसार हैं।

1.1.28 अनुशंसा:

ठाकुरडीह क्षेत्र-1 ब्लॉक में G3 चरण के वर्तमान गवेषण से अनुमानित (UNFC-333) संसाधन श्रेणी में ताम्र अयस्क संसाधन की स्थापना हुई है । ताम्र युक्त लोड्स गहराई में खुले हैं और वहां गवेषण में महत्वपूर्ण अंतराल हैं। इसलिए, संसाधन और ग्रेड पर अधिक विश्वास प्राप्त करने के लिए, इस क्षेत्र में निकट अंतराल पर ड्रिलिंग द्वारा G2 चरण के गवेषण की अनुशंसा की जाती है। इसके अलावा, टाईम-डोमेन ईएम सर्वेक्षण क्षेत्र में कंडक्टिंग बॉडिज और गहन स्तर के खनिजीकरण को दर्शाने में सहायक होगा।

इसके अलावा, जी2 स्तर पर ठाकुरडीह क्षेत्र-1 ब्लॉक का उन्नयन करने से सरकार को नीलामी के लिए एक बड़ा ब्लॉक बनाने के लिए मुंडादेवता-डारखुली दक्षिण झरिया जी2 ब्लॉक जैसे निकटवर्ती संभावित ब्लॉकों के साथ एकीकरण करने में सुविधा होगी।

GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G3) FOR COPPER & ASSOCIATED MINERALS IN THAKURDIH AREA-1 BLOCK (4.10 sq.km.) SINGHBHUM COPPER BELT, EAST SINGHBHUM DISTRICT, STATE – JHARKHAND

CHAPTER-1B

EXECUTIVE SUMMARY

1.1.1 Thakurdih Area-1 Block is part of previously explored Thakurdih-Charakmara (G3) Block and forms part of Baharagora copper prospect located at the extreme southeastern end of Singbhum copper belt of Jharkhand. The existence of old workings (shallow pits) for copper in the area was reported by previous workers (Stoehr 1870 & Dunn 1937). Previously, GSI reported strong to moderate geochemical and geophysical anomalies in the area for basemetal mineralisation. During 2022-23, MECL carried out G3 stage exploration work for copper in four sub-blocks (including Thakurdih Area-1) over 10.0sq.km area in Thakurdih Charakmara Block. Based on Integrated ground geophysical anomalies (Low resistivity and high chargeability) three scout boreholes drilled in the area yielded significant copper mineralised zones in Thakurdih Area-1 sub-Block. Total 128689 tonnes (0.13 million tonnes) of copper ore Reconnaissance resource (UNFC-334) with average grade of 0.39% Cu over an average thickness of 3.23m estimated and further exploration at G3 stage was recommended in Thakurdih Area-1 block.

1.1.2 The present preliminary exploration at G3 stage for copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km. area) in East Singhbhum Dist, Jharkhand taken up with an objective to prove the strike and depth continuity of mineralisation and to estimate the copper ore resources at G3 level (inferred cateogory) as per UNFC norms and MEMC Rules 2015 (amended up to 2021) under NMET funding.

1.1.3 The present G3 stage exploration inlcuded detailed geological mapping on 1:2000 scale, topographical survey over 4.10 sq.km. area, collection and analysis of bedrock samples (26 nos.), trench samples (48 nos.) for Cu, Pb, Zn, Ni, Co, Mo & W analysis and exploratory drilling work involving 2200m in 17 Boreholes (Phase-I &II) at 200m spacing interval approximately, along with alied activities of borehole deviation survey, borehole geophysical logging and associated laboratory studies for Copper

and associated minerals, Au & Ag and ICP-MS analysis including petrographic (10 nos.), mineragraphic studies (10 nos.) and specific gravity determination etc.

1.1.4 The block area exposes mainly Granite/ Granite Gneiss of Archaean age, Quartzites and Schistose rocks of Palaeoproterozoic age of Chaibasa formation, Gravels of Tertiary and recent Alluvium/soil cover. Most of the area is concealed under soil cover with cultivated lands at places. Rock exposures are limited except quartzites and granites. Surface expression of the mineralized zone is poor and ill defined. Few old old working pits seen in the area. Geochemical sampling and I.P., Resistivity survey, however provide some anomalies but most of the information on the geology and the sulphide mineralization has been obtained from the drill holes.

1.1.5 In Thakurdih Area-1 block, copper mineralisation occurs along two zones namely Northern band & Southern band. In northern band, mineralization mainly occurs along the unexposed Porphyroblastic Garnetiferous Chlorite Mica schist which is running in succession with the Northern Quartzite ridge at its up dip side (north of Quartzite ridge). In southern band, mineralization mainly occurs along the contact of Granitic rock with the Meta-basic schistose rocks. Additionally, mineralization occurs in silicified brecciated rocks, less frequently in quartzite. Mineralisation in this area is not confined to any particular stratigraphic horizon nor to any particular litho-unit. However, some litho-units are preferred relative to other. The control of mineralisation is In general, the mineralisation strikes E-W to NW-SW with 55° to 80^0 N & NE dip in Northern band while N50°W-S50°E with 60° to 80^0 NE dip in the Southern band.

1.1.6 Copper and associated mineralisation is mainly Litho-structure and shear controlled. Copper mineralisation in the area is structurally controlled by openings formed through shearing, folding or multistage deformation. Sulphide mineralisation occurs in the form of fissure vien type associated with closely spaced shears, mostly parallel to sub-parallel to the foliation in varied lithologies. Sulphides occur mainly as disseminations, stringers and patches/streaks, replacement patches, sheeted veins associated with metabasic schistose rocks, garnetiferous chlorite mica schist and

granities. Chalcopyrite is the main ore mineral followed by magnetite, pyrite pyrrhotite. Other sulphides and oxides occur in minor or trace proportions.

1.1.7 Bedrock samples were collected from targeted litho-units to know the basemetal content during the course of geological mapping. Out of 27 nos bedrock samples, one sample (BR/21) of Garnetiferous mica schist with malachite stains collected from north of Trench MTB/TB in the northern band shown highest Cu value of 8.07% Cu. Other samples shown Cu value ranges from <0.01% Cu to 0.08% Cu. One Samples (BR/01) collected from Quartzo-feldspathic schist shown Mo value of 0.19% with 0.02% Cu value. Sample analysis of Pb, Zn, Co, Ni, Mo & W are not encouraging.

1.1.8 Limited trenching work taken up in the area to trace concealed extensions of mineralised zones. Trench MTB/T5 made in the southern band on profile S18-S18' indicated two mineralised zones with average of 0.15% Cu over 6m thickness and 0.11% Cu over 3.0m thickness over granite/ gneiss. Concealed strike extensions of mineralisaed ore bodies could not be traced except MTB/T5 due to thick soil cover. Trench sample analysis for Pb, Zn, Ni, Co, Mo & W are not encouring.

1.1.9 Out of total 17 nos boreholes (2200m) drilled in Thakurih Area-1 Block, total 12 nos. boreholes drilled in the Northern band while 05 boreholes drilled in the Southern band to prove the strike and depth persistence of copper bearing ore zones mostly for 1st level (60 m vertical depth) and for 2nd level (120m vertical depth) intersections. Few boreholes intersected mineralised zones below 2nd level.

1.1.10 Total 348 nos. borehole core samples indicated Cu values range from minimum 0.2% Cu to maximum 5.29% Cu, 122 samples range from minimum 0.51% Cu to 5.29% Cu and 50 samples from 1.01% Cu to 5.29% Cu. Total 8 samples (MTB/16) shown Zn values range from 0.10% Zn to 0.28% Zn in one borehole (MTB/16). Total 24 samples shown Ni values range from 0.10% Ni to 0.40% Ni in 11 boreholes. Total 43 nos. samples indicated Mo values range from 0.01% Mo to 0.39% Mo in 9 boreholes. Total 4 samples shown Mo values range from 0.12% Mo to 0.39% Mo in two boreholes. 2 samples shown Co values of 0.11% Co & 0.13% Co in Borehole No. MTB-08. Borehole Sample analysis for Pb, Zn, Ni, Co, Mo & W are not encouraging except few spot values.

1.1.11 Total 2467.50 m drilling data includes 17 Boreholes (2200 m) of present drilling and 3 old boreholes (267.50m) of previous exploration (MECL) has been taken into consideration for geological interpretation, correlation, and evaluation of resource as per the cut-off grade criteria parameters.

1.1.12 Based on the analytical results of individual primary samples, multiple mineralised zones intersected in the boreholes have been identified at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off. Total 85 Nos. mineralized zones intersected in all 20 boreholes at 0.2% Cu cut-off value with grade varying from 0.2% Cu to 1.8% Cu over 0.5m to 31.00m thickness. At 0.5% Cu cut-off, total 52 Mineralized zones intersected in 16 Boreholes and grade varies from 0.5% Cu to 1.68% Cu over 0.40m to 7.50m thickness. At 1.0% Cu Cut-of, 30 mineralized zones intersected in 13 Boreholes and grade varies from 1.01% Cu to 2.72% Cu over 0.40m to 6.50m thickness at 1.0% Cu cut-off value.

1.1.13 The borehole geophysical logging helped to delineate sulphide minaralised zones along with their thickness and depths. The geophysical logging also enhanced the value of information collected from the boreholes.

1.1.14 The copper resource of the block has been estimated by "Geological cross-section Method" (principal method) as well as "Level Plan Method" (check method) for payable copper bearing lodes at 0.20% Cu, 0.5% Cu and 1.0% Cu cut-off sapareately considering 2.00m minimum stoping width (M.S.W) as true width and 3.00m Non ore parting. The average specific gravity for the copper ore resource estimation in the block is taken as 3.00.

1.1.15 The copper mineralisation is erratic in nature and some individual lodes shows pinch and swell nature along the strike and dip with variation in grade. The widths and grades of the lodes depend on the cut-off grade, thickness and strength of the partings.

1.1.16 At 0.2% Cu cut-off, toal 7 lodes pertaining to northern band NB1, NB2, NB3, NB4, NB5, NB5A, NB6 and 6 lodes pertaining to southern band SBA, SB1A, SB3, SB4, SB5 were delineated in 16 boreholes (0.2%-1.21% Cu over 2.08-27.62m true width). At 0.5% cut-off, 3 lodes of northern band (NB1, NB3 & NB6) and 4 lodes of southern band (SB1, SB1A, SB3 & SB4) delineated in 9 boreholes (0.50%-1.28% Cu over

2.10m-5.57m true width). At 1.0% Cu cut-off I lode of northern band (NB6) and 2 lodes of southern band (SB1 & SB1A) delineated in 3 boreholes (1.01%-1.41%Cu over 2.45-3.63m true width).

1.1.17 Analytical results of 17 Nos. composite samples by ICP-MS method pertaining to 0.5% Cu ore zones, indicated ∑REE+Y+Sc values range from 262.25 ppm to 4654.36 ppm with an average of 1087.81 ppm over 2.50m to 7.50m thickness Total 4 ore zones (0.5% Cu cut-off zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1105.30 to 4654.36 ppm with an average value of 2462.37 ppm.

1.1.18 Similarly, Analytical results of 32 Nos. composite samples by ICP-MS method pertaining to 0.2% Cu ore zones, indicated ∑REE+Y+Sc values range from 258.81 ppm to 3913.13 ppm with an average of 888.71 ppm over 2.0m to 31.0m thickness. Total 8 ore zones (0.2% Cu cut-off zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1028.87 to 3913.3 ppm with an average value of 1691.58 ppm. Anomalous REE values reported mostly in Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized), Gt. Chlorite schist/metabasic schist, granite and contact zones of schist and granite.

1.1.19 At 0.5% Cu cut-off, copper zones (17 Nos.) indicated Co values range from 57.56 ppm Co to 1300 ppm Co. Total 11 ore Zones indicated values Co values range from 101.48ppm Co to 288.03 ppm Co. over 2.50m to 7.50m with One zone shown highest Co value of 1300ppm Co over 4.00m thickness (MTB-08). Only one Zone had shown Mo value of 192.97 ppm Mo over 7.50m thickness (MTB-08). Analytical results for other elements are not encouraging.

1.1.20 At 0.2% Cu cut-off, copper zones (32 Nos.) indicated Co values range from 38.97 ppm Co to 1220.33 ppm Co. Total 18 zones indicated cobalt values range from 102.79 ppm Co to 367.13 ppm Co with one zone shown highest value of 1220.33 ppm over 3.50m thickness (MTB-08). Two zones shown Mo values of 147.60m over 8.0m (MTB-08) and 138.83 ppm Mo over 13.23m (MTB-17). Analytical results for other elements are not encouraging.

1.1.21 Composite samples (17 nos.) collected from copper bearing zones >0.5% Cu cut-off indicated Au values range from 32.81 ppb to 480.05 ppb and Ag values range from <100ppb to 414.80 ppb. Analysis values for Au & Ag are not encouraging.

1.1.22 In Thakurdih Area-1 Block, total Copper ore Gross resources estimated by Geological Cross Section Method at **0.20% Cu cut-off grade** criteria are **4924418 tonnes (4.92 million tonnes).** After 10% deduction from gross resources total **Net geological in situ resource are 4431977 tonnes (4.43 million tonnes)** with an **average grade of 0.38% Cu** over average thickness of 6.14m. The resource estimated over a cumulative strike length of 2.6 km and upto vertical depth of 180m from ground surface.

1.1.23 At 0.5% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **1130244 tonnes (1.13 million tonnes)** and **1017220** tonnes (**1.02 million tonnes)** respectively with **average grade of 0.70% Cu** over an average thickness of 3.45m. The resource estimated over a cumulative strike length of 1.8 km and upto 180m vertical depth from ground surface.

1.1.24 At 1.0% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **139996 tonnes (0.14 million tonnes)** and **125997** tonnes (**0.13 million tonnes)** respectively with **average grade of 1.23% Cu** over an average thickness of 2.77m. The resource estimated over a cumulative strike length of 600m and up to 180m vertical depth from ground surface.

1.1.25 In order to ascertain the reliability of resource estimated by Geological Cross Section Method, the same has been estimated at 0.20% Cu, 0.5% Cu and 1.0% Cu cut off grade by the Level plan method and results closely matched the main method. The total resource estimated at 0.20% Cu cut-off by Level plan method are 4924995 tonnes (4.92 million tonnes) gross resource and 4432496 tonnes (4.43 million tonnes) of net in-situ resource with an average grade of 0.38% Cu. At, 0.5% Cu cut-off, total 1068581 tonnes (1.07 million tonnes) of gross resource and 961723 net in-situ resorce (0.96 million tonnes) with average grade of 0.69% Cu estimated. At 1.0 Cu cut-off, total 141815 tonnes (0.14 million tonnes) of gross resource and 127634 tonnes (0.13 million tonnes) of net in-situ resource with an average grade of 1.24% Cu estimated.

1.1.26 The variations in the resources and grade of Geological cross section method and Level Plan method are minimum and within the acceptable limits (i.e. <10%). Hence, the reliability of resource estimation has been established and resource estimated by Geological Cross Section Method has been considered for all practical purposes.

1.1.27 Total estimated resources in Thakurdih Area-1 Block placed under "Inferred Mineral Resource" category 333 of UNFC system and as per the specifications given in the Mineral (Evidence of Mineral Contents) Rule-2015, Amended upto 2021.

1.1.28 Recommendation:

Present exploration at G3 stage established Copper ore resource at Inferred (UNFC-333) resource category in Thakurdih Area-1 Block. Copper bearing lodes are open in depth and there are significant gaps in exploration. Hence, G2 stage exploration is recommended in the area by close spaced drilling for gaining more confidence on resource and grade. Also, Time Domain EM survey would be helpful to delineate conducting bodies and deeper level mineralisation in the area.

Moreover, upgradation of Thakurdih Area-1 Block at G2 stage would facilitate the Govt. for amalgamation with adjoining potential blocks like Mundadevta-Darkhuli South Jharia G2 Block for making a sizable block for auction.

CHAPTER-II

2.1.0 DETAILS OF THE QUALIFIED PERSON(S) / EXPLORATION AGENCY

(To be provided separately for all the qualified persons signing of the report)

Table No 2.1
Details of exploration agency involved during exploration work

TITLE	DETAILS
(a) Name:	Mineral Exploration and Consultancy Limited (Formerly Mineral Exploration Corporation Limited) (A Govt. of India Enterprise; A Miniratna-I PSE) (Ministry of Mines, Govt of India)
(b)Communication Address:	Dr. Babasaheb Ambedkar Bhawan, Highland Drive Road, Seminary Hills, Nagpur-440006.
(c) Contact Mobile No:	0712-2510289, 0712-2511829
(d) E-Mail id:	cmd@mecl.gov.in gm-exploration@mecl.gov.in
(e) Qualification of Technical Personnel	M.Sc. Geology/ Applied Geology
(f) Experience:	Professionals have more than 30+ years of experience
(g) Affiliation to any organization/company, if yes, specify the name of the organization or company.	A Govt. of India Enterprise; A Miniratna-I CPSE Ministry of Mines, Govt. of India

2.2.0 DETAILS OF PERSONS ASSOCIATED WITH VARIOUS ASPECTS OF EXPLORATION ASSESSMENT OF RESOURCES AND RESERVES

2.2.1 The list of personnel associated with the execution of different exploration activities carried out in Thakurdih Area-1 Block (G-3), District: East Singbhum, Jharkhand given in the following **Table No-2.2.**

Table-2.2
List of Person(s) associated with the Exploration Work

S No.	Title	Name of the Personnel
1	Overall Guidance	Shri Srikant Sharma, Head (Exploration) Shri P. Ravindran Nair, G.M (Exploration), Retd.
2	Overall planning, Coordination & Supervision	Shri Srikant Sharma, Head (Exploration) Shri P. Ravindran Nair, G.M (Exploration), Retd. Shri Pradeep Kulkarni, Retd. D.G.M. (Exploration) Shri Mohamad Dasthageer, Manager (Geology) Shri Milon Mondal, Asst. Manager (Geology)
3	Project Management & Field operation	Shri Ankit Gautam, Asst. Manager (Drilling)/Project Manager Kendadih Project
4	Physical Execution of Work	
	Geology	Shri Milon Mondal, Asst. Manager (Geology) Shri Sharadindu Layek, Asst. Manager (Geology) Shri Kolluri Sudheer, Geologist
	Sampling	Shri Milon Mondal, Asst. Manager (Geology) Shri Pankaj Taye, Sr. Tech.(sampling)
	Survey	Shri Pratap Singh Negi, Asst. Survey & Map Officer, OIC Shri Jagdish Kumar Thakral, Retd. Survey and Map Officer Shri Durgesh Devarshee, Asst. Survey Map Officer Shri SK. Nazimuddin Ahmad, Sr. T.A. (S & D)
	Drilling	Shri Ankit Gautam, Asst. Manager (Drilling) Shri Ankit Prabhakar, Asst. Manager (Drilling)

S No.	Title	Name of the Personnel
		Shri Pravasisha Mishra, Asst. Drilling Officer Shri Sandeep A. Parida, Asst. Drilling Officer
	Geophysics	Shri Guljar Singh Dhami, G M (Geological Services) Shri Bimalendu Roy, Manager (Geophysics) Shri Manoj Dey, Manager (Geophysics)
5	Chemical Laboratory	Shri Shri Srikant Sharma, Head (Exploration) Shri P. Ravindran Nair GM (Exploration), Retd.
		Shri Rohit Sharma, Senior Manager (Chemical)
		Dr. Deepti Rahangdale, Manager (Chemical)
		Fawaz SVP, Asst. Manager (Chemical)
6	Petrographic Studies	Shri Sayantan Pal, Manager (Geology)
7	Data Processing & Documentation	Shri Mohammad Dasthageer, Senior Manager (Geology) Shri Milon Mondal, Manager (Geology) Shri Kashung Chinshong, Asst. Manager (Geology) Saumya Anand, Asst. Manager (Geology)
		Shri Uday A. Patil, Sr. Operator (Computer) Shri N. C. Reddy, Sr. Operator (Computer)
8	Reprography and Printing	Shri Pratap Singh Negi, Asst. Survey & Map Officer, OIC
		Shri Durgesh Devarshi, Asst. Survey & Map Officer

CHAPTER-3

TITLE AND OWNERSHIP

3.1.0 TITLE OF THE REPORT

GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G3) FOR COPPER & ASSOCIATED MINERALS IN THAKURDIH AREA-1 BLOCK (4.10 sq.km.), SINGHBHUM COPPER BELT, EAST SINGHBHUM DISTRICT, JHARKHAND

Ownership: Government of Jharkhand

Name of Prospector: MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)
(A Govt. of India Enterprise; A Miniratna-I PSE)
(Ministry of Mines, Govt. of India)

Address of Prospector: Dr. Babasaheb Ambedkar Bhavan,
High Land Drive Road, Seminary Hills, Nagpur, Pin- 440006
E-mail of Prospector: cmd@mecl.gov.in; gm-exploration@mecl.gov.in
Telephone numbers of Prospector: 0712-2510289; 0712-2511829

3.2.0 DETAILS OF PERIOD OF PROSPECTING

Background Information

3.2.1 Copper with its unique physical, mechanical and electrical properties, has played a vital role in the industrial growth of a nation. In India, around 75% of demand is met through imports. The increasing demand of Copper metal in the country can be eased with the exploration of new copper deposits of economic importance. In view of the above, exploration for copper ore has been accorded high priority in the XIIth Plan document.

3.2.2 Over the past three decades, no major base metal deposit has been discovered in India. However, the possibility of exploiting smaller mineral bodies located in close proximity to one another cannot be ruled out, especially with advancements in technology and improved operational efficiency. Therefore, it is of utmost importance to identify and explore such small-sized deposits, particularly those occurring in clusters.

3.2.3 Thakurdih Area-1 Block forms a part of MECL's previously explored Thakurdih-Charakmara G3 block and lies within the Baharagora Copper prospect, located near the southeastern extremity of the Singhbhum Copper Belt in East Singhbhum District, Jharkhand. The Baharagora area comprises several small blocks, including Mundadevta-Darkhuli, South Jharia, and the Thakurdih-Charakmara area. Evidence of old workings (shallow pits) for copper in the Thakurdih-Charakmara area was first reported by earlier workers (Stoehr, 1870; Dunn, 1937). The area was later covered by airborne multi-instrument geophysical surveys conducted in 1963. Based on ground evaluation of electromagnetic and magnetic anomalies, coupled with geological understanding, the Geological Survey of India (GSI) identified potential mineralized zones within the Baharagora area. Integrated geological, geochemical, and ground geophysical surveys, along with exploratory drilling, were carried out by GSI during 1975–76 and 1977–78 in parts of the Mundadevta-Darkhuli, South Jharia, and Charakmara areas of the Baharagora prospect. GSI's work revealed strong geochemical anomalies for copper, as well as significant Induced Polarization (IP) geophysical anomalies, which correlated well with old workings in Thakurdih Area-1, Area-2, and Area-3 of the Thakurdih-Charakmara region. Based on these anomalies, exploratory drilling was undertaken, and resources were estimated by GSI in the Mundadevta-Darkhuli area. However, no boreholes were drilled in the Thakurdih Area-1 Block during GSI's earlier exploration.

Later, MECL explored the Mundadevta-Darkhuli and South Jharia blocks during 2021–22 at the G2 stage for copper. This work led to the estimation of a net in-situ geological resource of **1.75 million tonnes at 0.96% Cu (at 0.50% Cu cut-off)** and **0.64 million tonnes at 1.46% Cu (at 1.00% Cu cut-off)** up to a vertical depth of 245 meters."**

3.2.4 Thakurdih-Charakmara G3 Block is just adjoining and extension to the Mundadevta-Darkhuli & South Jharia G2 Block. Thakurdih-Charakmara block covers an area of 10.0 sq.km and comprises four sub-blocks namely Charakmara, Thakudih Area-1, 2 and 3 in located close proximity to each other. Few old workings trending in NW-SE direction located in Thakurdih Area-1 near Thakurdih village. GSI drilled only two scout boreholes in Charakmara area during its previous exploration. Much of the area was unexplored by drilling including Thakurdih Area-1, Area-2 & Area-3. In view of the potentiality of the prospect, MECL (2022-23) carried out G-3 stage exploration in Thakurdih-Charakmara Block (10 sq.km.) including Charakmara, Thakurdih Area-1, Area-2 and Area-3 sub blocks under NMET funding. Exploration work comprising of Geophysical survey (I.P cum resistivity, Magnetic & SP) and followed by exploratory drilling (1497.50m in 12 Bhs) in Thakurdih Charkamara block.

3.2.5 Total 3 scout boreholes were drilled in Thakurdih Area-1 sub block to test the integrated geophysical anomalies and all 3 scout boreholes intersected copper mineralisation at depth. One Ore zone intersected in scout Borehole MTCB-09 with an average 0.26% Cu over 3.22m thickness and another Ore zone in Borehole MTCB-10 with an average 0.46% Cu over 5.20m thickness in Thakurdih Area-1 are significant and likely to persist along strike and depth. Total **128689** tonnes (**0.13 million tonnes)** of net Reconnaissance Resource (UNFC 334) with **average grade of 0.39% Cu** over an average thickness of 3.23m estimated at 0.2% Cu cut off and further work at G3 stage was recommended to prove the strike and depth persistence of ore zones in Thakurdih Area-1 sub block.

3.2.6 Based on the recommendations and potentiality of the prospect, Thakurdih Area-1 block has been carved out from Thakurdih Charakmara Block to explore at G3 stage work by carrying out detailed geological mapping and exploratory drilling at 200 m spacing interval to establish the strike and depth persistence of mineralized zones and estimate the resource at 333 of UNFC in the area. Accordingly Preliminary Exploration (G-3 stage) proposal for Thakurdih Area-1 Block has been been formulated.

3.2.7 The project proposal was discussed in 63rd TCC meeting held on 22nd, 26 &27th March, 2024. Based on deliberations, the committee approved scheme of G3 stage exploration including Detailed Geological mapping on 1:2000 scale & topographical survey with 2m contour interval in 4.10 sq.km area, Trenching work, exploratory drilling work along with alied field activities and associated laboratory studies. The committee recommended the proposal for the approval of the EC for "Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km), Singbhum Copper Belt, East Singbhum District Jharkhand with an estimated cost of Rs. 436.03 lakhs (including GST) with time line of 12 months.

3.2.8 Subsequently, the 35th Executive Committee (E.C.) held on 16th May, 2024 approved the Preliminary Exploration (G-3 stage) for Copper and Associated Minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singbhum Copper Belt, East Singhbhum District, vide Office Memorandum F.No. 23/454/2024-NMET/80, New Delhi, dated, 20th May, 2024. **(Annexure No. XV).**

Details of Period of prospecting:

3.2.9 Following the Office Memorandum/ sanction order from NMET, MECL initiated field activities and established base camp near Baharagora under administrative control of MECL's Kendidih project. MECL commenced G-3 stage exploration work comprising of Detailed geological mapping (1:2000 scale) and topographical survey over 4.10 sq.km. area surface Bedrock sampling (26 BR), Trenching work, (83 cu.m. in 3 No.s trenches), drilling and associtated activities in the area.

3.2.10 MECL commenced exploration (Phase-I) work with commencing of Borehole No. MTB-01 on 29.05.2024 and concluded drilling activites with closure of borehole No. MTB-07 on 20.08.2024. During Phase-I, total 7 boreholes (789m) drilled at approx. 400m spacing interval to confirm the strike and depth persistence of copper mineralization in the area. Phase-I Boreholes interstected multiple zones for copper.

3.2.11 The outcome of exploration work (Phase-I) reviewed with 1st TCC-2 held 27th Sep, 2024 meeting of NMET. Based on positive outcome of Phase-I drilling, committee advised to take up Phase-II infilling boreholes at 200m spacing interval as per the approved quantum.

3.2.12 Considering the multiple copper bearing zone intersections in the boreholes, MECL requested 770 no.s additional Borehole core samples (primary+check) in 1st TCC-1 meeting. In line with this, 2nd TCC-2 meeting held on 22nd & 23rd Oc, 2024 approved additional samples as per the revised cost sheet submitted by MECL.

3.2.13 Phase-II drilling commenced on 09.10.2024 with Borehole No. MTB-08 and concluded with closure of Borehole No. MTB-17 on 11.02.2025. Total 1411m in 10 boreholes drilled at 200m spacing interval to fill the gaps. Altogether (Phase-I & II) 2,200m drilling in 17 Boreholes achieved in the block area. Multiple zones for copper intersected at 0.2%, 0.5% & 1.0% Cu cut-off in the drilled boreholes based on analtytical results of individual borehole samples.

3.2.14 The project was reviewed with 8th TCC-2 meeting held on 28th & 29th April, 2025. The positive outcome of exploration work (Phase-I &II) was presented. MECL proposed analysis of additional 80 nos. of samples with additional cost of ₹6.48 Lakhs along with timeline extension of 3 months up to 19th August 2025 for submission of final GR. The committee recommended the proposal for approval of EC for revised project cost of ₹474.75 lakhs (including GST) and timeline extension of 3 months up to 19th August 2025 for submission of final Geological Report. **(Annexure No. XV).**

3.2.15 The outcome of project was reviewed with 10th TCC-2 meeting held on 23rd 24th & 25th June, 2025. Draft Geological report was peer reviwed by Dr. Rajgopal Mohanty, Former Additional Director (Retd.), AMD and comments/suggestions were attended. The final Geological report was reviewed along with peer review comments with 11th TCC-2 meeting hld on 23rd, 24th & 25th July, 2025 and committee advised to submit the report as per due date.

CHAPTER-IV

4.0.0 DETAILS OF THE AREA UNDER STUDY

4.1.0 LOCATION AND ACCESSIBILITY OF THE BLOCK

4.1.1 The study area is situated in and around Thakurdih, Jhariya, Karkata, Kesharda, Maheshpur, Purba Jambari, Bhandudih villages in Baharagora Tehsil of East Singbhum District of Jharkhand State. The block area is located about 4km Northwest of Baharagora town and tehsil headquarter in East Singhbhum District, Jharkhand.

4.1.2 The Thakurdih Area-1 block falls under Survey of India Toposheet No. 73J/11, covering an area of 4.10 sq and lies between 22° 18' 10.6238" N to 22° 19' 23.4125"N latitudes and 86° 40' 34.6370"E to 86° 41' 56.5099"E longitudes. The block location is shown in **Plate-I** and **Text Figure-1**. The locational co-ordinates (Geographic & UTM) of the cardinal points of the Thakurdih Area-1 Block, Singhbhum Copper Belt, East Singhbhum District, Jharkhand are in given in **Table 4.1**.

Table-4.1

Co-ordinates of the corner points of the block boundary of Thakurdih-Area-1 Block, Singhbhum Copper Belt, East Singhbhum District, Jharkhand

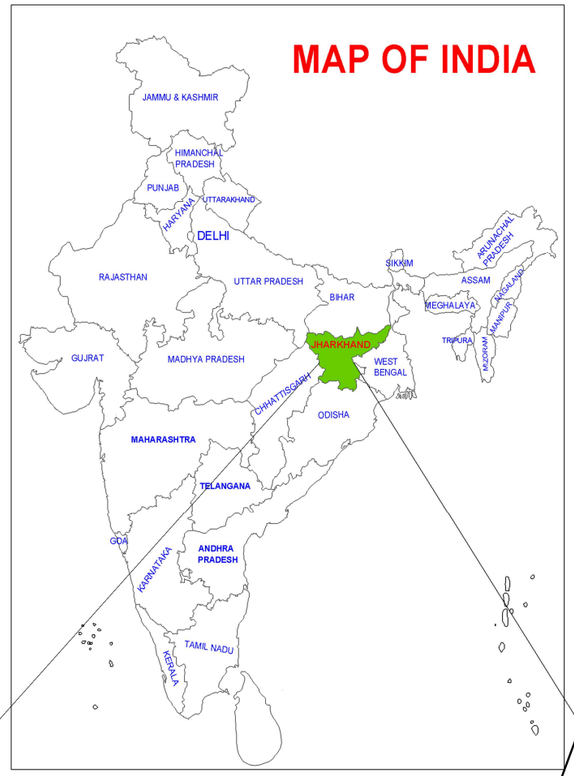
Corner Cardinal points	WGS -84 (DMS)		UTM (Zone 45N)	
	LATITUDE	LONGITUDE	Easting	Northing
1	22° 19' 23.1904" N	86° 40' 34.8022" E	466667	2468627
2	22° 19' 23.4125" N	86° 41' 56.3542" E	469000	2468629
3	22° 18' 10.7567" N	86° 41' 56.5099" E	469000	2466395
4	22° 18' 10.6238" N	86° 41' 20.5106" E	467970	2466393
5	22° 19' 04.1304" N	86° 40' 34.6370" E	466661	2468041

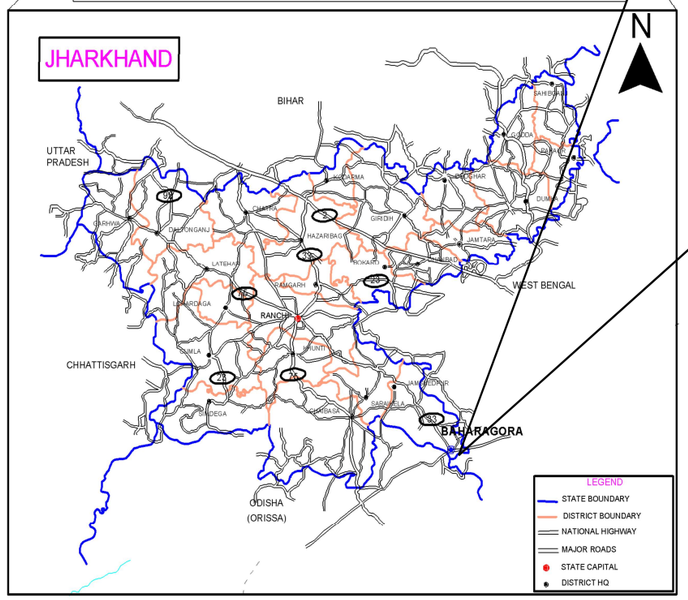
4.2.0 ACCESSIBILITY TO THE BLOCK

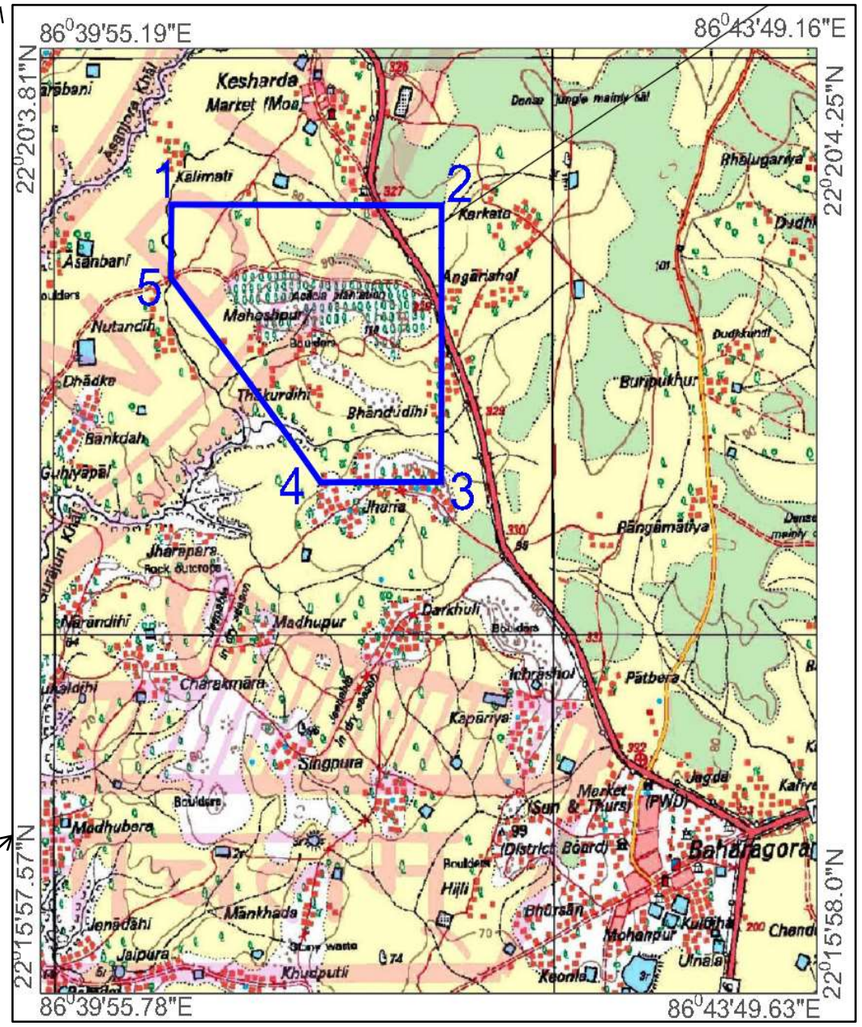
4.2.1 The block area can be approached by metal road from Baharagora. Baharagora is a small town and tehsil headquarter near the junction of NH-49 (Kharagpur to Bilaspur) and NH-18 (Dhanbad-Balasore), in East Singhbhum district and situated on the south-east corner of Jharkhand, India. It is 60 km from Kharagpur, 90 km from Jamshedpur, 50 km from Ghatshila, 50 km from Baripada and 200 km from Kolkata. The nearest railhead is Chakulia and Dhalbhumgarh, which are at a distance of 25 km and 31 km respectively in the Howrah-Mumbai line of the South-Eastern Railway. The nearest airport is Sonari Airport (Jamshedpur) at about 62 km and Netaji Subhas Chandra Bose International Airport, Kolkata which is 186 km towards East from the area.

Text Figure-1: Location Map of Thakurdih Area-1 Block, East Singbhum District, Jharkhand

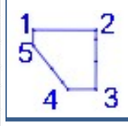
LOCATION MAP OF THAKURDIH AREA-1 BLOCK DISTRICT EAST SINGHBHUM, JHARKHAND







Coordinates of Block Boundary of Thakurdih Area-I Block, District: East Singhbhum, Jharkhand				
Corner Points	WGS-84(DMS)		UTM(Zone 45N)	
	Latitude	Longitude	Easting	Northing
1	22°19'23.1904"N	86°40'34.8022"E	466667	2468627
2	22°19'23.4125"N	86°41'56.3542"E	469000	2468629
3	22°18'10.7567"N	86°41'56.5099"E	469000	2466395
4	22°18'10.6238"N	86°41'20.5106"E	467970	2466393
5	22°19'04.1304"N	86°40'34.6370"E	466661	2468041



LEGEND

Thakurdih Area-1
Block boundary (Area 4.10 Sq.km)

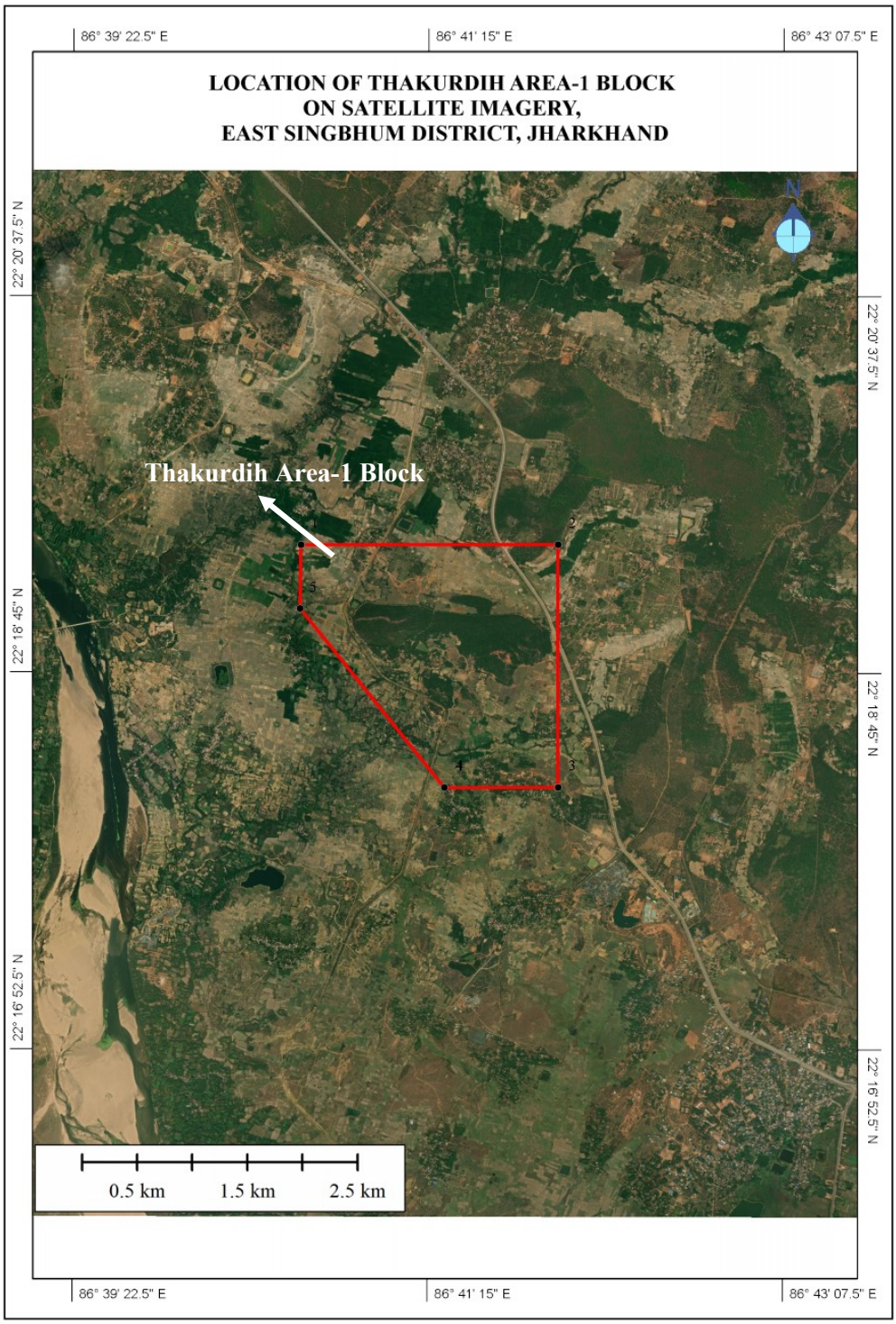
MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LOCATION MAP
THAKURDIH AREA -1 (4.10 Sq.km)

DISTRICT : EAST SINGHBHUM — STATE : JHARKHAND

RF. Not to Scale	Prepared at : NEM GR CELL , MECL, NAGPUR	
MECL/EXPL./ JULY 2025	PLATE NO.- I	01

Text Figure-2: Location Map of Thakurdih Area-1 Block on Google satellite imagery



4.3.0 DETAILS OF THE AREA WITH LAND USE

4.3.1 In general, majority of the area is occupied by soil cover. Most of the lands are private cultivated lands and forest lands. The central part of the block area is under forest cover where quartzite forms low ridges above schistose rocks. Cadastral details and land details (government, private and forest) of the area are not available. Major crops in and around the area include Paddy, pulses, oilseeds, cashew and vegetables. Two Water bodies (ponds) exist one in the central part and another one near the eastern boundary of the block area. Few old working pits located near Thakurdih and Jharia villages but mostly filled up with debris material. Satellite imagery sourced from Google Earth with location of the study area is given as **Text Figure No-2.**

4.4.0 MINERAL(S) UNDER INVESTIGATION

4.4.1 Thakurdih Area-1 block (4.10 sq.km.) explored for copper and associated Minerals at G3 Stage during present investigation.

CHAPTER-V

PHYSIOGRAPHY AND ENVIRONMENT

5.1.0 RELIEF OF THE AREA WITH MINIMUM AND MAXIMUM ELEVATION, DRAINAGE PATTERN, NATURAL WATER COURSES, RESERVOIRS, ETC.

5.1.1 The topography of block is generally flat undulating except the central part of the area occupied by quartzites low rising ridges trending E-W direction over schistose rocks. The elevation of the area varies from maximum 116m above MSL in central part of the area to minimum 70m above MSL in the southwestern part of the block area. The major part of the area is covered by soil/alluvium and gravel beds and most of the area is under cultivation.

5.1.2 The Subarnarekha River flowing in north to south direction is located about 2km from the outside the western boundary of the block area. There are no major river and nalas/streamlets exist in the area. Two water bodies (ponds) exist in the area one is located in the central part of the block while another one is located on eastern boundary of the block. One irrigation canal passes through from north to south direction in the western part of the block area. The general slope of ground is south, southwesterly. The block area shows the dendritic drainage pattern. The block location depicted on google satellite imagery is shown as **Text Figure No.2 &** topographical map of Thakurdih Area-1 Block is shown as **Plate No. III.**

5.2.0 ROADS, RAILWAY TRACK, ELECTRIC TRANSMISSION LINE, TELEPHONE LINE, ETC.

5.2.1 The study area located about 4 km NW of Baharagora town. Baharagora is a small town near the junction of NH-49 (Kharagpur to Tatanagar) and NH-18 (Dhanbad - Balasore), in East Singhbhum district and situated on the south-east corner of Jharkhand, India. NH-18 connecting Balasore to Jamshedpur is passing through the north eastern corner of the block area. No railway line/track exit in the block area.

5.2.2 There is one power transmission line in almost E-W direction passes through the northern part of the block area. No major telephone line passes through the block.

5.3.0 HOST POPULATION (LOCAL TRIBES), HUMAN SETTLEMENTS WITHIN AND NEARBY THE AREA

5.3.1 As per census of 2011, the total population of the district was 2293919 persons. The total urban population is 1274591 persons whereas the total rural population is 1019328 persons. The administrative division and population of the district is given in **Table – 5.1.**

Table 5.1: Administrative Division and population (Census 2011) of East Singhbhum District, Jharkhand.

Sr. No	Sub division	Block	Rural population			Urban population		
			Male	Female	Total	Male	Female	Total
1	Dalbhum	Patamda	41751	41125	82876	--	--	--
2		Boram	35142	33871	69013	--	--	--
3		Golmuri-Cum-Jugsalai	52218	50405	102623	602229	555349	1157578
4		Potka	94601	94526	189127	5317	5168	10485
5	Ghatshila	Ghatshila	45006	44275	89281	20912	19712	40624
6		Musabani	28662	28824	57486	25594	24004	49598
7		Dumaria	31043	31085	62128	--	--	--
8		Dhalbhumgarh	31309	30623	61932	--	--	--
9		Gurbandha	21703	21298	43001	--	--	--
10		Chakulia	54960	53850	108810	8352	7954	16306
11		Baharagora	78103	74948	153051	--	--	--
Total			514498	504830	1019328	662404	612187	1274591

5.4.0 SOCIO DEMOGRAPHIC PROFILE OF THE AREA AND NEARBY

5.4.1 The Thakurdih Area-1 Block lies in the southeastern end of Singbhum copper belt near Baharagora town, East Singhbhum District Jharkhand. The block forms an administrative division in Ghatshila sub division of East Singhbhum. As per the Census India 2011, Baharagora has a total population of 153,051, all of which are

rural. There are 78,103 (51%) males and 74,988 (49%) females. Population in the age range 0-6 years are 19,937.

5.4.2 The details of the Population Census 2011, of Baharagora are given in **Table-5.2**

Table-5.2: Census Data of Baharagora block, East Singhbhum district, Jharkhand.

Description	Rural	Urban
Number of households	35194	-
Total Population	153051	-
Population (%)	6.67%	-
Male Population	78,103	-
Female Population	74,988	-
Sex Ratio	960	-
Literacy (%)	64.45%	-

5.4.3 In Baharagora, whole population lives in rural area. There are 6.84% Scheduled Caste (SC) and 35.91% Scheduled Tribe (ST) of total population in Baharagora area.

5.5.0 HISTORICAL SITES AND ARCHAEOLOGICAL MONUMENTS, PLACES OF WORSHIP, PUBLIC UTILITIES ETC.

5.5.1 One tourist attraction is Chitreshwar temple situated in Chitreshwar village in Baharagora Block 12 km from Baharagora. The temple is said to be one of the largest natural Shiva linga. Many devotees of Shiva come daily. Chitreshwar temple is believed to have the largest Shiva linga after Lingaraja Shiva linga in Bhubneshwar. It has another temple called Bhuteshwar, which is in Baharagora Block. Ghatsila a famous tourist spot and is also situated in the district which was once inhabited by renowned Bengali poet Bibhutibhushan Bandyopadhyay. Rankini Temple located near the mining town of Jadugora and Ghatshila are also worth mentioning. Goddess Rankini is held in high esteem and worshiped by the tribal and non-tribal people inhabiting the district.

5.6.0 FORESTS, SANCTUARIES, NATIONAL PARK AND WILD LIFE SANCTUARIES ETC.

5.6.1 The major part of the block area falls under private cultivated land. However, the central part of the block area is occupied by forest land. No National parks and wild life sanctuaries etc. exist within the block area and in the proximity of the block area.

5.7.0 FLORA AND FAUNA WITHIN AND NEARBY

5.7.1 The area is characterized by tropical flora. The rocky uplands and gravely mounds are generally occupied by thorny bushes and isolated deciduous trees. Plains are generally covered by green grass shrubs and trees. The important among them are Sal (Shorearobusta), Tamarind (Tamarindus indica), Shisham (Dalbergia latifolia), Mahua (Bassia latifolia), Bair (Zozyplus jujuba), Mango (Mangnifera indica), Jackfruit (Artocarpus integrifolia), and Bamboo (Dandrocalamusstrictus).

5.7.2 The wild animals present in the East Singhbhum District include Elephant, deer, bears, Pigs and Wild dogs. Tigers and panthers are present but make very rare appearance. At times they do attack village cattle and in stray cases human beings. Bears are present in large number and attack at times human being and do heavy damage to crops and fruits. Pigs are present in fairly large number and cause damage to cultivation. Wild dogs are seen frequently. (Source: https://jamshedpur.nic.in/florafauna). However, wild animals are not present/ not seen in the block area except commonely seen animals like dogs, birds and rabbits, snakes etc.

5.8.0 WATER BODIES SUCH AS RIVER, NALA, STREAM, RESERVOIR, ETC

5.8.1 The major part of the area is covered by alluvium / soil and gravel cover. There is no major river/stream and reservoir exist in the area. However, two water bodies (pond) exist in the area. One water body is located in the central part while another one is near the eastern boundary of the block area. The North to south flowing Subarnarekha River is draining about 2 km outside from the western boundary of the block area.

5.9.0 CLIMATIC CONDITIONS

5.9.1 The area experiences tropical climate. The winter season ranges from November to middle of March. The summer season commences by the end of March and continues up to early June. The summer months are scorchy and very hot. The temperature variation ranges from 9°C to 42°C in the area.

5.9.2 The rainy season starts in early June and prolong up to October. Pre-monsoon rains are also very common in the area. Being nearer to the coast, cyclonic rain is also very common. The The average annual rainfall in the East Singhbhum District is reported about 1200-1300 mm, mainly during June to August.

5.10.0 OTHER PHYSIOGRAPHIC, SOCIAL AND ENVIRONMENTAL FACTOR

5.10.1 East Singhbhum district has a leading position in respect of mining and other industrial activities in Jharkhand state. Jamshedpur is the districts headquarter of East Singhbhum. An almost five-decade old copper refinery of Hindustan Copper Limited is in operation in Moubhandar, Ghatsila, and another town of the district. The Singhbhum Shear Zone, a geological feature lying between Subarnarekha River on the northeast and Dhanjori ranges on the southwest houses the mines of Copper and Uranium. Most notable copper mines are Banalopa, Badia, Pathargora, Dhobni, Kendadih, Rakha and Surda in Musabani. Of these, only Surda remains operational. Uranium Corporation of India explores uranium in Jadugora, Narwapahar, Bhatin, Turamdih and Baghjanta. Chakulia, an important town in the southeastern part of the district, is famous for its rice mills, oil mills, washing soap factories, and bamboo production.

5.10.1 Environmentally, the area faces stress due to extreme heat, water scarcity, deforestation and pollution of the Subarnarekha River from mining and industrial waste. Despite these issues, local initiatives like tree plantation drives aim to restore ecological balance.

CHAPTER-VI

6.0.0 INFRASTRUCTURE

6.1.0 LOCAL INFRASTRUCTURE WITH ROADS, RAILWAYS, PORT FACILITIES, ELECTRICITY, WATER ETC. WITH DISTANCE FROM THE AREA. DETAILS OF NEABY INDUSTRIES IN THE AREA WHICH MAY USE THE MINERAL COMMODITY LIKELY TO BE MINED.

6.1.1 The area lies in the heart of mining activity centre with producing copper mines like Surda of M/s Hindusan Copper Limited with one concentrator located at Mosabani and a copper smelter at Moubhandar which are in operation and close to the area (58 km). Banking and postal facilities are available at Baharagora area. Jamshedpur, the steel city has all workshop and marketing facilities. Small workshop and market is also available at Baharagora.

6.1.3 Baharagora is a small town near the junction of NH-49 (Kharagpur to Bilaspur) and NH-18 (Dhanbad-Balasore), in East Singhbhum district and is well connected by road to the major cities. NH-18 originates from Gobindpur in Jharkhand and extends to Balasore in Odisha, passing through Dhanbad, Jamshedpur, Ghatshila, Baharagora and Baripada. NH-49 connecting Bilaspur in Chattisgarh to Khargpur in West Bengak, NH 49 traverses through Baharagora, proving vital east-west connectivity across multiple states. Block area is about 60 km from Kharagpur, 90 km from Jamshedpur, 50 km from Ghatshila, 50 km from Baripada and 200 km from Kolkata.

6.1.4 The nearest railhead is Chakulia and Dhalbhumgarh, which are at a distance of 25 km and 31 km respectively in the Howrah-Mumbai line of the South-Eastern Railway. The nearest airport is Sonari Airport (Jamshedpur) at about 62 km and Netaji Subhas Chandra Bose International Airport, Kolkata which is 186 km towards East from the area.

6.1.2 Subarnarekha River draining about 2km outside from the western boundary of the Thakurdih Area-1 block.

CHAPTER-VII

7.0.0 GEOLOGY

7.1.0 REGIONAL GEOLOGY

7.1.1 The Precambrian Geology of the Singhbhum Craton was first built up by Dunn (1929,1937), Dunn and Dey (1942) and they divided the craton into four major structural units, which are I) Singhbhum geo-anticline comprising highly metamorphosed rocks of Iron Ore Series, II) Dalma lava geo-syncline in the north, running parallel to the geo-anticline, III) a shear-zone, known as Singhbhum Shear Zone, and IV) a second geo-anticline to the north of the Dalma Lava Geo-syncline with an intervening thrust zone. According to them Singhbhum shear zone extends from Duarpuram, North-East of Chakradharpur, in an approximately East-West direction, turns South-East near Jamshedpur and continues through Jaduguda-Rakhamines, Surda-Mosaboni-Badia mines and eventually ends up at Granites near Baharagora. However later studies revealed that the shear zone extends upto Mayurbhanj districts of Odissa where its trace can be found through some N-S trending shears.

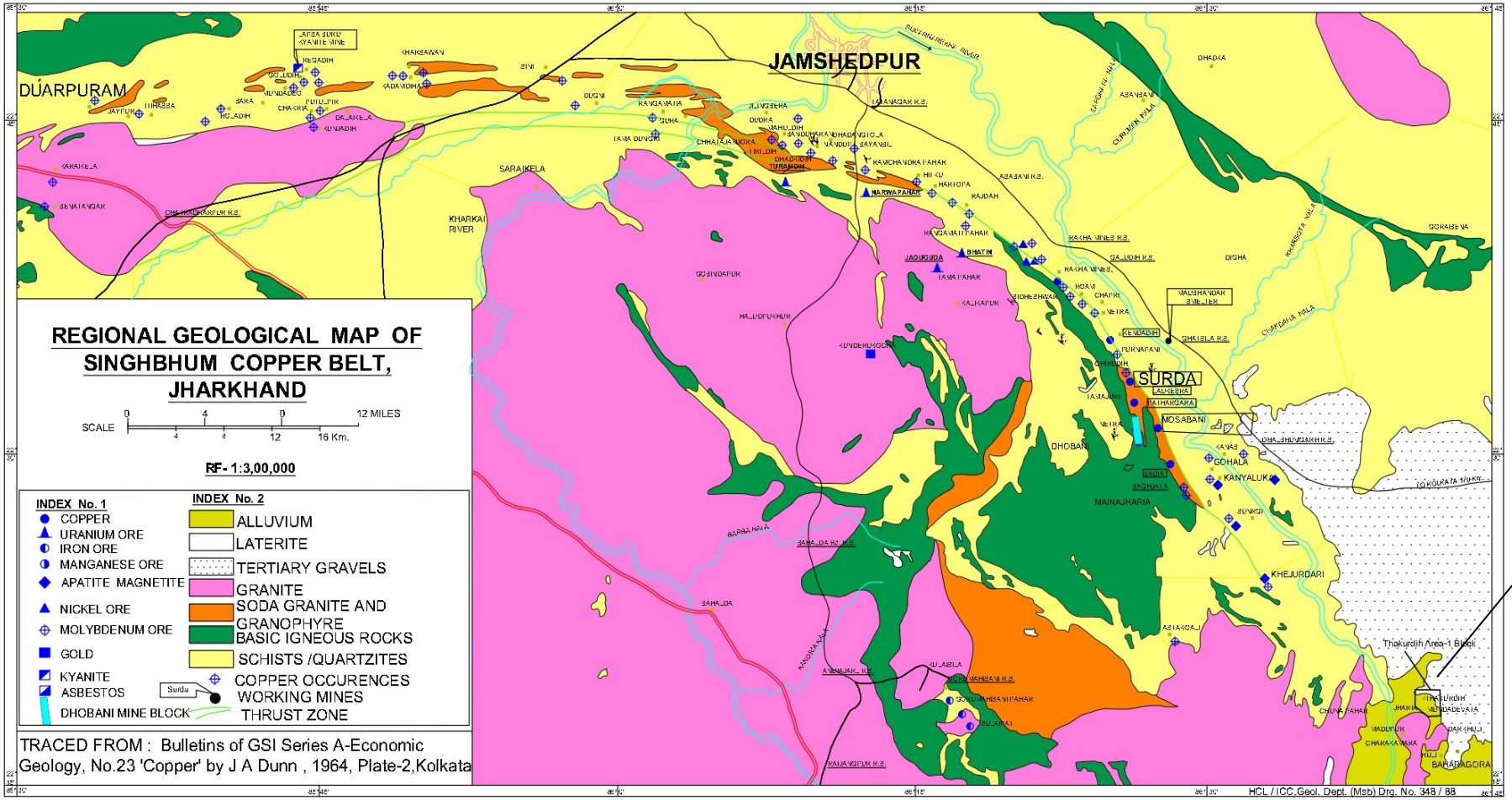
7.1.2 The Singhbhum Shear Zone (SSZ) is the most important single structural element and stands out as a premier metallogenic province geologically and structurally favourable corridor hosting deposits of uranium, copper, and gold and other critical and strategic metals. The SSZ, high strain ductile zone extending over 200km, from west to the southeast with wdiths varying from a few hundred meters to several kilometers dipping about 40° northward. SSZ is characterized by multiphase deformation, extensive hydrothermal activity and a diverse lithological framework that includes granites, schist and pegmatites highly conducive for polymetallic mineralisation and has been extensively investigated by AMD, GSI and MECL.

7.1.3 The Stratigraphic succession of the Singhbhum-Ordissa Craton after Saha et.al, 1988 is given in the following **Table-7.1** and the regional geological map is given as **Plate-II** and **Text Figure-3.**

Table-7.1:
Stratigraphic Sucession of Singbhum-Orissa Craton After Saha et.al, 1988

Newer Dolerite dykes	c.950-1600Ma
Mayurbhanj Granite	c.2100Ma
Gabbro-anorthosite-ultramafics	
Kolhan Group	c.2100Ma (?)
---------- Unconformity ----------	
Dhanjori Group	
Dhanjori-Simlipal lavas	c.2300Ma
Quartzite-conglomerate	
Singhbhum Group	c.2300-2400 Ma
Pelitic and arenaceous metasediments, mafic sills	
---------- Unconformity ----------	
Singhbhum Granite (Phase III)	c.3100 Ma
Iron Ore Group	
Mafic lava, acid volcanics, tuffaceous shale~ banded hematite jasper, banded hematite quartzite, chert, and quartzite	
---------- Unconformity ----------	
Singhbhum Granite) (Phase I and II)	c. 3300Ma
---------- Unconformity ----------	
Older Metamorphic Tonalite Gneiss (OMTG)	c.3700-3800 Ma
Older Metamorphic Group (OMG)	c.4000 Ma
Pelitic schist, quartzite, amphibolites	

TEXT FIGURE-3: REGIONAL GEOLOGICAL MAP OF SINBHUM COPPER BELT, JHARKHAND SHOWING LOCATION OF THAKURDIH AREA-1 BLOCK, DISTRICT EAST SINGHBHUM, STATE- JHARKHAND

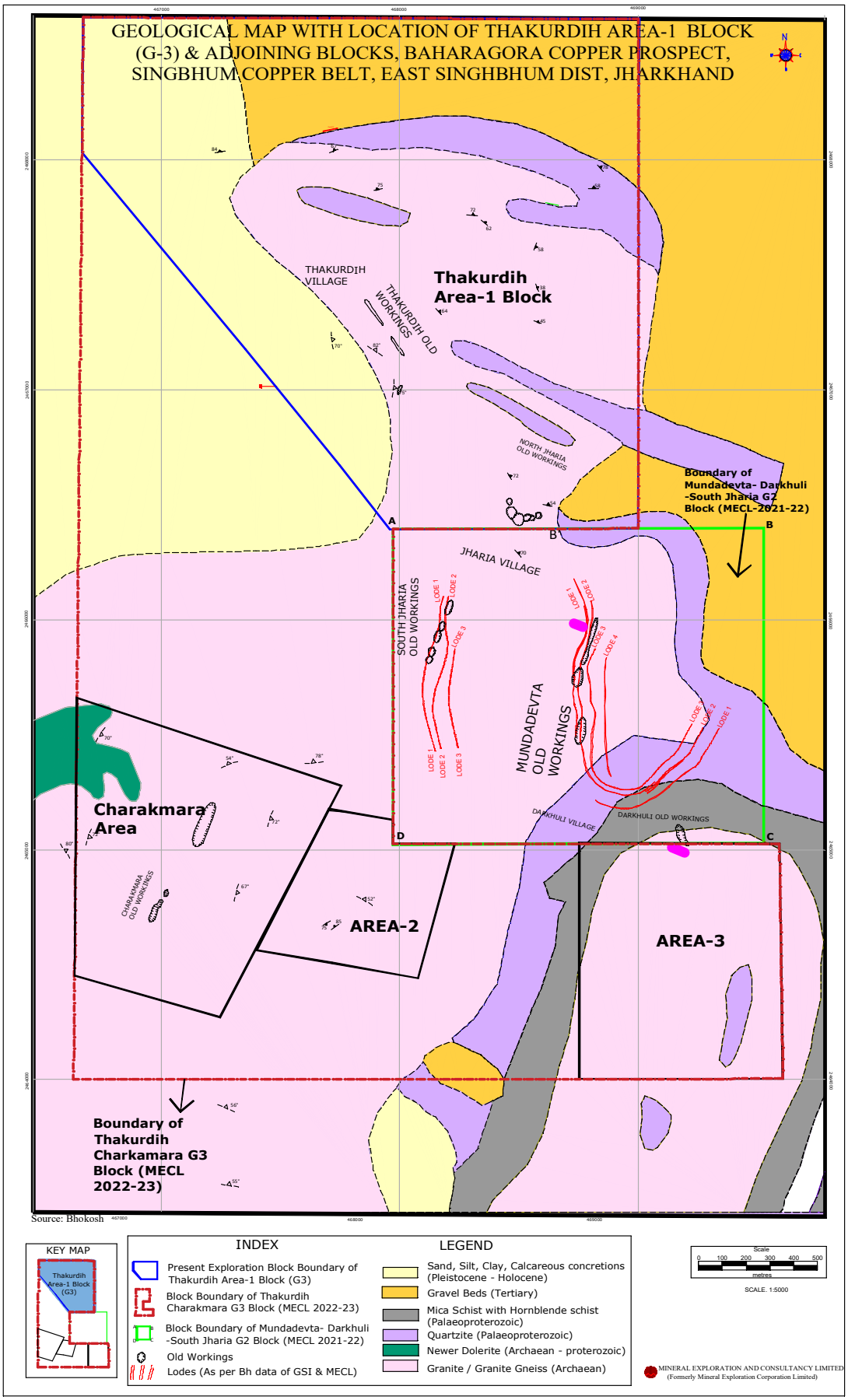


Thakurdih Area-1 Block

7.1.4 The present Thakurdih Area-1 block is located in the southeastern extremity of Singhbhum Shear Zone and forms the part of Baharagora Copper prospect. The Baharagora area is the SE extension of the main Singhbhum Shear Zone. The portion in between is covered with thick alluvium for about 13km. Baharagora copper prospect consititues several sub blocks namely, Mudadevta-Darkhuli & South Jharia, Thakurdih-Charakmara. The main rock types exposed in and around the Baharagora area are Granite / Granite gneiss of Archean age, newer dolerites of Archean-proterzoic age, Quartzites and schistose rocks of represent the Chaibasa formation of palaeoproterozic age, Gravel beds of tertiary age and sand, silt clay calcareous concretions, lateritic soil of pliestocene and Holocene age. Geological map with location of Thakurdih Area-1 Block with adjoining blocks in Baharagora Copepr prospect is given as **Text Figure-4.**

7.1.5 As per the previous workers (GSI, 1974; Sarkar and saha, 1962; Saha et all, 1977; Misra, 1999; and Mishra et al, 2002), the granite exposed in this area are distinct from the Singhbhum granite in terms of their tectonic settings, metamorphism and intensity of deformation and by the abundance of Tourmaline and Magnetite and geochemical affinity suggests that the Singhbhum granite might be a possible protolith to this pluton (Mishra et al, 2002). This Granite occurring in and around Bahargaora to Bangriposi in the west is termed as Mayurbhanj Granite (GSI, 1974; Sarkar and saha, 1962; Saha et all, 1977; Misra, 1999; and Mishra et al, 2002). Though, the age of this Granite is determined as Neo-archean (Saha et all, 1977; Misra, 1999), it possibly represents a composite pluton hosting both older and younger phases (Acharya et al, 2010). Granitic rock of the Baharagora area may be part of the Mayurbhanj granite or physically attached to it. The age of this granitic rock is widely debatable.

TEXT FIGURE-4: GEOLOGICAL MAP WITH LOCATION OF THAKURDIH AREA-1 BLOCK & ADJOINING BLOCKS, BAHARAGORA COPPER PROSPECT, SINGBHUM COPPER BELT, EAST SINGBHUM DIST, JHARKHAND.



7.2.0 REGIONAL STRUCTURE

7.2.1 According to previous workers, the Singhbhum Shear Zone or the Copper Belt Thrust extending east from N. Singhbhum through Seraikela, turns south-east near Jamshedpur and continues through Baharagora towards Mayurbhanj in Orissa. Baharagora is thus located almost at south-eastern end of the Copper Belt Thrust. Evidences of shearing and breciation are common and preserved in the mica schists, quartzite, quart schist and quartz granulite.

7.2.2 Thakurdih Area-1 block is located almost at the south-eastern end of the copper belt thrust/ Singhbhum shear Zone and forms the part of baharaghora Copper prospect. In the Baharagora area, the shear zone is rather ill-defined, narrow and limited in extent and becomes almost obscure in the granite country. The foliation planes in schists away from the granite have been found to be shear-plates formed by transposition of earlier S-planes in the zone of shearing. The dominant linear structures are parallel to the direction of tectonic transport with the sense of movement broadly up-dip in all places. The following structural elements have been observed and are briefly discussed below.

7.2.3 The different rock formations in the shear zone have developed structures corresponding to their physical character. Mica schist showing drag folds, slip cleavages, mineral lineations and constitute the "S tectonites". The harder formations on the other hand, show tension and shear joints, mineral lineations, breciation, mullions and rodning.

7.2.4 The planer structures present in this area are stratification plane (S_0), axial plane foliation (S1 and S2), crenulation cleavage, Slickenside and Joints. S_0 preserved in very few places (Mainly in Quartzite) and are marked by compositional variations. S_1 and S_2 appears as fine foliation in mica schist and shows brilliant preferred orientation of mica and chlorite in metabasic rocks. These planar structures are interpreted as axial planar schistosity is parallel to the axial planes of the D_1 and D_2 folds. Slickensides are prevalent in quartz schist and quartzite. Joints are very profound in competent rock like quartzite and quartz schist. 3 sets of joints namely i) Strike Joints, ii) Dip joints, iii) Diagonal joints are well developed.

7.2.5 The main linear structures found are puckers, mineral lineation, Bedding-Cleavage intersection, streaking and grooving lineations.

7.2.6 No major faults except small drag faults due to stretching in quartzite/ quartz schist are noticed at places.

7.2.7 Quartzite & Quartz schist in the Baharagora area are thrown into S-shaped, plunging synforms and antiforms, with plunge varying from 35°to 50° towards northeast. In the Mundadevta-Darkhuli block, the synformal flexure is asymmetric with eastern limb dipping more steeply (80-85°) than the western limb (60-65°). The plunge of the fold axis is about 40° towards N40°E. In general, litho units strike varies from NW-SE, E-W and dip 55°-85° due NE and north.

7.3.0 REGIONAL METAMORPHISM

7.3.1 Metamorphic grade of the rocks in the area under consideration is marked by such minerals as Biotite, Garnet, Staurolite and kyanite indicates middle amphibolite facies of metamorphism (Fyfe & Turner 1966). These index minerals formed during regional metamorphism constitute a progressive series in space and time. Later shearing movements initiated retrogressive metamorphism resulting in the area development of Biotite, muscovite and chlorite indicating Middle Greenschist facies in the area, locally crystallization outlasting deformation.

7.3.2 Highly metamorphosed basic sills and dykes of various sizes, intimately associated with mica schists of Chaibasa formation, are numerous in this area. The slightly altered basic intrusive criss-crossing granite belongs to Newer Dolerite suite of rocks. The quartz-actinolite-anthophyllite rocks found at a few localities might be altered ultramafics.

7.4.0 MINERALISATION IN THE REGION

7.4.1 The mineralisation is structurally localized (shear zone) as three types viz. apatite-magnetite, sulphide and uranium mineralisations which do not show very well-defined space and time relationships. Sulphide mineralization is not restricted to

particular lithologic or stragigraphic unit. It has taken palce in sheared sodagranite in Mosabani, in epidiorite at Dhobani, in quartz-chlorite-biotite schists and granular chlorite-biotite-quartz rock in Surda-Tamapahar sections in chlorite-schists (altered basic volcanic) at Ramchandra pahar. Sulphides occur as disseminations, stringers and veins along shear and tension surfaces and show clear-cut or assay type boundaries with the host rocks. The main sulphide minerals are Chalcopyrite, Pyrite and Pyrrhotite. Other minerals occur in minor to very minor proportions. Sulphide mineralisation is not restricted to any particular lithology. Copper is the metal mainly found with the traces of other metals such as Mo, Ni, Co, Au also reported. A number of workable deposits situated in the Singhbhum copper belt, and numerous other sulphide occurrences also found in the rest of the belt. These deposits show some common characters as regards ore minerals assemblage and general mode of occurrence.

7.4.2 The nature and geological setting of the ore bodies, their close association in space with the metavolcanics or their derivatives, the stratabound nature of the ore bodies, absence of a well-defined pattern of wall rock alteration, metamorphosed nature of the ores, co-folding of the ore bodies with the enclosing rocks and parallelism of the ore shoots to the dominant down-dip lineations in the area indicate that the ores were emplaced at an early stage of the geologic evolution of the belt from the ore solutions derived through the leaching of ore elements of the volcanic rocks by the convective circulation of surface water (Majumdar 1984).

7.4.0 GEOLOGY OF THE BLOCK

7.4.1 The major lithounits exposed in the area are Granite / Granite gneiss of Archean age, Quartzites (Garnetiferous/Kyanite Quarztite), Schistose rocks (Quartz/Garnetiferous mica Schist, Metabasic schist, Amphibolite schist) belonging to Chaibasa formation of Palaeoproterozoic age, Gravel Beds of tertiary age and Soil/Alluvium, slope wash of recent. Quartzite forms low rising ridges above schistose rocks in the central part of the block area. Granite outcrops seen in southwestern part of the block area. Tertiary Gravel beds occupy on the north and northeastern part of the block. In general, most of the block area is covered by soil cover/alluvium with limited rock exposures. The most of the area is under cultivation. The generalized local stratigrapic succession of the block area is given in **Table No. 7.2**.

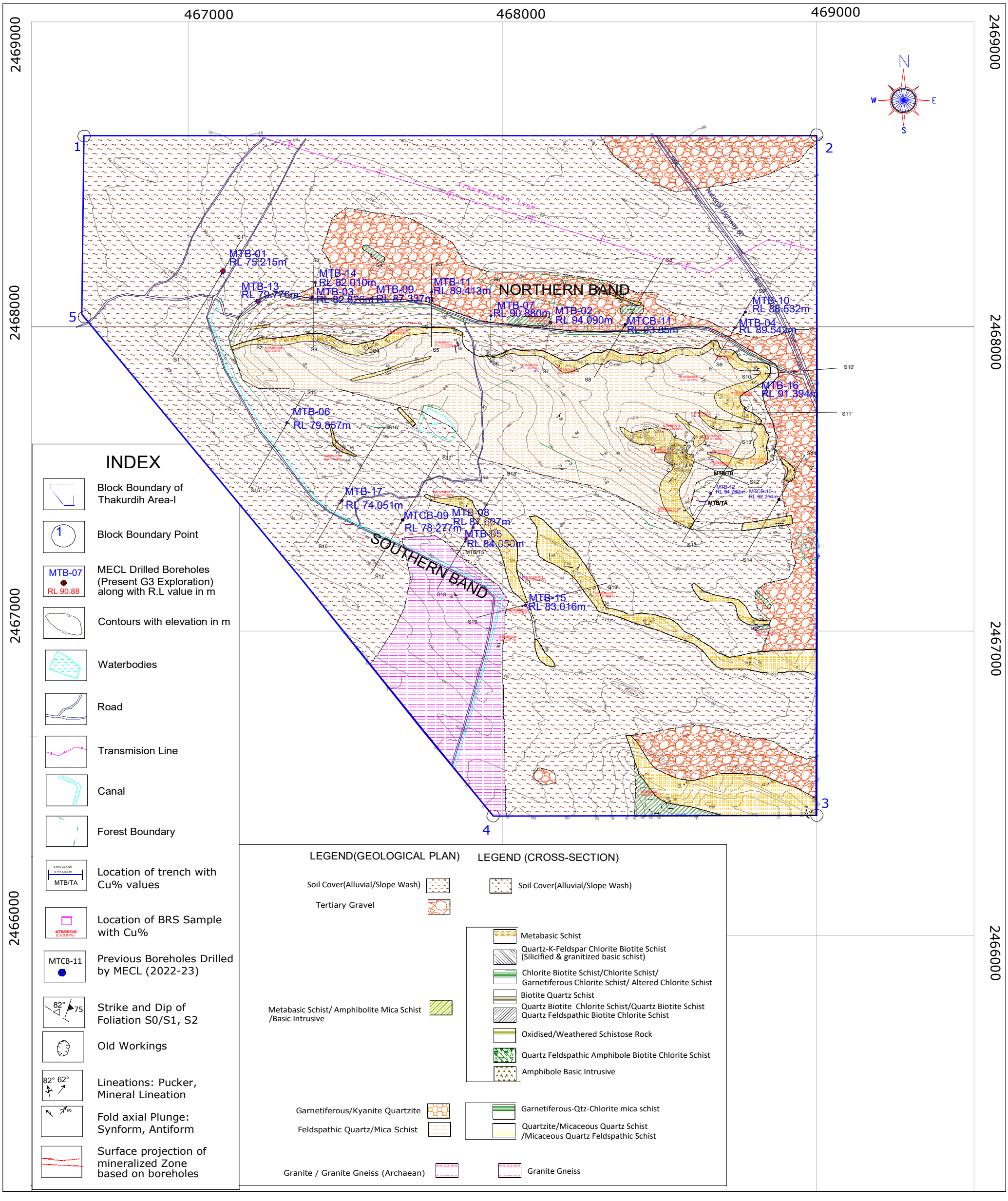
Table No. 7.2: The Local Stratigraphic Succession of the Block area

Age	Litho-units
Pleistocene - Holocene	Soil/Alluvium, slope wash
Tertiary	Gravel beds
Paleoproterozoic (Chaibasa formation)	Schistose rocks: Quartz/Gt., Mica Schist, Metabasic schist, Amphibolite schist
	Quartzites, Garnetiferous/Kyanite Quarztite
Archaean	Granite / Granite gneiss

7.4.2 The main lithounits intersected in the boreholes drilled by MECL are granite/granite gneisses, quartzite/garnetifours/kyanite and staurolite bearing quartizites, schistose rocks of quartz schist, quartz mica schist, quartz-feldspathic schist, metabasic schist (and altered version of the same), amphibolite schist and basic dolerite dykes/basic intrusive.

7.4.3 During present investigation, Thakurdih Area-1 block was covered by detailed geological mapping on 1:2000 scale over 4.10 sq.km. area. However, due to size limitations in plotter the map produced on 1:4000 scale. **(Plate No. IV-A)**. The interpreted geological map of Thakurdih Area-1 block with location of bedrock samples, old working pits, trenches and drilled borehole locations given as **Plate No. IV-A and Text Figure-5.**

TEXT FIGURE- 5:
GEOLOGICAL MAP OF THAKURDIH-AREA-1 BLOCK,
SINBHBHUM COPPER BELT, EAST SINGHUM DISTRICT, JHARKHAND



7.6.0 DESCRIPTION OF DIFFERENT LITHO UNITS

The detailed megascopic charactersitics and petrography description of rocks exposed/ intersected in the boreholes in the area are given below.

1. **Granite gneiss:** Granite gneiss present in the block area is pink, pinkish grey, grayish white to pinkish white in colour. Rock is medium grained, very hard and compact, gneissic texture, sheared and brecciated at places. Granitic rocks exposed in the south-western part of the area and its further extension on north western part is mostly covered by soil cover. The granitic rocks show heterogeneity in mineralogical composition and texture. It is fine grained like Aplitic Granite (Ref: MTB-05/P1) near the contacts with metamorphosed schistosed rocks to medium grained at places at distant, massive to crudely foliated at places (Photo 7). It contains considerable amount of biotite as major mica mineral, also with Magnetite and chlorite. Feldspathisation, particularly albitisation accompanied as an alteration feature.

   Under microscope (Ref; MTB-05/P1/Apltitic granite), Albite is present as fine to very fine groundmass and as well as medium subhedral prismatic phenocrysts. Quartz occurs as fine to very fine anhedral grains and as patchy lenses. Silicification is also noted in areas. Opaques are present as fine to very fine disseminated grains and as well as segregated patches in pockets. Microcline is noted as subhedral traces, mostly albitised. Muscovite/ sericite occur as fine to very fine flakes and flaky aggregates. Chlorite is noted as fine to very fine flakes, patches and fillings. Calcite is seen present as intrusive patches and fillings in areas. Epidote is noted as very fine granular aggregates in pockets.

2. **Quartzite:** Quartzite is well exposed in the central part of the block area. Quartzite is generally banded in nature, hard compact light grey in colour, fine grained. Three types of prominent bands present in quartzites are bluish band (Photo 1a and 1b) probably consists of kyanite, reddish band (Photo 1a, 1b and 2a) consists of Staurolite with or without garnet (the oxidization of Fe in garnet probably contributed to the reddish colour) and the third one is quartz schist (Photo 2b, 3b) that consists

predominantly of quartz and muscovite along with some minor feldspar and garnet porphyroblast (Photo 3b). Garnet porphyroblasts are augen shaped and mica rich schistosity is warping around them. The individual crystal varies in diameter from few mm to up to 10 cm. Quartzite bands in the northern ridges and the middle and southern part of the blocks are winding in nature and thrown into tightly pressed flexure folds with an overall NE-SW trend and showing the axial planar cleavage parallel to the fold axial plane, are at high angle with the bedding (S0/S1) (Photo 3a).

Under microscope, (MTB-11/P1/ garnet and staurolite bearing biotite-chlorite rich quartzite.), Quartz is the main constituting mineral of the specimen, occurring as fine to medium anhedral grains showing tight quartzitic texture. Biotite and chlorite are present as fine disseminated flakes showing parallel alignment. Garnet occurs as fine to medium subrounded grains and anhedral patches. Staurolite occurs as fine subhedral prismatic grains in association with garnet. Opaques are seen present as fine to very fine anhedral subhedral grains. Muscovite is noted as fine flakes and flaky aggregates in pockets.

3. **Schistose rocks:** These are the most abundant litho units intersected in the boreholes. These are fine to medium grained, dark grey, greyish black, greenish black and reddish brown coloured showing schistose texture. The wide range of schistose rocks occurs in the blocks and varies with varying composition, degree of metamorphism and degree of alteration. The predominant schistose rocks are metabasic schist, garnetiferous quartz-chlorite-mica schist, Micaceous Quartz-feldspathic schist ± Garnet ± Kyanite, Quartz feldspathic amphibole -biotite - chlorite schist (Altered and silicified basic schist), Quartz biotite chlorite muscovite /sericite schist ±Amphibole (Altered Basic schist?), Quartz feldspathic amphibole/biotite/chlorite schist (Altered basic schist)± Garnet, Amphibole/biotite.chlorite schist ± epidote (?) (altered Metabasic schist?), Quartz - k-feldspar chlorite/ biotite schist±Amphibole (silicified & granitized basic schist) , Chlorite Biotite Schist/Chlorite Schist/Garnetiferous Chlorite Schist/Altered Chlorite Schist, Biotite Quartz Schist/ Itercalation between biotite-quartz schist and biotite quartz schist and biotite chlorite schist/ Altered Biotite Quartz schist, Quartz Biotite Chlorite Schist/ Quartz Biotite Schist/ Quartz Schist/ Qtz-Felspathic-Bio-Chl Schist.

The mica schist is medium grained and highly schistose. It consists predominantly of muscovite and quartz with subordinate biotite and chlorite. Garnet mainly appears as very small (1-5 mm) porphyroblast. It is mostly exposed along the southern flank of the northern quartzite ridge (Photo 4). However, the host rock of the northern Cu-bearing lode, also a Garnetiferous Qtz mica chlorite schist (intersected in boreholes) is different in form or appearance, from the mica schist exposed at the southern flank. This Garnetiferous Qtz mica chlorite schist is abundant of biotite and contains some large garnets porphyroblasts of 2-5 cm along with the cluster of Garnet porphyroblasts (Photo 5) cemented by quartz. Exposure of this rock type hosting mineralised zone is not found anywhere at the northern part of the quartz ridge, except pebbles of weathered Garnets scattering at the surface (Photo 6a, 6b), which may indicative of existence of Garnetiferous mica schist beneath the soil cover. Muscovite, chlorite in the mica schist is developed from Biotite owing to retrogradation of the former (GSI, 1974) with the separation of Magnetite (as evident from the field exposure and Borehole core) (Ref: MTB-14/P1, 17/P1). This Garnetiferous mica schist is noticed to contain some amount of amphibole group of minerals along with relatively greater amount of Plagioclase at some places. At least 3 phases of deformation were recognized within the exposed mica schist. Superposed folding (Photo 13), mineral lineation, crenulation (Photo 14) and puckers are reported. The overall trend and attitude follow the adjacent quartzite.

Under microscope, (MTB-14/P1-garnetiferous chlorite-quartz schist.), Chlorite occurs as fine flaky aggregates showing parallel alignment. Garnet occurs as coarse to fine subhedral to anhedral patchy porphyroblasts showing very fine inclusions of quartz in areas. Quartz is present as fine anhedral grains. Biotite is seen present as fine flakes and flaky relicts within chloritic aggregates. Apatite is noted as fine slender prismatic grains in accessories.

Under microscope, (MTB-17/P1, biotite-quartz-magnetite schist), Biotite is present as fine flaky aggregates showing parallel alignment and mostly segregating in thin sub-parallel bands/ zones. Quartz and feldspar are present as fine anhedral grains segregating in thin sub-parallel bands/ zones Opaques (magnetite) occur as fine to

medium subhedral aggregates and patches aligned along the schistosity. Tourmaline occurs as fine to very fine subhedral prismatic grains in dissemination. Chlorite is seen present as patchy fillings in areas, replacing biotite. Allanite and zircon are noted as very fine grains and as inclusions within biotite, around which pleochroic haloes are observed.

Meta-basic schist is this area is mainly consists of Biotite, Hornblende, Actinolite, Albite and quartz and is strongly schistose. At some places, garnetiferous variety also noticed, mainly at the contact with the mica schist (as intersected in borehole). Exposure of the same is very scarce, except at some dug out pits in the northern part of the block (down-dip side of the northern quartz ridge) and at some location at the south-eastern part of the block. Though not exposed, at some of the boreholes (MTB-06, 08) altered version of these meta-basic schist have been intersected containing relatively greater amount of Chlorite, Antigorite along with intrusive carbonate patches.

Under microscope (MTB-01/P1, Biotite actinolite quartz albite schist) Biotite occurs as fine to medium flakes and patches, often segregating in zones and showing parallel alignment. Actinolite occurs as fine to medium subhedral prismatic grains showing parallel alignment. Quartz occurs as fine anhedral grains, often clustering in pockets. Albite is present as fine subhedral to anhedral grains. Chlorite is seen present as pseudomorphic patches developing after amphibole alterations. Hornblende is present as fine to medium subhedral and anhedral patchy relicts within biotite and chlorite patches. Opaques occur as fine anhedral grains and as very fine specks in accessories. Zircon is noted as very fine inclusions within biotite around which pleochroic haloes are observed.

Under microscope (MTB-06/P1 Biotite-quartz actinolite albite schist) Biotite and actinolite occur as fine to medium subhedral prismatic grains and anhedral patches showing parallel alignment. Quartz and albite are present as fine to medium anhedral to subhedral grains showing crude alignment. Chlorite is seen present as pseudomorphic patches replacing amphiboles. Opaques occur as fine to very fine subhedral to anhedral grains. Tourmaline is seen present as fine subhedral prismatic

grains in accessories Zircon is noted as very fine inclusions around which pleochroic haloes are observed.

Under microscope (MTB-08/P1, Altered mafic rock) Chlorite occurs as anhedral patches comprising very fine micro-crystalline aggregates and also occurs as very fine to fine flaky aggregates. Antigorite occurs as fine fibrous aggregates and fillings in association with chlorite. Opaques (magnetite) are present as fine to very fine anhedral to subhedral disseminations and as well as segregated patches in pockets. Tremolite occurs as fine acicular grains in dissemination. Olivine is noted as fine anhedral relicts within chlorite-antigorite patches. Carbonates are seen present as intrusive patches and fillings. The specimen is showing magnetism.

4. **Gravel bed:**

Tertiary gravel bed present mostly along the northeastern part, northern part and southeastern part of the block. It contains moderately sorted small (2-3cm) sub-rounded to rounded quartz, feldspar pebbles and occasionally large pebbles (>10cm) and boulders. Theses gravel beds exposed at some of the pond section, and covered at places by lateritic soil.

5. **Soil/Alluvium/Slopewash:** A major portion of the block area is covered by soil (Photo 15 a &b) with varying depth from 3.00m to 25.00m as intersected in Boreholes. Soil is reddish brown, yellowish grey to brownish grey. Soft Loose, fine, cohesive, sandy, poorly sorted, micaceous soil occurring in the area is product of weathering of parent rock underneath. Part of the area is under cultivated land.

7.5.1 **Field Photographs** :

Photo 1a : Banded Quartzite, alternate bands of Brown Garnet rich and Blue Grey Kyanite rich Quartzite (1b) Banding (indicating stratification or bedding?) in quartzite.

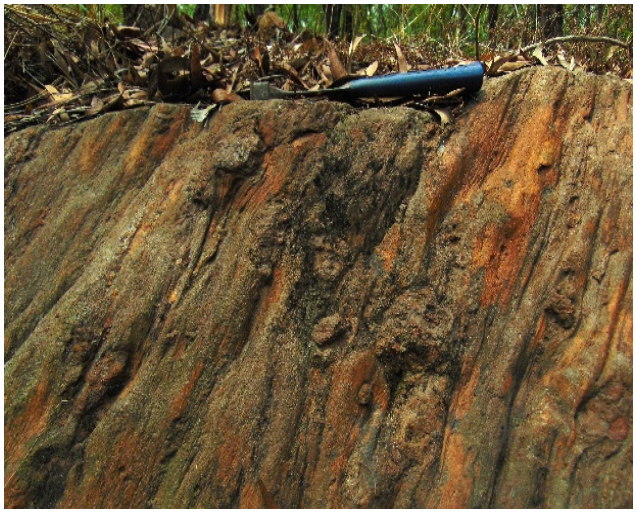


Photo 2a and 2 b : 2a Garnet within quartzite. 2b Garnet within quartz schist

Photo 3a: Axial planar cleavage Within Quartzite. Northern Quartzite ridge at Eastern most folded region.

Photo 3b: Qtz schist along with garnet porphyroblasts. At northern Quartzite ridge near eastern most folded region.

Photo 4. Garnetferous Mica schist at the southern flange of the northern

Photo: 6a, 6b: Loose scattered weathered Garnet pebbles, at the surface, indicative of Garnetiferous mica schist beneath soil cover mica schist beneath soil cover.

Photo 7a, 7b: Fine grained Granitic rock, exposed at the South-western part of the Block.

Photo-8: Bedding parallel Foliation or Schistosity (S_1) within Quartzite, near Jharia Village, at Southern Boundary of the Block

Photo 9a: Subvertical and Oblique joint sets in Quartzite. near Jharia Village, at Southern Boundary of the Block

Photo 9b: Three (3) sets of joint in Granite, SE of Thakurdih Village, at South-western part of the Block.

Photo 10 a: Small scale Antiform 10b: Small scale synform, at the hinge part or core of Large scale fleaxures within Quartzite, at Eastern most folded part of Northern Quartzite ridge/band

Photo 11: Smaller Z shaped fold, indicating layer parallel shearing between layers of different competency during folding within Quartzite

Photo 12. Thin (few mm) breccia blanket on a displacement plane within quartzite

Photo 13. Hook shaped Type-3 Superposed folding

Photo 14. Crenulation within mica cshis

Photo 15 a&b. General topography of the area, soil cover (15c) Panoramic view of the area.

Photo 16 a: Old working pit, Thakurdih (16b) Old working pit, North Jharia

7.5.3 **Borehole Core Photographs** :

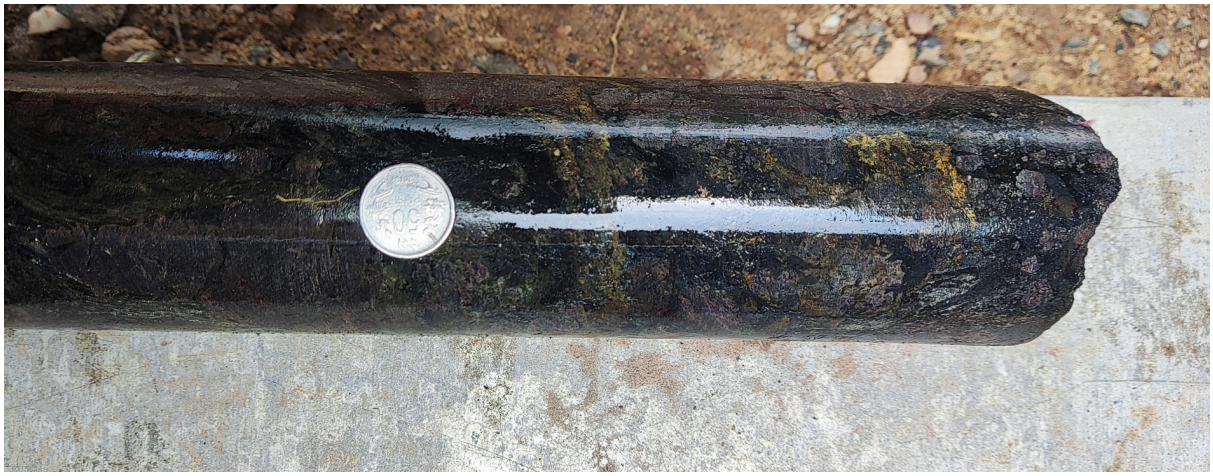


Photo 17: Stringers, veinlets and sheeted interconnected veins of Chalcopyrite and Pyrite, mainly occurring along porphyroblastic garnetiferous mica shist (MTB-4)

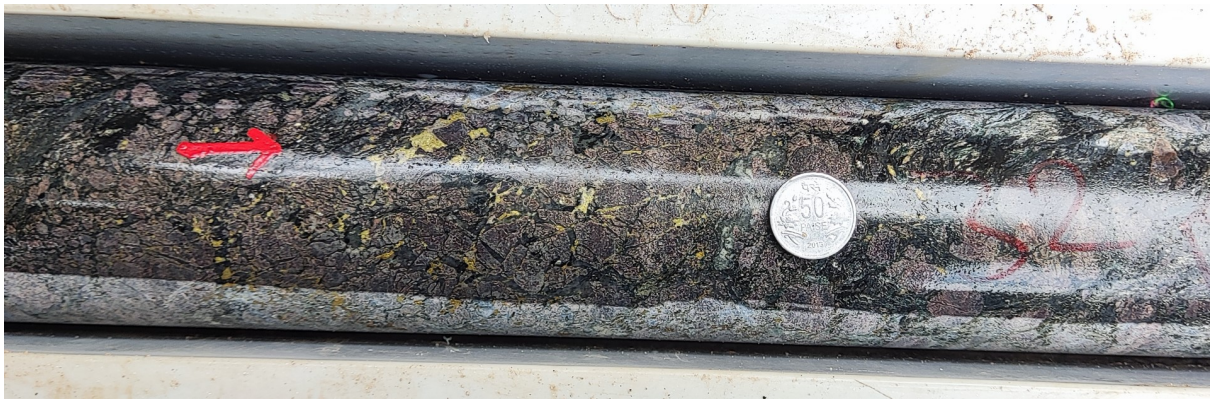


Photo 18: Stringers, veinlets and sheeted interconnected veins of Chalcopyrite and Pyrite mainly occurring along porphyroblastic garnetiferous mica shist (MTB-4)

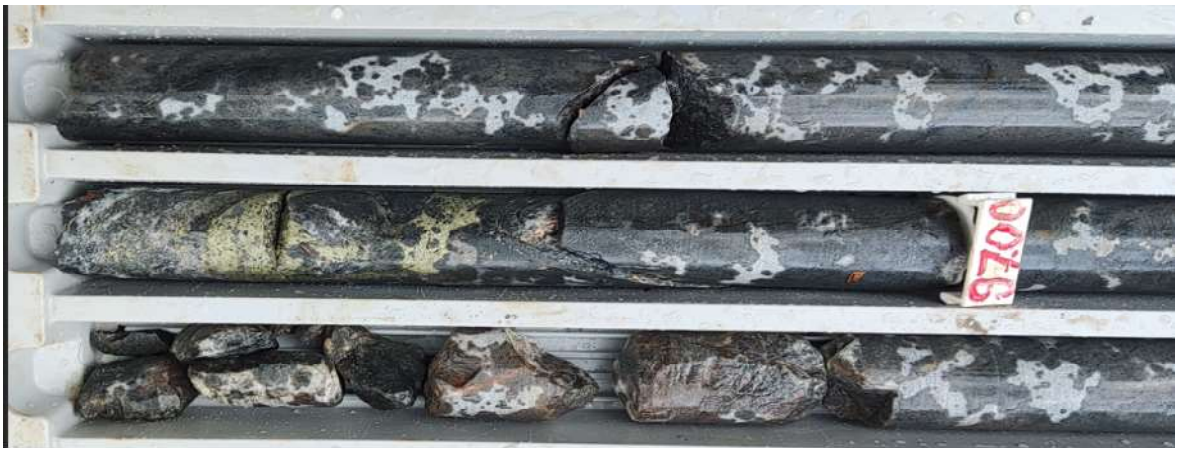


Photo 19: Massive thick fracture filling vein of Cpy, at contact of Granitic rock with Meta-basics. (MTB-5)

Photo-20: Stringers and veinlets parallel to schistosity (MTB-2)

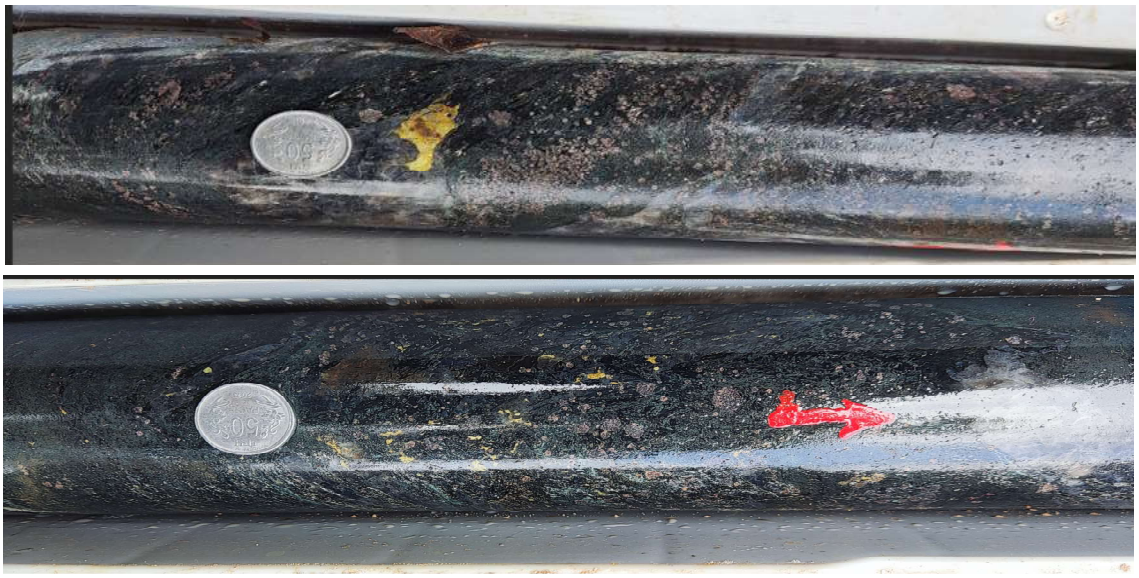


Photo 21: Stringers and veinlets of Chalcopyrite parallel to schistosity (MTB-2)

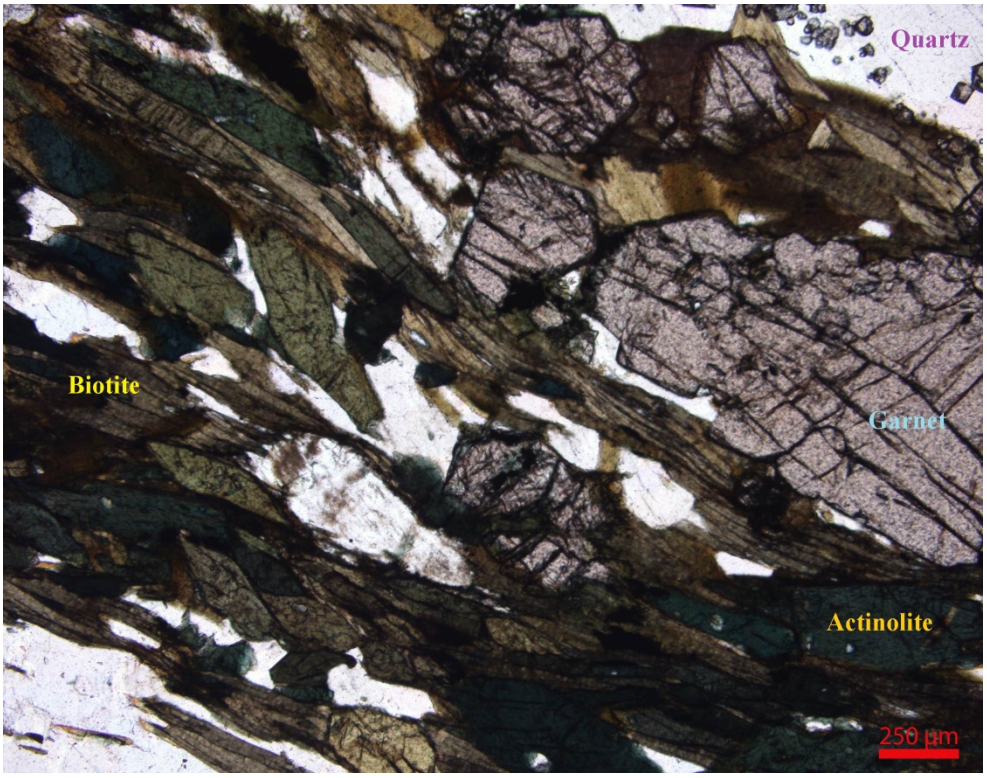
Photo-22: Assymetrical microfolding of Chalcopyrite stringers (MTB-07)

Photo-23: Microfolding of Chalcopyrite stringers (MTB-04)

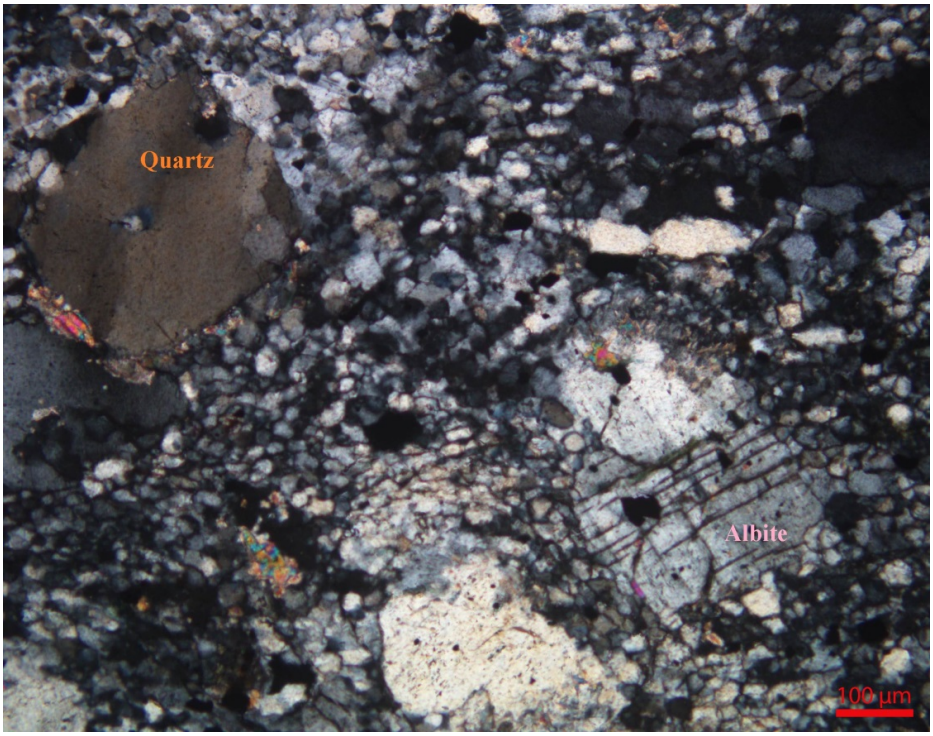
Photo-24: Chalcopyrite stringers along lensoidal sheared quartz vein (MTB-01)

7.7.0 PETROGRAPHIC STUDY:

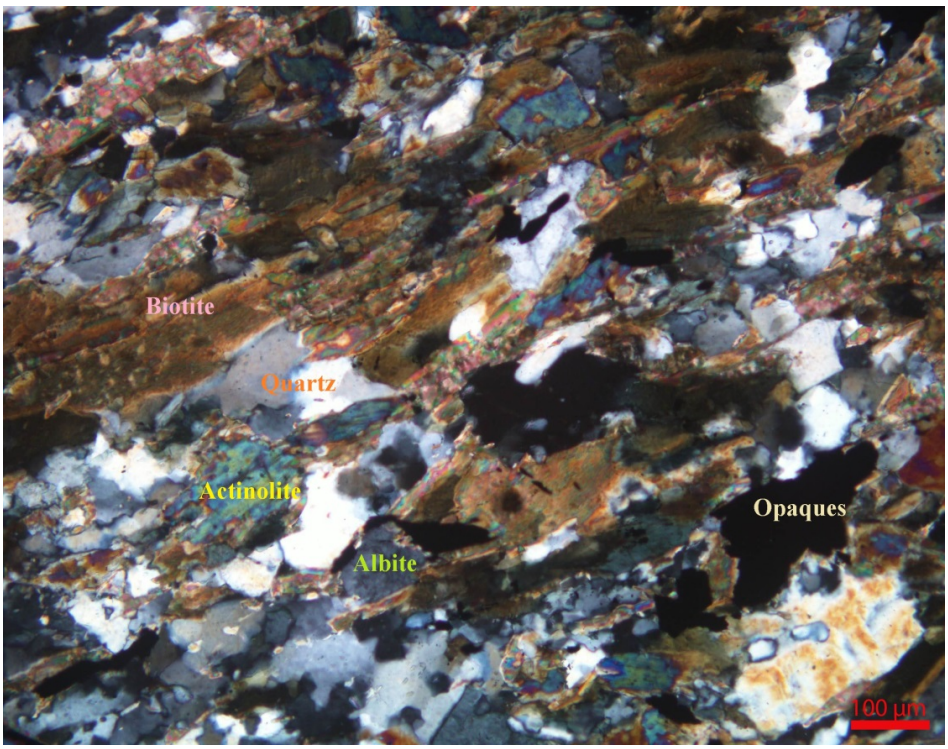
7.7.1 A total of 10 Nos. of rock samples intersected in the bloreholes have been subjected for petrographic studies at MECL laboratory, Nagpur. The findings of petrographic study have been discussed along with the description of rock types in the area. However, the petrographic study report has been attached as **Annexure No-IX.** The photomicrographs of the thin sections are given as Pmg-1 to Pmg-5.



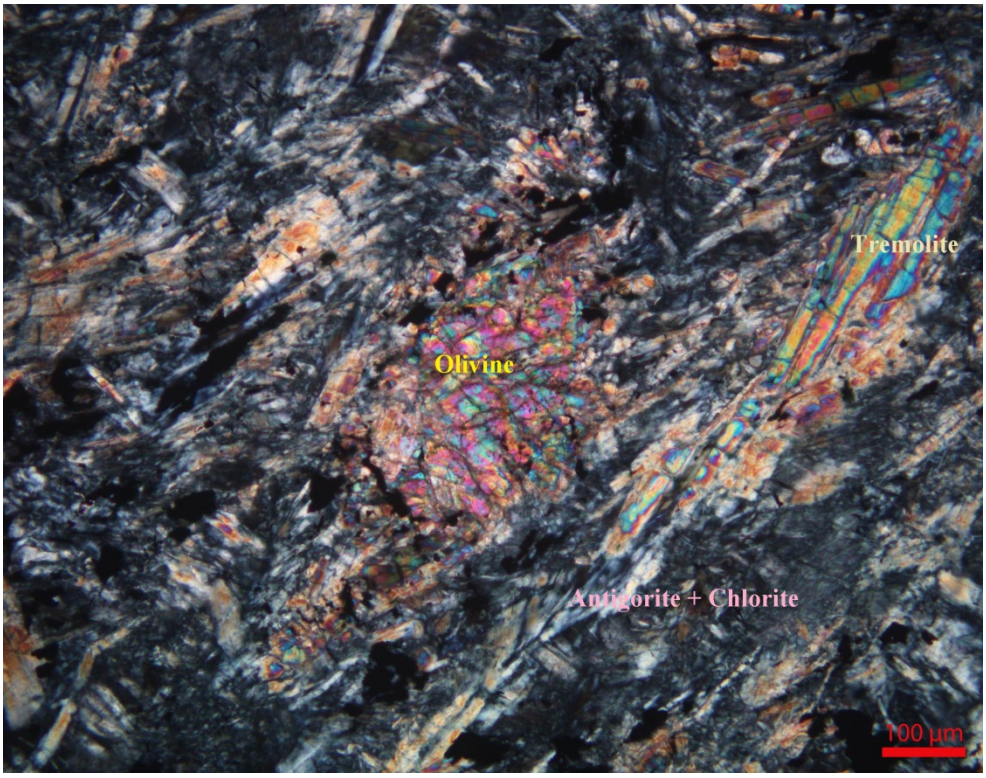
Pmg – 1: Photomicrograph showing association and parallel alignment of biotite, actinolite, quartz and garnet porphyroblasts in porphyroblastic garnetiferous biotite-actinolite-quartz schist as seen under plane polarized light.
Specimen No. : MTB-04/P1 **Magnification : 40X**



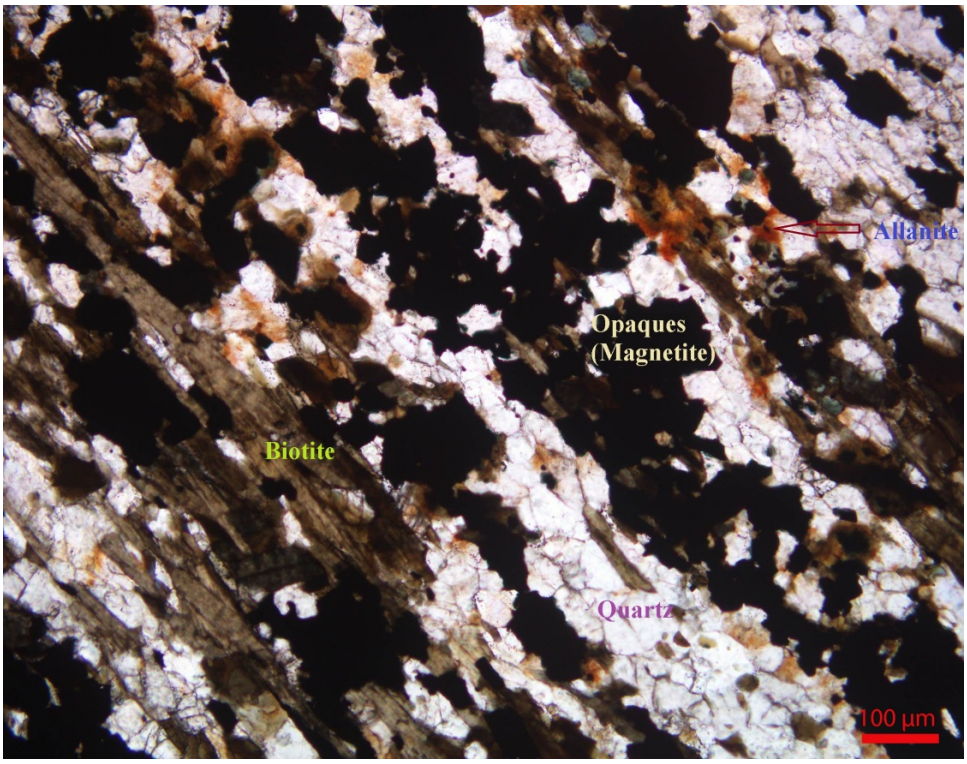
Pmg – 2: Photomicrograph showing occurrence of albite and quartz in Aplitic Granite as seen under crossed nicols..
Specimen No. : MTB-05/P1 **Magnification : 100X**



Pmg – 3: Photomicrograph showing association and parallel alignment of biotite, quartz, actinolite and albite in biotite-quartz-actinolite-albite schist as seen under crossed nicols.
Specimen No. : MTB-06/P1 **Magnification : 100X**



Pmg – 4: Photomicrograph showing relicts of olivine within antigorite-chlorite patches and associated acicular grains of tremolite in altered mafic rock as seen under crossed nicols.
Specimen No. : MTB-08/P1 **Magnification : 100X**



Pmg – 5: Photomicrograph showing association and parallel alignment of biotite, quartz and opaques (magnetite) and presence of very fine allanite grains with pleochroic haloes in accessories as seen under plane polarized light.
Specimen No. : MTB-17/P1 **Magnification : 100X**

7.8.0 STRUCTURE & METAMORPHISM

7.8.1 The area is falling in the south or south-eastern extremities of Singhbhum shear zone (SSZ). As per the previous many workers, the SSZ is rather ill-defined near the study area i.e. Baharagora but continues through the western side of the block to south and obscured into the Mayurbhanj granite. As per the previous workers (GSI, 1974, 1984 tectonic evolution of the Baharagora area has been categorized into three phases—D_1, D_2, and D_3. Bedding (S_0) is largely indistinct, while S_1, the earliest schistosity, is a result of the deformation D1, has been identified as aligning with the bedding. The D_2 phase resulted in the formation of relatively open, northeast-trending synforms and antiforms within meta-psammites, as well as puckering in metapelites resulting in S_2 along axial plane of folds. A phase of mild deformation (D_3)-affected all earlier structures and produced open folds with sub-horizontal axes which at places results in reversal of dip-direction locally. Different formations in the area developed different structures matching their physical characteristics. Crenulations, puckers, drag folds, feeble mineral lineations, micro-superposed folding etc. Whereas harder formation i.e. Quartzite shows tension joints, mineral lineation, intersection lineation, brecciation etc. In general, litho units strikes $N60^0W$-$S60^0E$, E-W dipping 60^0 to 80^0 NE and N in Thakurdih Area-1 block area.

7.8.2 Following are the brief details about the structural elements are noticed in the Block:

1. **<u>Planar Structure:</u>** Planar structure noticed in the area are bedding or stratification (S_0) plane (only in Quartzite), Axial planar foliation (S_1/S_2), Axial planar cleavage, Joints etc. Bedding or Stratification planes (S0) marked by compositional variation within Quartzite and Micaceous Qtz/Qtz-feldspathic schist and is obsolete in Mica schist.

   Foliation or Schistosity (S_1/S_2) is defined by excellent preferential orientation of mica and chlorite minerals in Mica schist and preferred orientation of Biotite chlorite and amphibole minerals in Meta-basic schists. Crude foliation has been noticed in some places within granite and is marked by very feeble

dimensional orientation of feldspar laths. Axial planar cleavage is prevalent along S_2 in large folds of quartzite bands

Joints are common, particularly in the competent rock like Quartzite and Granite. Some vertical to sub-vertical joints noticed in Quartzite. There are some Strike joints noticed in Granite at the south-eastern boundary of the Block. At places vein quartz has been broken by these joints into rhombohedral slices.

2. **Linear Structure:** Important linear features noticed are Mineral lineation, intersection lineation, small fold axis, puckers, at places streaking and grooving lineation in the Quartzite.

Mineral Lineations are prevalent in this area and defined by parallel orientation of mica and chlorite in the mica schist, Garnets and mica in Micaceous Quartz schist and Biotite, chlorite, and Amphibole in Meta-basics. Mineral lineation is steeply plunging (50-60°) in Quartzite and more or less similar to the plunge of fold axis (S2) further suggesting the development of these lineations due to D2 folding.

Intersection lineation can be seen as bedding-cleavage intersection in number of places within the Quartzite and Quartz schist. Intersection lineations are almost parallel to the fold axial plunge of large antiformal flexure at the southernmost quartz band near south east corner of the Boundary.

Small scale folds are very common in this area and are gentle to tight at places, some times showing superpositions of different generations. At the northernmost quartz ridge the small-scale folds large synformal-antiformal flexures showing similar plunge to that of large fold.

Puckers are universal in mica schists and Micaceous quartz schist. They are developed on S2 show great diversity in shape and orientation. Pucker axes are sub-Parallel to mineral lineations.

Grooving lineations are a common type of lineation restricted to Quartzite only.

3.Faults: No major faults have been directly exposed in the area; however, certain structural features such as minor displacement and the discontinuation of the northern Quartzite band near Borehole (BH) No. MTB-07, along with further discontinuities of Quartzite bands towards the southwest, may indicate the presence of a concealed NE–SW trending fault zone beneath the soil cover. This possible fault may have originated near BH No. MTB-07 and propagated in the southwest direction.

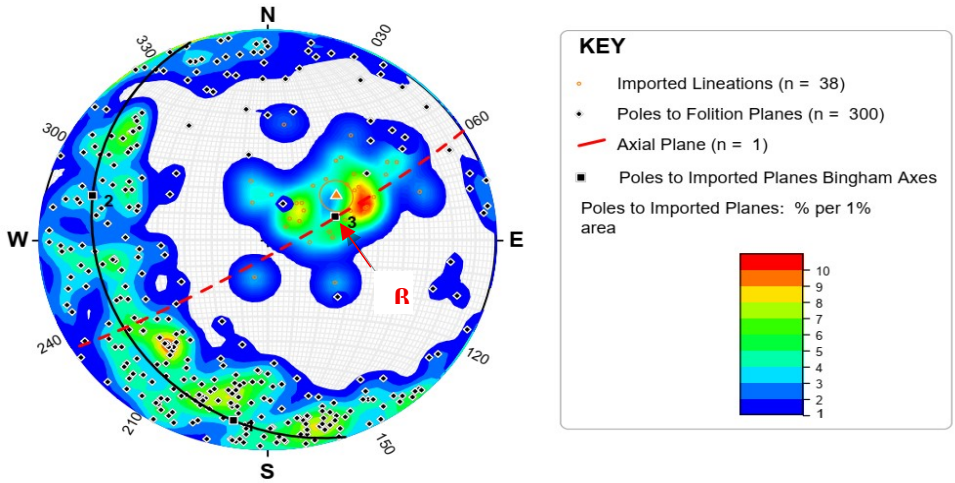
The deflected ends of the northern Quartzite band near BH No. MTB-07 and foliation data in the surrounding mica schist suggest a dextral (right-lateral) sense of movement along this interpreted fault. Furthermore, the geophysical anomaly map shows a dextral offset of a low-resistivity zone from southeast to northwest across this zone, supporting the interpretation.

Although a highly fractured/brecciated zone was intersected in BH No. MTB-17 (Section S16–16'), due to the considerable distance between MTB-17 and MTB-07, this feature may not be directly linked to the inferred fault. Its association requires further investigation and cannot be conclusively established based on current data.

4.Folds: Quartzites and Quartz schists in the current study area are thrown into open to tight plunging synform and antiforms, their amount of plunge varying from 35° to 50° towards NE. Superposed folding are noticed in Mica schist exposed in the south of the Northern Quartzite band. These large flexure folds are asymmetric at places, owing to different amount of dipping angle in each limb. Minor S/Z-shaped drag folds are extensively present in the area suggesting layer parallel shearing during folding event.

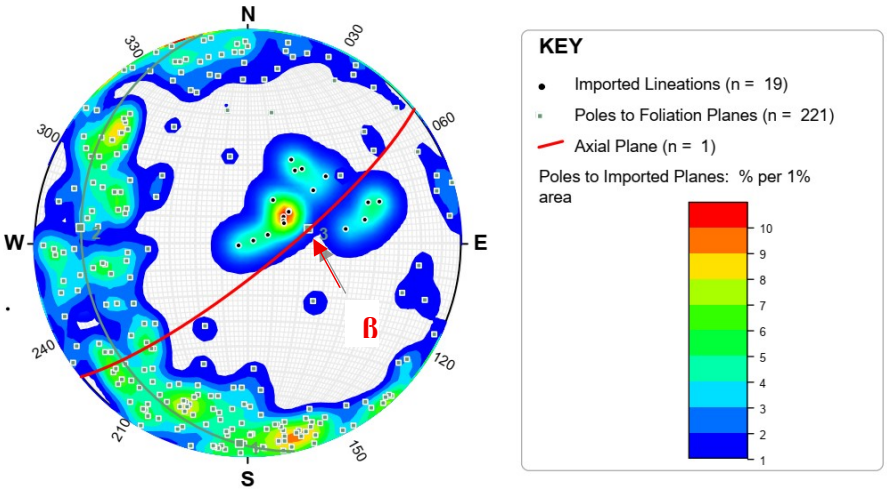
7.8.3 Based on available structural data, Stereonet analysis for the entire area as well as for Northern and and Southern band has been performed to understand and unravel the structural complexity both for the lithic horizons and ore bands.

Text Figure-5A: Stereonet analysis for the entire block area



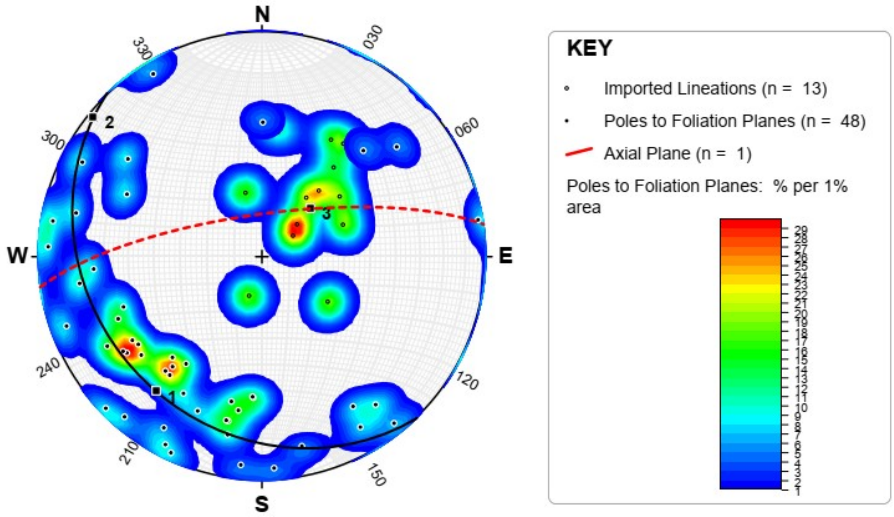
All the planar (foliation S1 and S2) and linear data (Smaller fold axis, puckers, crenulations, intersection lineations) recorded from all over the block has been plotted here in the equal area net. From the spread of the poles to the planes of foliation in the equal area net that the area is multiply deformed/folded in many phases. However, calculated β-axis value from the best fit girdle is showing a plunge of 64° towards 070. Which is Plunge of the D2 folds in the Block. And calculated axial plane 059/84S showing comparability with field data. Different Linear data (as mentioned above) has been showing cluster surrounding the calculated β-axis (Beta) also supporting the validity of the interpreted data.

Text Figure-5B: Stereonet analysis for Northern Band



All the planar (foliation S1 and S2) and linear data (Smaller fold axis, puckers, crenulations, intersection lineations) recorded from Northern Ore band domain has been plotted here in the equal area net. From the spread of the poles to the planes of foliation in the equal area net that the area is multiply deformed/folded in many phases. However, calculated β-axis value from the best fit girdle is showing a plunge of 66° towards 077. Which is almost similar to the Plunge of the D2 folds in the Block and calculated β-axis (Beta) value is almost like that of Whole block data. And calculated axial plane 051/79S showing comparability with the whole block data. Different Linear data (as mentioned above) has been showing cluster surrounding the calculated β-axis (Beta) also supporting the validity of the interpreted data.

Text Figure-5C: Stereonet analysis for Southern Band



All the planar (foliation S1 and S2) and linear data (Smaller fold axis, puckers, crenulations, intersection lineations) recorded from Southern Ore band domain has been plotted here in the equal area net. From the spread of the poles to the planes of foliation in the equal area net that the area is multiply deformed/folded in many phases. However, calculated β-axis value from the best fit girdle is showing a plunge of 66° towards 046. Which is almost Comparable to the Plunge of the D2 folds in the Block and calculated β-axis (Beta) value is analogus to that of Whole block data and Northern Band data. And calculated axial plane 262/75N showing comparability with the trend of the whole block data and Northern Band. Change of dip direction of calculated axial plane may be attributed to the later modification by D3 folding event. Different Linear data (as mentioned above) of Southern ore band domain has been showing cluster surrounding the calculated β-axis (Beta) also supporting the validity of the interpreted data.

7.8.4 Copper mineralization in the area is structurally controlled and mainly conforms to S1 foliation, which is refolded during D2 deformation, enhancing ore localization around D2 hinge zones similar to patterns seen in other Baharagora blocks. Stereonet analysis confirms multiphase deformation, with the D2 fold axis plunging 64° ENE and an axial plane of 058/84S. The northern ore band is hosted in porphyroblastic garnetiferous schist, while the axial zone shows no surface indications of mineralization or consistent geophysical anomalies. Therefore, presence of additional mineralised band along axial planar region are unlikely. However, Some more bedrock and pit soil sampling may be done in next phase of exploration to confirm the same. (Plate No. IV-A & IV-B).

7.8.5 **Metamorphism:** The Metamorphic grade of the rocks in the area under consideration is marked by such minerals as Biotite, Garnet, Staurolite and Kyanite and indicated middle amphibolite facies of Fyfe and Turner (1966). It is very much correspondents to the regional metamorphic trend of Singhbhum group of rocks.

7.9.0 MINERALISATION IN THE BLOCK

7.9.1 In Thakurdih Area-1 block, few old workings trending NW-SW direction located (Fig 16 a & b). The area is mostly under soil cover (15 a &b) Rock exposures are limited in the area and the surface expression of the mineralized zone is poor and ill defined. Geochemical sampling and I.P. Resistivity survey, however, provide some anomalies but most of the information on the geology and the sulphide mineralization has been obtained from the drill holes.

7.9.2 In Thakurdih Area-1 block copper mineralisation occurs along two zones namely Northern band & Southern band. In northern band, mineralization mainly occurs along the unexposed Porphyroblastic Garnetiferous Chlorite Mica schist which is running in succession with the Northern Quartzite ridge at its down dip side (north of Quartzite ridge). In southern band, mineralization mainly occurs along the contact of Granitic rock with the Meta-basic schistose rocks. The mineralisation strikes E-W to NW-SW with 55° to 80^0 N & NE dip in Northern band while N50°W-S50°E with 60° to 80^0 NE dip in the Southern band.

7.9.3 Mineralization occurs as fissure veins, a very common feature of singhbhum copper belt shear zone. All the host rocks in the blocks showing sign of more or less shearing effect. Shearing causes the multiple openings in the form of foliation planes, fractures, breccia are infilled with sulphides and gangue, forming characteristic sheeted veins. There is no well-defined pattern of wall rock alteration although some minerals such as biotite, chlorite and quartz are at places associated with ore bodies along with magnetite.

7.9.4 Specially in the Northern band, the individual lodes exhibit alternating bands of richer and leaner mineralization. In drilled cores, they appear as sheeted zones consisting of multiple closely spaced veinlets and stringers occurring alongside foliation plane, brecciated Quartz veins, interspaces of porphyroblast clusters interspersed with poorly mineralized partings. In the southern band, lodes are more densely concentrated, predominantly forming massive veins that filled vacant spaces associated with fractures, breccia, and schistosity. Additionally, other structures such

as stringers and veinlets are also observed. Consequently, the width and grade of the lodes are influenced by factors such as the cut-off grade, thickness, and the extent of these partings.

7.9.5 Copper ore with associated metals occurs in four distinct modes i.e. (i) disseminations, (ii) stringers, thick viens and vienltes along foliation and fractures, (iii) Massive sulphide viens within breccias composed of quart viens and other rock types and (iv) Minor replacement patches associated with closely spaced shears. Chalcopyrite is the main ore mineral followed by magnetite, pyrite pyrrhotite. Other sulphides and oxides occur in minor or trace proportions.

7.9.6 Sulphide mineralization distributed across different lithological and structural units. Disseminations are rare and restricted to relatively feebly schistose meta-basic rocks at places, quartzite, and certain metabasites (or amphibolite) and are very poor in grades. Stringers and veinlets are localized along foliations and fractures within schists, while massive quartz-sulphide veins are restricted to breccia zones. Mineralization predominantly occurs through open-space fillings, with replacement features limited to portions of disseminations, minor streaks, and isolated replacement patches. (ref mineragraphy)

7.9.7 Copper mineralization in this area does not appear to be restricted to a specific stratigraphic horizon or rock unit. While it is observed across various rock types within the area, certain rocks serve as more favourable hosts than others. The mineralized zones of interest are confined to porphyroblastic Garnetiferous, quartz chlorite mica schist (restricted to Northern mineralized zone), silicified brecciated rocks, and meta-basics (hornblende-actinolite-biotite schist). Additionally, mineralization occurs in granite and, less frequently, in quartzite.

7.9.8 Copper and associated mineralisation is mainly Litho-structure and shear controlled. Copper and associated mineralization in this area is structurally controlled by openings formed through shearing, folding or multistage deformation. The physical properties of the host rocks influence both the fracturing patterns and the type of mineralization. Different openings thus gave rise to in-filling types of mineralisation

such as stringers, veins and veinlets, Breccia filling etc. Orebodies generally align parallel to the foliation of the enclosing rocks and appears to be conformable with S1/S2 surfaces and are co-folded along with the enclosing rocks (Photo 21, 22).

7.9.9 Drilling carried out in Thakurdih Area-1 Block area indicate that mainly seven mineralized zones in Northern band numbered as Lode-NB1, NB2, NB3, NB4, NB5, NB5A, NB6 and six mineralized zones in Southern band numbers as Lode-SB1, SB1A, SB2, SB3, SB4 & SB5 starting from footwall side intersected in the boreholes drilled by MECL. The copper mineralisation is erratic in nature and some individual lodes shows pinch and swell nature along the strike and dip. The widths and grades of the lodes depends on the cut-off grade, thickness and strength of the partings.

7.10.0 MINERAGRAPHIC STUDIES OF MINERALISED CORE SAMPLES

7.9.1 A total of 10 number of polished sections of mineralized core samples intersected in the boreholes subjected to mineragraphic studies reveals that the major (>5%) minerals are chalcopyrite, magnetite, pyrite, pyrrhotite, ilmenite. Minor minerals (<5% to >1%) are present as pyrrhotite, pentlandite, ilemenite, pyrite and violarite. Accessory minerals (<1% to >0.1%) are present as pentlandite, Molybdenite, Covellite, hematite. Traces (<0.1%) are Hematite, Sphalarite. The sample wise details of the mineragraphic studies are presented as **Annexure-X** and the photomicrographs of the polished sections are given as **pmg-5 to pmg-10.**

1) **Chalcopyrite** occurs as coarse patches, veinlets and as fine to very fine fillings (Pmg-7). Chalcopyrite and pyrrhotite are present as mutually associated and often intermixed patches and veinlets (Pmg-6). Chalcopyrite occurs as patches and dendritic fillings along inter-granular spaces (Pmg-8). Chalcopyrite occurs as fine to medium anhedral grains, patches and as inclusions within magnetite. (Pmg-9)

2) **Magnetite** occurs as fine to moderately coarse subhedral to anhedral grains and patches, being cut across by chalcopyrite-pyrrhotite veinlets in areas. (Pmg-6 & 7).

Magnetite occurs as fine subhedral to anhedral grains, patches and blades in dissemination (Pmg-8). Magnetite occurs as coarse elongated patches and fine anhedral grains showing crude parallel alignment (Pmg-9).

3) **Pyrite** occurs as medium to moderately coarse patches and as fine anhedral to subhedral grains. Pyrite is seen present as patches and fine fillings, often showing association with chalcopyrite (Pmg-8).

4) **Pyrrhotite** and Chalcopyite are present as mutually associated and often intermixed patches and veinlets. (Pmg-6).

5) **Ilmenite/ Magnetite** occur as fine to very fine subhedral prismatic/ bladed grains, mostly seen included within garnet porphyroblasts. Ilmenite is present as fine to very fine blades.

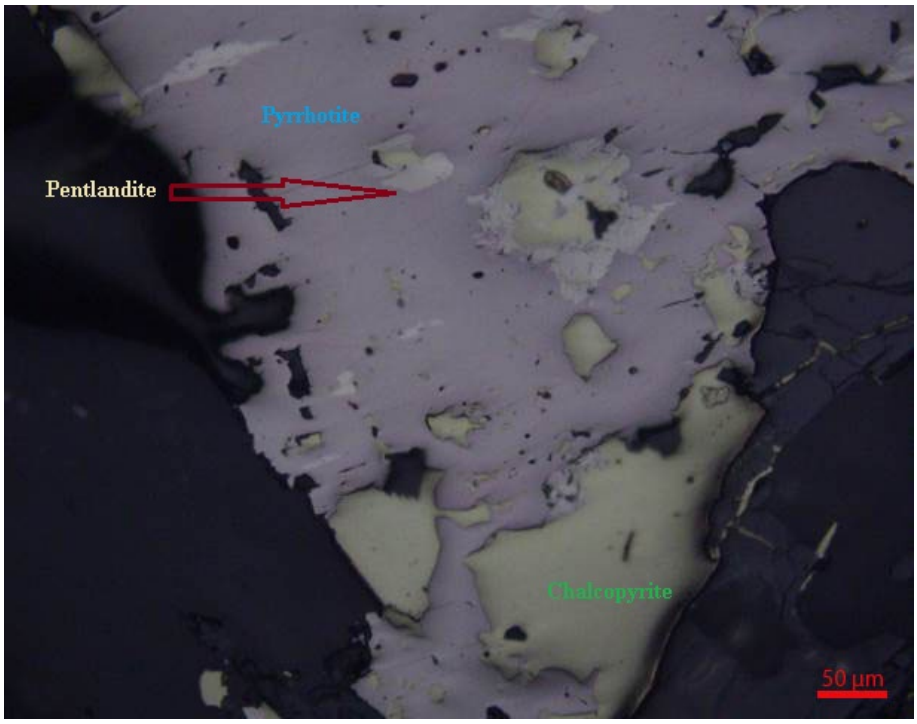
6) **Pentlandite/ violarite** occur as fine anhedral patches within chalcopyrite Pentlandite is present as patchy intergrowths within chalcopyrite. Pentlandite is noted as very fine lamellar and flame shamed exsolutions within pyrrhotite. (Pmg-6).

7) **Covellite** is noted as fine patchy fillings replacing chalcopyrite in areas. (Pmg-7).

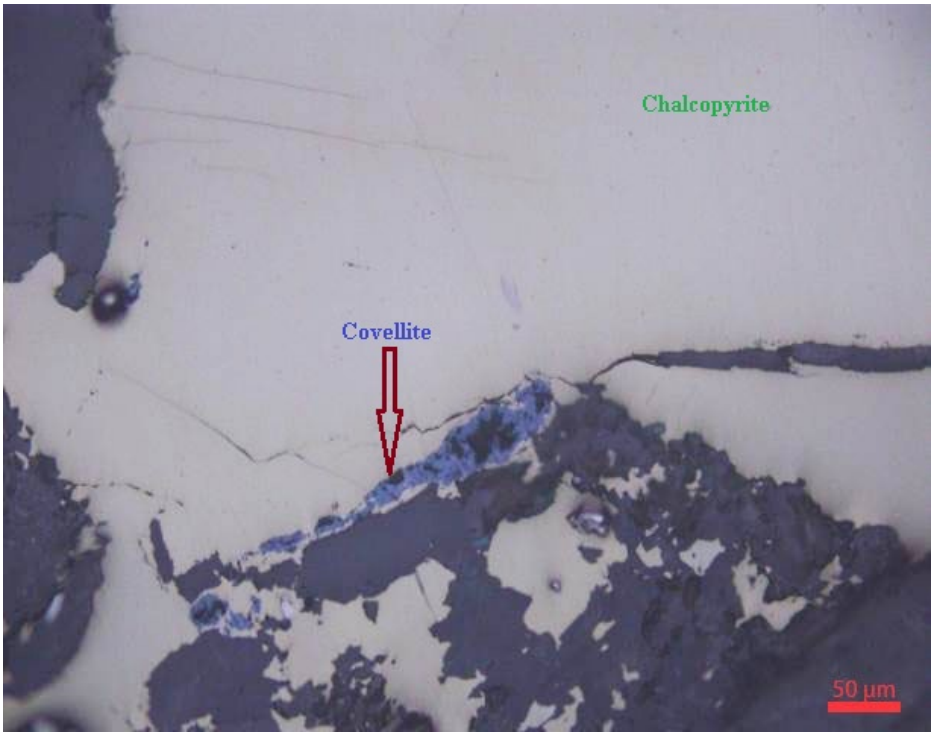
8) **Molybdenite** is noted as very fine flaky inclusions within chalcopyrite, at places.

9) **Hematite** is seen developing in areas after martitisation of magnetite. Hematite is noted as fine to very fine grains, especially in contacts with magnetite and pyrite

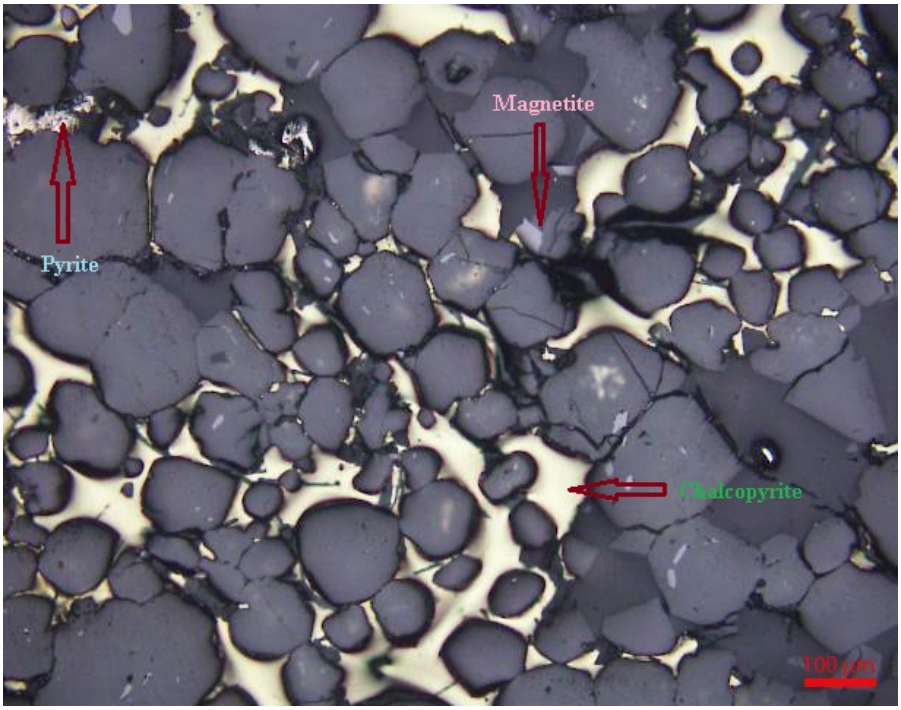
10) **Sphalerite** occurs as very fine inclusions/ intergrowths within chalcopyrite patches.



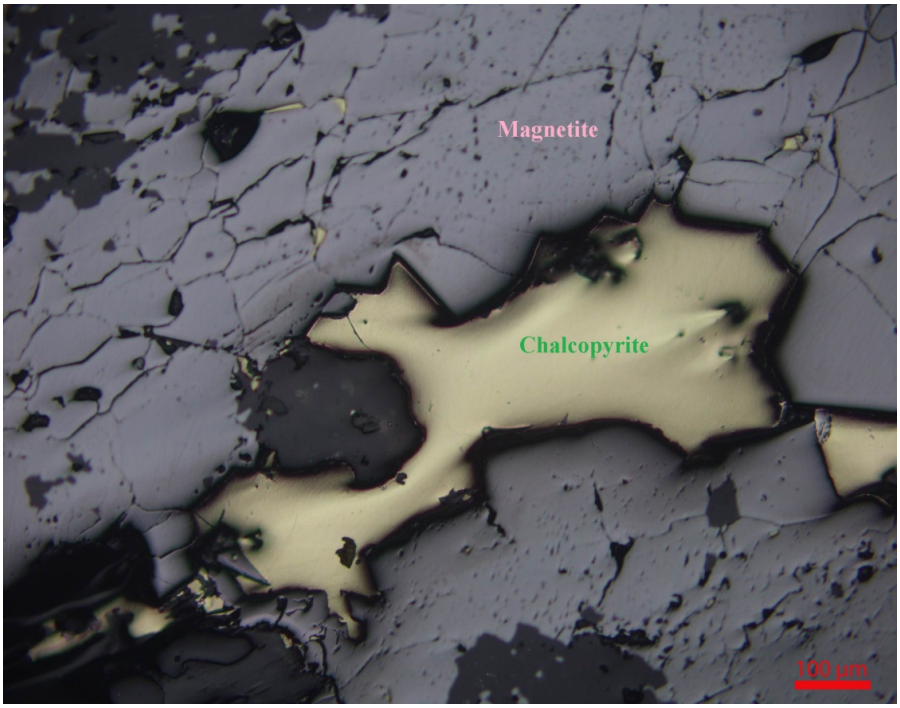
Pmg – 6: Photomicrograph showing pyrrhotite-chalcopyrite intermixed patches and pentlandite exsolutions within pyrrhotite as seen under reflected light.
Specimen No. : MTB-04/M1 **Magnification : 200X**



Pmg – 7: Photomicrograph showing patchy fillings of covellite replacing chalcopyrite as seen under reflected light.
Specimen No. : MTB-06/M1 **Magnification : 200X**



Pmg – 8: Photomicrograph chalcopyrite dendritic fillings along inter-granular spaces and associated pyrite and magnetite grains as seen under reflected light.
Specimen No. : MTB-12/M1 **Magnification : 100X**



Pmg – 9: Photomicrograph showing magnetite and chalcopyrite patches and very fine inclusions of chalcopyrite within magnetite as seen under reflected light.
Specimen No. : MTB-17/M1 **Magnification : 100X**

CHAPTER-VIII

8.0.0 PREVIOUS EXPLORATION

8.1.0 DETAILS OF PREVIOUS EXPLORATION CARRIED OUT BY OTHER AGENCIES

8.1.1 The Baharagora Copper Prospect is located near the southeastern extremity of the Singhbhum Shear Zone. The existence of old workings (shallow pits) for copper in the Baharagora area area was reported as early as 1870 by Stoehr. A description of these workings was given by Dunn (1937). The area was covered by airborne multi-instrument geophysical surveys in 1963. Baharagora copper prospect comprises of number of sub blocks namely Mundadevta Darkhuli, South Jharia, Thakurdih and Charakmara Blocks.

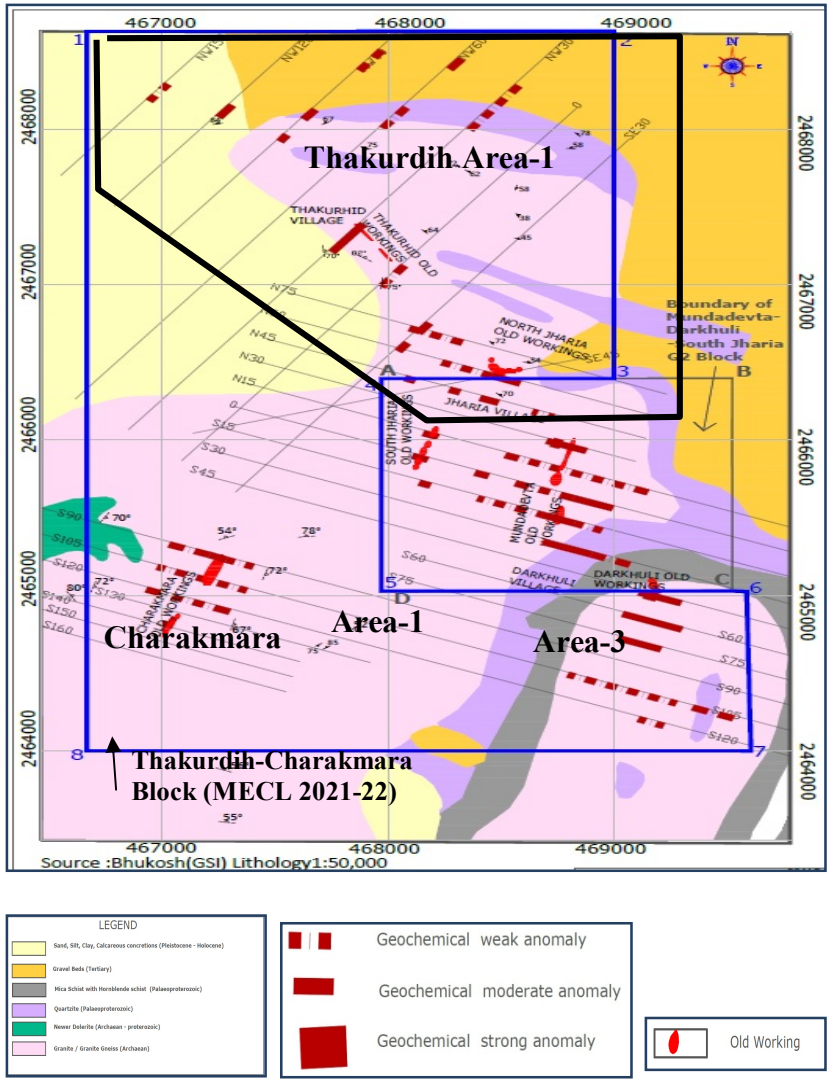
8.1.2 The Airborne Mineral Surveys and Exploration wing of GSI carried airborne Geophysical survey under "Operation Hardrock" in 1967-68. Airborne Geophysical data supplemented with Ground Geophysical Reconnaissance indicated a probable zone of Mineralisation in the Baharagora Area. GSI reported that Ground evaluation of the electromagnetic and magnetic signatures coupled with the available geological knowledge indicated the presence of potential mineralised zones. This led to the intensification of efforts in the form of integrated geological, geochemical and ground geophysical surveys and exploratory diamond drilling to locate ore bodies and to assess the potentiality of the deposit. Results of all these efforts have indicated that the Baharagora copper deposit consists of a number of small blocks/mineralised grounds Mundadevta Darkhuli, South Jharia and Charakmara Blocks are apparently more promising.

8.1.3 During previous exploration of GSI, (Majumder 1971) carried out exploration in Mundadevta-Darkhuli Block and a geological resource of 1.22m tonnes of 1 .23% Cu and 0.70m tonnes of 0.87% Cu and 0.21% Ni was estimated. Based on the outcome of previous work of GSI, MECL explored Mudadevta-Darkhuli & South Jharia Block for Copper and associated minerals over an area of 2.13 sq.km. at G2

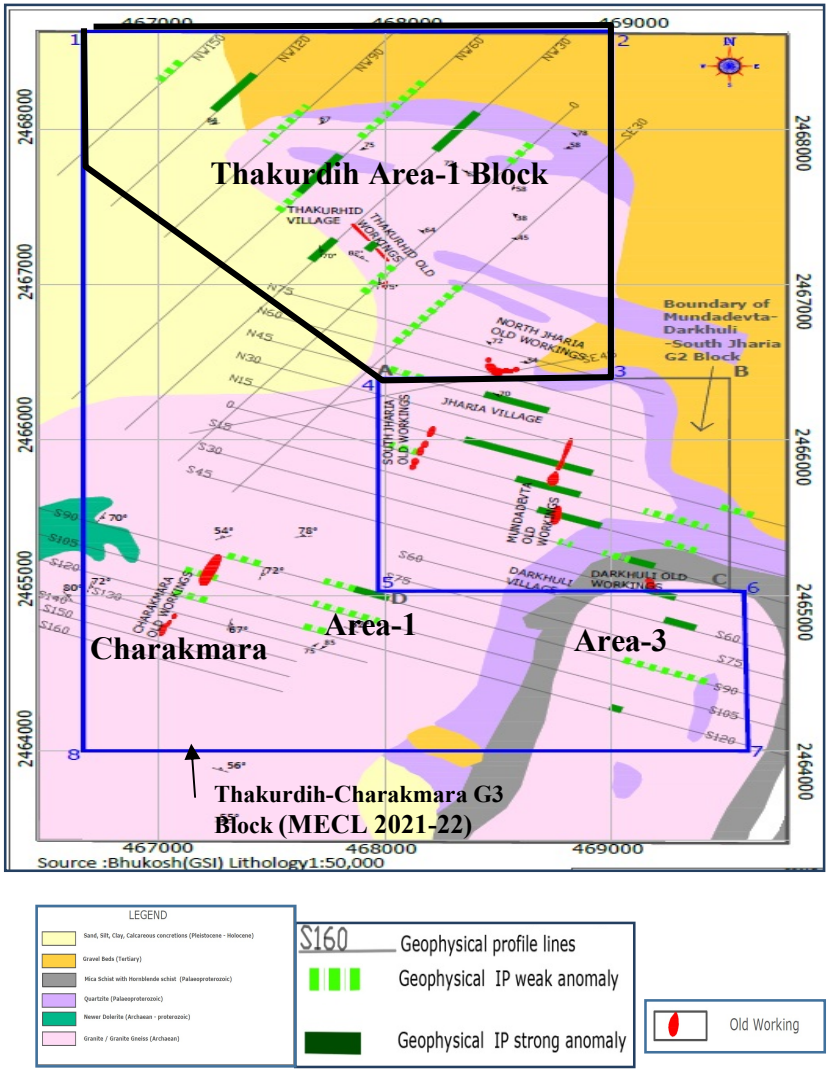
stage in 2021-22. Total 5112m in 23 nos Boreholes were drilled in the area and resources estimated at 0.50% Cu and 1.0% Cu cut-off separately with 2.0m minimum stoping width (M.S.W.) as true width and 3.0m maximum parting. Total 1.74 milllion tonnes of net geological in-situ resources with an average grade of 0.96% Cu over 3.58m thickness at 0.50% Cu cut-off and 0.64 milllion tonnes of net geological in-situ resource with an average grade of 1.46% Cu over 3.53m thickness at 1.00% Cu cut-off up to a vertical depth of 245m from ground surface. The Thakurdih-Area-1 Block is just adjoining and northern extension to the Mundadevta-Darkhuli & South Jharaia G2 Block. (Plate-IV-D).

8.1.4 During the F.S. 1975-76 & 1977-78, GSI carried out geochemical survey followed by geophysical survey carried in the Block area. Soil samples at closer intervals (10-15m) were collected from the anomalous zones and analyzed for copper, nickel, cobalt and molybdenum which resulted with 46 anomalies with weak, moderate, and strong categories. In general, geochemical anomalies coincide with the old workings, values are upto 10000ppm for Cu. Subsequently, the area was covered by IP-Resistivity traverses at interval of 150/300 m with dipole length of 150m. In some sections, detailing with shorter dipole separation (30m) had been done which resulted with 15 no of high chargeable IP and Magnetic anomaly zones with values 200nT to maximum value 1200 nT. Geophysical anomalies indicated weak IP anomalies in Charakmara area and strong IP anomalies in Thakurdih Area-1, Area-2 and Area-3 of the block area. Geophysical anomalies (IP) corroborated well with geochemical anomalies and old workings in the area. (Text Figure 6A & 6B)

8.1.5 In Charakmara there is a line of discontinuous pits for a distance of about 500m in a NE-SW direction in metabasites, basic schists and biotite quartz schist within the granitic country rocks. Similarly, NW-SE trending old workings located in Thakurdih (Area-1) area. GSI drilled 2 test boreholes namely BC-1 and BC-2 in Charakmara area involved 300.45m drilling spaced 100m apart. A zone of mineralisation in BC-1 intersected over a width of 1.35m with 0.59% Cu & 0.11% Ni and in BC-02 over a width of 2.05m with 2.74% Cu. Further drilling was recommended by the previous workers and further it was opined that there is a reasonable chance of finding some tonnage from this block.



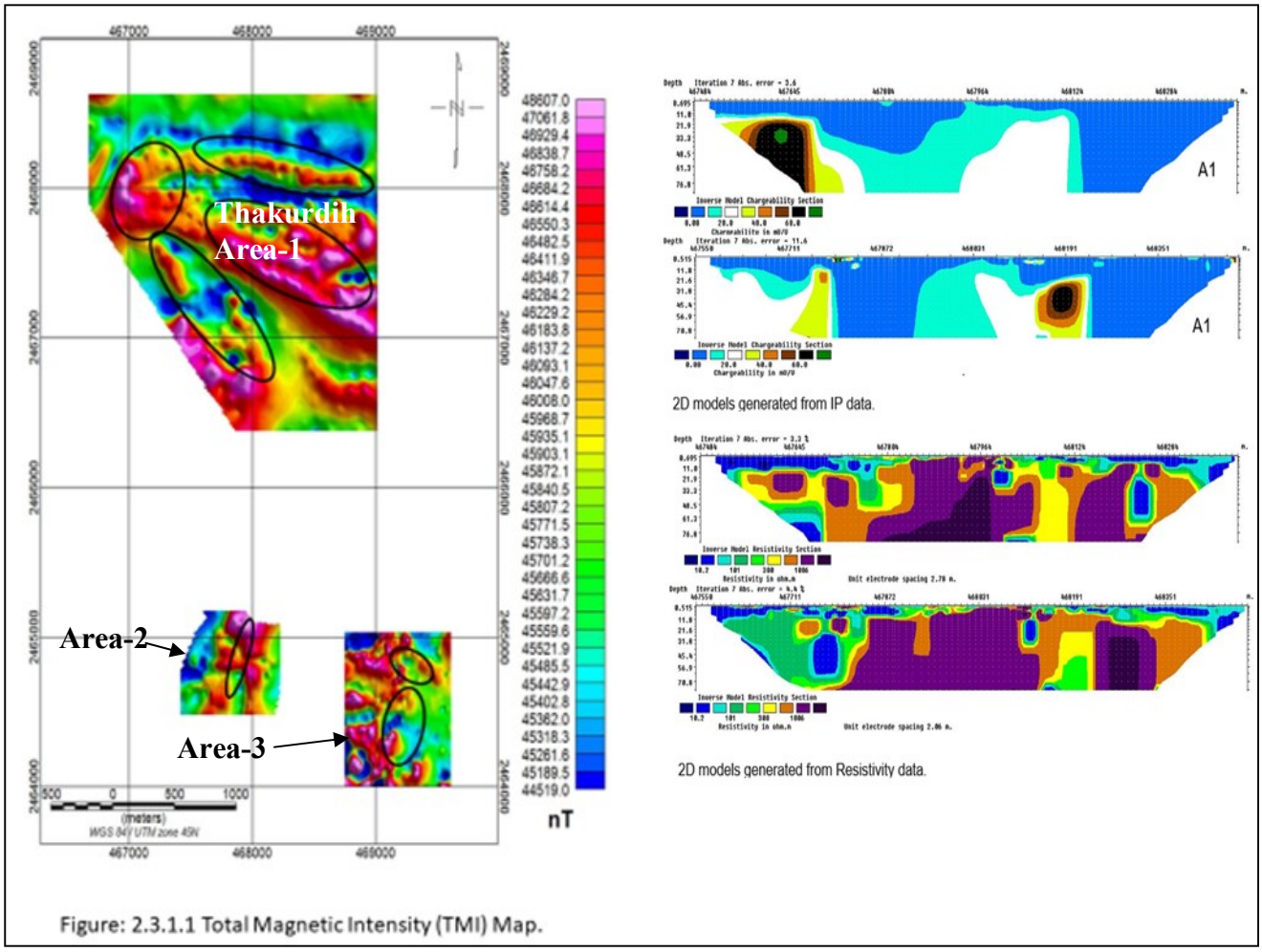
TEXT FIGURE: 6.A. Geochemical anomaly map (after GSI



TEXT FIGURE: 6-B. Geophysical anomaly map (after GSI

8.1.6 G3 Stage Exploration in Thakurdih-Charkamara Block (10 sq.km) by MECL:

During the year 2022-23, MECL carried out G3 stage exploration in Thakurdih-Charkamara block including Thakurdih Area-1 sub block over 10.0 sq.km. area. Work included ground geophysical survey (I.P. Resistitivity, Magnetic at 100/50 m profile at 20m interval), exploratory drilling (1497.50m in 12 Boreholes) and associated activites. Integrated geophysical survey (I.P. Resistivity and Magnetic) carried out in the area (60 Lkm) has brought out some prominent anomalies in Thakurdih Area-1 & 3 Text Figure 7.). High chargeability and low resistivity zones were delineated and anomalies corroborated well with old workings, previous geophysical and geochemical anomalies of GSI.



TEXT FIGURE- 7: Geophysical anomalies in sub blocks of Thakurdih-Charakamara Block (MECL 2022-23)

8.10 In Thakurdih Area-1 sub block, based on integrated ground geophysical anomalies all three drilled scout/test boreholes (MTCB-09, 10 & 11) intersected mineralized zones at 0.20% cut-off value. MTCB-09 intersected (Lode-IB) zone of 0.26% Cu over 3.22m thickness and Borehole MTCB-10 (Lode-1AA) intersected zone of 0.46% Cu over 5.20m thickness. Total 128689 tonnes (**0.13 million tonnes)** with **average grade of 0.39% Cu** estimated in the area.

8.11 It was recommended that "Integrated geophysical anomalies intersected significant mineralized zones of considerable thickness and grade at depth in the test boreholes drilled in Thakurdih Area-1. Hence, in order to ascertain the potentiality of the prospect, seamless G3/G2 stage exploration is recommended to confirm the strike and depth persistence of ore zone in Thakurdih Area-1 of Thakurdih-Charakmara block."

CHAPTER-IX

EXPLORATION UNDERTAKEN DURING CURRENT INVESTIGATION

9.1.0 AREAL OR GROUND GEOPHYSICAL OR GEOCHEMICAL DATA

9.1.1 Areal or ground geophysical activities and geochemical survey have not carried out in the area during present exploration as there is no scope of work. However, previous exploration of GSI and MECL (Geophysical & Geochemical data) have been taken into consideration while formulation the scheme of present exploration as well as planning of boreholes in the area.

9.2.0 BOREHOLE GEOPHYSICAL LOGGING

9.2.0 Introduction:

9.2.1 Borehole geophysical logging has been carried out as a part of basemetal exploration program during present exploration in Thakurdiha Area-1 Block. The borehole geophysical logging technique is primarily based on measurements of a series of petro-physical parameters made within a borehole and displayed for study on a continuous depth synchronized chart. The measurements made for variation in physical properties of the formation.

9.3.0 OBJECTIVES:

9.3.1 The main objective of borehole geophysical logging in base metal exploration was to delineate the minaralised zones along with their depths and thicknesses encountered in the boreholes. The parameters recorded are variations in magnetic susceptibility, resistivity, chargeability, conductivity, self potential, density, borehole diameter (caliper) and spectral gamma.

9.4.0 QUANTUM OF WORK:

9.4.1 The multi parametric borehole geophysical logging was undertaken during present investigation by MECL in Thakurdih Area-1 Block. Total 1875 m. of Borehole Geophysical logging was carried out in 15 boreholes for magnetic susceptibility, resistivity, chargeability, conductivity, self potential, density, borehole diameter (caliper) and spectral gamma. Geophysical logging for Boreholes MTB-16 & 17 could not be done due to drilling and other issues. Statement showing the details of borehole geophysical logging carried out by MECL is given below given in **Table 9.1.**

Table No. 9.1
Details of Geophysical Logging Parameters of boreholes drilled by MECL in Thakurdih Area-1 Block

SI. No.	BH NAME	Date of Logging	Drilling Depth (m)	GPL Depth (m)	RS	SP	IP	SG	BD	CL	MS
1	MTB-01	22.06.2024	108	104	Y	Y	Y	Y	Y	Y	Y
2	MTB-02	25.06.2024	105	104	Y	Y	Y	Y	Y	Y	Y
3	MTB-04	06.07.2024	97	95	Y	Y	Y	Y	Y	Y	Y
4	MTB-03	11.07.2024	115	113	Y	Y	Y	Y	Y	Y	Y
5	MTB-05	20.07.2024	113	111	Y	Y	Y	Y	Y	Y	Y
6	MTB-06	10.08.2024	139	136	Y	Y	Y	Y	Y	Y	Y
7	MTB-07	21.08.2024	112	110	Y	Y	Y	Y	Y	Y	Y
8	MTB-08	01.11.2024	215	129	Y	Y	Y	Y	Y	Y	Y
9	MTB-10	19.11.2024	181	179	Y	Y	Y	Y	Y	Y	Y
10	MTB-09	27.11.2024	130	130	Y	Y	Y	Y	Y	Y	Y
11	MTB-11	05.12.2024	170	168	Y	Y	Y	Y	Y	Y	Y
12	MTB-12	19.12.2024	95	94	Y	Y	Y	Y	Y	Y	Y
13	MTB-13	19.12.2024	110	109	Y	Y	Y	Y	Y	Y	Y
14	MTB-14	14.01.2025	200	199	Y	Y	Y	Y	Y	Y	Y
15	MTB-15	15.01.2025	100	94	Y	Y	Y	Y	Y	Y	Y
	Total			**1875**							

NOTE: RS- Short Normal Resistivity, **SP-** Self Potential Suceptability **IP-** Induced Polarisation/ Chargeability, **SG-** Spectral Gamma, BD- Bulk Density, **CL-** Caliper, **MS** – Magnetic susceptibility

9.5.0 LOG DATA ACQUISITION

9.5.1 The borehole geophysical logging by MECL has been carried out using RG (Robertson Geologger) Logger in 15 boreholes in the block. The recording system of Robertson Geologger (R.G.) unit is digital and a printer is attached with a high speed integral thermal plotter. RG-Win logger software is installed in the system for data acquisition, calibration of the tools and replay of logs.

9.5.2 The probes used are i) ELTG (Electrical, Temperature, Gamma Probe, (ii) INPS (Induced Polarisation) Probe (iii) SGAM (Spectral Gamma) Probe and Dual Inducation Sonde, Dual density and Magnetic susceptibility probe.

9.5.3 For recording geophysical logs, each probe is lowered carefully into the borehole and the data recorded while hoisting the probe. Uniform speed of 6 m per minute or less maintained for recording depending on the requirement of specific probe/sonde and vertical scale of 1:200 was maintained for replay/ print of geophysical logs.

9.6.0 DATA PROCESSING AND INTERPRETATION

9.6.1 Well CAD software is used for processing the log data. A composite record of logs was prepared during processing stage. Different litho-units have different characteristic log responses and by combining the same it could be possible to categorize the litho-units as encountered in the boreholes.

9.6.2 The identification of lithology from the geophysical logs is based on the response of physical properties i.e., natural radioactivity (spectral gamma), electrical resistivity, magnetic sucesptibility, conductivity, density, self potential and chargeability (IP) of various formations.

9.6.3 The high chargeability and low resistivity log responses clearly indicate the presence of sulphide mineralization. The resistivity log response is high against quartzite/granite/granite gneiss etc., whereas chargeability response in these formations is mostly very low except when mineralization is dissiminated.

Amphibolite/Biotite Basic schistose rocks given medium to high resistivity and low chargeability response in the absence of any sulphides and low resisvity and high chargeability in case of mineralization. The spectral gamma ray high response is observed mainly in feldspathic quartz bearning schistose rocks. High conductivity is observed in veins rich in sulphides bearing minerals and other potential mineralization zones. Low Magnetic susceptibility is observed in quartzite/granite/granite gneiss etc. and medium magntic susceptibility observed in sulphide zones indicating the paramagnetic character of minerals/ore like pyrite, chalcopyrite etc. whereas high magnetic susceptibility rarely observed for zones bearing pyrrhotite. SP log response has supported at few places for zones corresponding to rich sulphide zones however, mostly the responces are not very indicative in this study area due to intense deformation.

9.7.0 DISCUSSION OF RESULTS

9.7.1 The multi parameter log responses of each borehole have been studied and interpreted separately for identification of litho units and sulphide mineralized zones along with their depths and thickness. The borehole geophysical logs are presented in **Plate-IX-A-IX-E.** Integrated geophysical anolomous zones for mineralisation based on geophysical logging results shown in geological cross sections in **Plate VA(1) & VA(2).**

9.8.0 CONCLUSION

9.8.1 The borehole geophysical logging helped to delineate sulphide minaralised zones along with their depths and thickness. The geophysical logging also enhanced the value of information collected from the boreholes.

CHAPTER-X

10.0.0 EXPLORATION UNDERTAKEN DURING CURRENT INVESTIGATION

10.1.0 Background Information

10.1.1 Thakurdih Area-1 Block has been carved out of MECL's previously explored Thakurdih Charkamara G3 Block and is just adjoining and northern externsion of previously MECL explored Mudadevta-Darkhuli South Jharia G2 Block of Baharagora copper prospect. Keeping in view the potentiality of the prospect and its close proximity to Mudadevta-Dharkhuli & South Jharia G2 Block, the present exploration at G3 stage is warranted in Thakurdih Area-1 block to ascertain the potentiality of the prospect and establish copper ore resources in the area.

10.1.2 Accordingly, Thakurdih Area-1 Block taken up at G-3 level of exploration for Copper and associated minerals to prove the strike and depth continuity of ore zones at 200m spacing interval and establish the Inferred resource ''333'' category of UNFC as per Minerals (Evidence of Mineral Contents) Amendment Rules, 2021. The objectives of present exploration at G-3 stage are as follows.

The exploration work will be carried out in two phases.

Phase-I

1. To carry out Detailed geological mapping on 1:2000 scale supported with surface samples (Bedrock/channel) from the area.
2. To carry out Topographical survey at 2m contour interval in the entire block area.
3. To carry out Trenching work (200 cu.m) along Borehole profile lines to decipher the ore body
4. To carry out drilling of 700m (7 Bhs) at specified locations (400m interval) to confirm the strike and depth continuity of copper ore zones up to 60m vertical depth.

Phase-II (Phase-II work shall be carried out after review of Phase-I work),

5. To carryout drilling 1500m (10 Bhs) in gap areas to confirm the strike and depth continuity of ore zones up to 60m vertical depth at 200 spacing and intersect ore zones at 2nd level (120m vertical depth) on selected borehole profiles.

6. To estimate copper ore resources at G3 level as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules 2015.

10.2.0 Exploration Methodology

10.2.1 The components of G-3 level of exploration for Copper and associated minerals in Thakurdih Area-1 Block to full fill the above-mentioned objective in accordance with MEMC rule 2015 (amended till 2021) as approved by NMET is furnished in the **Table No. 10.1** and the field component wise description has been given in subsequent paragraphs.

10.2.2 The details of the nature and quantum of work proposed Vs an actual achievement is given in **Table-10.1.**

Table – 10.1
Quantum of Work vs. Achievement by MECL in Thakurdih Area-1 Block, Singhbhum Copper Belt, District: East Singhbhum, Jharkhand

Sl.No	Description and Nature of Work	Unit	Target	Achieved
A	**GEOLOGICAL & SURVEY WORK**			
1	Detailed Geological Mapping (1:2000 scale)	Sq. km	4.10	4.10
2	Topographical Survey (2m contour interval)	Sq. km	4.10	4.10
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and block boundary by DGPS	Per Point of observation	17	17
B	**TRENCHING**			
1	Excavation of trenches along Borehole profiles	Cu.m.	200	84 (3 Trenches)
C	**DRILLING**			
1	Drilling up to 300m (Hard Rock)	m	2200 (17 Bhs)	2200 (17 Bhs)
2	Borehole deviation Survey by Multishot Camera	m	2200 (17 Bhs)	2200 (17 Bhs)
3	Borehole Geophysical logging	m	2200 (17 Bhs)	1875 (15 Bhs)
4	Core preservation	m	300	300
C	**LABORATORY STUDIES**			
1	**<u>Chemical Analysis</u>**			
i)	**Surface Samples (Bedrock/Channel) Primary samples**			
	a. for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	30	26
ii)	**Surface Check samples External (10%)**			
	a. for Cu, Pb, Zn, Ni, Co, Mo, Ag & W	Nos	3	3
iii)	**Trench Samples**			
	a. for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	150	48
iv)	**Check Trench Samples**			
	a. for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	15	5
v)	**Borehole Primary samples**			
	a. for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	1050	1011
vi)	**Check samples External (10%)**			
	a. for Cu, Pb, Zn, Ni, Co, Mo & W	Nos	105	101
v)	**Composite samples**			
	a. for Bi, Ge, Te, Sn, As & Cd	Nos.	30	17
	b. for Au & Ag (Fire assay)	Nos.	30	17
	c. for 34 Element analysis by ICP-MS method	Nos.	50	49

Sl.No	Description and Nature of Work	Unit	Target	Achieved
	d. For Fe, SiO_2, Al_2O_3, TiO_2, V_2O_5, Cr_2O_3, MnO, MgO, CaO, S P, & LoI (for magnetite)	Nos.	30	29
D	**Petrological samples (Surface & BH Core Samples)**			
i	Preparation of thin section	Nos	10	10
ii	Study of Thin Section	Nos	10	10
E	**Mineragraphic Studies**			
a	Preparation of polished section	Nos	10	10
b	Study of Polished Section	Nos	10	10
c	Digital Photographs	Nos	10	10
d	Specific gravity determination	Nos	5	5
F	**Geological Report**	Nos	1	1

10.2.3 The Preliminary exploration (G-3 stage) for Copper and associated Minerals in Thakurdih Area-1 Block included Topographical survey (1:2000 scale) and Detailed Geological mapping (1:2000 scale) over 4.15 sq.km. area collection and analysis of 27 Nos. Bedrock samples. Exploratory drilling (2200m in 17 Bhs) along with associated activities i.e. borehole deviation survey & borehole geophysical logging and associated laboratory studies including petrographic, mineragraphic and specific gravity determination studies.

10.2.4 The exploratory drilling work in Thakurdih Area-1 block commenced with the surveying and exploratory drilling work with drilling of Borehole No. MTB-01 on date 23.04.2022 and completed with the closure of Borehole No. MTB-17 on date 09.06.2023. Total 2200 m of diamond core drilling in 17 boreholes achieved in the block area. The allied field-works including borehole fixation and determination of co-ordinates & reduced level of boreholes by DGPS, drilling work and associated borehole deviation survey & borehole geophysical logging, core logging, core sampling etc. were completed simultaneously. The survey work in the block area was carried out with the help of DGPS in WGS-84 Datum. The laboratory studies including chemical analysis and physical analysis i.e. petrographic, mineragraphic and specific gravity studies were carried out simultaneously in MECL and other external laboratories. Component wise Exploration methodology and findings has been described in subsequent paragraphs.

10.2.5 Topographical Survey

Topographical survey has been carried out by DGPS survey instrument over 4.10 sq.km. area in the Thakurdih Area-1 Block located in part of Survey of India toposheet no 73J/11. Topographical survey map used to understand the topography, roads, drainage/water bodies of the mapped area and also used as a base map for the Geological mapping and borehole planning. Available surface features in the block area have been picked up and borehole locations and their RL have been fixed during survey work. Accuracy and quality of surveys used to located drill holes and other locations have been disucussed in Chapter-XI. Topographical map prepared on 1:2000 scale with 2.0m contour interval. However due to size limitations in plotter the map produced on 1:4000 scale. **(Plate No. III)**.

10.2.6 Geological Mapping

Detailed Geological mapping taken up in the total area of 4.10 sq. km on 1:2000 scale. Topographical survey map was used to understand the topography, roads, and drainage of the mapped area and was also used as a base map for geological mapping. For recording precise sample location and to carry out a geological survey, handheld BAP-GPS device has been used. The coordinates had been recorded in UTM coordinate system with WGS 1984 datum. The entire area is occupied by soil cover and is under intense cultivation. Most of the outcrops are obliterated and only few scattered outcrops/exposures are seen at places. Lithological units, attitude of rock types and lithological contacts were mapped and location of old workings have been located. Major litho units mapped in the area are Granite, Quartzites, schistose rocks (Quartz mica schist) and, Metabasic/Amphibolite schist and gravel beds have been mapped ignoring minor variations. Attitude of structural features of rocks, foliation, lineations, fold axis were recorded by brunton compass. Variation of lithologies aling with the structural elements were systematically recorded and the readings and sample locations recorded in the field were plotted and produced in the form of interpreted geological map on 1:2000 scale. However, due to size limitations in plotter the map produced on 1:4000 scale. **(Plate No. IV-A)**. The description of lithology has already been furnished in Chapter No VII.

10.2.7 Surface Sampling (Bedrock)

During the course of geological mapping, total 26 nos. of bedrock chip samples collected from different rock types i.e. Metabasic schist, Garnetiferous quartz mica schist/quartzites etc. to know the content of copper and associated minerals. Bedrock samples were analysed for Cu, Pb, Zn, Co, Mo & W contents. Litho units showing signatures of sulphides presence or suspected for sulphide potential with alternation features were sampled to confirm the existence of mineralization through geochemical abundance. The location of bedrock sampels were recorded with handheld BAP-GPS device plloted on the surface Geological map of the block area (Plate No, IV-A). The sampling technique has been described in detail in the Chapter-XII. The details of bed rock samples and analytical results are provided in **Annexure-I-A**. The location of samples along with Cu value shown on Geological map of Thakurdih Area-1 Block is given in **Plate-IV-A.**

10.2.8 Discussion on Bedrock Sample Results:

Out of 26 nos bedrock samples, only one sample (BR/21) of Garnetiferous mica schist with malachite stains collected from north of Trench MTB/TB in the northern band shown highest cu value of 8.07% Cu value. 21 nos. bedrock samples values range from 0.01% Cu to 0.08% Cu and 4 bedrock samples shown <0.01% Cu value. Only one Samples (BR/01) OF Quartzo-feldspathic schist shown Mo value of 0.19% with 0.02% Cu value. Sample analysis of other elements Pb (<0.01%) Zn (<0.01% to 0.03%) Ni (<0.01% to 0.03%), Co (<0.01% to 0.01%), Mo (<0.01% to 0.01%) & W (<0.01%) are not encouraging.

10.2.9 Trenching

10.2.9.1 Trenching work carried out in the area to trace concealed strike extensions of mineralized zones in the area. Trenching work carried out through hiring one JCB (hydraulic excavtor) to expose the soil covered/concealed lithology and litho contacts, in addition to expose the extension of the mineralized zones in the area. A total 03 trenches (MTB/T5, MTB/TA & MTB/TB) of cumulative 84 cum. (approx.) were made and total 48 samples collected from two trenches (MTB/T5 & MTB/TA). Out of total 200 cu.m. approved trenching work, 84 cu.m. trenching (3 trenches) has

been achieved in the area. Further trenching work could not be done due to thick soil cover (>2m) and forest related issues.

10.2.9.2 Trench No. MTB/T5 was excavated in the southern band to expose the northwestern concealed extension of old working pit (filled with debris). Trench exposed weathered mantel/oxidised schistose rock and granite gniess below the soil cover. Total 20 trench channel samples collected at 0.5m interval and analysed for copper and associated minerals from granite gneiss. Trench MTB/TA & MTB/TB were excavated in the northern band to expose concelaed extention of mineralized zones below soil cover. Trench MTB/TA exposed weathered mantle/oxidised shistose rock and meta basic/amphibolite schist below soil cover. Total 28 trench channel samples collected at 0.5m intervals and analysed for copper and associated minerals from metabasic schist. Trench MTB/TB did not expose any concealed rock /extension of mineralisation due to thick soil cover.

10.2.9.3 Trenches were mapped to understand the disposition of lithology and mineralisation. (Photo-25). Samples were collected by cutting channels from trench walls exposed metabasic schist/mica schistose rocks exposures within the trenches. Channel sampling was adopted to ascertain the variation of grade both along and across the channel. The contact zones and adjoining rocks exposed in trenches were also sampled to know the metal content. Altogether 48 samples collected from two Trenches.

10.2.9.2 The location of trenches were recorded with handheld GPS device and plloted on the Geological map of the block area (**Plate-IV-A**). After examination and completion of sampling work all trenches were closed immediately and land reclaimed. The details of trenches are provided in **Table 10.2** and their locations are shown in **Plate No. IV-A.** Trench profiles are given in **Plate No.IV-C.**

Photo-25: Photograph showing Excavation of Trenches (MTB/T5, TA,TB) in Thakurdih Area-1 Block

10.2.10 Discussion on Trenching Results:

10.2.10.1 All trench samples processed to -200 mesh size and analysed at MECL laboratory for Cu, Pb, Zn, Ni, Co, Mo & W. Trench MTB/T5 indicated two zones with average of 0.15% over 6m thickness and 0.11% Cu over 3.0m thickness in granite. Trench MTB/TA indicated poor values for basemetal mineralisation and values range from 0.01% Cu to 0.05% Cu in metabasic schist. Other associated elements Pb, Zn, Ni, Co, Mo & W are not encouring. Concealed strike extensions of mineralisaed ore bodies could not be traced except MTB/T5 due to thick soil cover and deep seated mineralisation in the area. Details of chemical analysis of trench samples for Cu, Pb, Zn, Ni, Co, Mo & W are given in **Annexure No. I-B.**

Table-10.2 Details of Trenches excavated in Thakurdih Area-1 Block, East Singbhum District, Jharkhand

Sr.No.	Trench No.	Easting & Northing (From)	Easting & Northing (To)	RL (m)	Direction	Length (m)	Width (m)	Depth (m)	Vol. (cu.m.)	Samples (Nos.)	Lithology encountered	Remarks
1	MTB/T5	467868.7785, 2467271.368	467855.9395, 2467252.033	83.50	N30^{0}E, S30^{0}W	14	1	2	28	20	Soil, weathered mantle/oxidised schistose rock, Granite	Two zones: 0.15% X 6m & 0.11% Cu X 3.0m
2	MTB/TA	468640.199, 2467422.612	468620.827, 2467416.632	94.20	N80^{0}E, S80^{0}W	20	1	2	40	28	Soil, weathered mantle/oxidised schistose rock, Metabasic schist/Amp/Mica schist	Values range from 0.01% Cu to 0.05% Cu
3	MTB/TB	468662.175, 2467527.951	468652.805, 2467529.609	97.65	N80^{0}W, S80^{0}E)	8	1	2	16	-	Soil	-
	Total								**84**	**48**		

10.2.11 Exploratory Drilling:

10.2.11.1 During the present G3 exploration program, total 17 boreholes involving total 2200m exploratory drilling (Phase-I &II) carried out as per the approved quantum to prove the strike and depth continuity of copper bearing ore zones at 200m spacing interval approxiately in the Thakurdih Area-1 Block. During previous exploration of MECL (2022-23), drilled total 3 scout boreholes (2 Bhs in northern band & 1 Bh in southern band). The present explroation (G3) has been planned in consideration with previous exploration data. During Phase-I exploration, total 7 boreholes (789m) i.e. MTB-01 to MTB-07 drilled at approx. 400m spacing interval on selected profiles to confirm the strike and depth persistence of copper mineralization in the area up to 60m vertical depth (30mRL) from ground surface. Boreholes interstected multiple zones for copper at 0.2% Cu cut-off value.

10.2.11.2 The outcome of Phase-I drilling was reviewed with 1st TCC-2 of NMET meeting held on 27th Spe, 2024. Based on the positive outcome of Phase-I exploration work and as per the advice of TCC committee Phase-II infilling drilling with total 1411m in 10 boreholes drilled at 200m spacing interval approximately to fill up the gaps. Altogether 2,200m drilling (Phase-I & II) in 17 Boreholes achieved in the block area. All borehole cores were logged and mineralized zones have been identified and samples were prepared and analysed for copper and associated elements (Cu, Pb, Zn, Ni, Co, Mo & W) in MECL Chemical Laboratory, Nagpur.

10.2.11.3 The details of boreholes drilled during present exploration and previous boreholes drilled during previous explroation (2022-23) by MECL in Thakurdih Area-1 Block are summerised in below given **Table No. 10.3** and also given in **Annexure No. III-A** and **III-B** respectively.

Table-10.3
Details of present & previous Boreholes drilled by MECL in Thakurdih-Area-1 Block, Singhbhum Copper Belt, District East Singhbhum, Jharkhand

S.No.	Agency	Phase	Section No.	Borehole No.	RL (m)	Angle from horizontal (°)	Azimuth (°)	Total Depth (m)	Level	Remarks
1	MECL (Present Exploration)	Phase-I	S1	MTB-01	75.22	50	210	108.00	1st	Northern band
2			S7	MTB-02	94.09	50	190	105.00	1st	Northern band
3			S3	MTB-03	82.83	50	180	115.00	1st	Northern band
4			S9	MTB-04	89.54	50	210	97.00	1st	Northern band
5			S18	MTB-05	84.05	60	210	113.00	1st	Southern band
6			S15	MTB-06	79.86	50	210	139.00	1st	Southern band
7			S6	MTB-07	90.88	55	180	112.00	1st	Northern band
8		Phase-II	S18	MTB-08	87.61	60	210	215.00	2nd	Southern band
9			S4	MTB-09	87.34	50	180	130.00	1st	Northern band
10			S9	MTB-10	88.53	50	210	180.00	2nd	Northern band
11			S5	MTB-11	89.41	50	180	170.00	1st	Northern band
12			S13	MTB-12	94.78	50	210	95.00	1st	Northern band
13			S2	MTB-13	79.78	50	180	110.00	1st	Northern band
14			S3	MTB-14	82.01	50	180	200.00	2nd	Northern band
15			S19	MTB-15	83.02	50	250	100.00	1st	Southern band
16			S10	MTB-16	91.39	50	265	88.00	1st	Northern band
17			S16	MTB-17	74.05	50	210	123.00	1st	Southern band
			Sub Total					**2200.00**		
18	MECL (2021-22)	Previous exploration	S8	MTCB-11	93.85	50	210	91.50	1st	Northern band
19			S17	MTCB-09	78.27	50	210	91.00	1st	Southern band
20			S14	MTCB-10	92.64	50	210	85.00	1st	Northern band
			Sub Total					**267.50**		
			Total					**2467.50**		

10.2.11.4 The present exploration targeted to prove the strike and depth persistence of ore zones at 200m spacing interval in Northern band and Southern band and estimate the inferred resource category (UNFC:333) in Thakurdih area-1 Block. Out of 17 drilled Boreholes, total 12 boreholes drilled in the northern band to cover about 2 km cumulative strike length of which 10 boreholes drilled for 1st level intersections (60m vertical depth) and 2 boreholes for 2nd level intersections (120m vertical depth). Likewise, 5 boreholes drilled in southern band to cover about 1.0 km strike length of which total 4 boreholes drilled for 1st level intersections (60m vertical depth) and 1 borehole drilled for 2nd level (120m vertical depth) intersections to check deeper extensions of mineralized zones. Previous 3 nos. scout boreholes drilled mainly for 1st level intersections to test the ground geophysical anomalies in the area during previous explroation.

10.2.11.5 Total 20 boreholes including 17 Bhs (2200m) of present exploration and 03 Bhs (267.50m) of previous exploration totalling 2467.50m drilling data has been clubbed to form an integrated exploration database and the same has been utilised for the evaluation of available copper ore resources in the area.

10.2.12 Discussion on Drilling Results:

10.2.12.1 During the present exploration, a total of 1011 nos. of primary core samples have been generated from 17 boreholes and subjected to analysis for Cu, Pb, Zn, Ni, Co, Mo & W. Total 348 borehole samples indicated Cu values range from minimum 0.2% Cu to maximum 5.29% Cu, 122 samples from 0.51% to 5.29% Cu and 50 samples from 1.01% Cu to 5.29% Cu. Multiple zones for copper intersected in the boreholes at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off. Total 8 samples shown Zn values range from 0.10% Zn to 0.28% Zn In Borehole No. MTB/16, Total 24 samples shown Ni values range from 0.10% Ni to 0.40% Ni in 11 boreholes. Total 43 nos. samples indicated Mo values range from 0.01% Mo to 0.39% Mo in 9 boreholes. Total 4 samples shown Mo values from 0.12% Mo to 0.39% Mo in two boreholes. 2 samples shown Co values of 0.11% Co & 0.13% Co in Borehole No. MTB-08. Sample analysis for Pb, Zn, Ni, Co, Mo & W are not encouraging.

Borehole primary Sample analysis details of present and previous exploration are given in **Annexure-V-A and Annexure- V-B respectively.**

10.2.12.2 Based on the analytical results of individual primary samples, mineralised zones intersected in the boreholes have been identified at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off. All drilled boreholes (17 nos.) intersected mineralized zones for copper at 0.2% Cu cut-off. Multiple zones for copper intersected at 0.2 % Cu, 0.5% Cu & 1.0% Cu cut-offs. Total 85 Nos. mineralized zones intersected in all 20 boreholes (17 Nos. Present Bhs & 03 Nos. Previous Bhs) at 0.2% Cu cut-off value varying from 0.2% Cu to 1.8% Cu over 0.5m to 31.00m thickness. At 0.5% Cu cut-off, total 52 Mineralized zones intersected 16 Boreholes (15 Nos. present Bhs +1 Nos. previous Bh) and grade varies from 0.5% Cu to 1.68% Cu over 0.40m to 7.50m thickness. At 1.0% Cu Cut-of, 30 mineralized zones intersected 13 Boreholes (12 Nos. Present Bhs & 1 No. previous Bh) and grade varies from 1.01% Cu to 2.72% Cu over 0.40m to 6.50m thickness at 1.0% Cu cut-off value. Borehole wise Mineralized Zone details at 0.20% Cu, 0.50% Cu and 1.0% Cu are given in **Annexure VII-A.**

10.2.12.3 In order to check analytical bias if any, external check (10 % of primary samples) samples pertaining to bedrock (3 Nos.), trench (5 Nos.) and drill core samples (101 Nos.) as per approved quantum have been analysed for Cu, Pb, Zn, Ni, Co, Mo & W in External JNARDDC laboratory, Nagpur. The details of External check analysis of samples of Bedrock/trench and borehole core samples for Cu, Pb, Zn, Ni, Co, Mo & W are given in **Annexure –II and VI** respectively.

10.3.0 DATA SPACING FOR REPORTING OF EXPLORATION RESULTS

10.3.1 During present G-3 stage exploration, the boreholes were spaced at 200m interval approximately in Thakurdih Area-1 Block to establish the strike and depth persistence of copper bearing ore zones in northern band and southern band. Total 15 Boreholes drilled at 1st level (60m vertical depth) and 3 boreholes for 2nd level boreholes (120m vertical depth) drilled to check deeper extensions of ore zones on the selected profiles. As per the exploration norms specified for basemetal sulphides

of Cu-Pb-Zn borehole spacing along the strike may be kept as 200-100m or closer interval. In view of geological setting and as per the deliberations and advise by the TCC committee, boreholes drilled at approximately 200m spacing interval during present exploration to estimate the resource. The exploratory drilling work carried out in the area may be adequate to establish copper ore resources at G-3 stage (preliminary exploration) as per the exploration norms of Minerals (Evidence of Mineral Content) Rule-2015 as amended up to 14th Dec, 2021. Hence, estimated resources categorized under "Inferred Mineral Resource" category with 333 code of UNFC in Thakurdih Area-1 Block.

10.4.0 Petrographic Study

Petrographic study was carried out on 10 nos of borehole core samples collected from different litho units intersected in the drilled boreholes. The petrographic study results have been discussed along with the description of rock types in Chapter-VII and petrographic study report has been attached as **Annexure No-IX.**

10.5.0 Mineragraphic Study

Total 10 nos of borehole core samples collected from mineralized zones intersected in the drilled boreholes and subjected to mineragraphic study by preparing polished section. Mineragraphic study results have been disucussed in Chapter-VII and mineragraphic study report has been attached as **Annexure No-X.**

10.6.0 Preparation of Geological Report:

Geological Report has been prepared in Corporate Office, MECL, Nagpur by integration of geological, geochemical and sub-surface drilling data. AutoCAD, ArcGIS & GDM softwares have been used for preparation of various maps. The report has been written using Microsoft word and excel 2021 version.

CHAPTER-XI

11.0.0 LOCATION OF DATA POINTS

11.1.0 ACCURACY AND QUALITY OF SURVEY TO LOCATE DRILL HOLES

11.1.1 The Block area is located near Thakurdih Village, District East Singhbhum, Jharkhand and covered under Survey of India Toposheet No.73J/11. Survey site is located approx.4 Km from Baharagora town near the junction of NH-49 (Kharagpur to Bilaspur) and NH-18 (Dhanbad-Balasore) in East Singhbhum district and situated on the south-east corner of Jharkhand, India. It is 60 km from Kharagpur, 90 km from Jamshedpur, 50 km from Ghatshila, 50 km from Baripada and 200 km from Kolkata. Thakurdih Area-I Block bounded by latitude & Longitude as given below **Table No. 11.1:**

Table No.11.1: Thakurdih Area-I Block cooridnates

SL NO.	*LAT/LONG*	*WGS-84 DATUM (DMS)*
1	*LATITUDE*	22° 18’ 10.6238” N To 22°19’23.4125”N
2	*LONGITUDE*	86° 40’ 34.6370” E To 86° 41’56.5099”E

Area Details.

The Block area is **4.10** Sq. Km.

General.

All the Topographical features & Boreholes (17 Nos.) drilled in Thakurdih Area-I were surveyed in respect of their location with the help by DGPS.

TECHNICAL SPECIFICATION OF DGPS

MAKE	TRIMBLE DGPS
MODEL	R8-S
YEAR	2018

a*) MEASUREMENT ACCURACY*:

- Static Mode
- Horizontal – 3 mm +0.1 ppm or better.

- Vertical – 3.5 mm +0.4 ppm or better.

b) ***SOFTWARE & COMMUNICATION***: Fully functional and Trimble business centre office post processing software.

11.1.2 The survey work has been carried out with the help of DGPS (Make-Trimble DGPS System, Model-R8s). The DGPS Base Station named as BB-2 was established on forest boundary pillar near Jhamboni village which is situated at Northern part Thakurdih Area-I Block. Two numbers of Stations named as BS-1 & BS-2 also established by DGPS, as referenced control Station for further Survey work. The details of Base stations given below **Table No. 11.2**.

Table No. 11.2: The R.L & Coordinate of Base stations determined by DGPS instrument in WGS-84 Datum. (UTM Zone 45 North)

DGPS STATIONS COORDINATES IN WGS-84 DATUM						
	WGS-84 (DMS)		**WGS-84,UTM, ZONE – 45N**			
Station ID	**Latitude**	**Longitude**	**Northing (Meter)**	**Easting (Meter)**	**RL (Meter)**	**Feature Code**
BB-2	N22°19'08.57083"	E86°41'08.06959"	2468175.470	467617.756	88.004	DGPS BASE STATION
BS-1	N22°19'05.88806"	E86°41'06.88568"	2468093.052	467583.714	87.337	DGPS CONTROL STATION
BS-2	N22°19'06.54870"	E86°41'13.52256"	2468112.970	467773.627	89.413	DGPS CONTROL STATION

11.1.3 The location of the major surface features such as Forest boundary, water bodies, Roads, power transmission lines, canal etc. have been picked up during the survey work.

11.1.4 **Baseline Processing Results:**

Topographical survey map with 2.0m contour interval depicting surface features like road, transmission line, canal, water bodies, villages etc. is given as **Plate-III.** Total 17 boreholes drilled by MECL during present exploration i.e. MTB-01 to MTB-17 have been fixed by DGPS survey instrument. Borehole locational co-ordinates & Reduced level (RL) of the borehole are given in **Annexure-III-A** and also shown in **Plate-IV-A.**

11.2.0 QUALITY AND ADEQUACY OF TOPOGRAPHIC CONTROL

11.2.1 The survey work has been carried out with the help of DGPS (Make-Trimble GNSS/DGPS System, Model-R8s) for higher level measurement accuracy. In order to have control on survey work, one base station BB-2, BS-1 & BS-2 has been fixed. After competition of field survey work, raw data was downloaded from Base & Rover of DGPS Instrument and data has been processed through Trimble Business Centre software (TBC) for generating point list summary and Base line processing report. Survey work carried out by the experienced qualified surveyor as per the prevailing standard procedures.

CHAPTER-XII

12.0.0 SAMPLING TECHNIQUES AND SAMPLE PREPARATION

12.1.0 Sampling

12.1.1 Sampling inludes Surface sampling (Bedrock), Trench sampling and drill core sampling. All samples subjected to analysis of Cu, Pb, Zn, Ni, Co, Mo & W by AAS method. Based on cut-off grade criteria parameters mineralized zones identified at 0.2% Cu, 0.5% Cu & 1.0% Cu zones. Composite samples prepared from primary Drill core samples of identified copper mineralized zones zones subjected to 34 Elements by ICP-MS method, additionally 6 elements (Bi, Ge, Te, Sn, As & Cd) analysis by AAS method and for Au & Ag by fire assay method. Additionally, composite samples pertaining to magnetite bearing copper zones subjected to major oxide analysis (Fe, SiO_2, Al_2O_3, TiO_2, V_2O_5, Cr_2O_3, MnO, MgO, CaO, S P & LoI by XRF method.

12.2.0 Nature, quality and appropriateness of sample preparation technique

12.2.1 Sampling methodology adopted for bedrock, trench and borehole core sample is different from each other. The detailed description of sampling techniques discussed in subsequent paragraphs.

12.2.2 Sampling techniques:

A.Bedrock Samples: A total of 26 nos. of bed rock samples (BRS) were collected systematically from varied litho units (meta basalt, quartz chlorite schist, quartzite, quartz vein, old working dump material) exposed in the study area. The Bedrock chip samples were collected by chipping exposed rock units in 1 m radius by sledge hammer (5kg) and chisel. During the sampling, surface was properly cleaned and each sample was collected in separate plastic bags. After collecting each sample, all the instruments were properly cleaned before proceeding for next sample collection to maintain quality and to avoid contamination. The sample locations are plotted on geological map (**Plate No-IV-A**). First, each Bedrock sample of around 2 kgs collected from the field was crushed. After crushing, the crushed samples were mixed

thoroughly and reduced the sample size to 500 gm by coning and quartering. This representative samples were powdered and completely passed through (-) 200 mesh size sieves from which 100 gm sample packed in polythene sample pouch at Sampling unit, Kendadih and sent to MECL Chemical Laboratory, Nagpur for chemical analysis for Cu, Pb, Zn, Ni, Co, Mo & W by AAS method.

B. Trench Samples: Trench samples were collected from the walls of trench sections by cutting channels/groves. The channelling was done cutting across the strike direction of the zone by using proper hammer and chisel. The sampling zones were marked properly by measuring tape and white marking powder. Channel samples were collected with an interval of 1m based on the type of mineralization/lithology Chipped samples were collected along the channel cut and packed in polythene sample bags with proper labelling. While sampling, due care was taken to avoid contamination of samples. The trench locations are plotted on geological map (**Plate No-IV-C**). A total of 48 Nos. channel samples were collected from two trenches (MTB/TA & MTB/T5) and processed -200 mesh size at sampling unit, Kendadih and sent to MECL Chemical Laboratory, Nagpur for chemical analysis for Cu, Pb, Zn, Ni, Co, Mo & W by AAS method.

C. Drill Core Samples: The sampling and analysis have been carried out for entire mineralized zones/length intersected in the boreholes drilled on visual basis. The primary samples have been marked in the mineralized zones intersected in the borehole based on type and concentration of mineralization /lithology and in general the sample length has been kept as 0.50 m which varied in some instances because of variation in lithology and type and concentration of mineralisation. The mineralized core has been split longitudinally into two equal halves in such a way that the concentrations of ore minerals are uniform in both the equal halves. One half of the core sample has been crushed to (–) 200 mesh size and another half kept in the core box for future reference. By progressive coning and quartering and repeatedly mixing the sample has been reduced to 600 grams. The representative sample completely passed through (-) 200 mesh size sieves from which 100 gm sample packed in polythene sample pouch at Sampling unit, Kendadih and sent to MECL Chemical Laboratory, Nagpur for chemical analysis for Cu, Pb, Zn, Ni, Co, Mo & W by AAS method.

12.3.0 Quality control procedures adopted during sampling

12.3.1 The samples have been prepared under the supervision of geologist and qualified sampling technician. During the sampling, surface was properly cleaned and each sample was collected in separate plastic bags. After collecting each sample, all the instruments were properly cleaned before proceeding for next sample collection to maintain quality and to avoid contamination. After collecting the chip samples all samples properly packed in polythene samples bags with proper labelling.

12.3.2 Further measures have been taken during sieving and pounding/grinding of samples. The sieve and containers have been cleaned after processing of each sample to avoid contamination and measures have also been taken to avoid loss of powder in air. The prepared/processed samples sent to MECL chemical laboratory, Nagpur. All measures taken for packing and transportation of samples. It has been thoroughly checked that none of the sample bags were damaged during transportation.

12.4.0 Measures taken to ensure that the sampling is representative of the in-situ material collected.

12.4.1 It is very important to submit the representative sample of collected material for geochemical analyses. Bed rock, trench and drill core samples quantity has been reduced by coning and quartering method after thoroughly mixing to maintain the homogeneity of the samples. All measures taken that samples remain representative in nature of in situ material collected.

12.5.0 Appropriateness of grain size

12.5.1 In accordance with the standard sampling procedures, it has also been observed that smaller the particle size, higher the homogeneity of the sample as well as higher the dissolvability during the chemical analysis. As per the standard practice adeopted for basemetal mineralisation in Singhbhum Copper belt, Bedrock, trench and drill core samples are generally pounded to (-) 200 mesh size for analysis of Copper and associated minerals.

CHAPTER-XIII

13.0.0 DRILLING TECHNIQUE AND DRILL SAMPLING EMPLOYED

13.1.0 DRILLING TYPES AND DETAILS

13.1.1 During the present investigation, MECL drilled total 17 no of boreholes involving total 2200m diamond core drilling along with associated borehole deviation survey and borehole core logging, sampling and laboratory studies in the block area. The details of boreholes drilled by MECL are given in **Annexure-III-A** and summary of borehole is given in **Table-10.3**. of **Chapter-X.**

13.1.2 Drilling operation was carried out by deploying three hydrostatic drill rigs KDR-600 (MEC-391), KDR-600 (MEC-394) and KDR-1000 (MEC-374) and three conventional wireline drill rigs RD-100 (MEC-354), RD-60 (MEC-351) and RD-60 (MEC-350) during Phase-I & Phase-II drilling operation in Thakurdih Area-1 Block. Rotary wash type of wireline drilling method was undertaken. Diamond impregnated NQ bit (outer diameter 75.7 mm and inner diameter 47.6 mm) had been used during drilling operation. At the starting few meters, all the boreholes have been used with HX and NX casing to cover soil cover and loose friable weathered formation. All the precautions had been taken to maintain quality of drilling and achieve maximum core recovery. The core recovery varies from minimum 96.36% and maximum 98.70% with an average core recovery is about 97.53%. The average core recovery in the mineralized zones is about 93% which is satisfactory. The quality of drilling was ensured during the operation. After closure, all the boreholes have been properly plugged and sealed with cement pillars.

13.1.3 All the inclined exploratory boreholes drilled by MECL in the block area have been surveyed to ascertain deviation in azimuth and in the borehole path, if any, with the help of multi shot deviation camera (**Photo-26**). The specifications of the deviation survey instrument are given in **Table-13.1.**

Table-13.1
The specifications of the Deviation Survey Instrument

1	Name of instrument	Borehole deviation survey instrument
2	Name of manufacturer (model and make)	Eastman Company Private Ltd (Germany)
3	Parameters	Inclination and azimuth angle
4	Inclination range	0 to 90 degrees
5	Azimuth range	0 to 360 degrees from north
6	Inclination resolution	NA
7	Azimuth resolution	NA

13.1.4 The boreholes have been washed properly after closing and before pull down the deviation camera and after that drill strings have been pulled out from the borehole.

13.1.5 Deviation survey instrument is based on the concept of continuous recording of azimuth and inclination when it is lowered into the borehole. After assembling the deviation survey instrument, it is lowered into the borehole so that its top coincides with the ground level. The instrument is lowered to desired depth i.e., 6.00m interval and keep it stationary for half a minute in order to record stabilized readings required. Several readings have been obtained in this way at regular depth interval i.e., 6.00m till the closure depth of the bore hole. Once the survey instrument reaches the closure depth, it is pulled out of borehole and transfer the recording in a system.

13.1.6 The initial readings are generally erratic due to magnetism on account of casing lowered in the borehole and hence not considered for deviation data plotting. The borehole deviation data is plotted on the geological cross section with the help of GDM software. The borehole wise deviation data obtained/determined is presented as **Annexure-III- C.**

Photo-26: Borehole deviation survey instrument

13.2.0 WHETHER CORE AND CHIP SAMPLE RECOVERIES HAVE BEEN PROPERLY RECORDED AND RESULTS ASSAYED

13.2.1 The core samples have been recorded properly and the details run wise litholog and summarized litholog for boreholes drilled by MECL are given in **Annexure- IV- A** and **Annexure- IV- B** respectively. The logging of run wise core as well as the cuttings from boreholes have helped in discerning the physical characters like colour, shape, size and nature of mineralisation as well as texture, structural features such as joints, fractures, foliations etc. and their attitude with respect to core axis and identification of different litho units.

13.2.2 The mineralised zones/length recorded during the geological core logging has been subjected for sampling and analyses for copper (Cu) and associated elements. The primary sample had been marked in the mineralized zones intersected in the borehole based on ore type and concentration of mineralisation/lithology. In general, the sample length has been kept at 0.50 m interval which varied in some instances because of variation in lithology and type and concentration of mineralisation. The details of analysis of primary borehole core samples for Cu, Pb, Zn, Ni, Co, Mo & W are given in **Annexure-V-A.**

13.3.0 MEASURES TAKEN TO MAXIMIZE SAMPLE RECOVERY AND ENSURE REPRESENTATIVE NATURE OF THE SAMPLES.

13.3.1 The short runs were drilled as per necessity so that optimum core recovery is maintained. The core recovery in the mineralized zones is about 93% which is satisfactory. Whenever core recovery is less, the grade of the recovered portion has been extrapolated over the non-recovered section. The quality of drilling was ensured during the operation.

13.4.0 WHETHER THE RELATIONSHIP EXISTS BETWEEN SAMPLE RECOVERY AND GRADE

13.4.1 The core recovery in the mineralized zones is about 93% approximately which is satisfactory. The entire mineralized zones / length recorded during the geological logging on visual basis have been analysed for copper (Cu) and associated elements and the copper ore zones identified at 0.20%, 0.5% & 1.0% Cu cut-off grade. As the recovery in mineralized zones is consistently high, it is unlikely to have any significant impact on the grade estimation.

13.5.0 CORE LOGGING

13.5.1 The drilled core recovered from the boreholes has been logged systematically to demarcate various litho-units. The core recovery from the drilled boreholes varies from minimum 91.95% to maximum 98.70% with an average core recovery percentage of all the boreholes is about 96.36%. The logging of run wise core as well as the cuttings from boreholes have helped in discerning the physical characters like colour, shape, size and nature of copper mineralisation as well as texture, structural features such as joints, fractures, foliations etc. and their attitude with respect to core axis and identification of different litho units. Besides, the qualitative analytical data have helped in delineating the ore and non-ore litho units.

13.5.2 The borehole logging was carried out run-wise for boreholes drilled by MECL. Since the variation of litho units in schistose rock in down-hole direction and run lengths were short, thus consolidated / summarized litholog for all the boreholes were prepared with all details to show the litho units as graphic representation. The grouping of litho units intersected in the boreholes was done as Top Soil, Oxidised/Weathered schistosed rock, Metabasic schist, Garnetiferous Qtz-Chl-Mica schist, Quartzite/Micaceous Quartz schist/ Micaceous Quartz-feldspathic schist ± Garnet ± Kyanite, Granite Gneiss, Quartz feldspathic amphibole -biotite - chlorite schist (Altered and silicified basic schist)±Qtz vein, Quartz biotite chlorite muscovite /sericite schist ±Amphibole (Altered Basic schist?), Quartz feldspathic amphibole -biotite - chlorite schist (Altered basic schist)± Garnet, Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?), Amphibolite/Basic intrusive?, Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized basic schist), Chlorite Biotite Schist/Chlorite Schist/Garnetiferous Chlorite Schist/Altered Chlorite Schist, Biotite Quartz Schist/ Itercalation between biotite-quartz schist and biotite quartz schist and biotite chlorite schist/ Altered Biotite Quartz schist, Quartz Biotite Chlorite Schist/ Quartz Biotite Schist/ Quartz Schist/ Qtz-Felspathic-Bio-Chl Schist/Intercalation between Qtz-Bt rock and granite rock.. Detailed borehole core logging is given as **Annexure-IV-A** and summerised borehole logs given as **Annexure-IV-B** respectively. For ease of conveniance, broadly these intersected litho units further grouped into Soil cover (Aluvial/slopewash), Metabasic schist/Amphibolite mica schist/Basic intrusive, Gartnetiferous/Kyanite quartzite/Feldspathic quartz mica schist, Granite/Granite geniss and litho projections shown in geological cross sections (**Plate No. VA, VB, VC**). Lithology intersected in the drilled boreholes projected on surface along with mineralised zones and shown as **Plate No. IV-B**.

CHAPTER-XIV

14.0.0 SUB-SAMPLING TECHNIQUES AND SAMPLE PREPARATION

14.1.0 WHETHER CUT OR DRAWN AND WHETHER QUARTER, HALF OR ALL CORE TAKEN

14.1.1 The details of sampling procedure described in previous Chapters No. X & XII. During the sample preparation the borehole core sample has been split longitudinally into two equal halves with the help of hydraulic core splitter. One half has been preserved and the other has been crushed for the preparation of primary samples at -200 mesh size. Sample has been homogenized by proper mixing and coning quartering as per the standard sampling procedure.

14.2.0 NATURE, QUALITY AND APPROPRIATENESS OF THE SAMPLE PREPARATION TECHNIQUE

14.2.1 The details of sampling procedure and techniques for bedrock, trench and borehole core primary samples described in previous chapters No. X & XII. The composite samples have been prepared after delineation of mineralised zones at 0.2% Cu and 0.5% Cu cut-off grade considered for resource estimation. The powdered primary samples from delineation of mineralised zones at required thickness and cut-off grade, have been mixed in proportion of their extrapolated length to prepare the composite samples. The samples have been mixed thoroughly and required quantity of samples have been drawn by through mixing and coning and quartering. Total 49 Nos. composite samples (include 0.2% Cu & 0.5% Cu cut-off ore zones) prepared for 34 Element analysis by ICP-MS method, 17 Nos. samples (0.5% Cu cut-off zones) for 6 element analysis ((Bi, Ge, Te, Sn, As & Cd) by AAS method and Au & Ag by fire assay method. Additionally, 39 nos. composite samples prepared from magnetite bearning copper ore zones for major oxide analysis (Fe, SiO_2, Al_2O_3, TiO_2, V_2O_5, Cr2O3, MnO, MgO, CaO, S, P & LoI by XRF method. Prepared composite samples have been sent to MECL Chemical laboratory.

14.3.0 QUALITY CONTROL PROCEDURES ADOPTED

14.3.1 Standard sampling procedure in supervision of qualified sampling technician has been adopted and the samples have been prepared at project sampling unit, Kendadih. Bedrock (26 Nos.) Trench samples (48 Nos.) and Borehole core primary samples (1011 Nos.) analysed for Cu, Pb, Zn, Ni, Co, Mo & W by AAS method in MECL Chemical laboratory, Nagpur. All qualtity control procedures adopted while sample preparation and analysis as per the standard operationg procedures. To check the sampling and analytical bias if any, a total of 3 Nos. of bedrock, 5 Nos. of Trench and 101 numbers of external checks (10% of primary samples) have been analysed in external JNARDDC Laboratory, Nagpur for analysis of Cu, Pb, Zn, Ni, Co, Mo & W and found no major differences between two laboratories.

14.4.0 MEASURES TAKEN TO ENSURE THAT THE SAMPLING IS REPRESENTATIVE OF THE IN-SITU MATERIAL COLLECTED

14.4.1 All the primary samples have been marked and prepared from copper mineralised cores. During the preparation of primary samples, the mineralised cores have been studied meticulously and samples have been marked properly. These mineralised cores are subjected for preparation of primary samples as per the sampling procedure for primary samples are described in Chapter X & XII. The composite samples have been prepared from the powdered primary samples after delineation of mineralised zones at required thickness and cut-off grade. The proper marking of primary samples from drilled cores and following standard procedure for primary and composite sample preparation shows the representative samples have been collected from the in-situ materials.

14.5.0 WHETHER SAMPLE SIZES ARE APPROPRIATE TO THE GRAIN

14.5.1 The primary samples have been prepared (–) 200 mesh size and all the other samples have been prepared from primary samples. As per the previous studies in and

surroung the area, the (–) 200 mesh size is appropriate for the liberation of mineral grains and analysis for copper (Cu) and associated elements in the block area.

CHAPTER-XV

15.0.0 QUALITY OF ASSAY DATA AND LABORATORY TESTS

15.1.0 THE NATURE, QUALITY AND APPROPRIATENESS OF THE ASSAYING AND LABORATORY PROCEDURES

The chemical analysis of primary samples for copper (Cu) and associated elements has been carried out in Chemical Laboratory of MECL. The analysis has been carried out by Atomic Absorption Spectroscopy (AAS) method by Analytical Jena ZEEnit model instrument. The Standard Operating Procedure (SOP) for the Determination of Copper (Cu) and associated elements using AAS is given below.

15.1.1 Analysis of Copper by AAS method.

Reagents and Standards

- Aqua Regia – 50-60 ml (Prepared using AR Grade Acids)
- Stock standards for copper – 1 ml of solution = 1 mg of copper (1000 ppm).

Procedure

1. Weigh 0.3 – 1.0 gm of the sample in a 250 ml beaker and add 50-60 ml aqua regia.
2. Cover the beaker with watch glass, and digest on hot plate for 5-6 hrs till syrup like solution is formed.
3. After digestion, add 10-20 ml water and heat for 5-10 minutes and filter by Whatman grade – 40 filter paper, in 250 ml volumetric flask.
4. Wash the residue with hot distilled water for four to five times.
5. Add the washings to the filtrate and makeup the volume up to 250ml.
6. Aspirate the sample solution in AAS using Air-Acetylene flame mode with following settings-

   (AAS to be calibrated before testing samples with at least 10 calibration points)

   - Wavelength - 324.7 nm,
   - Slit width - 0.5 nm,
   - Lamp current - 4.0 mA
   - Instrument mode - Absorbance

7. Read the absorbance and concentration on atomic absorption spectrophotometer (Analytical Jena ZEEnit model).
   (Run CRM and repeat samples after every 20 samples)

Calculation

$$\text{copper in \%} = \frac{\text{Cu ppm reading x volume (ml) x 100 x Dilution factor}}{\text{1000000 x weight of sample (gm)}}$$

15.1.2 Analysis of Gold (Au) by fire assay method.

Samples are prepared as weighted 50 fusion pots in a batch. Prior to using fusion pots for weighing a visual inspection inside the fusion pot is performed. The sample is weighed 50g in a fusion crucible containing flux of Lead monoxide, sodium carbonate, borax, silica, silver nitrate fused in a preheated fusion furnace 1050^0C for 45 minutes and the molten melt is poured into a cast iron mold. The lead botton is separated from the slag and oxidized in a cupellation furnase keeping in a cupel for one hour. The obtained Prill is cooled and digested in aqua regia and aspirated in Atomic Absorption Spectrometer for ppm levels.

15.1.3 Methodology of Chemical Analyses by ICP-MS

Chemical Laboratory, MECL, Nagpur is having Agilent make ICPMS 7800 model for elemental analyses. ICP-MS (inductively coupled plasma-mass-spectrometry) is a technique to determine low-concentrations (ppb = parts per billion = µg/l) and ultra-low-concentrations of elements (ppt = parts per trillion = ng/l). ICP-MS can also measure elements at concentrations up to 100s or even 1000s of parts per million (ppm). Accuracy and precision (standard deviation) for 34 of these elements is either excellent (<5%) or good (5–10%).

15.1.4 SOP for 34 Element Analysis by ICP-MS Procedure:

1. **Acid Digestion Method**

a) **Weigh and Add Acids:** Place ~0.1–0.5 g of powdered sample in a PTFE vessel. Add ~3 mL concentrated HF + 1-2 mL concentrated $HClO_4$. Cover loosely with a PTFE lid or watch glass.

b) **Heat to Dryness:** Gently heat at 150–200 °C under the hood. The acid will react, dissolving most matrix; white fumes indicate silica removal. Continue heating until nearly dry (residual melt).

c) **Evaporate to Near Dryness:** Carefully evaporate to a small volume, then add ~1–2 mL concentrated HNO_3 and heat again to remove HF residues. If fuming ceases, add fresh $HClO_4$ (0.5–1 mL) and repeat to ensure all organics are oxidized.

d) **Re-dissolve:** Cool the vessel and add ~2 mL concentrated HCl or aqua regia (HCl : HNO_3 3:1) to re-dissolve any residue. Then dilute with 5–10 mL 2% HNO_3, transfer to a 50–100 mL volumetric flask, and dilute to volume with ultrapure/Millipore water.

2. ICP-MS Calibration and Tuning

Inductively Coupled Plasma Mass Spectrometer (ICP-MS) instruments must be warmed up and tuned before each run. Start the plasma and allow ~30 min stabilization. Use a commercial tune solution to adjust torch position, nebulizer gas flow, sample depth, lens voltages, and RF power. Optimize for high count rates and low oxide formation.

a. Calibration: Prepare multi-element calibration standards covering the expected concentration range (e.g. 0.1–100 µg/L). Include a calibration blank and at least 4 non-zero. It is common to match the acid matrix of standards to samples (e.g. 2% HNO_3 + a few % HCL).

b. Sample Introduction and Data Acquisition

Introduce samples via an auto sampler and nebulizer (typically concentric or cyclonic) into the plasma.

c. Target Elements (34-Element Suite)

The 34-element geochemical ICP-MS suite typically includes major, minor and traces metals plus all rare earths. Report elemental concentrations in appropriate units (e.g. ppm or mg/kg) on a dried sample basis.

3. Quality Control (CRMs, Blanks, Duplicates)

a) **CRM:** Digest and analyze at least one certified reference material (geochemical standard of similar matrix) as an unknown. Recoveries should be within ~10% of certified values.

b) **Blanks:** Process method blanks (all reagents, no sample) through digestion and analysis to detect contamination. Instrument blanks (2% HNO_3) should also be run.

c) **Duplicates/Replicates:** Include sample duplicates or matrix spike duplicates to assess precision. Relative percent difference (RPD) between duplicates should typically be <10–20%.

d) **Calibration Checks:** Run a second source standard or CCV to check calibration drift. Internal standard signals should remain within ~80–120% of initial intensities.

15.2.0 NATURE OF QUALITY CONTROL PROCEDURES ADOPTED

15.2.1 The standard procedure of quality control has been adopted during the chemical analysis in Chemical laboratory, MECL, Nagpur which includes

(i) Analysis of Certified reference materials/measurement standards
(ii) Analysis of blind samples
(iii) Use of QC samples and control charts
(iv) Analysis of blank samples
(v) Analysis of spiked samples
(vi) Analysis in duplicate samples

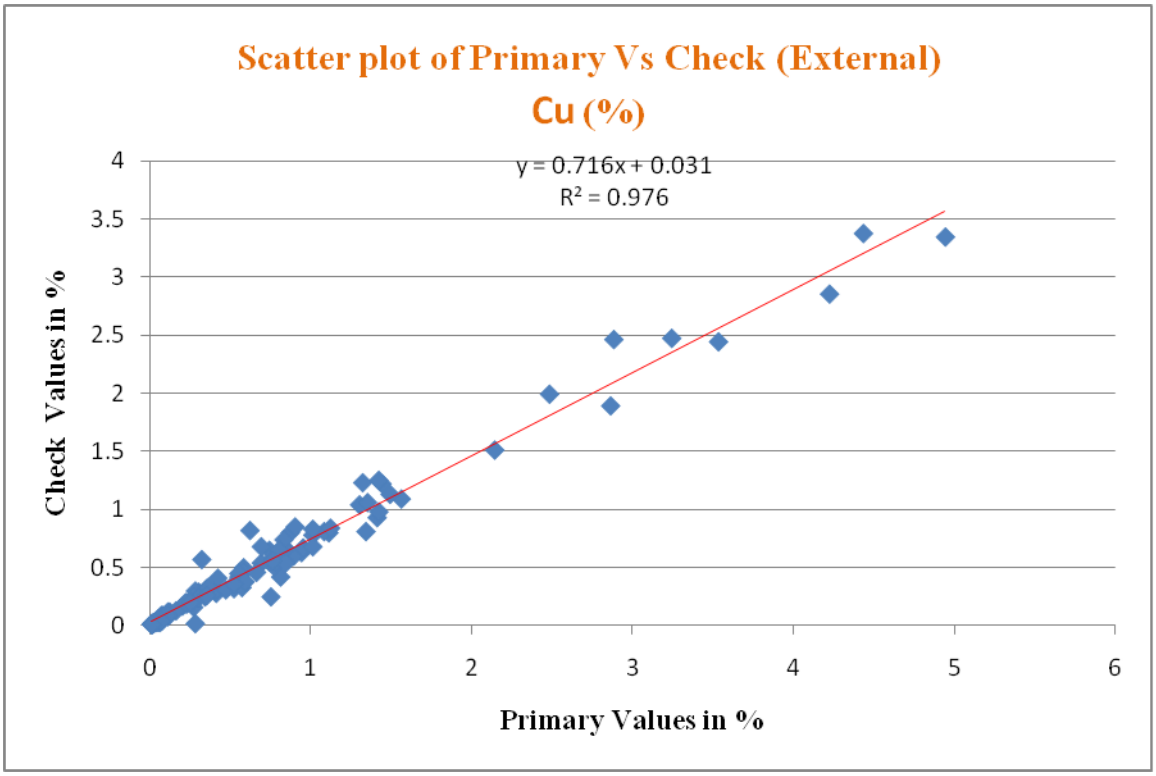
15.3.0 CHECK ANALYSIS FROM THIRD PARTY NABL ACCREDITED LABORATORY

15.3.1 In accordance to the standard practice of quality assurance and quality control, total 3 nos. of bedrock external samples (10% of primary bedrock samples), 5 nos. of channel external samples (10% of primary trench samples) and 101 Nos. of primary samples (10% of primary Borehole core samples) have been analysed as external check samples for Cu, Pb, Zn, Ni, Co, Mo & W in external laboratory i.e. M/s JNARDDC Laboratory, Nagpur. In order to assess the reliability of homogeneity of primary samples and repeatability of their chemical analysis with primary samples results of MECL laboratory. External check sample results of M/s JNARDDC Laboratory has been compared with primary sample results for Cu, Pb, Zn, Ni, Co, Mo & W and found no major or significant difference between the results. The details of Primary and External Check samples for bedrock, trench and borehole core samples are given in the **Annexure-II and VI respectively.**

15.3.2 The comparative studies of primary Vs External check analysis of borehole core samples for Copper (Cu) is given in **Table-15.1** and scatter plots is represented as **Text Figure- 8.**

Table-15.1: Comparison of Primary vs External Check Samples for Copper

SL. NO.	Comparision Index	Primary Analysis for Cu	External Check Analysis for Cu
1	No. of Samples	101	
2	Arithmetic Mean	0.796	0.602
3	Standard Deviation	0.959	0.695
4	Standard Error of Mean	0.095	0.069
5	Variance	0.919	0.483
6	Mean of Deviation	0.194	
7	Correlation coefficient	0.988	
8	Paired T value	6.669	
9	F test value	1.902	



Text Figure-8: Scatter Plot of Primary Vs Check (External) Analysis of Cu

15.3.3 The data set for primary Vs External check analysis comprises 101 pairs of borehole core samples. **Table-15.1** shows that the difference in arithmetic mean, standard deviation, of primary and exterrnal check samples are not high. The value of R^2

given in scatter plot (Text Figure – 8) is 0.976, which is close to 1.00 and indicates a good correlation in primary and external check analysis.

15.3.4 The statistical and comparative studies for primary Vs external check samples shows the repeatability of the analysis for Cu i.e. insignificant differences between primary and exterrnal check analysis, which support the reliability of sampling procedure.

15.4.0 SECURITY AND CHAIN OF CONTROL OF SAMPLES SHOULD BE CLEARLY MENTIONED

15.4.1 The samples have been prepared at Project camp (Kendadih) sampling unit with proper lebeling and tag and samples sent to chemical laboratory, Nagpur. At the sampling unit, standard procedures have been followed and all the precautionary measures have been taken to avoid the contamination. All samples prepared under the supervision of qualified sampling technician. The samples have been transported from Kendadih project site to Chemical laboratory, Nagpur with proper sealing of sampling bags and the same has been verified in Chemical laboratory. Further the remaining half spilt core samples preserved with sample tags for any future reference under the custody of the company.

CHAPTER-XVI

16.0.0 MOISTURE

16.1.0 METHOD OF DETERMINIATIONOF MOISTURE CONTENT

16.1.0 Mositure content not determined.

CHAPTER-XVII

17.0.0 BULK DENSITY

17.1.0 METHOD OF DETERMINIATION AND RESULT

17.1.0 During present exploration, total 5 samples collected from mineralised portions intersected in the boreholes subjected to specific gravity determination. Specific gravity determinations have done by Walker's Steel Yard Balance method. The average specific gravity for copper bearing mineralized zones determined as 3.16 based on 5 borehole core samples **(Annexure-XI).** However, Thakurdih Area-1 Block is just adjoining to the Mudadevta-Darkhuli & South Jharia G2 block which was previously explored by GSI and subsequnetly by MECL (2021-22) at G2 stage for copper and associated minerals. The average specific gravity for copper bearing mineralized zones was determined as 3.00 based on total 25 nos. borehole core samples. Hence, in view of a greater number of specific gravity samples, similar type of mineralization the average specific gravity for copper ore zones for 0.2%, 0.5% & 1.0 Cu cut-off grade has been taken as 3.00 for the resource estimation purpose in Thakurdi Area-1 Block area.

CHAPTER-XVIII

18.0.0 BENEFICIATION STUDIES AS MAY BE REQUIRED

18.1.0 DETAILS OF BENEFICIATION STUDIES

18.1.0 Beneficiation studies have not been carried out in the present exploration as it was out of the scope of the approved quantum of work.

CHAPTER-XIX

19.0.0 RESOURCE ESTIMATION TECHNIQUES

19.1.0 DISCUSSION ON DATA DENSITY TO ASSURE CONTINUITY OF MINERALISATION

19.1.1 Thakurdih Area-1 block is located in the southeastern tip of the Singhbhum Shear Zone and forms the part of Baharagora copper prospect. The Baharagora area comprises a number of blocks and the area was previously explored by GSI and MECL. The present Thakurdih Area-1 Block has been carved out from previously MECL (2022-23) explored Thakurdih Charakmara (G3) block. Moreover, the block is located just adjoining to the Mudadevta-Darkhuli South Jharia G2 block which was previously explored by MECL (2021-22) at G2 stage.

19.1.2 Thakurdih Charakmara (G3) Block consist of total four sub-blocks namely Charakmara, Thakurdih Area-1, Area-2 and Area-3. MECL previous exploration work in Thakurdih Charakmara area comprises of Integrated geophysical survey (I.P. Resistivity and Magnetic) in Thakurdih Area-1, 2 and 3 sub blocks and exploratory drilling of 1497.50m in 12 boreholes in Charkamara, Thakurdih Area-1 and Area-3 sub blocks. Total 3 test boreholes (267.50m) drilled in Thakurdih Area-1 sub Block drilled by MECL during previous exploration intersected considereable mineralized zones for copper. A total **128689** tonnes (**0.13 million tonnes)** of net-geological insitu resource with **average grade of 0.39% Cu** over an average thickness of 3.23m estimated and placed under "Reconnaissance Resource" 334 category of UNFC and further work at G3 stage was recommended in Thakurdih Area-1 sub Block.

19.1.3 Keeping in view the potentiality of the prospect and based on the previous work carried out in the area, the present G3 stage exploration has been executed by MECL in Thakurdih Area-1 Block, to prove the strike and depth continuity of copper mineralization and to estimate the resource under inferred category (UNFC:333) as per the approved quantum of work.

19.1.4 During the present G3 stage exploration, total 2200m drilling in 17 boreholes drilled to prove the strike and depth persistence of copper bearing mineralized zones in line with previously drilled MECL boreholes (3 Bhs) at approximately 200m spacing interval. Total 12 boreholes drilled in northern band (MTB-01, 02, 03, 04, 07, 09, 10, 11, 12, 13, 14 & 16) and 5 boreholes drilled in southern band (MTB-05, 06, 08, 15 & 17). Out of 17 boreholes, 15 Boreholes targeted for 1st level (60m vertical depth) ore zone intersections, and 3 boreholes for 2nd level (120m vetical depth) intersections to check for deeper extensions of mineralization. The present exploration at G3 stage has confirmed strike and depth contuinity of mineralization in the area.

19.2.0 WHETHER PREVIOUS EXPLORATION DATA HAS BEEN USED

19.2.1 Previous exploration data of MECL (2022-23) pertaining to 3 boreholes (total 267.50m) in the area has been taken in to consideration along with recently drilled boreholes of present exploration for geological interpretation, correlation and evaluation of copper ore resource. Details of present and previous Boreholes and chemical analysis of samples are given in **Annexure No. III-A, III-B, V-A and V-B.** All the previous and present drilling data have been combined to form an integrated exploration database and has been used for the evaluation of copper ore resources subject to the fulfillment of cut-off grade criteria parameters set for resource estimation.

19.3.0 THE NATURE AND APPROPRIATENESS OF THE ESTIMATION TECHNIQUE(S) APPLIED AND KEY ASSUMPTIONS

19.3.1 The copper ore resource of the block area has been estimated by "**Geological cross-section Method**" as well as "**Level plan Method**". However, the "Geological cross section method shall be considered as principal method for resource estimation and resources by Level plan method (as secondary method) has been estimated to validate the resource estimated from Geological Cross Section Method. Certain axiomatic assumptions are inherently involved in estimation of overall grade and resource of the deposit, which are given below.

1. The rule of gradual change or law of linear function has been applied (Constantine C. Popoff, 1966) along with the rule of nearest points for application of influence of half way between successive boreholes.

2. The boreholes which are not intersecting any mineralisation have been considered as negative boreholes and completely eliminated from resource estimation.

3. The thickness and grade of each mineralized zone intersected in the borehole have been considered as it is for the entire influence area of the borehole.

19.4.0 THE BASIS FOR CLASSIFICATION OF THE MINERAL RESOURCES

19.4.1 During present G-3 stage exploration, the boreholes were spaced at 200m interval approximately in Thakurdih Area-1 Block to establish the strike and depth persistence of copper bearing ore zones in northern band and southern band. Total 15 Boreholes drilled at 1st level (60m vertical depth) and 3 boreholes 2nd level boreholes (120m vertical depth) drilled to check deeper extensions of ore zones on selected profiles. As per the exploration norms specified for basemetal sulphides of Cu-Pb-Zn borehole spacing along the strike may be kept as 200-100m or closer interval. In view of geological setting and as per the deliberations and advise by the TCC committee, boreholes drilled at approximately 200m spacing interval during present exploration. The exploratory drilling work carried out in the area may be adequate to establish copper ore resources at G-3 stage (preliminary exploration) as per the exploration norms of Minerals (Evidence of Mineral Content) Rule-2015 as amended up to 2021. Hence, estimated resources in the Thakurdih Area-1 Block may be e categorized under "Inferred Mineral Resource" category with 333 code of UNFC.

19.5.0 THE ASSUMPTIONS MADE REGARDING RECOVERY OF BY PRODUCTS

19.5.1 The present exploration (G3) has been carried out for copper ore and associated minerals in Thakurdih Area-1 Block. Borehole core primary samples collected from mineralized zones at regular intervals (generally 0.5m) analysed for Cu, Pb, Zn, Ni, Co, Mo & W in MECL laboratory, Nagpur. The copper bearing ore zones have been delineated at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off on the basis of the primary

sample analysis. Composite samples have been collected from the identified zones to check for any associated mineral content.

19.5.2 **34 Element Analysis by ICP-MS:** Total 49 nos of composite samples collected from at 0.5% Cu cut-off (17 samples) and 0.2% Cu cut-off (32 samples) and analysed for 34 elements by ICP-MS method in MECL Laboratory, Nagpur.

Analytical results of 17 Nos. composite samples pertaining to 0.5% Cu ore zones, indicated ∑REE+Y+Sc values range from 262.25 ppm to 4654.36 ppm with an average of 1087.81 ppm over 2.50m to 7.50m thickness. Analytical results of 4 ore zones (>0.5% Cu zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1105.30 to 4654.36 ppm with an average value of 2462.37 ppm.

Similarly, Analytical results of 32 Nos. composite samples pertaining to 0.2% Cu ore zones, indicated ∑REE+Y+Sc values range from 258.81 ppm to 3913.13 ppm with an average of 888.71 ppm over 2.0m to 31.0m thickness. Analytical results of 8 ore zones (0.2% Cu zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1028.87 to 3913.3 ppm with an average value of 1691.58 ppm. Anomalous REE values reported mostly in Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized), Gt. Chlorite schist/metabasic schist, granite and contact zones of schist and granite. Composite sample analysis given in **Annexure-VIII- A**.

19.5.3 REE analysis for copper ore zones by ICPMS method is given in below **Table 19.**

Table 19: REE analysis for Copper zones by ICPMS method

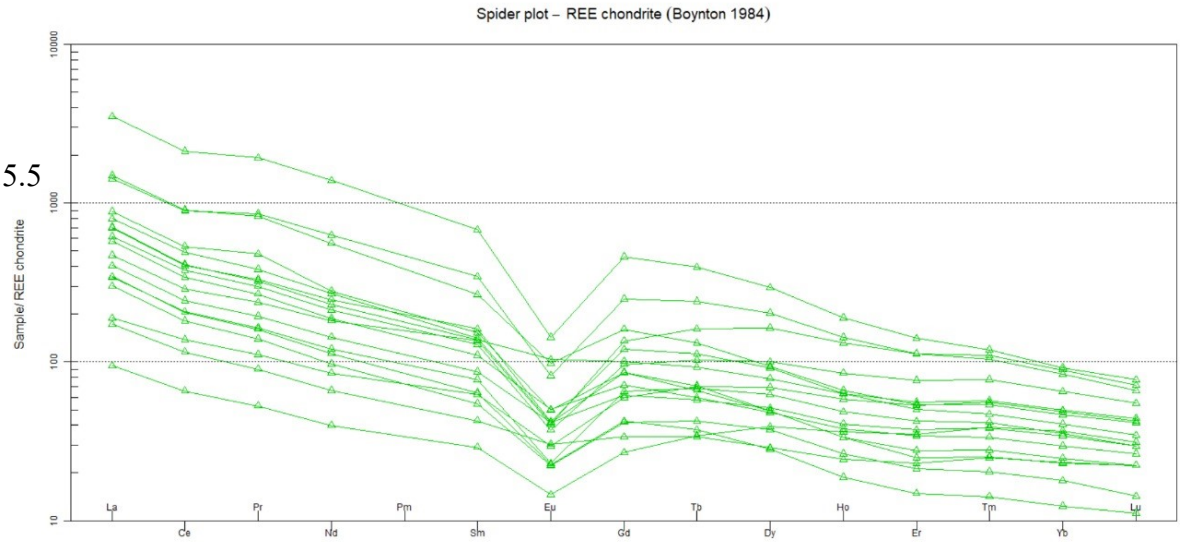
Cut-off	Zones	Values	Minimum (ppm)	Maximum (ppm)	Average (ppm)
0.50%	17 Zones	∑REE	160.6	4316	959.72
		∑REE+Y+Sc	262.25	4654.36	1087.81
	4 Zones	**>1000 ppm ∑REE+Y+Sc**	**1105.3**	**4654.36**	**2462.37**
0.20%	32 Zones	∑REE	183.29	3587.62	778.74
		∑REE+Y+Sc	258.81	3913.3	888.71
	8 Zones	**>1000 ppm ∑REE+Y+Sc**	**1028.87**	**3913.3**	**1691.58**

19.5.4 Spider plots of REE chondrite prepared for 0.5% cu cut-off zones (**Text Figure No.9**). The spider plot (0.5% Cu cut-off zones) shows chondrite-normalized REE patterns indicating a clear enrichment in Light Rare Earth Elements (LREEs) such as La, Ce,

and Nd, and a relative depletion in Heavy Rare Earth Elements (HREEs) like Yb and Lu. A prominent negative europium (Eu) anomaly is observed, suggesting plagioclase fractionation or a crustal source signature. The overall pattern, with enriched LREEs and depleted HREEs along with a Eu anomaly, is characteristic of felsic igneous rocks or continental crustal materials affected by magmatic differentiation processes.

Text Figure No. 9: Spider plots for REE for 0.5% cu cut-off zones

19.5.5



19.5.6 As per the petrographic studies, Apatite is present in the mineral assemblage and may potentially host significant REE enrichment. Additionally, a few doubtful specks of xenotime and monazite have been observed. However, their confirmation remains uncertain due to their occurrence as accessory phases in only one specimen and their extremely fine grain size. Further studies to be carried out in next phase of exploration to confirm the same.

19.5.7 At 0.5% Cu cut-off, copper zones (17 Nos.) indicated Co values range from 57.56 ppm Co to 1300 ppm Co. Total 11 ore Zones indicated values Co values range from 101.48ppm Co to 288.03 ppm Co. over 2.50m to 7.50m with One zone shown highest Co value of 1300ppm Co over 4.00m thickness (MTB-08). Only one Zone shown Mo value of 192.97 ppm Mo over 7.50m thickness (MTB-08). Analytical results for other elements are not encouraging.

19.5.8 At 0.2% Cu cut-off, copper zones (32 Nos.) indicated Co values range from 38.97 ppm Co to 1220.33 ppm Co. Total 18 zones indicated cobalt values range from

102.79 ppm Co to 367.13 ppm Co with one zone shown highest value of 1220.33 ppm over 3.50m thickness (MTB-08). Two zones shown Mo values of 147.60m over 8.0m (MTB-08) and 138.83 ppm Mo over 13.23m (MTB-17). Analytical results for other elements are not encouraging.

19.5.9 Analytical results of 34 elements by ICP-MS method is given in **Annexure-VIII- A**.

19.5.10 **Bi, Ge, Te, Sn, As & Cd analysis:** Additionally, 17 composite samples for 0.5% Cu cut-off zones were analysed for analysis of Bi, Ge, Te, Sn, As & Cd (AAS method) in MECL laboratory, Nagpur. Ge values range between 12.48ppm and 27.71ppm Ge, Cd values between 1.47ppm and 2.37ppm Cd and As values range between 26.08 ppm and 45.17ppm As with one zone shown highest value of 1751.71ppm As over 3.0m (MTB-08). Values for Bi, Te were below detection limit (<1ppm) while Sn values <1ppm to 25.88ppm. Analytical results for Bi, Ge, Te, Sn, As & Cd are not encouraging. Analytical results for Bi, Ge, Te, Sn, As & Cd are given in **Annexure VIII-B.**

19.5.3 **Au & Ag Analysis (Fire assay):** Total 17 nos of composite samples collected from copper bearing ore zones (17 Nos. for > 0.5% Cu cut-off) indicated Au values range from 32.81 ppb to 480.05 ppb and Ag values range from <100ppb to 414.80 ppb. Analysis values for Au & Ag are not encouraging. Composite sample analysis is given in **Annexure VIII-C**.

19.5.11 **Major oxide analysis:** Also, 29 nos composite samples pertaining to magnetite rich copper ore zones subjected to major oxide analysis for Fe (T), SiO_2, Al_2O_3, TiO_2, V_2O_5, Cr_2O_3, MnO, MgO, CaO, S, P & LoI) in MECL Chemical laboratory, Nagpur. Analytical results of major oxides indicated Total Fe (T) values from minimum 6.07% Fe (T) to maximum 17.22 % Fe (T) with one ore zone shown highest Total Fe value of 36.55% Fe (T) over 3.0m thickness (MTB-08). SiO_2 value range from 18.56% to 69.35%, Al_2O_3 values from 4.56% to 15.20% and TiO_2 values from 0.32% to 1.56%, V_2O_5 values from <0.01% to 0.08% and Cr_2O_3 values from <0.01% to 0.06%. Major oxide analysis is given in **Annexure-VIII-D**.

19.6.0 DETAILED DESCRIPTION OF THE METHOD USED AND THE ASSUMPTIONS MADE TO ESTIMATE TONNAGE AND GRADES

19.6.1 The copper ore resource and grade has been estimated by "**Geological cross-section Method**" (as principal method), as well as "**Level plan Method**" (as secondary method) and estimated resources in Thakurdih Area-1 Block area are placed under Inferred resource category (333) of UNFC considering the following parameters and assumptions.

1. **Cut-off Grade**: The mineralized zones have been demarcated at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off. For the purpose of estimation of grade vis-à-vis resource of the copper ore the overall average grade of the mineralized zones with above cut-off grade has been considered for resource estimation.

2. **Minimum Stoping Width and Maximum Parting:** As per standard practice, the minimum stopping width of 2.00 m as true width and maximum parting (Non ore parting) upto 3.00 m is considered for delineation of copper ore lodes/zones for resource estimation.

3. In case of copper ore lodes/zones with true thickness less than 2.00m, the sample at hanging wall /footwall of below cut-off grade has been included judiceously to earmark the true thickness of 2.00m, considering the overall grade after dilution must be above the required cut-off grade.

4 **Section influence:** The sectional area influence of 25.00m from the borehole intersection towards down dip direction or up to the mid of the two boreholes as the case may be and the sectional area influence from the borehole intersection up to the soil/weathered zone towards the updip direction has been included under Inferred Resource category (333) having the same thickness and the grade as of the intersection in the boreholes. The grade of the copper ore lodes intersected in the borehole has been assigned to its influence zones.

5 **Strike influence:** In general, boreholes are spaced at 200 m strike interval approximately. When two adjoining boreholes are positive for Mineralized zones, strike influence of lode/zone is taken as 50% (i.e. 100m approx..) on either side of the section. In case adjoining boreholes are negative for Mineralized zones, influence of lode/zone is taken 25% (i.e.50m approx.) on either side of the section as the case may be. In case, spacing between two section lines is more than 200m or no borehole avialble on the next section, strike influence is taken as 25% (i.e. 50m approx..) on either side of the section. The grade of the copper ore lodes intersected in the borehole has been assigned throughout the section.

6 **Specific Gravity:** The average specific gravity for copper ore mineralized zones has been taken as 3.00 for 0.20%, 0.5% & 1.0% Cu cut-off grade for estimation of resources in Thakurdih Area-1 Block.

7. An overall deduction of 10% is applied to the total gross tonnage to arrive at the net in-situ geological resource of copper to account for geological reasons i.e., data gaps, geological uncertainities, irregular nature of deposit and abrupt change in zone thickness etc.

19.6.2 Exploration Data for Resource Estimation:

Altogether 2467.50m exploratory drilling data in 20 nos. of boreholes comprising of total 267.50m (3 Boreholes) of previous borehole data and 2200 m (17 Boreholes) of present exploration data of MECL in Thakurdih Area-1 Block has been taken into consideration and clubbed to form an integrated exploration database with total 1053 nos. individual borehole sample analysis pertaining to total 20 boreholes. The same has been utilised for evaluation of available resource and grade in the Block.

19.6.3 Copper ore lodes:

Based on the analytical results of individual primary borehole samples (1053 nos. samples) of 20 boreholes drilled in the area, mineralised zones intersected in the boreholes have been identified at 0.2% Cu, 0.5% Cu & 1.0% Cu cut-off and have been disucussed in Chapter-X.

In Northern band total 7 copper ore lodes namely NB1, NB2, NB3, NB4, NB5, NB5A, NB6 and 6 lodes SBA, SB1A, SB3, SB4, SB5 in Southern band have been delineated on the basis of above cut-off grades parameters. Further, the lodes are correlated and given nomenclature from footwall side. The identified zones have been used for geological interpretation and correlation purpose. The intersection positions have been used as an approximation to guide the trend of mineralization in the cross sections and level plans. The lodes intersected in the boreholes have been plotted on the geological cross sections and level plans. Drilling data indicated that mineralized zones behave erratic nature with pinch and swelling nature of mineralisation along the strike and depth continuity with variation in grade.

19.6.4 For estimation of resources, lodes have been identified on the basis of assay chemical analysis i.e. Cu% at 0.2% Cu cut-off, 0.5% Cu cut-off and 1.0% Cu cut-off grade separately considering the minimum stoping width of 2.00m as true thickness and Non-ore parting of 3.00m and the details of lodes considered for resource estimation are provided in **Table no. 19.1, Table No. 19.2 and 19.3 respectively and also given in Annexure-VII-A, VII-B and VII-C respectively.**

Table-19.1: Borehole wise Copper Ore Zone at 0.2% Cu cutoff with 2.00m MSW and 3.00m Non ore parting in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand (By MECL)

Section No.	Borehole No.	Lode No.	Depth of Intersection (m)		Thick -ness (m)	True Thick-ness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	29.50	38.50	9.00	7.28	0.46	Northern band
S2-S2'	MTB-13	NB4	83.50	86.50	3.00	2.29	0.32	
S3-S3'	MTB-03	NB6	50.50	53.50	3.00	2.19	0.46	
S3-S3'	MTB-03	NB4	76.00	81.60	5.60	4.16	0.25	
S3-S3'	MTB-14	NB6	108.00	116.50	8.50	6.31	0.28	
S3-S3'	MTB-14	NB5	121.00	127.75	6.75	4.93	0.31	
S3-S3'	MTB-14	NB5A	134.25	138.75	4.50	3.12	0.37	
S3-S3'	MTB-14	NB4	143.75	146.75	3.00	2.08	0.21	
S3-S3'	MTB-14	NB3	178.00	184.00	6.00	4.16	0.24	
S4-S4'	MTB-09	NB4	75.00	78.50	3.50	2.60	0.24	
S4-S4'	MTB-09	NB3	88.00	91.00	3.00	2.22	0.20	
S5-S5'	MTB-11	NB3	141.50	148.00	6.50	4.83	0.31	
S6-S6'	MTB-07	NB3	47.50	68.50	21.00	15.35	0.37	
S6-S6'	MTB-07	NB2	73.50	80.00	6.50	4.75	0.22	
S6-S6'	MTB-07	NB1	94.50	109.00	14.50	10.60	0.36	
S7-S7'	MTB-02	NB1	80.50	87.00	6.50	5.57	0.36	
S9-S9'	MTB-04	NB1	50.00	81.00	31.00	27.62	0.27	
S9-S9'	MTB-10	NB1	131.00	145.00	14.00	12.36	0.30	
S14-S14'	MTCB-10	NB1	75.00	80.20	5.20	3.98	0.63	
S15-S15'	MTB-06	SB5	43.00	46.00	3.00	2.76	0.23	Southern band
S15-S15'	MTB-06	SB4	84.00	91.00	7.00	6.44	0.57	
S15-S15'	MTB-06	SB3	115.50	124.30	8.80	8.10	0.46	
S15-S15'	MTB-06	SB2	128.80	133.30	4.50	4.14	0.20	
S16-S16'	MTB-17	SB1	92.77	106.00	13.23	11.21	0.38	
S17-S17'	MTCB-09	SB2	75.78	79.00	3.22	2.19	0.26	
S18-S18'	MTB-05	SB2	78.00	81.50	3.50	2.10	0.39	
S18-S18'	MTB-05	SB1	85.00	101.00	16.00	11.70	0.59	
S18-S18'	MTB-08	SB3	47.50	51.00	3.50	2.10	0.92	
S18-S18'	MTB-08	SB1A	199.00	207.00	8.00	4.47	1.21	
S19-S19'	MTB-15	SB2	52.50	57.30	4.80	4.11	0.32	
S19-S19'	MTB-15	SB1	77.50	97.50	20.00	17.14	0.53	

Table-19.2: Borehole wise Copper Ore Zone at 0.5% Cu cutoff with 2.00m MSW and 3.00m Non ore parting in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand (By MECL)

Section No.	Borehole No.	Lode	Depth of Intersection (m)		Thick-ness (m)	True Thickness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	31.00	34.00	3.00	2.45	1.01	Northern band
S3-S3'	MTB-14	NB6	109.00	112.00	3.00	2.45	0.59	
S6-S6'	MTB-07	NB3	64.00	68.50	4.50	3.29	0.83	
S6-S6'	MTB-07	NB1	101.50	109.00	7.50	5.48	0.52	
S9-S9'	MTB-10	NB1	139.50	142.00	2.50	2.24	0.55	
S14-S14'	MTCB-10	NB1	75.00	80.20	5.20	3.98	0.63	
S15-S15'	MTB-06	SB4	88.00	90.50	2.50	2.30	0.89	Southern band
S15-S15'	MTB-06	SB3	116.50	122.00	5.50	5.06	0.63	
S16-S16'	MTB-17	SB1	92.77	97.00	4.23	3.58	0.50	
S16-S16'	MTB-17	SB1	100.00	103.50	3.50	2.96	0.56	
S18-S18'	MTB-08	SB3	47.50	51.00	3.50	2.10	0.92	
S18-S18'	MTB-08	SB1A	199.00	206.50	7.50	4.19	1.28	
S19-S19'	MTB-15	SB1	78.00	84.50	6.50	5.57	0.63	
S19-S19'	MTB-15	SB1	88.00	91.00	3.00	2.57	1.18	

Table-19.3: Borehole wise Copper Ore Zone at 1.0% Cu cutoff with 2.00m MSW and 3.00m Non ore parting in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand (By MECL)

Section No.	Borehole No.	Lode	Depth of Intersection (m)		Thick ness (m)	True Thickness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	31.00	34.00	3.00	2.45	1.01	Northern band
S18-S18'	MTB-08	SB1A	200.00	206.50	6.50	3.63	1.41	Southern band
S19-S19'	MTB-15	SB1	88.00	91.00	3.00	2.57	1.18	

19.6.5 As per the cut-off grade criteria parameters set for resource estimation multiple lodes for copper intersected in the boreholes. At 0.2% Cu cut-off, toal 7 lodes pertaining to northern band NB1, NB2, NB3, NB4, NB5, NB5A, NB6 and 6 lodes pertaining to southern band SBA, SB1A, SB3, SB4, SB5 were delineated in 16 boreholes (0.2%-

1.21% Cu over 2.08-27.62m true width). At 0.5% cut-off, 3 lodes of northern band (NB1, NB3 & NB6) and 4 lodes of southern band (SB1, SB1A, SB3 & SB4) delineated in 9 boreholes (0.50%-1.28% Cu over 2.10m-5.57m true width). At 1.0% Cu cut-off I lode of northern band (NB6) and 2 lodes of southern band (SB1 & SB1A) delineated in 3 boreholes (1.01%-1.41%Cu over 2.45-3.63m true width).

19.6.6 The present G3 stage exploration drilling mainly aimed to target northern band and southern band and prove copper mineralisation at about 200m spacing interval based on previously reported geophysical anomalies as well as well as to establish further strike and depth continuity of previously drilled scout boreholes. Since the present Thakurdih Area-1 block is in continuity with Mundadevta-Darkhuli & South Jharia block where G2 level of exploration has been completed with substantial resources, the possible mineralisation cannot be ruled out in the gap area of these two blocks. However, previous ground geophysical survey of GSI and MECL indicated weak anomalies in the gap area. Since the area is concealed under soil cover and presence of one old working located in the extreme southern corner of the block area, few scout boreholes may be drilled to test the sub suface continuation of mineralisation along the strike and dip in further phase of exploration. An interpreted anomalous zone for expected trend of mineralisation based on integrated geology, geochemical and geophysical data prepared for all sub blocks of Baharagora area including Mudadevta-Darkhuli & South Jharia, Thakurdih-Charakmara area and Thakurdih Area-1 Block is given in **Plate No. IV-D.**

19.7.0 METHODOLOGY ADOPTED IN CROSS-SECTION METHOD OF RESOURCE ESTIMATION

Following methodology has been adopted while computation of copper ore resource by Geological Cross-Section Method.

1. In Thakurdih Area-1 Block, total of 17 Nos. Geological Cross Sections serially numbered as S1-S1' to S10-S10′, S13-S13' to S19'-S19' were drawn perpendicular to general strike of the formations/mineralised zones based on the interpretation of surface and sub-surface geological data i.e., litho-units intersected in the borehole and its attitude i.e., foliation angle etc., copper ore lodes along with nomenclature, thickness and qualitative data.

2. The cross-sections have been prepared by marking surface geology on the profile and the borehole data (lithology, nomenclature, thickness and analytical data of copper ore lodes) plotted on section along each inclined borehole. The path of the inclined boreholes has been plotted along the Geological Cross Sections by considering the deviation along depth and azimuth with the help of GDM software **(Plate-V.A(1), V.A(2), V.B(1), V.B(2), VC(1) and VC(2) and Text Figure No.10.)**

3. The different copper ore lodes at required cut-off grade and MSW (minimum stopping width) plotted on the sections have been correlated based on the thickness, grade and their spatial disposition i.e., strike and depth persistence in Level Plans and Geological Cross Sections and designated with the different name for identification and correlation.

4. Copper Ore resource has been estimated based on the copper ore lodes deciphered and demarcated on earlier mentioned parameters of resource estimation.

5. The area measurements have been made with the help of computer aided Auto-CAD Map 2024 software.

6. The area of influence has been summed up to arrive at the lode-wise total area for the cross-section.

7. Thus, the area obtained has been multiplied by cross sectional influence (strike influence) to obtain the sectional volume.

8. The obtained volume has been multiplied by the average specific gravity (3.00) to arrive at the resource in tonnes.

9. Thus, the sum of Section-wise cross-sectional resource is the total geological gross in-situ resource.

19.8.0 METHODOLOGY ADOPTED IN LEVEL PLAN METHOD OF RESOURCE ESTIMATION:

In order to ascertain the reliability of resource estimated by Geological Cross Section Method, copper ore resources also estimated by Level Plan Method. Following methodology has been used for preparation of the Level Plan and resource estimation.

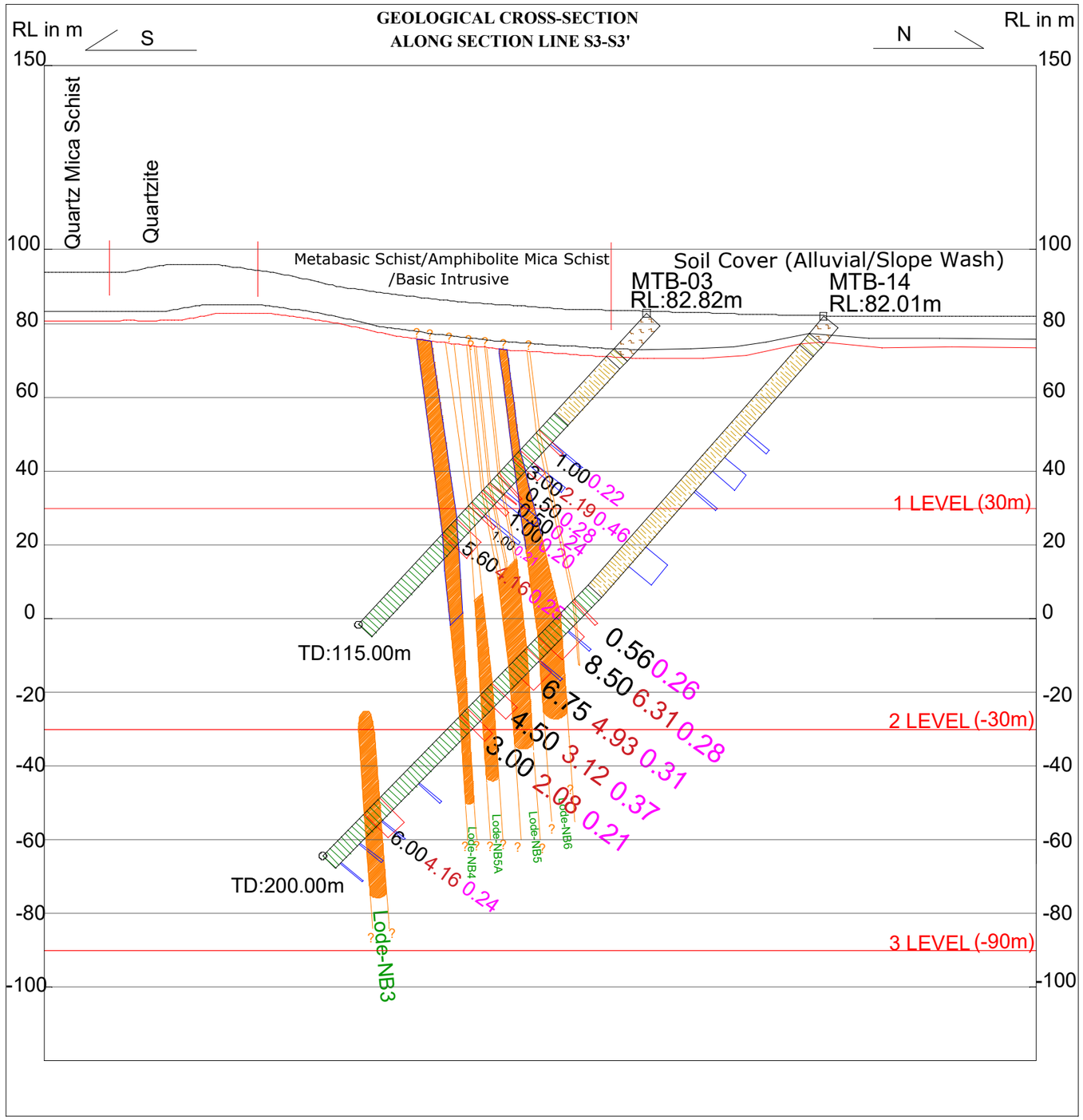
1. The Level plan has been prepared separately for all the lodes at 0.2% Cu cut-off, 0.5% Cu cut-off and 1.0% Cu cut-off from 1st Level to 3rd Level **(Plate-VI.A, VI.B, VIC, VII.A, VII.B, VII.C, VIII.A, VIII.B & VIII.C) respectively and Text Figure – 11).**

2. The area of Lode has been calculated with the help of computer aided AutoCAD Map 2024 software.

3. Thus, the area obtained has been multiplied with Level Difference and the volume of lode has been calculated.

4. The volume of the copper ore lodes was multiplied by the average specific gravity factor (3.0) and total geological gross in-situ resource has been estimated.

TEXT FIGURE- 10: TYPICAL GEOLOGICAL CROSS SECTION ALONG SECTION LINE S3-S3'



INDEX

LEGEND(GEOLOGICAL PLAN)

- Soil Cover (Alluvial/Slope Wash)
- Metabasic Schist/ Amphibolite Mica Schist/ Basic Intrusive
- Garnetiferous/Kyanite Quartzite/Feldspathic Quartz/Mica Schist
- Granite / Granite Gneiss (Archaean)

LEGEND (CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist
- Quartz-K-Feldspar Chlorite Biotite Schist(Silicified & granitized basic schist)
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/ Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Garnetiferous-Qtz-Chlorite mica schist
- Quartzite/Micaceous Quartz Schist/Micaceous Quartz Feldspathic Schist
- Granite Gneiss

MTCB-11 RL:93.85m — Previous Boreholes Drilled by MECL with Reduced Level in meter (2022 -2023)

MTB-15 RL:83.01m — Boreholes drilled by MECL in present G3 exploration with Reduced Level in meter

TD: 85.00m — Total Depth in m

Lode with Apparent Thickness & True Thickness in m and Copper Grade (Cu%) of Mineralized zone (zone at 0.2%Cut-off)

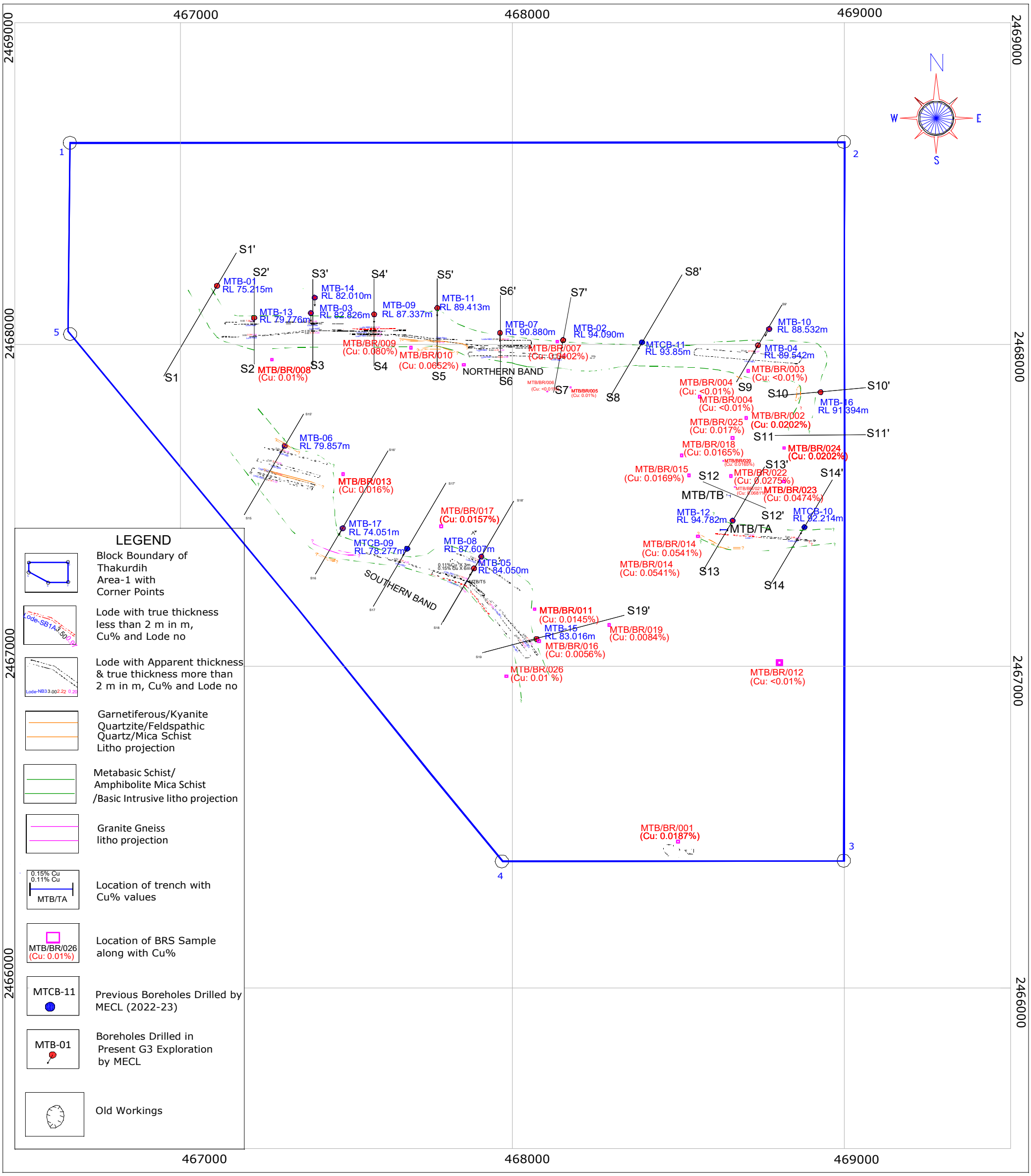
Soil Profile

Weathered Zone

Litho Boundaries

Integrated borehole geophysical anomaly

TEXT FIGURE-11: TYPICAL LEVEL PLAN (1ST `LEVEL-30mRL)



19.9.0 DESCRIPTION OF THE GEOLOGICAL INTERPRETATION USED TO CONTROL THE RESOURCE ESTIMATES

The resource has been estimated by two methods i.e. Geological Cross Section method and Level plan method and resource estimated by both the method has been compared. There is no significant difference between the resources estimated by both the method which support the reliability of both the resource estimation methods. An overall deduction of 10% is applied to the total gross tonnage to arrive at the geological net in-situ resource of copper to account for data gaps, geological uncertainities, irregular nature of deposit and abrupt change in zone thickness etc.

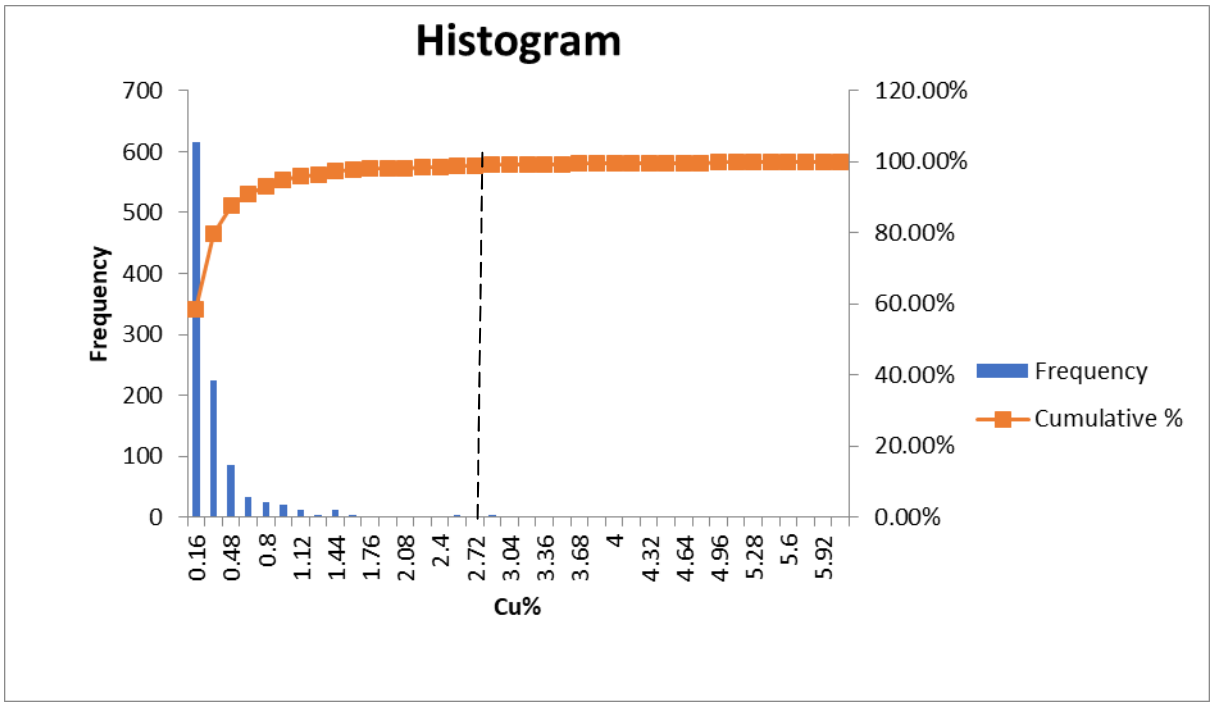
19.10.0 DESCRIPTION OF BASIS FOR USING OR NOT USING GRADE CUTTING OR CAPPING

19.10.1 The present exploration has been carried out at G-3 stage for copper (Cu) mineralization in the Thakurdih-Area-I block. Statistical analysis is carried out for samples of all 20 number of boreholes including present and previous exploration. Keeping in view the nature and style of mineralisation the entire borehole primary sample data of MECL (n=1054) has been subjected to statistical evaluation and it is inferred that the frequency distribution is positively skewed as could be seen from the **Text Figure 12.** Statistical parameters estimated for primary samples given in **Table 19.4.** Based on frequency histograms of raw samples at around 2.72% Cu, the value drops or else closed to the zero. The exercise assumes that the gap between 2.72% Cu and 3.2% Cu values is due to paucity in exploration and with additional drilling this gap would be abridged. Hence, grade capping is considered as 2.72% Cu. There are 14 no. of samples had fallen beyond 2.72% Cu. These values are erratic highs and need to be tonned down for processing the exploration data for evaluation purpose. Hence all values >2.72% Cu equated to 2.72% Cu in the borehole sample data.

Table-19.4: Statistical parameters estimated for primary sample (Entire data n=1054)

Parameters (n=1054)	
Minimum	0.00
Maximum	5.92
Mean	0.27
Standard deviation	0.518
Skewness	5.44
Variance	0.26

Text Figure-12
Frequency histogram & Probability plot of Primary Analysis borehole entire data (n=1054)



19.11.0 GEOSTATISTICAL METHODS DETAIL

The resource has been estimated by Geological Cross Section method as well as Level plan method. Geostatistical methods not used for resource estimation in the block area.

19.12.0 DATA VERIFICATION AND/OR VALIDATION PROCEDURES USED

Borehole assay data has been verified through statistical analysis as well as external check analysis in external laboratories. Moreover, the resource has been estimated by two methods i.e., Geological Cross Section method and Level plan method. The resource estimated by both the method has been compared and found there is no major significant difference in estimation of resources by these methods.

CHAPTER-XX

20.0.0 REPORTING OF RESOURCES

20.1.0 RESOURCE AND GRADE

20.1.1 The copper ore resource and grade has been estimated by the Geological Cross Section Method and section wise, lode wise and grade wise resource at 0.2% Cu cut-off grade, 0.5% Cu cut-off and 1.0% Cu cut-off is given in **Annexure-XII-A. XII-B and XII-C** respectively.

20.1.2 In Thakurdih Area-1 Block, total Copper ore Gross resources estimated by Geological Cross Section Method at **0.20% Cu cut-off grade** criteria are **4924418 tonnes (4.92 million tonnes).** After 10% deduction from gross resources total **Net geological in situ resource are 4431977 tonnes (4.43 million tonnes)** with an **average grade of 0.38% Cu** over average thickness of 6.14m. In general, the resource estimated over a cumulative strike length of 2.6 km and upto two levels i.e. 120m vertical depth. However, in few sections resource estimation done up to vertical depth of 180m from ground surface. The summarized resources of Thakurdih Area-1 Block by cross section method at 0.2% Cu cut-off are given below **Table No.20.1**.

Table No.20.1:

Summary of Estimated Resources (333) by cross section method

At 0.2 Cu cut-off grade.

Area	Lode No.	Gross Total Resource (Tonnes)	Net Resource (Tonnes)	Average Grade (Cu %)	Average Thickness (m)	Total Net Metal content (Tonnes)
Northern band & Southern band	NB1, NB2, NB3, NB4, NB5, NB5A, NB6, SB1, SB1A, SB2, SB3, SB4 & SB5	4924418 (4.92 MT)	4431977 (4.43 MT)	0.38	6.14	16841

20.1.3 At 0.5% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **1130244 tonnes (1.13 million tonnes)** and **1017220** tonnes (**1.02 million tonnes)** respectively with **average grade of 0.70% Cu** over an average thickness of 3.45m. The resource estimated over a cumulative strike length of 1.8 km and upto vertical depth of 180m from ground surface. The summarized resources of Thakurdih Area-1 Block by cross section method at 0.5% Cu cut-off are given below **Table No.20.2**.

Table No.20.2:

Summary of Estimated Resources (333) by cross section method

At 0.5% Cu cut-off grade.

Area	Lode No.	Gross Total Resource (Tonnes)	Net Resource (Tonnes)	Average Grade (Cu %)	Average Thickness (m)	Total Net Metal content (Tonnes)
Northern band & Southern band	NB1, NB3, NB6, SB1, SB1A, SB3, SB4	1130244 (1.13 MT.)	1017220 (1.02 MT.)	0.70	3.45	7120

20.1.4 At 1.0% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **139996 tonnes (0.14 million tonnes)** and **125997** tonnes (**0.13 million tonnes)** respectively with **average grade of 1.23% Cu** over an average thickness of 2.77m. The resource estimated over a cumulative strike length of 600m and up to 180m vertical depth from ground surface. The summarized resources of Thakurdih Area-1 Block by cross section method at 1.0% Cu cut-off are given below **Table No.20.3**.

Table No.20.3:

Summary of Estimated Resources (333) by cross section method

At 1.0% Cu cut-off grade.

Area	Lode No.	Gross Total Resource (Tonnes)	Net Resource (Tonnes)	Average Grade (Cu %)	Average Thickness (m)	Total Net Metal content (Tonnes)
Northern band & Southern band	NB6, SB11, SB1	139996 (0.14 MT)	125997 (0.13 MT.)	1.23	2.77	1550

20.1.5 The summarized estimated net resources of Thakurdih Area-1 Block by cross section method at 0.2% Cu, 0.5% Cu and 1.0% Cu cut-off are given below **Table No.20.4**.

Table No.20.4:

Summary of Estimated Net in-situ Resources (333) by cross section method

At 0.2% Cu, 0.5% & 1.0% Cu cut-off grade.

Cu Cut-off Grade	Net Resource (Tonnes)	Average Grade (Cu %)	Average Thickness (m)	Total Net Metal content (Tonnes)
0.20%	4431977 (4.43 MT)	0.38	6.14	16841
0.50%	1017220 (1.02 MT.)	0.70	3.45	7120
1.0%	125997 (0.13 MT.)	1.23	2.77	1550

20.1.6 In order to ascertain the reliability of resource estimated by Geological Cross Section Method, the same has been estimated at 0.20% Cu, 0.5% Cu and 1.0% Cu cut off grade by the Level plan method. The total gross geological in-situ and net resource estimated at 0.20% Cu cut-off by Level plan method in Thakurdih Area-1 Block are 4924995 tonnes (4.92 million tonnes) gross resource and 4432496 tonnes (4.43 million tonnes) of net in-situ resource with an average grade of 0.38% Cu. At, 0.5% Cu cut-off, total 1068581 tonnes (1.07 million tonnes) of gross resource and 961723 net in-situ resorce (0.96 million tonnes) with average grade of 0.69% Cu estimated. At 1.0 Cu cut-off, total 141815 tonnes (0.14 million tonnes) of gross resource and 127634 tonnes (0.13 million tonnes) of net in-situ resource with an average grade of 1.24% Cu estimated. The details of Level wise for 0.2% Cu, 0.5% Cu and 1.0% Cu cut-off estimated by Level plan method are given in **Annexure-XIII-A, XIII-B and XIII-C** and the summary of resources estimated by Level plan method given in **Table-20.5.**

Table-20.5

Summary of Copper Ore Resource (UNFC-333) at 0.2% Cu, 0.5% Cu & 1.0% Cu cut off grade by Level Plan Method

Area	Cut-off Grade	Level No.	Gross Total Resource (Tonnes)	Net Resource (Tonnes)	Average Grade (Cu %)
Northern band & Southern band	**0.2%**	1, 2, 3	4924995 (4.92 MT)	4432496 (4.43 MT)	0.38
	0.5%	1,2,3	1068581 (1.07 MT)	961723 (0.96 MT)	0.69
	1.0%	1,2,3	141815 (0.14 MT)	127634 (0.13 MT)	1.24

20.2.0 COMPUTATION OF AVERAGE GRADE:

20.2.1 All calculations for grade estimation for copper are made by weighted average method. Since the sample interval was uniformly maintained along with different litho-units, the length of the sample was mostly maintained at 0.50m interval with the exception of litho-unit variations, and any structural implications. The, weighted average has been calculated by following formula:

$$\text{Weighted average grade} = \frac{V1 \times G1 + V2 \times G2 + V3 \times G3 + \ldots\ldots\ldots\ldots + Vn \times Gn}{V1 + V2 + V3 + \ldots\ldots\ldots\ldots + Vn}$$

Here `V' = Volume of Copper ore in individual borehole

`G'= Grade of the respective Copper ore in the corresponding borehole

20.3.0 COMPARISON OF RESOURCE ESTIMATION BY CROSS-SECTION AND LEVEL PLAN METHOD:

20.3.1 The total copper ore resource with average grade estimated separately at 0.2% Cu, 0.5% Cu and 1.0% Cu cut-off by the Geological Cross Section and Level plan Methods have been compared to ascertain the confidence level of resource estimation. The comparison of resource for both methods at above cut-offs are given in **Table-20.6.**

Table- 20.6

Comparison of Geological Resource estimated at 0.2%, 0.5% & 1.0% Cu cut-off by Cross Section and Level Plan Methods (333) in Thakurdih Area-1 Block

Cut-off grade	**0.20 % Cu cut-off**		**0.50 % Cu cut-off**		**1.0 % Cu cut-off**	
Estimation method	**Cross section**	**Level plan**	**Cross section**	**Level plan**	**Cross section**	**Level plan**
Gross in-situ Resource (Tonnes)	4924418	4924995	1130244	1068581	139996	141815
Gross in-situ Resource (MT)	4.92	4.92	1.13	1.07	0.14	0.14
Net in-situ Resource (Tonnes)	4431977	4432496	1017220	961723	125997	127634
Net in-situ Resource (MT)	4.43	4.43	1.02	0.96	0.13	0.13
Copper Grade (%)	0.38	0.38	0.70	0.69	1.23	1.24
% of Difference in Net Resource	-0.01%		5.45%		-1.30%	

20.3.2 The difference between resource estimated by Geological Cross Section and Level plan Method in Thakurdih Area-1 Block at 0.20% Cu cut-off grade is -0.01%% i.e. the resource estimated by Geological Cross Section is -0.01% lessar than that of resource estimated by Level plan method. At 0.5% Cu cut-off, level plan resource are 5.45% lower than than that of resource estimated by Cross section method. At 1.0% Cu cut-off, Level plan resources are 1.30% higher than that of resources estimated by cross section method. Resource variation and Grade variation between two methods are acceptable. The variations in the resource and grade of both the methods are minor and are within the acceptable limits (i.e. <10%). Hence, the reliability of resource estimation has been established and resource estimated by Geological Cross Section Method has been considered for all practical purposes.

20.4.0 CATEGORY OF RESOURCE:

20.4.1 During present G3 stage exploration, boreholes were spaced at 200m interval approximately in line with previously drilled boreholes to prove the strike and depth continuity of mineralized zones mostly for 1st level (60m vertical depth) and few 2nd level (120 m vertical depth) intersections in Thakuridih Area-1 Block. Exploration data generated so far in the area and Borehole spacing may be sufficient to categorise the resource under inferred category. Hence, the total estimated copper ore resource of Thakurdih Area-1 Block categorized as "Inferred Mineral Resource" category with Code 333 as per UNFC system and as per the specifications given in the Mineral (Evidence of Mineral Contents) Rule-2015, Amended upto 2021.

CHAPTER-XXI

21.0.0 SUMMARY AND RECOMMENDATIONS

21.1.0 DISCUSSION ON THE OUTCOME OF THE EXPLORATION WORK DETAILING THE NATURE OF THE DEPOSIT

21.1.1 Thakurdih Area-1 Block is part of previously explored Thakurdih-Charakmara (G3) Block and forms part of Baharagora copper prospect located at the extreme southeastern end of Singbhum copper belt of Jharkhand. Historic old workings and previously GSI reported strong to moderate geochemical and geophysical anomalies in the area for basemetal mineralisation. During 2022-23, MECL carried out G3 stage exploration work in Thakurdih Charakmara Block for copper in four sub-blocks (including Thakurdih Area-1) over 10.0sq.km area and identified copper mineralised zones through integrated geophysical anomalies and scout drilling in Thakurdih Area-1 Sub Block. Total 128689 tonnes (0.13 million tonnes) of Reconnaissance resource (UNFC-334) with average grade of 0.39% Cu over 3.23m average thickness estimated and further exploration at G3 stage was recommended in Thakurdih Area-1 block.

21.1.2 The present preliminary exploration at G3 stage for copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km. area) in East Singhbhum Dist, Jharkhand was taken up with an objective to prove the strike and depth continuity of mineralisation and to estimate the copper ore resources under Inferrred category (UNFC-333) as per UNFC norms and MEMC Rules 2015 (amended up to 2021) under NMET funding.

21.1.3 The present G3 stage exploration inlcuded detailed geological mapping on 1:2000 scale, topographical survey over 4.10 sq.km. area, sampling (26 bedrock and 48 trench samples). A total of 2200 drilling in 17 boreholes was completed along with borehole deviation surveys, geophysical logging, petrographic (10 nos.), mineragraphic (10 nos.) studies and specific gravity determinations.

21.1.4 The block area exposes mainly Granite/ Granite Gneiss of Archaean age, Quartzites and Schistose rocks of Palaeoproterozoic age of Chaibasa formation along with Tertiary gravels and recent alluvium. Most of the block is concealed under soil cover with limited rock exposures. few old workings seen in the area. Surace mineralisation is poorly defined, drill holes provided most geological and sulphide mineralisation information.

21.1.5 Copper mineralisation occurs along two zones namely Northern & Southern bands. In Northern band, mineralization mainly occurs along Porphyroblastic Garnetiferous Chlorite Mica schist near Quartzite ridge. In the Southern band, mineralization mainly occurs along the Granitic and Meta-basic schistose contacts. Additionally, mineralization occurs in silicified brecciated rocks, less frequently in quartzite. Mineralisation in this area is not confined to any particular stratigraphic horizon nor to any particular litho-unit. The mineralisation strikes E-W to NW-SW with 55° to 80^0 N & NE dip in Northern band while N50°W-S50°E with 60° to 80^0 NE dip in the Southern band.

21.1.6 Copper mineralisation is litho-structure and shear controlled. Copper and associated mineralisation in the area is structurally controlled by shearing, folding and deformation. It is of fissure vien type, associated with shears parallel to foliation. Sulphides occurdsa mainly as disseminations, stringers, strekas, replacement patches and sheeted veins within schistose rocks and granites. Chalcopyrite is the main ore mineral followed by magnetite, pyrite pyrrhotite.

21.1.7 Bedrock samples were collected from targeted litho-units. One sample (BR/21) of Garnetiferous mica schist with malachite stains showed highest Cu value of 8.07% Cu. Other samples showed Cu <0.01% Cu to 0.08% Cu. One Samples (BR/01) of Quartzo-feldspathic schist showed Mo value of 0.19% with 0.02% Cu value. Other elements (Pb, Zn, Co, Ni, Mo & W) were not encouraging.

21.1.8 Trenching was done to trace concealed mineralised zones. Trench MTB/T5 in the southern band indicated two mineralised zones with 0.15% Cu over 6m nd 0.11% Cu over 3.0m in granite gneiss. Other strike extensions could no be traced due to thick soil. Trench samples for Pb, Zn, Ni, Co, Mo & W were not encouring.

21.1.9 Out of total 17 nos boreholes (2200m), 12 were in the Northern band and 05 in the Southern band. These aimed to prove the strike and depth persistence of copper bearing ore zones mostly at 60m (1st Level) and 120 (2nd Level) vertical depths.

21.1.10 Among 348 nos. borehole core samples, Cu ranged from 0.2% Cu to 5.29% Cu. 122 samples ranged 0.51% Cu to 5.29% Cu and 50 samples ranged 1.01% Cu to 5.29% Cu. Zn (8 samples), Ni (24 samples), Mo (4 samples) and Co (2 samples) showed some higher values. But Pb, Zn, Ni, Co, Mo and W results were generally not encouraging.

21.1.11 Total 2467.50 m (20 Boreholes) drilling data including 2200 m (17 Boreholes) from present work 267.50m (3Boreholes) of previous work of MECL has been used for geological interpretation, correlation and resource evaluation as per the cut-off grade criteria.

21.1.12 Based on the analytical results, 85 mineralised zones were identified at 0.2% Cu in 20 boreholes (0.2% - 1.8% Cu over 0.5m to 31m). At 10.5% Cu, 52 zones were identified in 16 boreholes (0.5%-1.68% Cu over 0.4m -7.5m). At 1.0% Cu, 30 zones were identified in in 13 boreholes (1.01% - 2.72% Cu over 0.4m-6.5m)

21.1.13 The borehole geophysical logging helped delineate sulphide minaralised zones with their thickness and depths. The geophysical logging also enhanced the value of information collected from the boreholes.

21.1.14 Copper resources were estimated using Geological Cross section (main) and Level plan (check) methods at 0.2%, 0.5% and 1.0% Cu cut-offs sapareately considering minimum stoping width (M.S.W) of 2.00m as true width and Non ore parting of 3.0m. The average specific gravity of 3.0 were applied.

21.1.15 At 0.2% Cu cut-off, toal 7 lodes pertaining to northern band NB1, NB2, NB3, NB4, NB5, NB5A, NB6 and 6 lodes pertaining to southern band SBA, SB1A, SB3, SB4, SB5 were delineated in 16 boreholes (0.2%-1.21% Cu over 2.08-27.62m true width). At 0.5% cut-off, 3 lodes of northern band (NB1, NB3 & NB6) and 4 lodes of southern

band (SB1, SB1A, SB3 & SB4) delineated in 9 boreholes (0.50%-1.28% Cu over 2.10m-5.57m true width). At 1.0% Cu cut-off I lode of northern band (NB6) and 2 lodes of southern band (SB1 & SB1A) delineated in 3 boreholes (1.01%-1.41%Cu over 2.45-3.63m true width).

21.1.16 Analytical results of 17 Nos. composite samples by ICP-MS method pertaining to 0.5% Cu ore zones, indicated ∑REE+Y+Sc values range from 262.25 ppm to 4654.36 ppm with an average of 1087.81 ppm over 2.50m to 7.50m thickness Total 4 ore zones (0.5% Cu cut-off zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1105.30 to 4654.36 ppm with an average value of 2462.37 ppm.

21.1.17 Similarly, Analytical results of 32 Nos. composite samples by ICP-MS method pertaining to 0.2% Cu ore zones, indicated ∑REE+Y+Sc values range from 258.81 ppm to 3913.13 ppm with an average of 888.71 ppm over 2.0m to 31.0m thickness. Total 8 ore zones (0.2% Cu cut-off zones) indicated ∑REE+Y+Sc values >1000 ppm ranging from 1028.87 to 3913.3 ppm with an average value of 1691.58 ppm. Anomalous REE values reported mostly in Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized), Gt. Chlorite schist/metabasic schist, granite and contact zones of schist and granite.

21.1.18 At 0.5% Cu cut-off, copper zones (17 Nos.) indicated Co values range from 57.56 ppm Co to 1300 ppm Co. Total 11 ore Zones indicated values Co values range from 101.48ppm Co to 288.03 ppm Co. over 2.50m to 7.50m with One zone shown highest Co value of 1300ppm Co over 4.00m thickness (MTB-08). Only one Zone shown Mo value of 192.97 ppm Mo over 7.50m thickness (MTB-08). Analytical results for other elements are not encouraging.

21.1.19 At 0.2% Cu cut-off, copper zones (32 Nos.) indicated Co values range from 38.97 ppm Co to 1220.33 ppm Co. Total 18 zones indicated cobalt values range from 102.79 ppm Co to 367.13 ppm Co with one zone shown highest value of 1220.33 ppm over 3.50m thickness (MTB-08). Two zones shown Mo values of 147.60m over 8.0m (MTB-08) and 138.83 ppm Mo over 13.23m (MTB-17). Analytical results for other elements are not encouraging.

21.1.20 Composite samples (>0.5% Cu) from 17 mineralised zones showed Au value from 32.81-480.05 ppb and Ag value from <100-414.80 ppb. Values for Au & Ag are not encouraging.

21.1.21 In Thakurdih Area-1 Block, total Copper ore Gross resources estimated by Geological Cross Section Method at **0.20% Cu cut-off grade** criteria are **4924418 tonnes (4.92 million tonnes).** After 10% deduction from gross resources total **Net geological in situ resource are 4431977 tonnes (4.43 million tonnes)** with an **average grade of 0.38% Cu** over average thickness of 6.14m. The resource estimated over a cumulative strike length of 2.6 km and upto vertical depth of 180m from ground surface.

21.1.22 At 0.5% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **1130244 tonnes (1.13 million tonnes)** and **1017220** tonnes (**1.02 million tonnes)** respectively with **average grade of 0.70% Cu** over an average thickness of 3.45m. The resource estimated over a cumulative strike length of 1.8 km and upto 180m vertical depth from ground surface.

21.1.23 At 1.0% Cu cut-off grade criteria, total **Gross** and **Net geological in situ** resources are **139996 tonnes (0.14 million tonnes)** and **125997** tonnes (**0.13 million tonnes)** respectively with **average grade of 1.23% Cu** over an average thickness of 2.77m. The resource estimated over a cumulative strike length of 600m and up to 180m vertical depth from ground surface.

21.1.24 In order to ascertain the reliability of resource estimated by Geological Cross Section Method, the same has been estimated at 0.20% Cu, 0.5% Cu and 1.0% Cu cut off grade by the Level plan method and results closely matched the main method. The total resource estimated at 0.20% Cu cut-off by Level plan method are 4924995 tonnes (4.92 million tonnes) gross resource and 4432496 tonnes (4.43 million tonnes) of net in-situ resource with an average grade of 0.38% Cu. At, 0.5% Cu cut-off, total 1068581 tonnes (1.07 million tonnes) of gross resource and 961723 net in-situ resorce (0.96 million tonnes) with average grade of 0.69% Cu estimated. At 1.0 Cu cut-off, total 141815 tonnes (0.14 million tonnes) of gross resource and 127634 tonnes (0.13 million tonnes) of net in-situ resource with an average grade of 1.24% Cu estimated.

21.1.25 The variations of resource and grade between both estimation methods were within the acceptable limits (<10%). Hence, the Geoological Cross section method has been accepted for practical purposes.

21.1.26 Total estimated resources in Thakurdih Area-1 Block placed under "Inferred Mineral Resource" category (UNFC-333) in line with MEMC Rules 2015 (Amended upto 2021).

21.2.0 RECOMMENDATION

21.2.1 Present exploration at G3 stage established Copper ore resource at Inferred (UNFC-333) resource category in Thakurdih Area-1 Block. Copper bearing lodes are open in depth and there are significant gaps in exploration. Hence, G2 stage exploration is recommended in the area by close spaced drilling for gaining more confidence on resource and grade. Also, Time Domain EM survey would be helpful to delineate conducting bodies and deeper level mineralisation in the area.

21.2.2 Moreover, upgradation of Thakurdih Area-1 Block at G2 stage would facilitate the Govt. for amalgamation with adjoining potential blocks like Mundadevta-Darkhuli South Jharia G2 Block for making a sizable block for auction.

CHAPTER-XXII

PLATES AND MAPS

22.1.0 List of Plates

22.1.0 The report includes all the relevant plates maps, plans, sections etc. List of plates are provided in the Geological Report.

CHAPTER-XXIII

23.0.0 ANNEXURE / ENCLOSURES TO THE REPORT

23.1.0 The report includes all the relevant annexure and maps, plans, sections, photographs etc. List of annexures, tables, maps, plans, sections, photographs, Text figures & etc are provided in the Geological Report.

CHAPTER-XXIV

24.0.0 ANY OTHER INFORMATION

24.1.0 GEO-TECHNICAL STUDIES

24.1.1 No specific geotechnical studies have been undertaken as there is no scope of work in present exploration at G3 stage. However, as part of geological logging, the following geo-tech parameters have been collected.

1. Core recovery
2. RQD%

24.2.0 REFERENCES

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CHAPTER-XXV

25.0.0 CERTIFICATION

25.1.0 CERTIFICATION

This is to certify that geological report has been prepared in respect of Preliminary Exploration (G-3 Stage) (Phase-I) for Copper and Associated Minerals in Thakurdih Area-1 Block (4.10 sq.km.) District: East Singbhum, State: Jharkhand by Mineral Exploration and Consultancy Limited (MECL) on behalf of National Mineral Exploration Trust (NMET). The report has been prepared in accordance with the Minerals (Evidence of Mineral Contents) Rule 2015 specified under Mineral Auction Rule, 2015 and amended up to 2021.

NAME: **SRIKANTH SHARMA**
DESIGNATION: **Sr. Manager (Geology)/ HoD (Exploration)**

DATE:

LOCALITY INDEX

Locality	Latitude	Longitude
Jharia	22°18’ 7.4”	86° 41’29.48”
Darkhuli	22°17’34.31”	86° 41’48.43”
Baharagora	22°16’39.75”	86° 43’29.24”
Thakurdih	22°18’35.33”	86° 41’15.96”

ABBREVIATIONS USED

SL. No.	Abbreviation	Full form
1	M / m	Meter
2	Cu m	Cubic Meter
4	RL	Reduced Level
5	mRL	Reduced Level in metre
6	M.S.L.	Mean sea level
7	IBM	Indian Bureau of Mines
8	GSI	Geological Survey of India
9	NMET	National Mineral Exploration Trust
10	TCC	Technical cum Cost Committee
11	EC	Executive Committee
12	MMDR	Mines and Minerals (Development and Regulation)
13	MEMC	Minerals (Evidence of Mineral Contents)
14	MECL	Mineral Exploration and Consultancy Limited
15	NABL	National Accreditation Board for Testing and Calibration Laboratories
16	JNARDDC	Jawaharlal Nehru Aluminium Research Development and Design Centre
17	QA/QC	Quality Assessment/ Quality Checks
18	WGS-84	World Geodetic System-84
19	DMS	Degree Minute Second
20	UTM	Universal Transverse Mercator
21	Bhs	Boreholes
22	DGPS	Differential Global Positioning System
23	XRF	X-ray Fluorescence
24	ICP-MS	Inductively Coupled Plasma Mass Spectrometry
25	AAS	Atomic Absorption Spectroscopy
26	XRF	X-Ray Fluorescence Spectroscopy
27	BDL	Below Detection Limit
28	MT	Million Tonnes

Details of Bedrock Sample Analysis for Copper, Lead, Zinc, Nickel, Cobalt, Molybdenum & Tungsten in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Primary Sample No.	Latitude	Longitude	Lithology	Cu %	Pb %	Zn %	Ni %	Co %	Mo %	W %
1	MTB/BR/001	22.3035	86.6942	Garnetiferous Feldspathic Quartz schist/Quartzite	0.02	<0.01	<0.01	<0.01	<0.01	0.19	<0.01
2	MTB/BR/002	22.3155	86.6964	Quartzite	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3	MTB/BR/003	22.3167	86.6962	Quartzite	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	MTB/BR/004	22.3160	86.6948	Garnetiferous Quartz Muscovite(mica) schist	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
5	MTB/BR/005	22.3163	86.6910	Garnetiferous Kya Quartzite	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
6	MTB/BR/006	22.3161	86.6903	Garnetiferous Quartz Mica	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
7	MTB/BR/007	22.3176	86.6906	Meta- basic schist	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
8	MTB/BR/008	22.3170	86.6823	Garnetiferous Kya Quartzite	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
9	MTB/BR/009	22.3174	86.6863	Garnetiferous Kya Quartzite	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
10	MTB/BR/010	22.3169	86.6879	Garnetiferous Quartz Mica	0.07	<0.01	0.01	0.01	<0.01	<0.01	<0.01
11	MTB/BR/011	22.3100	86.6900	Meta- basic schist	0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
12	MTB/BR/012	22.3085	86.6971	Meta- basic schist	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
13	MTB/BR/013	22.3138	86.6843	Quartzite	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
14	MTB/BR/014	22.3121	86.6947	Quartzite	0.05	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
15	MTB/BR/015	22.3138	86.6946	Quartzite/Quartz schist	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	MTB/BR/016	22.3091	86.6901	Quartzite	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
17	MTB/BR/017	22.3124	86.6872	Foliated Quartzite/ Quartz	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
18	MTB/BR/018	22.3144	86.6942	Garnetiferous Kya Quartzite	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	MTB/BR/019	22.3096	86.6921	Foliated Quartzite/ Quartz	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	MTB/BR/020	22.3142	86.6955	Garnetiferous feldspathic Quartz schist	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
21	MTB/BR/021	22.3135	86.6958	Garnetiferous mica schist	8.07	<0.01	0.03	0.01	0.01	<0.01	<0.01
22	MTB/BR/022	22.3137	86.6957	Garnetiferous Quartzite/quartz schist	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
23	MTB/BR/023	22.3136	86.6972	Garnetiferous Quartzite/quartz schist	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	MTB/BR/024	22.3146	86.6972	Banded Garnetiferous quartzite/Qtz schist	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
25	MTB/BR/025	22.3148	86.6957	Garnetiferous quartzite	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	MTB/BR/026	22.3081	86.6891	Granite gneiss	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01

Details of Trench Sample Analysis (Primary) for Copper, Lead, Zinc, Nickel, Cobalt, Molybdenum & Tungsten in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sr No	Trench No.	Sample No	From (m)	To (m)	Thickness (m)	Cu %	Pb %	Zn %	Ni %	Co %	Mo %	W %	Lithology
1	MTB/T5	MTB/T5/001	0.00	0.50	0.50	0.12	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
2		MTB/T5/002	0.50	1.00	0.50	0.13	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
3		MTB/T5/003	1.00	1.50	0.50	0.14	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
4		MTB/T5/004	1.50	2.00	0.50	0.27	<0.01	<0.01	0.03	0.01	<0.01	<0.01	Granite gneiss
5		MTB/T5/005	2.00	2.50	0.50	0.12	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
6		MTB/T5/006	2.50	3.00	0.50	0.12	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
7		MTB/T5/007	3.00	3.50	0.50	0.05	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
8		MTB/T5/008	3.50	4.00	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
9		MTB/T5/009	4.00	4.50	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
10		MTB/T5/010	4.50	5.00	0.50	0.12	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
11		MTB/T5/011	5.00	5.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
12		MTB/T5/012	5.50	6.00	0.50	0.15	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
13		MTB/T5/013	6.00	6.50	0.50	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
14		MTB/T5/014	6.50	7.00	0.50	0.08	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
15		MTB/T5/015	7.00	7.50	0.50	0.13	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
16		MTB/T5/016	7.50	8.00	0.50	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
17		MTB/T5/017	8.00	8.50	0.50	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
18		MTB/T5/018	8.50	9.00	0.50	0.09	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	Granite gneiss
19		MTB/T5/019	9.00	9.50	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
20		MTB/T5/020	9.50	10.00	0.50	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	Granite gneiss
21	MTB/TA	MTB/TA/001	2.00	2.50	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
22		MTB/TA/002	2.50	3.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
23		MTB/TA/003	3.00	3.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
24		MTB/TA/004	3.50	4.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
25		MTB/TA/005	4.00	4.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
26		MTB/TA/006	4.50	5.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
27		MTB/TA/007	5.00	5.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
28		MTB/TA/008	5.50	6.00	0.50	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
29		MTB/TA/009	6.00	6.50	0.50	0.01	<0.01	0.02	0.02	0.01	<0.01	<0.01	Metabasic schist
30		MTB/TA/010	6.50	7.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
31		MTB/TA/011	7.00	7.50	0.50	0.05	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
32		MTB/TA/012	7.50	8.00	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
33		MTB/TA/013	8.00	8.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
34		MTB/TA/014	8.50	9.00	0.50	0.02	0.01	0.02	0.02	0.01	<0.01	<0.01	Metabasic schist
35		MTB/TA/015	9.00	9.50	0.50	<0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
36		MTB/TA/016	9.50	10.00	0.50	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
37		MTB/TA/017	10.00	10.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
38		MTB/TA/018	10.50	11.00	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
39		MTB/TA/019	11.00	11.50	0.50	0.02	<0.01	0.01	0.03	0.01	<0.01	<0.01	Metabasic schist
40		MTB/TA/020	11.50	12.00	0.50	0.03	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
41		MTB/TA/021	15.00	15.50	0.50	0.02	<0.01	0.02	0.03	<0.01	<0.01	<0.01	Qtz Mica schist
42		MTB/TA/022	15.50	16.00	0.50	0.02	<0.01	0.02	0.03	0.01	<0.01	<0.01	Qtz Mica schist
43		MTB/TA/023	16.00	16.50	0.50	0.02	<0.01	0.02	0.03	0.01	<0.01	<0.01	Qtz Mica schist
44		MTB/TA/024	16.50	17.00	0.50	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01	Qtz Mica schist
45		MTB/TA/025	17.00	17.50	0.50	0.02	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
46		MTB/TA/026	17.50	18.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist
47		MTB/TA/027	18.00	18.50	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	Metabasic schist
48		MTB/TA/028	18.50	19.00	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	Metabasic schist

Comparision Analysis of Bedrock & Trench Primary Sample Analysis Vs External Check Sample Analysis for Copper, Lead, Zinc, Nickel, Molybdenum, Cobalt and Tungsten in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Sl. No.	Sample Type	Primary Sample No.	Check Sample No.	Cu (%)			Pb (%)		Zn (%)		Ni (%)		Mo (%)		Co (%)		W (%)	
				Primary	Check	Difference (Check-Primary)	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check
1	Bedrock	MTB/BR/001	MTB/BR/CH1	0.02	0.01	0.01	<0.01	0.00	<0.01	0.00	<0.01	0.00	0.19	ND	<0.01	0.00	<0.01	ND
2	Bedrock	MTB/BR/007	MTB/BR/CH2	0.04	0.02	0.02	<0.01	0.00	<0.01	0.00	0.02	0.00	<0.01	ND	0.01	ND	<0.01	ND
3	Bedrock	MTB/BR/021	MTB/BR/CH3	8.07	5.29	2.78	<0.01	0.02	0.03	0.02	0.01	0.00	<0.01	ND	0.01	0.00	<0.01	ND
4	Trench	MTB/T5/004	MTB/T5/CH1	0.27	0.15	0.12	<0.01	0.01	<0.01	0.00	0.03	0.01	<0.01	ND	0.01	0.00	<0.01	ND
5	Trench	MTB/T5/015	MTB/T5/CH2	0.13	0.07	0.06	<0.01	0.01	<0.01	0.00	0.02	0.01	<0.01	ND	<0.01	0.00	<0.01	0.00
6	Trench	MTB/TA/002	MTB/TA/CH1	0.01	0.01	0.00	<0.01	0.01	0.01	0.01	0.02	0.01	<0.01	ND	0.01	0.00	<0.01	0.00
7	Trench	MTB/TA/011	MTB/TA/CH2	0.05	0.03	0.02	<0.01	0.01	0.01	0.00	0.02	0.01	<0.01	ND	<0.01	0.00	<0.01	0.00
8	Trench	MTB/TA/023	MTB/TA/CH3	0.02	0.01	0.01	<0.01	0.01	0.02	0.01	0.03	0.01	<0.01	ND	0.01	0.01	<0.01	ND

ANNEXURE-III-A/1

Particulars of Boreholes drilled by MECL (MTB-01 to MTB-17) during present G3 investigation in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Borehole No.	WGS84 - UTM ZONE -45N		RL (m)	Angle from horizontal (°)	Azimuth (°)	Date of Commencement	Date of Closure	Total Depth (m)	Remarks
		Northing (m)	Easting (m)							
1	MTB-01	2468181.59	467109.57	75.22	50	210	29.05.2024	17.06.2024	108.00	Phase-I
2	MTB-02	2468012.65	468152.80	94.09	50	190	15.06.2024	24.06.2024	105.00	
3	MTB-03	2468097.07	467393.04	82.83	50	180	29.06.2024	11.07.2024	115.00	
4	MTB-04	2467996.87	468739.87	89.54	50	210	26.06.2024	04.07.2024	97.00	
5	MTB-05	2467303.66	467884.18	84.05	60	210	07.07.2024	19.07.2024	113.00	
6	MTB-06	2467684.20	467313.79	79.86	50	210	22.07.2025	08.08.2024	139.00	
7	MTB-07	2468035.24	467962.62	90.88	55	180	25.07.2026	20.08.2024	112.00	
8	MTB-08	2467340.41	467906.47	87.61	60	210	09.10.2024	28.10.2024	215.00	Phase-II
9	MTB-09	2468093.05	467583.71	87.34	50	180	29.10.2024	26.11.2024	130.00	
10	MTB-10	2468047.42	468773.10	88.53	50	210	01.11.2024	16.11.2024	180.00	
11	MTB-11	2468112.97	467773.63	89.41	50	180	20.11.2024	03.12.2024	170.00	
12	MTB-12	2467452.25	468663.17	94.78	50	210	29.11.2024	12.12.2024	95.00	
13	MTB-13	2468082.37	467221.71	79.78	50	180	06.12.2024	15.12.2024	110.00	
14	MTB-14	2468145.05	467404.42	82.01	50	180	22.12.2024	10.01.2025	200.00	
15	MTB-15	2467084.24	468072.86	83.02	50	250	01.01.2025	17.01.2025	100.00	
16	MTB-16	2467852.26	468927.96	91.39	50	265	21.01.2025	01.02.2025	88.00	
17	MTB-17	2467429.37	467488.71	74.05	50	210	28.01.2025	11.02.2025	123.00	

Details of Previous Boreholes drilled by MECL (2022-23) in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Borehole No	Total Depth (m)	WGS84 - UTM ZONE -45N		RL (m)	Azimuth (°)	Angle from horizontal (°)
			Northing (m)	Easting (m)			
1	MTCB-09	91.00	2467360.28	467684.14	78.28	210.00	60.00
2	MTCB-10	85.00	2467427.36	468877.57	92.64	210.00	60.00
3	MTCB-11	91.50	2467997.75	468390.53	93.85	210.00	60.00

Details of Borehole Deviation data (MTB-01 to MTB-17 & MTCB-09 to MTCB-11) in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
MTB-01			
1	0.00	210.00	50.00
1	3.00	207.73	48.22
1	9.00	206.51	48.42
1	15.00	206.92	49.06
1	21.00	207.31	48.59
1	27.00	207.47	49.95
1	33.00	207.09	48.92
1	39.00	207.01	49.30
1	45.00	207.11	49.02
1	51.00	207.85	48.82
1	57.00	207.81	48.20
1	63.00	208.57	48.36
1	69.00	208.78	47.54
1	75.00	209.56	47.68
1	81.00	209.04	46.97
1	87.00	209.38	47.33
1	93.00	208.46	46.56
1	99.00	209.11	46.89
1	105.00	208.65	46.36
MTB-02			
2	0.00	190.00	50.00
2	4.00	197.15	49.82
2	7.00	197.64	50.13
2	13.00	196.71	50.21
2	19.00	196.50	50.47
2	25.00	196.71	51.08
2	31.00	196.50	50.86
2	37.00	195.88	50.34
2	43.00	195.83	49.75
2	49.00	195.90	49.41
2	55.00	196.00	49.22
2	61.00	195.66	48.37
2	67.00	195.04	47.48
2	73.00	195.03	47.31
2	79.00	194.90	47.01
2	85.00	195.48	47.07
2	91.00	189.91	46.48
2	97.00	189.86	46.37
2	103.00	190.47	46.43
MTB-03			
3	0.00	180.00	50.00
3	4.00	178.49	46.36
3	10.00	177.68	47.66

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
3	16.00	177.71	47.77
3	22.00	178.05	47.59
3	28.00	177.71	47.60
3	34.00	178.06	47.52
3	40.00	178.06	47.37
3	46.00	177.78	47.49
3	52.00	177.51	47.57
3	58.00	178.09	47.31
3	64.00	177.81	47.35
3	70.00	177.12	47.31
3	76.00	177.99	47.19
3	82.00	177.31	47.21
3	88.00	177.97	46.90
3	94.00	177.44	46.94
3	100.00	177.90	46.76
3	106.00	177.86	46.76
3	112.00	177.54	46.70
MTB-04			
4	0.00	210.00	48.79
4	4.00	205.60	48.93
4	7.00	198.30	50.87
4	10.00	198.09	49.67
4	17.00	197.95	49.94
4	24.00	197.98	50.54
4	31.00	197.89	50.67
4	38.00	197.92	50.82
4	45.00	197.95	50.96
4	52.00	196.88	51.16
4	59.00	197.09	51.21
4	66.00	197.39	51.23
4	73.00	197.69	51.26
4	80.00	197.83	51.37
4	87.00	197.90	51.50
4	94.00	198.12	51.71
4	97.00	198.40	51.38
MTB-05			
5	0.00	210.00	60.00
5	4.00	204.13	58.79
5	10.00	204.46	57.47
5	16.00	204.08	57.54
5	22.00	204.26	58.14
5	28.00	203.86	58.03
5	34.00	203.88	57.76
5	40.00	203.88	58.53
5	46.00	203.86	58.61
5	52.00	204.09	58.53
5	58.00	203.18	58.10
5	64.00	203.39	58.23

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
5	70.00	203.56	58.47
5	76.00	203.70	58.28
5	82.00	203.67	57.88
5	88.00	203.93	57.50
5	94.00	204.04	57.56
5	100.00	203.86	57.32
5	106.00	203.76	57.30
5	112.00	203.70	57.19
MTB-06			
6	0.00	210.00	50.00
6	4.00	211.99	49.61
6	10.00	211.68	49.19
6	16.00	211.50	50.04
6	22.00	211.88	49.72
6	28.00	211.64	50.52
6	34.00	212.20	49.53
6	40.00	211.96	50.53
6	46.00	212.17	49.71
6	52.00	212.55	50.14
6	58.00	212.97	49.56
6	64.00	213.39	49.15
6	70.00	214.11	48.49
6	76.00	214.49	47.93
6	82.00	214.65	47.40
6	88.00	214.75	47.65
6	94.00	214.61	47.81
6	100.00	214.37	47.64
6	106.00	214.33	47.49
6	112.00	214.38	47.70
6	118.00	213.99	48.11
6	124.00	214.05	47.84
6	130.00	214.38	47.33
6	136.00	214.78	47.20
MTB-07			
7	0.00	180.00	55.00
7	4.00	187.28	52.95
7	7.00	186.94	53.00
7	13.00	187.30	53.23
7	19.00	187.56	53.33
7	25.00	187.72	53.23
7	31.00	187.49	53.19
7	37.00	187.43	53.54
7	43.00	187.86	53.69
7	49.00	188.32	53.86
7	55.00	187.88	53.74
7	61.00	187.66	53.14
7	67.00	186.99	52.96
7	73.00	186.97	53.02

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
7	79.00	186.98	53.04
7	85.00	187.43	53.37
7	91.00	188.01	53.49
7	97.00	188.02	53.42
7	103.00	188.00	53.30
7	109.00	189.00	52.63
MTB-08			
8	0.00	210.00	60.00
8	7.00	211.26	65.70
8	13.00	211.33	66.15
8	19.00	210.76	65.49
8	25.00	210.94	65.49
8	31.00	210.62	65.38
8	37.00	210.94	65.71
8	43.00	210.54	65.61
8	49.00	210.92	65.30
8	55.00	211.37	64.67
8	61.00	211.58	64.36
8	67.00	211.96	63.93
8	73.00	211.95	63.67
8	79.00	211.80	63.34
8	85.00	211.83	63.20
8	91.00	212.27	62.90
8	97.00	212.75	62.71
8	103.00	213.03	62.59
8	109.00	212.95	62.39
8	115.00	212.78	62.40
8	121.00	212.80	62.65
8	127.00	213.13	62.63
8	133.00	213.29	62.56
8	139.00	213.16	62.52
8	145.00	213.66	62.15
8	151.00	214.03	61.91
8	157.00	214.63	61.85
8	163.00	214.87	61.83
8	169.00	214.83	61.72
8	175.00	214.73	61.62
8	181.00	214.67	61.47
8	187.00	214.52	61.31
8	193.00	214.38	60.93
8	199.00	214.54	60.23
8	205.00	214.93	60.31
8	211.00	215.17	60.27
MTB-09			
9	0.00	180.00	50.00
9	4.00	178.00	50.84
9	7.00	177.00	50.88
9	13.00	176.00	49.16

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
9	19.00	178.00	47.99
9	25.00	180.00	48.34
9	31.00	179.00	48.57
9	37.00	180.00	48.56
9	43.00	182.02	48.09
9	49.00	181.54	47.81
9	55.00	181.13	47.70
9	61.00	180.55	47.59
9	67.00	175.58	47.63
9	73.00	179.34	47.66
9	79.00	178.90	47.59
9	85.00	179.77	47.48
9	91.00	178.61	47.37
9	97.00	178.41	47.24
9	103.00	180.05	46.78
9	109.00	178.01	46.53
9	115.00	179.04	46.40
9	121.00	176.35	46.37
9	127.00	172.00	46.22
MTB-10			
10	0.00	210.00	50.00
10	7.00	208.00	51.24
10	10.00	207.00	51.58
10	16.00	205.00	53.11
10	22.00	209.00	52.50
10	28.00	210.00	52.62
10	34.00	208.00	52.77
10	40.00	209.00	52.74
10	46.00	209.00	52.71
10	52.00	210.00	52.31
10	58.00	212.70	52.13
10	64.00	212.75	51.79
10	70.00	212.57	51.63
10	76.00	212.93	51.17
10	82.00	212.66	50.59
10	88.00	212.30	50.18
10	94.00	213.83	49.90
10	100.00	210.86	49.90
10	106.00	210.02	49.95
10	112.00	211.21	49.94
10	118.00	211.02	49.71
10	124.00	211.21	49.54
10	130.00	210.91	49.36
10	136.00	212.29	49.46
10	142.00	213.07	49.38
10	148.00	213.43	49.23
10	154.00	211.92	48.98
10	160.00	212.47	48.96

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
10	166.00	212.40	48.80
10	172.00	208.99	48.31
10	178.00	212.95	47.66
MTB-11			
11	0.00	180.00	50.00
11	2.00	180.00	51.23
11	6.00	180.00	51.68
11	10.00	178.00	51.58
11	16.00	180.00	51.82
11	22.00	188.00	51.85
11	28.00	186.00	51.92
11	34.00	182.00	51.67
11	40.00	181.16	51.50
11	46.00	182.35	51.45
11	52.00	182.09	51.50
11	58.00	181.12	51.34
11	64.00	182.20	51.27
11	70.00	181.81	51.26
11	76.00	179.22	51.12
11	82.00	181.07	50.77
11	88.00	181.69	50.78
11	94.00	183.10	50.65
11	100.00	183.36	50.32
11	106.00	182.57	50.08
11	112.00	182.59	50.02
11	118.00	182.32	49.78
11	124.00	182.52	49.59
11	130.00	183.69	49.52
11	136.00	182.87	49.18
11	142.00	183.78	48.95
11	148.00	183.93	48.82
11	154.00	180.00	48.42
11	160.00	183.64	48.01
11	166.00	183.39	47.86
MTB-12			
12	0.00	210.00	50.00
12	3.00	225.34	50.52
12	7.00	212.00	50.09
12	13.00	212.00	49.60
12	19.00	214.00	49.68
12	25.00	214.00	49.82
12	31.00	212.00	50.03
12	37.00	210.00	50.23
12	43.00	212.00	50.49
12	49.00	216.68	50.41
12	55.00	215.84	50.72
12	61.00	215.30	50.94
12	67.00	214.99	50.99

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
12	73.00	215.03	50.99
12	79.00	215.74	50.80
12	85.00	217.02	50.90
12	91.00	218.92	50.81
MTB-13			
13	0.00	180.00	50.00
13	7.00	178.00	50.13
13	13.00	179.00	51.19
13	19.00	178.00	50.21
13	25.00	172.00	49.67
13	31.00	188.00	49.98
13	37.00	182.00	49.92
13	43.00	183.00	49.78
13	49.00	184.70	49.54
13	55.00	180.00	48.95
13	61.00	186.39	48.67
13	67.00	184.27	48.53
13	73.00	183.87	48.37
13	79.00	184.17	48.70
13	85.00	185.23	48.49
13	91.00	183.29	48.62
13	97.00	182.46	48.52
13	103.00	180.00	48.37
13	109.00	186.00	48.28
MTB-14			
14	0.00	180.00	50.00
14	1.00	359.78	50.21
14	7.00	180.88	49.92
14	13.00	178.00	49.94
14	19.00	175.00	50.09
14	25.00	178.00	50.01
14	31.00	183.27	49.74
14	37.00	185.22	49.54
14	43.00	184.49	49.11
14	49.00	184.81	48.85
14	55.00	182.48	48.72
14	61.00	186.40	48.70
14	67.00	185.25	48.44
14	73.00	185.45	47.88
14	79.00	186.19	47.39
14	85.00	183.85	46.88
14	91.00	182.98	46.74
14	97.00	184.46	46.31
14	103.00	182.94	46.33
14	109.00	185.37	46.24
14	115.00	183.10	46.13
14	121.00	185.12	46.30
14	127.00	182.89	46.09

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
14	133.00	184.86	45.92
14	139.00	182.00	45.74
14	145.00	184.06	45.69
14	151.00	189.24	45.62
14	157.00	185.80	45.38
14	163.00	182.83	45.14
14	169.00	182.80	44.82
14	175.00	180.00	44.87
14	181.00	180.00	44.75
14	187.00	182.80	44.66
14	193.00	180.00	44.43
14	199.00	184.00	44.46
MTB-15			
15	0.00	250.00	50.00
15	4.00	293.79	50.61
15	10.00	252.00	50.86
15	16.00	250.00	50.98
15	22.00	251.00	50.56
15	28.00	253.00	50.74
15	34.00	258.00	51.02
15	40.00	256.00	51.15
15	46.00	254.00	51.35
15	52.00	256.11	51.14
15	58.00	254.83	50.88
15	64.00	254.08	50.74
15	70.00	256.23	50.40
15	76.00	255.49	50.16
15	82.00	253.00	49.82
15	88.00	260.18	49.53
15	94.00	258.00	49.65
15	100.00	254.65	49.51
MTB-16			
16	0.00	265.00	50.00
16	6.00	262.50	50.35
16	7.00	260.00	50.40
16	13.00	268.00	51.61
16	19.00	273.87	52.19
16	25.00	274.76	51.31
16	31.00	275.58	51.67
16	37.00	275.53	51.63
16	43.00	275.30	51.71
16	49.00	275.24	51.73
16	55.00	275.17	51.57
16	61.00	273.92	51.58
16	67.00	261.76	51.55
16	73.00	250.05	51.20
16	79.00	277.46	50.89
16	85.00	280.03	50.79

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
MTB-17			
17	0.00	210.00	50.00
17	4.00	210.00	50.63
17	7.00	210.00	50.73
17	13.00	210.00	50.87
17	19.00	210.00	51.07
17	25.00	210.00	50.94
17	31.00	210.00	51.34
17	37.00	210.00	51.27
17	43.00	210.00	51.93
17	49.00	210.00	52.19
17	55.00	210.00	53.01
17	61.00	210.00	53.15
17	67.00	210.00	53.40
17	70.00	210.00	53.26
17	73.00	210.00	53.14
17	76.00	210.00	52.79
17	79.00	210.00	52.31
17	82.00	210.00	52.38
17	85.00	210.00	52.43
17	88.00	210.00	52.38
17	91.00	210.00	52.24
17	94.00	210.00	52.23
17	97.00	210.00	51.95
17	100.00	210.00	51.80
17	103.00	210.00	51.74
17	106.00	210.00	51.67
17	109.00	210.00	51.58
17	112.00	210.00	51.35
17	115.00	210.00	51.19
17	118.00	210.00	51.21
17	121.00	210.00	51.04
MTCB-09			
18	0.00	210.00	60.00
18	7.00	210.00	58.79
18	13.00	210.00	58.94
18	19.00	210.00	59.11
18	25.00	210.00	59.10
18	31.00	210.00	59.36
18	37.00	210.00	59.30
18	43.00	210.00	59.14
18	49.00	210.00	59.25
18	55.00	210.94	59.44
18	61.00	211.79	58.43
18	67.00	211.78	58.21
18	73.00	211.42	58.15
18	79.00	208.83	57.97
MTCB-10			

Sl. No.	Depth (m)	Bearing (°)	Angle (°)
19	0.00	210.00	60.00
19	4.00	210.00	61.34
19	10.00	210.00	61.97
19	16.00	210.00	61.83
19	22.00	210.00	61.70
19	28.00	214.13	61.68
19	34.00	213.04	61.29
19	40.00	213.96	61.00
19	46.00	214.87	60.60
19	52.00	214.30	60.38
19	58.00	214.90	60.14
19	64.00	210.92	60.14
19	70.00	210.92	59.45
19	76.00	205.69	59.63
19	82.00	205.69	58.98
MTCB-11			
20	0.00	210.00	60.00
20	7.00	210.00	59.75
20	10.00	212.23	60.01
20	16.00	213.00	59.93
20	22.00	214.00	60.06
20	28.00	215.00	59.59
20	34.00	217.55	59.88
20	40.00	216.11	59.96
20	46.00	217.59	59.48
20	52.00	216.30	59.78
20	58.00	217.06	59.26
20	64.00	215.12	59.45
20	70.00	212.18	59.32
20	76.00	216.26	58.99
20	82.00	214.59	59.31
20	88.00	215.50	59.22

Detailed Runwise lithologs of boreholes drilled by MECL in Thakurdih Area-1 Block, District - East Singhbhum, Jharkhand

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-01	0.00	3.00	0.24	3.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	3.00	6.00	0.30	3.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	6.00	7.00	0.47	1.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	7.00	10.00	1.04	3.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	10.00	13.00	1.80	3.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	13.00	16.00	1.70	3.00	-		Yellow	Top soil	Loose, friable to cohesive in nature				
MTB-01	16.00	19.00	2.23	3.00	-		Yellow	Top soil (bands of weather rock)	Loose, friable to cohesive in nature				
MTB-01	19.00	22.00	2.00	3.00	-		Yellow grey	Soil + pebbles + cobbles of Quartz	Loose, cohesive				HQ
MTB-01	22.00	25.00	2.04	3.00	-		Yellow grey	Soil + pebbles + cobbles of Quartz					HQ
MTB-01	25.00	28.00	1.88	3.00	-		Yellow grey	Highly weathered schistosed rock (partially formed soil)	Soft, loose & cohesive	Very fine grained	Highly weathered fractures/fragmented friable		Partially fractured soil. HQ
MTB-01	28.00	31.00	2.86	3.00	0.60	20.98	Greenish grey	Quartz feldspathic amphibole + biotite + chlorite schist(Metabasic schist partially weathered)	Hard & compact	Very fine grained	Strongly schistosed @ ~ 35°-40° w.r.t CA, splitted along schistosity, highly fractured & fragmented at top 50 cm, partially turned to soil		HQ
MTB-01	31.00	34.00	2.79	3.00	1.04	37.28	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine grained	Strongly schistosed @ ~ 35°, crenulated, fracture/splitted along schistosity, few irregular fracture, fragmented & broken core, partially weathered along fracture		HQ up to 33.00, NQ 33.00 onwords, partially weathered upto 32.00
MTB-01	34.00	37.00	2.92	3.00	1.95	66.78	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine grained	Moderately to strongly schistosed @~ 35°-40° w.r.t CA, ocasional microfolds & crenulation, fractured/splitted along schistosity, occasionally broken core		NQ
MTB-01	37.00	40.00	2.90	3.00	1.58	54.48	Dark greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine - fine grained	Moderately to strongly schistosed @ ~ 35°-40°, occasionally microfolded & cranulationed, quartz carbonate veins parallel to schistosity, fractured parallel to schistosity	Random dissemination of Chalcopyrite & pyrite specs from 38.40-39.00 (from - <0.10 %)	
MTB-01	40.00	43.00	2.97	3.00	1.57	52.86	Dark greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine - fine grained	Moderately to strongly schistosed @~ 90°, fractured/splitted along schistosity, highly fractured, broken & friable core @ ~41.60-43.00, highly altered @~42.00 - 43.00, oxidation along fracture	Minor thin stringers of Chalcopyrite along schistosity & as gap filling	
MTB-01	43.00	46.00	2.96	3.00	1.91	64.53	Dark greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine - fine grained	Moderately to strongly schistosed @ ~ 50° w.r.t CA, fracture/splitted along schistosity, microfolded/crenulated, quartz veins	Rare spces of stringers of Chalcopyrite (Not worth sampling)	
MTB-01	46.00	49.00	2.86	3.00	2.28	79.72	Dark greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine - fine grained	Moderately schistosed, microfolding/crenulation of earlier generation schistosity, feldspathization (alternation), fractured along schistosity		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-01	49.00	52.00	2.82	3.00	2.06	73.05	Dark greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine-medium grained	Moderately schistosed @~45°-50°, altered & silicified, fractured along schistosity, broken & fragmented core, low angle fracture	Rare spces of sulfides along with magnetite (?) at places (Not worth sampling)	
MTB-01	52.00	55.00	2.88	3.00	1.84	63.89	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (altered) (Metabasic schist)	Hard & compact, friable @ ~ 54.00	Fine-medium grained	Moderately schistosed @ ~ 35°-40°, mostly fractured along schistosity, broken & fragmented core, thin quartz vein & carborate vein	Thin stringers & veins of Chalcopyrite along schistosity & as diff gop filling	
MTB-01	55.00	58.00	2.93	3.00	2.18	74.40	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (altered) (Metabasic schist)	Hard & compact	Fine grained	Feeble to moderately schistosed, occasional micro-folds & crenulations, mostly fractured along the schistosity ,few fracture @ ~ 50° discordant to schistosity ,quartz carborate vein	Stringers & veins & spces of Chalcopyrite & pyrite along schistosity & along fractured quartz vein	
MTB-01	58.00	61.00	3.00	3.00	2.49	83.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (altered) (Metabasic schist)	Hard & compact	Fine-medium grained	Feeble to moderately schistosed @~50°, few fractures parallel to schistosity, breciated quartz veins	Minor stringers & spces of Chalcopyrite at top	
MTB-01	61.00	64.00	2.70	3.00	2.20	81.48	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @ ~ 50°-55°, fractured/splitted along schistosity, occasional crenulations	Rare spces of Chalcopyrite	
MTB-01	64.00	67.00	3.00	3.00	1.77	59.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~ 55°, highly factured @ ~ 65.00-65.30, 66.90, fragmented & broken core, fracture angle is ~ 35°-50° w.r.t CA, occasional crenulations or microfoldings.	Stringers of Chalcopyrite along schistosity and as fracture filling in middle to bottom	
MTB-01	67.00	70.00	2.65	3.00	1.89	71.32	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°-55°, mostly fractured along schistosity, low angle fracture (~25°) @ ~67-67.20, irregular quartz vein, occasional presence of thin carbonate vein	Stringers & spces of Chalcopyrite & pyrite at top	
MTB-01	70.00	73.00	2.87	3.00	2.08	72.47	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-55°, mostly fractured along schistosity, few irregular fracture, occasional microfolds at place, broken/fragmented core	Minor stringers of Chalcopyrite & pyrite along some fracture plane & along schistosity	
MTB-01	73.00	76.00	2.94	3.00	2.28	77.55	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~55°-60°, multiple fracture @~40°-45°, broken core, k-alternation, silicified towards bottom	Minor spces & stringers of Chalcopyrite along schistosity	
MTB-01	76.00	79.00	2.73	3.00	1.81	66.30	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed ~55°, fractured parallel to schistosity, fracture @~78.00, occasionally potassic (K) alternation, fragmented core @~ 77.00		
MTB-01	79.00	82.00	2.64	3.00	2.02	76.52	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-55°, occasional microfolds & crenulations, low angle fracture @~ 30°		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-01	82.00	85.00	3.00	3.00	2.34	78.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, multiple fractures @50°-60°, also fracture/splitting parallel to schistosity, occasional fragmented core, quartz vein		
MTB-01	85.00	88.00	2.80	3.00	1.88	67.14	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, occasional microfoldings of earlier generation schistosity, fractured along schistosity, broken core	Rare stringers of Chalcopyrite (Not worth sampling)	
MTB-01	88.00	91.00	2.99	3.00	2.08	69.57	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, mostly fractured along schistosity, few fracture @~60°, fragmented core, partially silicified	Rare spces & stringers of Chalcopyrite & pyrite (Not worth sampling)	
MTB-01	91.00	94.00	2.89	3.00	1.88	65.05	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, multiple fracture oblique to schistosity @~30°-50°, at place conjugate fracture, fragmented & broken core		
MTB-01	94.00	97.00	2.81	3.00	2.55	90.75	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine-medium grained	Moderately to strongly schistosed, mostly factured parallel to schistosity, sheared quartz vein, occasional grannular appearance		
MTB-01	97.00	100.00	2.90	3.00	1.39	47.93	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine-medium grained	Moderately schisosed @~40°-50°, wavy to crenulated schistosity, highly fractured & fragmented core, fracture angle ranges from 40°-60° w.r.t CA, quartz vein parallel to schistosity	Minor stringers & veins of Chalcopyrite along with pyrite	
MTB-01	100.00	101.00	1.00	1.00	0.43	43.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine-medium grained	Strongly schistosed @~45°-50°, highly fractured & fragmented along schistosity plane, quartz veins	Very rare spces of sulfides	
MTB-01	101.00	102.00	0.87	1.00	0.37	42.53	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine-medium grained	Strongly schistosed @~45°-50°, highly fractured & fragmented along schistosity plane, quartz veins	Veins & stringers of pyrite along with Chalcopyrite as fracture filling with in the quartz vein	
MTB-01	102.00	104.00	1.80	2.00	1.42	78.89	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, straight to slighty wavy schistosity plane, occasional crenulation, sheared quartz vein, fracture/splitted along schistosity		
MTB-01	104.00	105.00	1.00	1.00	0.82	82.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°, fractured/splitted along schistosity		
MTB-01	105.00	108.00	3.00	3.00	2.18	72.67	Dark grey	Quartz feldspathic biotite schist	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, fracture @~40°-50° oblique to schistosity, quartz vein parallel to schistosity		
MTB-02	0.00	3.00	0.17	3.00			Brown	Loose gravels/pebbles	Loose	Fine grained			
MTB-02	3.00	6.00	0.20	3.00			Brown	Loose gravels/pebbles	Loose	Fine grained			
MTB-02	6.00	7.00	0.80	1.00			Yellow grey	Partially oxidised schistosed rock	Moderate hard & friable	Fine grained	Strongly schistosed highly fractured & fragmented, at place friable broken core, core loss		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-02	7.00	10.00	2.29	3.00			Yellow grey	Partially oxidised basic schist	Moderate hard & friable	Fine grained	Strongly schistosed highly fractured & fragmented, broken core, core loss, at place friable due to weathering / oxidation		
MTB-02	10.00	13.00	1.70	3.00			Yellow grey	Partially to fully oxidised basic schist	Moderate hard to soft & friable	Fine grained	Moderate to strongly schistosed, highly fractured & fragmented & broken core, core loss . Friable due to weathering or oxidation.		
MTB-02	13.00	16.00	2.18	3.00			Yellow grey	Partially to fully oxidised basic schist	Hard to moderate hard, compact to friable at place	Fine grained	Moderate to strongly schistosed, highly fractured & fragmented core, broken core, core loss, limonitic stain along fracture.		
MTB-02	16.00	19.00	2.60	3.00	1.55	59.62	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~ 50°, highly fractured & fragmented core along schistosity, occasionally broken core, partially oxidised along few fracture		
MTB-02	19.00	22.00	2.75	3.00	0.42	15.27	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~ 50°, highly fractured & fragmented core along schistosity, occasionally broken core, partially oxidised along few fracture		
MTB-02	22.00	25.00	2.89	3.00	0.76	26.30	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~45°-50°, highly fractured along schistosity, few fracture at high angle to CA, occasional sheared quartz vein parallel to schistosity.	Stringers of Chalcopyrite along schistosity & quartz vein	
MTB-02	25.00	28.00	2.81	3.00	1.94	69.04	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~45°-50°, mostly fractured along the schistosity, thin quartz veins.		
MTB-02	28.00	30.00	2.00	2.00	1.27	63.50	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~45°-50°, mostly fractured along schistosity, low angle fracture (~30°) @~28.50, oxidation along fracture	Rare stringers of pyrite & Chalcopyrite (Not worth sampling)	
MTB-02	30.00	31.00	0.70	1.00	0.27	38.57	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~45°-50°, mostly fractured along schistosity	Stringers of Chalcopyrite along schistosity (0.30% @0.50 cm) (Not worth sampling)	
MTB-02	31.00	34.00	1.75	3.00	0.75	42.86	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~45°-50°, mostly fractured along schistosity, low angle fracture (~ 20°) @~ 32.00m filled with quartz vein oxidation along low angle fracture		
MTB-02	34.00	37.00	3.00	3.00	1.61	53.67	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~ 50°, fractured parallel to schistosity, broken & fragmented core at place, partially silicified at place.		
MTB-02	37.00	40.00	3.00	3.00	1.15	38.33	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~50°, mostly fractured & splitted along schistosity, also low angle irregular fracture (~10°-20°)@~37.50-38.00, oxidation along low angle fracture		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-02	40.00	43.00	3.00	3.00	1.13	37.67	Dark Greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~ 50°, highly fractured & fragmented low angle fracture (~20°-30°) across the schistosity @~41.00-49.50, broken core, oxidation along low angle fracture.		
MTB-02	43.00	46.00	3.00	3.00	1.00	33.33	Dark grey	Quartz-feldspathic chlorite biotite schist ± amphibole	Hard & compact	Fine grained	Strongly schistosed @~50°, straight, few fracture @~40°, discordant to schistosity plane, quartz vein parallel to schistosity, oxidation along few fracture.	Minor stringers of sulfides at at 44.90 (Not worth sampling)	
MTB-02	46.00	49.00	3.00	3.00	1.75	58.33	Dark grey	Quartz-feldspathic chlorite biotite schist ± amphibole	Hard & compact	Fine grained	Strongly schistosed @~50°, straight few fracture @~40°, discordant to schistosity plane, quartz vein parallel to schistosity, oxidation along few fracture.		
MTB-02	49.00	52.00	3.00	3.00	1.90	63.33	Dark grey	Quartz-feldspathic chlorite biotite schist ± amphibole	Hard & compact	Fine grained	Strongly schistosed @~50°, fractured/splitted parallel to schistosity, occasionally fractures oblique to schistosity at place broken & fragmented core, minor quartz veins.	Minor thin stringers @ 50.00, 50.50 along schistosity (Not worth sampling)	
MTB-02	52.00	55.00	3.00	3.00	1.65	55.00	Dark greenish grey	Quartz-feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~50°, straight, mostly fractured along schistosity, intermittent thin quartz veins parallel tro schistosity.	Stringers & dissminated spces of Chalcopyrite along schistosity @ 52.10 & 53.70-55.00	
MTB-02	55.00	58.00	3.00	3.00	1.65	55.00	Dark greenish grey	Quartz-feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fracture @~56.33,57.50, along with broken & fragmented core, also fracture along schistosity.	Spces of Chalcopyrite & pyrite along schistosity adjaccent to quartz vein @ 52.10, also intermittent stringers along with disseminated spces of pyrite & Chalcopyrite parallel to schistosity throughout the core length 55-57.00	
MTB-02	58.00	61.00	3.00	3.00	2.54	84.67	Dark grey	Quartz-feldspathic chlorite biotite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~50°, mostly fractured/splitted along schistosity, occasionally sheared & brecciated quartz vein parallel to schistosity	Stringers of Chalcopyrite along brecciated quartz vein @59.70 (Not worth sampling)	
MTB-02	61.00	64.00	2.91	3.00	2.57	88.32	Dark grey	Quartz-feldspathic chlorite biotite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~50°, few fracture/splits parallel to schistosity, thin quartz vein /lamellae along schistosity.	Intermittent thin stringers of Chalcopyrite along quartz vein / lamellar at places @62.80 (Not worth sampling)	
MTB-02	64.00	67.00	2.85	3.00	2.05	71.93	Dark greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderate to strongly schistosed @~50°, irregular fracture with fragmented core @~64.00,also fracture parallel to schistosity, multiple sheared & brecciated quartz veins.	Cluster of thin stringers along quartz vein @~64.76, also Intermittent thin stringers of Chalcopyrite throughout the core length mainly adjaccent to quartz veins.	
MTB-02	67.00	70.00	1.46	3.00	0.70	47.95	Dark greenish grey	Quartz-feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @50°, fractured & fragmented along schistosity, occasionally broken core, partial silicification.	Stringers & spces of Chalcopyrite along schistosity	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-02			1.43				Light grey	Serpentine(?) biotite chlorite schist (altered Metabasic rock)	Moderate hard & compact	Very fine grained	Strongly schistosed @~45°-50°, highly fractured/ splitted folowing the schistosity, occasional fragmented & broken core.	Rare spces of Chalcopyrite	(NWS)
MTB-02	70.00	73.00	0.29	3.00	1.43	50.53	Grey white	Asbestose bearing Metabasic schist	Soft & friable	Fine grained	Schistosed, highly fractured & fragmented & broken, friable core		
MTB-02			2.54				Grey to dark grey	Quartz amphibole chlorite biotite schist (silicified from 70.30-72.00)	Very hard & compact	Fine -medium grained	Feeble to moderately schistosed, silicified, fractured from top to middle, brecciated albitic vein, higly fracture & fragmented to broken core with irregular fracture angle ranging from ~30°-60°.	Stringers & disseminated spces of Chalcopyrite along schistosity towords bottom (Not worth sampling)	
MTB-02	73.00	76.00	2.90	3.00	0.87	30.00	Dark grey	Serpantine brearing(?) amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine -medium grained	Strongly schistosed @~30°-40°, highly fractured along the schistosity, occasional fragmented & broken core.	Disseminated Chalcopyrite spces at top, rare & minor stringers of Chalcopyrite along schistosity at 74.00-75.00	
MTB-02			0.86				Light to dark grey	Garnetiferous quartz chlorite mica schist (silicified)	Very hard & compact	Fine grained	Feeble to moderately schistosed, altered & silicified, fractured along schistosity @~45°,	Thin stringers parallel to schistosity	Altered contact
MTB-02	76.00	79.00	2.71	3.00	1.26	46.49	Pinkish grey	Garnetiferous quartz chlorite mica schist (silicified at top)	Very hard & compact	Fine - course grained	Feeble to moderately schistosed @~50°, fractured parallel to schistosity, occasional broken & fragmented core, few extension fracture filled with carbonate vein.	Intermittent thin erratic stringers of Chalcopyrite along schistosity	
MTB-02	79.00	82.00	2.59	3.00	1.20	46.33	Pinkish grey	Garnetiferous quartz chlorite mica schist (silicified at top)	Hard & compact	Fine - very course grained	Feeble moderately schistosed @~50°, wavy, fractured at high angle (~60°-80°) to the CA, broken & fragmented core, at place sheared quartz vein.	Intermittentt stringers & spces of Chalcopyrite & pyrite along schistosity adjacent to quartz vein	
MTB-02	82.00	85.00	3.00	3.00	2.60	86.67	Pinkish grey	Garnetiferous quartz chlorite mica schist (silicified at top)	Hard & compact	Fine - very course grained	Feeble moderately schistosity @~50°, wavy fracture @~50°-60°, @~59.00, also few schistosity parallel fracture ,minor sheared & brecciated quartz vein	Stringers of Chalcopyrite along schistosity	
MTB-02	85.00	88.00	3.00	3.00	2.21	73.67	Pinkish grey	Garnetiferous quartz chlorite mica schist (silicified at top)	Hard & compact	Fine - very course grained	Feeble moderately schistosed, wavy to crenulated, occasionally mocrofolded, mostly fractured along schistosity, schistosity parallel quartz vein	Stringers of Chalcopyrite along schistosity	
MTB-02	88.00	91.00	3.00	3.00	2.47	82.33	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately schistosed @~50°, wavy to crenulated, occasionally microfolded, few fractures following the schistosity, thin quartz veins, Garnets occurs as porphyroclasts/ clustered porphyroclasts	Minor stringers, veinlets of Chalcopyrite along schistosity	
MTB-02	91.00	94.00	2.93	3.00	2.55	87.03	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately schistosed @~50°, wavy to crenulated, occasionally microfolded, few fractures following the schistosity, thin quartz veins, Garnets occurs as porphyroclasts/ clustered porphyroclasts	Stringers of Chalcopyrite along schistosity	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-02	94.00	97.00	2.97	3.00	2.07	69.70	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately schistsoed @~50°, wavy to crenulated, Garnets occurs as porphyroclasts/ clustered porphyroclasts, fractured along schistosity, sheared quartz veins, thin basic dyke @ 96.20.	Stringers & veins of Chalcopyrite & pyrite along schistosity & quartz veins, at place disseminated spces.	
MTB-02	97.00	100.00	3.00	3.00	1.36	45.33	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately schistosed wavy to crenulated, irregular low angle fracture (~10°-20°), broken & fragmented core @~98.00-99.00	Rare spces of sulfides (Not worth sampling)	
MTB-02	100.00	103.00	2.70	3.00	2.20	81.48	Greenish grey (pink patches)	Garnetiferous quartz biotite chlorite schist ± amphibole	Hard & compact	Fine - very course grained	Moderately schistosed, highly fractured & fragmented, high abandance of garnet towards bottom, quartz veins	Stringers of Chalcopyrite along schistosity at single place @~100.30 (Not worth sampling)	Gradational contact with the below meta-basic band
MTB-02			0.30				Greenish grey	Amphibole biotite schist/ Amphibolite (Metabasic intrusive)	Hard & compact	Fine - very course grained	Feeble schistosity .		
MTB-02	103.00	105.00	1.54	2.00	1.24	80.52	Greenish grey	Amphibole chlorite biotite schist/ Amphibolite (Metabasic intrusive)	Very Hard & compact	Fine grained	Moderately schistosed multiple fracture (~60°-80°) w.r.t CA thin to thick quartz feldspathic vein parallel to the schistosity		
MTB-03	0.00	3.00	0.31	3.00			Brown	Sandy soil	Soft & cohesive				
MTB-03	3.00	6.00	0.36	3.00			Brown yellow	Sandy soil	Soft & cohesive				
MTB-03	6.00	7.00	0.36	1.00			Brown yellow	Sandy soil	Soft, friable				
MTB-03	7.00	10.00	1.07	3.00			Yellow	Highly weathered schistosed rock + partially formed soil	Soft, friable	Fine grained	Highly weathered & oxidised		
MTB-03	10.00	13.00	0.75	3.00			Yellow	Highly wethered schistosed rock + partially formed soil	Soft, friable	Fine grained	Highly weathered & oxidised		
MTB-03	13.00	16.00	0.60	3.00			Yellowish grey	Partially to fully weathered schistosed rock	Moderate hard & friable	Fine grained	Strongly schistosed, highly fragmented core, core loss,		
MTB-03	16.00	19.00	1.45	3.00	0.33	22.76	Greenish grey	Amphibole biotite chlorite schist (metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~25°-30°, highly fractured & fragmented , fracture parallel to schistosity , occasionally weathered & oxidised		
MTB-03	19.00	22.00	2.92	3.00	0.40	13.70	Greenish grey	Amphibole biotite chlorite schist ± quartz ± Albite	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, fracture parallel to schistosity low angle fracture , fragmented core,	Rare specs of sulfides (Not worth sampling)	HQ upto 21.00 ↑ HQ, on words 21.00↓NQ
MTB-03	22.00	25.00	2.94	3.00	1.27	43.20	Greenish grey	Amphibole biotite chlorite schist ± Albite (metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°-55°, occasionally wavy to sigmoidal schistosity, fracture/ fragmented along schistosity, few low angle fracture, fragmented/ broken core , quartz veins		
MTB-03	25.00	28.00	2.90	3.00	1.09	37.59	Greenish grey	Amphibole chlorite biotite schist ± garnet ± Albite + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~45°-55°, irregular fractures, few fracture parallel to schistosity , quartz veins.		
MTB-03	28.00	31.00	2.97	3.00	1.98	66.67	Greenish grey	Amphibole chlorite biotite schist ± garnet ± Albite + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~45°-55°, irregular fractures, few fracture parallel to schistosity , quartz veins.		
MTB-03	31.00	34.00	2.96	3.00	1.44	48.65	Greenish grey	Garnetiferous amphibole chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~45°-50°, fracture along schistosity, large garnet porphyroclasts		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-03	34.00	37.00	2.60	3.00	0.84	32.31	Greenish grey	Garnetiferous amphibole biotite chlorite schist	Hard & compact	Fine to very coarse grained	Moderately strongly schistosed @~45°-50°, straight to wavy schistosity, multiple fracture along schistosity, fragmented core		
MTB-03			0.40				Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly moderately schistosed , large garnet porphyroclasts,		
MTB-03	37.00	40.00	2.90	3.00	1.28	44.14	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly moderately schistosed, large - garnet porphyroclasts/clusters, fracture high angle (>70°) , few low angle fracture (~30°) , oxidised low angle fracture.		
MTB-03	40.00	43.00	2.92	3.00	2.12	72.60	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly moderately schistosed, large - garnet porphyroclasts/clusters, fracture high angle (>70°) , few low angle fracture (~30°) , oxidised low angle fracture, quartz veins		
MTB-03	43.00	46.00	2.99	3.00	2.33	77.93	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately strongly schistosed , @~ 45°-50°, wavy , mostly fractured along schistosity ,	Minor specs & stringers of Chalcopyrite along schistosity place & inter-porphyroclarts area. (Not worth sampling)	
MTB-03	46.00	49.00	2.88	3.00	2.28	79.17	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~40°-50°, wavy, mostly fracture along schistosity , large garnet porphyroclasts , sometimes occuring as clusters	Minor stringers & specs of Chalcopyrite along schistosity	
MTB-03	49.00	52.00	2.92	3.00	2.25	77.05	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Large garnet porphyroclasts moderately strongly schistosed @~40°-50°, few fracture along schistosity.	Stringers of Chalcopyrite along schistosity	
MTB-03	52.00	55.00	2.90	3.00	2.16	74.48	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Large garnet porphyroclasts moderately strongly schistosed @~40°-50°, few fracture along schistosity.	Stringers & specs of Chalcopyrite along schistosity or along inter-porphyroclarts area.	
MTB-03	55.00	58.00	3.00	3.00	2.13	71.00	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Large garnet porphyroclasts sometimes oceuring as clasters, moderately strongly schistosed @~40°-50° , few fracture along schistosity, wavy to sigmoidal nature of schistosity plane.	Veins & stringers of Chalcopyrite at places	
MTB-03	58.00	61.00	2.84	3.00	2.20	77.46	Pink grey	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive@~60.58-61.00	Hard & compact	Fine to very coarse grained	Large garnet porphyroclasts schistosed @~45°-50°, mostly fractured along schistosity , few low angle irregular fracture.	Few stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-03	61.00	64.00	3.00	3.00	2.33	77.67	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Large - very large garnet porphyroclasts , moderate to strongly schistosed , fracture /fragmented at place @high (> 70°) angle , few fracture parallel to schistosity	Rare specs /stringers of Chalcopyrite along schistosity. (Not worth sampling)	
MTB-03	64.00	67.00	3.00	3.00	2.44	81.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately to strongly schistosed @~45°-50°, few fractures parallel to schistosity	Few erratic isolated stringers @~64.50. 64.90, 65.50-66.00	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-03	67.00	70.00	3.00	3.00	2.29	76.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately to strongly schistosed @~ 50°, w.rt CA, wavy to folded schistosity, fracture parallel to schistosity. Few fracture@~45°-50°, occuring discordant to foliation.	Few stringers of Chalcopyrite along with disseminated specs of Chalcopyrite along schistosity. (Not worth sampling)	
MTB-03	70.00	73.00	2.96	3.00	2.65	89.53	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately schistosed @~50°, few fractures @~50°, large garnet porphyroclasts.	Few disseminated specs along schistosity. (Not worth sampling)	
MTB-03	73.00	76.00	2.74	3.00	1.77	64.60	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately schistosed @~40°-50°, occasionally varries to low angle (~ 10°-20°) due to local folding , wavy schistosity , mostly fracture along schistosity	Few stringers & specs along schistosity & fracture with in the granet porphyroclarts	
MTB-03	76.00	79.00	3.00	3.00	2.09	69.67	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Moderately strongly schistosed @~45°-50°, occasionally schistosity angle varries to very low angle (~ 10°-20°) w.rt CA, low angle fracture parallel to schistosity.	Stringers & disseminated specs of Chalcopyrite along schistosity ,	
MTB-03	79.00	82.00	3.00	3.00	2.32	77.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Cluster of large to very large garnet porphyroclasts, strongly schistosity @~40°-50°,	Stringers of Chalcopyrite along schistosity, along with disseminated specs.	
MTB-03	82.00	85.00	3.00	3.00	2.48	82.67	Dark greenish grey with pink patches	Garnetiferous quartz chlorite biotite schist ± amphibole	Hard & compact	Fine to very coarse grained	Strongly schistosed @~ 40°-50°, wavy to sigmoidal schistosity , few fracture along schistosity , schistosity parallel quartz vein.	Few specs of pyrite & Chalcopyrite along schistosity (Not worth sampling)	
MTB-03	85.00	88.00	3.00	3.00	2.34	78.00	Dark greenish grey with pink patches	Garnetiferous quartz chlorite biotite schist ± amphibole	Hard & compact	Fine to very coarse grained	Strongly schistosed @~ 40°-50°, wavy to sigmoidal schistosity , few fracture along schistosity , schistosity parallel quartz vein.	Rare stringers & specs of Chalcopyrite along schistosity (Not worth sampling)	
MTB-03	88.00	91.00	3.00	3.00	1.78	59.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~45°-50°, multiple fracture parallel to schistosity, @~50°, fragmented core, large - very large porphyroclasts of garnet	erratic stringers & specs of Chalcopyrite & pyrite along schistosity (Not worth sampling)	
MTB-03	91.00	94.00	3.00	3.00	2.26	75.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~40°-50°, large - very large porphyroclasts of garnet, few fracture along schistosity , also irregular fractures.	Clustered stringers along schistosity at few places, also disseminated specs of Chalcopyrite throughout the core.	
MTB-03	94.00	97.00	2.88	3.00	1.46	50.69	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive (~ 30 cm)	Hard & compact	Fine to very coarse grained	Moderately schistosed @~45°-50°, few fracture parallel to schistosity.	Dissemination specs & erratic stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-03	97.00	100.00	3.00	3.00	2.17	72.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive@~97.5-98.5	Hard & compact	Fine to very coarse grained	Moderately strongly schistosed @~40°-50°, few fracture along schistosity, large to very large garnet porphyroclasts, also cluster of garnet at places.	Few specs & stringers of Chalcopyrite (Not worth sampling)	
MTB-03	100.00	103.00	3.00	3.00	2.71	90.33	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive	Hard & compact	Fine to very coarse grained	Moderately strongly schistosed @~40°-50°, few fracture along schistosity, large to very large garnet porphyroclasts, also cluster of garnet at places.	Few dissemination specs of Chalcopyrite (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-03	103.00	106.00	2.92	3.00	2.49	85.27	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive	Hard & compact	Fine to very coarse grained	Moderately to strongly schistosed, multiple fracture @~60°-70°, large- very large garnet porphyroclasts, occasionally clustered.	Stringers & specs of Chalcopyrite along schistosity & inter porphyroclarts area	
MTB-03	106.00	109.00	2.99	3.00	2.62	87.63	Dark grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic intrusive	Hard & compact	Fine to very coarse grained	Strongly schistosed @~40°-45°,wavy type schistosity, large to very large garnet porphyroclasts, occasionally clustered.	Stringers along schistosity at place also dissemination specs of Chalcopyrite	
MTB-03	109.00	112.00	3.00	3.00	2.69	89.67	Greenish grey with pink patches	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~45°-50°, few fracture parallel to schistosity, large to very large garnet porphyroclasts, occasionally clustered.		
MTB-03	112.00	115.00	3.00	3.00	2.38	79.33	Greenish grey with pink patches	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine to very coarse grained	Strongly schistosed @~45°-50°, few fracture parallel to schistosity, large to very large garnet porphyroclasts, occasionally clustered.		
MTB-04	0.00	3.00	0.18	3.00	-		Brown	Top soil	Loose friable	Sandy, fine-medium graind			
MTB-04	3.00	6.00	0.23	3.00	-		Brown	Top soil	Loose friable	Sandy, fine-medium grained			
MTB-04	6.00	7.00	0.51	1.00	-		Brownish grey	Loose pebbles/gravels	Loose				
MTB-04	7.00	10.00	0.74	3.00	-		Yellow	Soil	Loose, cohesive, soft	Fine grained			
MTB-04	10.00	13.00	0.86	3.00	-		Yellow	Soil	Loose, cohesive, soft	Fine grained			
MTB-04	13.00	16.00	1.56	3.00	-		Yellow	Soil	Loose, cohesive, soft	Fine grained			
MTB-04	16.00	19.00	1.21	3.00	-		Yellow	Soil	Loose, cohesive, soft	Fine grained			
MTB-04	19.00	22.00	1.58	3.00	-		Yellowish grey	Partially to fully weathered / oxidised schistosed rock	Soft to moderate hard , cohesive to compact at places	Fine grained	Schistosed , highly fractured , oxidised		
MTB-04	22.00	25.00	2.64	3.00	0.42	15.91	Greenish grey	Quartz amphibole chlorite biotite schist (Metabasic schist) (partially oxidised along fracture)	Hard & compact	Fine grained	Strongly schistosed @~40° w.rt CA , highly fractured at place broken & fragmented core, core loss, partially oxidised along fracture		
MTB-04	25.00	28.00	2.98	3.00	1.30	43.62	Greenish grey	Quartz amphibole chlorite biotite schist (Metabasic schist) (partially oxidised along fracture)	Hard & compact at place moderate hard & friable	Fine grained	Strongly schistosed @~ 40°-45° w.rt CA highly fractured, fragmented broken core, oxidesed along fracture silicified at place		
MTB-04	28.00	31.00	2.68	3.00	0.31	11.57	Greenish grey	Quartz amphibole chlorite biotite schist (Metabasic schist) (partially oxidised along fracture)	Hard & compact at place moderate hard & friable	Fine grained	Strongly schistosed @~40°-45° highly fractured & fragmented & broken core, at place fully to partially oxidised along fractured , brecciated quartz veins		
MTB-04	31.00	34.00	2.86	3.00	1.56	54.55	Greenish grey	Quartz amphibole chlorite biotite schist ± Garnet (Metabasic schist)	Hard & compact	Fine-medium grained	Strongly schistosed @~45°-50°, multiple fracture @~50°-60°, few low angle fracture @~ 20°-30°, oxidetion along few fracture, brecciated quartz vein		
MTB-04	34.00	37.00	3.00	3.00	1.22	40.67	Greenish grey	Quartz amphibole chlorite biotite schist ± Garnet (Metabasic schist)	Hard & compact	Fine-medium grained	Strongly schistosed @~45°-50°, multiple fracture @~ 50°-60°, fragmented along with patial oxidetion at bottom brecciated quartz vein		
MTB-04	37.00	40.00	2.94	3.00	1.43	48.64	Greenish grey	Quartz amphibole chlorite biotite schist ± Garnet (Metabasic schist), (silicified at places)	Hard & compact	Fine-medium grained	Strongly schistosed few schistosity parallel , conjugate fracture, garnet clusters		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-04	40.00	43.00	1.47	3.00	1.78	59.53	Greenish grey	Garnetiferous amphibole quartz chlorite biotite schist (Metabasic schist) (occasionally silicified)	Hard & compact	Fine-medium grained	Strongly schistosed @~ 40°-45°, few fracture,		
MTB-04			1.52				Pinkish grey	Garnetiferous quartz chlorite biotite schist ± muscoxite ± amphibole	Hard & compact	Fine-course grained	Large garnet partly roclasts strongly schistosed @~ 45° , quartz vein parallel to schistosity , schistosity parallel fracture		Gradational contact
MTB-04	43.00	46.00	2.97	3.00	2.36	79.46	Pinkish grey	Garnetiferous quartz chlorite mica schist ± muscoxite	Very hard & compact	Fine - very course grained	Strongly schistosed @~40°-45°, wavy , fracture along schistosity , few quartz vein	Dissemination of spces & stringers of chalcopyrite & pyrite along schistosity (43-44.00 @~0.10-0.20%)	
MTB-04	46.00	49.00	2.84	3.00	2.32	81.69	Pinkish grey	Garnetiferous quartz chlorite mica schist ± muscoxite	Hard & compact	Fine grained	Moderately strongly schistosed @~ 45°-50°, wavy , fractured along schistosity, few irregular fracture, sheared & brecciated quartz vein		
MTB-04	49.00	52.00	3.00	3.00	1.87	62.33	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Large to very large garnet porphyroblasts or cluster, moderately to strongly schistosed, wavy schistosity, few fracture @~50°-60°, occasionally broken core	Dissemination, of stringers & veinlets, spces of chalcopyrite along schistosity , along porphyroblast clusters	50-51
MTB-04	52.00	55.00	3.00	3.00	2.52	84.00	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Large to very large garnet porphyroblasts, feeble to moderate schistosity @~40°, wavy to sigmoidal schistosity, few fractures @~50°-60°.	Dissemination, of stringers & veinlets, spces of chalcopyrite along schistosity , along porphyroblast clusters	
MTB-04	55.00	58.00	2.91	3.00	2.42	83.16	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Feble to moderately schistosed @~40°-45°, fracture along schistosity , occasionally broken core, sheared quartz vein	Dissemination, of stringers & veinlets, spces of chalcopyrite along schistosity , along porphyroblast clusters	
MTB-04	58.00	61.00	2.91	3.00	1.91	65.64	Pinkish grey	Garnetiferous quartz chlorite mica schist + band of metabasic schist @ ~58.30-59.10	Hard & compact	Fine - very course grained	Moderately schistosed @~40°, large to very large garnet porphyroblasts, sheared & brecciated quartz vein, sharp contact between metabasic & garnet - quartz mica schist	Stringers & veins of chalcopyrite along schistosity & fractures quartz vein clasts	
MTB-04	61.00	64.00	3.00	3.00	2.39	79.67	Pinkish grey	Garnetiferous quartz chlorite mica schist + band of metabasic schist @ ~58.30-59.10	Hard & compact	Fine - very course grained	Large to very large porphyroblasts of garnet , moderate to strong schistosity @~45°-50°, wavy to sigmoidal schistosity, fracture parallel to schistosity	Stringers of chalcopyrite along schistosity & along porphyroblast clusters	
MTB-04	64.00	67.00	3.00	3.00	2.27	75.67	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately strongly schistosity , @~45°-50°, large- very large porphyroblasts of garnet , fractured parallel to schistosity , few irregular low angle (~2°-30°) fractures along with fragmented core,	Dissemination of spces & stringers of chalcopyrite along schistosity	
MTB-04	67.00	70.00	2.93	3.00	2.29	78.16	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately to strongly schistosed @~45°-50°, large- very large garnet porphyroblasts or clusters, few fractures parallel to schistosity.	Dissemination of spces & stringers of chalcopyrite along schistosity	67-68.50

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-04	70.00	73.00	2.92	3.00	2.19	75.00	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately to strongly schistosed @~45°-50°, large- very large garnet porphyroblasts or clusters, few fracture parallel to schistosity, low angle fracture @~ 25°.	Rare occurence of chalcopyrite spces & stringers along schistosity (NWS)	
MTB-04	73.00	76.00	3.00	3.00	1.86	62.00	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately to strongly schistosed @~40°-45°, fractured along schistosity , minor sheared quartz vein, large to very large garnet porphyroblasts & clusters.	Intermittant cluster of chalcopyrite stringers along schistosity	
MTB-04	76.00	79.00	2.77	3.00	1.20	43.32	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Moderately to strongly schistosed @~40° w.r.t. CA, wavy to sigmoidal schistosity , highly fractured & fragmented zone @~ 78-79.00, sheared quartz vein.	Dissemination of spces & stringers of chalcopyrite along schistosity	
MTB-04	79.00	82.00	2.78	3.00	2.21	79.50	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Strongly schistosed @~40°, wavy to sigmoidal schistosity , sheared & brecciated quartz vein, few fracture parallel to schistosity	Dissemination of spces & stringers chalcopyrite, massive vein & chalcopyrite along quartz vein fracture	
MTB-04	82.00	85.00	0.74	3.00	1.95	68.66	Pinkish grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine - very course grained	Strongly schistosed @~40°, wavy to sigmoidal schistosity , sheared & brecciated quartz vein, few fracture parallel to schistosity		
MTB-04			0.72				Pinkish white	Garnetiferous quartzite	Very hard & compact	Fine-course grained	Massive to feebly schistosed , at place , sharp contact , few fracture @~60°-80°.		
MTB-04			1.38				Greenish grey with pink	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine-course grained	Strongly schistosed @~40°-45°, wavy schistosity , fracture along schistosity.		
MTB-04	85.00	88.00	2.80	3.00	2.22	79.29	Greenish grey with pink patches/spots	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine-course grained	Strongly schistosed @~20°-30°, strongly sheared , highly fractured parallel to schistosity , broken & fragmented core.		Sharp contact
MTB-04	88.00	91.00	3.00	3.00	1.40	46.67	Greenish grey with pink patches/spots	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine-course grained	Strongly schistosed @~20°-30°, strongly sheared , highly fractured parallel to schistosity , broken & fragmented core.		
MTB-04	91.00	94.00	2.99	3.00	0.80	26.76	Greenish grey with pink patches/spots	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine-course grained	Strongly schistosed @~20°-30°, strongly sheared , highly fractured parallel to schistosity , broken & fragmented core few irregular fracture @~30°-50°.		
MTB-04	94.00	97.00	2.78	3.00	2.01	72.30	Greenish grey with pink patches/spots	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine-course grained	Strongly schistosed @~20°-30°, strongly sheared, fracture /splitted along schistosity , sheared quartz vein.		
MTB-05	0.00	3.00	0.09	3.00	0.00	0.00	Yellow	Top soil	Loose & friable				
MTB-05	3.00	6.00	0.11	3.00	0.00	0.00	Yellow	Top soil	Loose & friable				
MTB-05	6.00	9.00	0.35	3.00	0.00	0.00	Yellow brown	Loose soil with bands of oxidised schistosed rock	Loose & friable conesive occasionally friable	Fine grained			
MTB-05	9.00	10.00	0.99	1.00	0.00	0.00	Yellow brown	Loose soil with bands of oxidised schistosed rock	Loose & friable conesive occasionally friable	Fine grained			

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-05	10.00	12.00	1.01	2.00	0.00	0.00	Yellow grey	Highly weathered schistosed rock with partially formed soil	Loose & friable conesive occasionally friable	Fine grained			
MTB-05	12.00	13.00	0.39	1.00	0.00	0.00	Yellow grey	Pebbly & rock fragments of highly weatered schistosed rock	Loose & friable conesive occasionally friable	Fine grained			
MTB-05	13.00	13.50	0.22	0.50	0.00	0.00	Yellow grey	Fragmented core of weathered schistosed rock	Moderate hard	Fine grained	Schistosed, highly fragmented		
MTB-05	13.50	14.50	0.60	1.00	0.00	0.00	Yellow grey	Fragmented core of weathered schistosed rock	Moderate hard	Fine grained	Schistosed, highly fractured & fragmented, oxidised		
MTB-05	14.50	16.00	0.93	1.50	0.00	0.00	Yellow grey	Highly weathered /oxidised schistosed rock	Moderate hard	Fine grained	Schistosed, highly fractured & fragmented, oxidised		
MTB-05	16.00	19.00	1.27	3.00	0.00	0.00	Yellow grey	Highly weathered /oxidised schistosed rock (partially formed soil)	Moderate hard	Fine grained	Schistosed, highly fractured & fragmented, oxidised		
MTB-05	19.00	22.00	1.86	3.00	0.00	0.00	Yellow grey	Highly weathered /oxidised schistosed rock (partially formed soil)	Moderate hard to soft at places	Fine grained	Strongly sheared, highly fractured & fragmented, anastomoshing shear pattern, highly oxidised		
MTB-05	22.00	25.00	3.07	3.00	0.00	0.00	Yellow grey	Strongly sheared & faulted schistosed rock (highly oxidised)	Hard & compact	Fine grained	Strongly schistosed & sheared, anastomoshing shearing, microfolds, fully oxidised, occasionally highly fractured & fragmented		
MTB-05	25.00	28.00	3.02	3.00	0.00	0.00	Yellow dark grey	Strongly sheared & brecciated schistosed rock (partially to fully oxidised)	Moderate hard & friable	Fine grained	Strongly sheared & brecciated anastomoshing shearing, microfolds, partially to fully oxidised at place, highly fractured & fragmented		
MTB-05	28.00	29.00	0.93	1.00	0.00	0.00	Greenish grey	Strongly sheared & brecciated Metabasic schist (partially oxidised)	Moderate hard & friable	Fine grained	Strongly schistosed, sheared & brecciated, anastomoshing shearing pattern, highly fractured & fragmented along shear plane, partially to fully oxidised		
MTB-05	29.00	30.00	0.63	1.00	0.00	0.00	Greenish grey	Strongly sheared & brecciated Metabasic schist (partially oxidised)	Moderate hard & friable	Fine grained	Strongly schistosed, sheared & brecciated, highly fractured & fragmented		
MTB-05	30.00	31.00	1.02	1.00	0.12	11.76	Greenish grey	Feldspathic amphibole biotite chlorite schist (Metabasic schist)	Moderate hard	Fine grained	Strongly schistosed @~20°-25°, highly friable along schistosity, high amount of irregular hairline fracture,		
MTB-05	31.00	32.00	1.04	1.00	0.00	0.00	Greenish grey	Feldspathic amphibole biotite chlorite schist (Metabasic schist)	Moderate hard	Fine grained	Strongly schistosed @~10°-20°, highly fractured & fragmented, broken & crushed core, irregular fracture		
MTB-05	32.00	33.00	1.03	1.00	0.00	0.00	Greenish grey	Feldspathic amphibole biotite chlorite schist (Metabasic schist)	Moderate hard	Fine grained	Strongly schistosed @~10°-20°, occasionally thin anastomoshing shear zone near parallel to CA, highly fractured & fragmented.		
MTB-05	33.00	34.00	0.96	1.00	0.00	0.00	Greenish grey	Feldspathic amphibole biotite chlorite schist (Metabasic schist)	Moderate hard & compact	Fine grained	Schistosed, higly fractured & brecciated, fault gouge, island channel structure, broken & fragmented core		
MTB-05	34.00	35.00	0.95	1.00	0.00	0.00	Greenish grey	Feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~20°-30°, straight to wavy, fractured & fragmented, oxidised along fracture, anastomoshing shear fracture		
MTB-05	35.00	36.00	0.81	1.00	0.00	0.00	Yellow grey	Highly oxidised, friable & fragmented schistosed rock	Fragmented & powdered	Fine grained	Broken, fragmented & powdered, fault zone rock		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-05	36.00	37.00	0.96	1.00	0.00	0.00	Yellow grey	Highly oxidised, friable & fragmented schistosed rock	Fragmented & powdered	Fine grained	Broken, fragmented & powdered, fault zone rock		
MTB-05	37.00	38.00	0.63	1.00	0.00	0.00	Yellow	Highly oxidised faulted schistosed rock	Soft & friable	Fine grained	Schistosed, highly fractured, fragmented, crushed core, slicken lines, loose and fragmented, core lose		
MTB-05	38.00	38.20	0.30	0.20	0.00	0.00	Yellow	Highly oxidised faulted schistosed rock	Soft & friable	Fine grained	Schistosed, highly fractured, fragmented, crushed core, slicken lines, loose and fragmented, core lose		
MTB-05	38.20	39.00	1.16	0.80	0.00	0.00	Greenish grey	Partially oxidised faulted rock fragments/benteders of Metabasic schist	Hard & compact	Fine grained	Schistosed, fragmented & broken rock pebbles /benders, core loss		
MTB-05	39.00	40.00	0.62	1.00	0.00	0.00	Greenish grey	Partially oxidised schistosed faulted rock (Metabasic schist)	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented, broken core, loose pebbles, slicken lines, core loss		
MTB-05	40.00	40.20	0.20	0.20	0.00	0.00	Greenish grey	Partially oxidised schistosed faulted rock (Metabasic schist)	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented, broken core, loose pebbles, slicken lines, core loss		
MTB-05	40.20	41.00	0.73	0.80	0.00	0.00	Dark grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Schistosed highly fractured & fragmented, crushed core, slicken lines, core loss fault zone rock, fracture angle is (0°-50°) w.rt CA		
MTB-05	41.00	42.00	0.78	1.00	0.00	0.00	Dark grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Schistosed, highly fractured & fragmented, crushed core, slicken lines, core loss, fault zone rock, fracture angle is (0°-50°) w.rt CA		
MTB-05	42.00	43.00	1.07	1.00	0.00	0.00	Greenish grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Schistosed, highly crushed fractured & fragmented core, grain size reduction, slicken lines, core loss, fault zone rock, fracture angle is @~ 0°-50° with CA		
MTB-05	43.00	44.00	1.01	1.00	0.00	0.00	Greenish grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Schistosed, highly crushed, fractured & fragmented core, grain size reduction, slicken lines, core loss, fault zone rock, few fracture angle is @~ 0°-50° with CA, fault plane angle is @~5°-10° w.rt CA		
MTB-05	44.00	45.00	0.92	1.00	0.00	0.00	Greenish grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Schistosed, highly crushed, fractured & fragmented core, grain size reduction, slicken lines, core loss, fault zone rock, few fracture angle is @~ 0°-50° with CA, fault plane angle is @~5°-10° w.rt CA		
MTB-05	45.00	46.00	0.90	1.00	0.00	0.00	Greenish grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Strongly sheared @~ 0°-5° w.rt CA, crused core, slicken lines, friable along shear plane.		
MTB-05	46.00	47.00	1.01	1.00	0.00	0.00	Greenish grey	Faulted & crushed Metabasic schist	Moderate hard & friable	Very fine grained	Strongly sheared @~ 0°-5° w.rt CA, crused core, slicken lines, friable along shear plane.		
MTB-05	47.00	49.00	1.96	2.00	0.39	19.90	Greenish grey	Quartz feldspathicamphibole chlorite biotite schist ± epidote (Metabasic schist) (altered at place)	Hard & compact	Very fine grained	Strongly schistosed @~20°-30°, occasional thin shear zone (0°-5°), sub - parallel to CA, fractured & fragmented along schistosity.		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-05	49.00	52.00	3.06	3.00	0.56	18.30	Greenish grey	Quartz feldspathicamphibole biotite chlorite muscoxite schist ± epidote (altered Metabasic schist)	Hard & compact	Very fine grained	Strongly schistosed @~30° towords top & schistoity angle is ~50° wrt CA towords bottom thin, sub-parallel to low angle (~0°-10°) sheare zone oblique to schistosity plane, fracture/ fragmented along schistosity.		
MTB-05	52.00	54.00	1.89	2.00	1.22	64.55	Greenish grey	Quartz feldspathicamphibole chlorite biotite schist ± epidote ± muscoxite (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, fracture / fragmented along schistosity, thin schistosity parallel quartz veins.		
MTB-05	54.00	55.00	0.98	1.00	0.00	0.00	Greenish grey	Quartz feldspathic-biotite-chlorite-muscoxite - schist ±amphibole ± epidote (altered Metabasic schist)	Hard & compact	Very fine grained	Strongly schistosed @~30°-40°, highly fractured & fragmented, broken core.		
MTB-05	55.00	56.00	1.00	1.00	0.34	34.00	Greenish grey	Quartz feldspathic-biotite-chlorite-muscoxite - schist ±amphibole ± epidote (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, fractured & fragmented, broken core.		
MTB-05	56.00	57.00	0.91	1.00	0.68	74.73	Greenish grey	Quartz feldspathic-biotite-chlorite-muscoxite - schist ±amphibole ± epidote (altered Metabasic schist)	Hard & compact	Very fine grained	Strongly schistosed, fractured along schistosity, few irregular fracture.		
MTB-05	57.00	58.00	1.03	1.00	0.62	60.19	Greenish grey	Quartz feldspathic-biotite-chlorite-muscoxite - schist ±amphibole ± epidote (altered Metabasic schist)	Hard & compact	Very fine grained	Strongly schistosed, fractured along schistosity, few irregular fracture.		
MTB-05	58.00	61.00	2.99	3.00	1.72	57.53	Greenish grey	Quartz feldspathic - biotite -chlorite - muscoxite schist ±amphibole ± fuchsite	Hard & compact	Fine grained	Strongly schistosed @~30°-40° wrt CA, highly fracture/ splitted along schistosity, Fuchsite rich Muscovite bearing zone at bottom.		
MTB-05	61.00	64.00	2.78	3.00	0.79	28.42	Grey to greenish gery	Quartz feldspathic - biotite -chlorite - muscoxite schist ±amphibole ± fuchsite (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, mostly fracture/splitted along schistosity, Fuchsite & muscovite rich zone at top, broken core		
MTB-05	64.00	67.00	3.00	3.00	1.83	61.00	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Strongly schistosed @~45-50°, mostly fracture along schistosity, few fracture @~70°-80° w.rt CA, thin quartz veins.	Grains of chalcopyrite alongside quartz vein @~66.90 (NWS)	
MTB-05	67.00	70.00	3.03	3.00	2.40	79.21	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Strongly schistosed @~45-50°, mostly fracture along schistosity, few fracture @~70°-80° w.rt CA, thin quartz veins.		
MTB-05	70.00	73.00	2.94	3.00	1.65	56.12	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Moderately strongly schistosed @~45°-50°, few fracture @~70°-80°, low angle fracture @~10°-20°, along with few schistosity parallel fracture, thin schistosity parallel quartz veins.	Thin minor stringers of chalcopyrite along schistosity @72.50-73.00 and along fractures (<0.10%) (NWS)	
MTB-05	73.00	76.00	3.00	3.00	2.31	77.00	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Moderately strongly schistosed @~45°-50°, w.rt CA, mostly fracture along schistosity place, occasionally thin quartz veins.	Stringers of chalcopyrite along some channel /vein parallel to schistosity (NWS)	
MTB-05	76.00	79.00	2.99	3.00	2.54	84.95	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Moderately to strongly schistosed @~40°-45°, few fracture parallel to the schistosity, thin quartz veins.	Fracture filling vein of chalcopyrite & pyrite @78.30, also minor stringers of Chalcopyrite parallel to schistosity.	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-05	79.00	82.00	2.89	3.00	1.97	68.17	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Very hard & compact	Very fine grained	Moderately to strongly schistosed @~40°-45°, mostly fracture parallel to the schistosity. occasional conjugate fracture @~80.00m, thin schistosity parallel quartz veins, potassic alteratoin.	Veins & stringers of chalcopyrite , pyrrhotite & minor pyrite	
MTB-05	82.00	85.00	2.88	3.00	1.77	61.46	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Hard & compact	Very fine grained	Moderately to strongly schistosed @~40°-50°, fracture parallel to schistosity, few fracture (~40°-50°) discordant to schistosity, potassic alteration	Rare stringers of chalcopyrite	
MTB-05	85.00	88.00	2.96	3.00	2.26	76.35	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Hard & compact	Very fine grained	Moderately to strongly schistosed @~50°-55°, few fracture parallel to schistosity, schistosity parallel thin quartz veins, potassic alteration	Massive patches & stringers , veins of chalcopyrite & pyrrhotite along schistosity of the host rock	
MTB-05	88.00	91.00	1.91	3.00	1.84	63.23	Dark greenish grey	Quartz feldspathic -amphibole -chlorite-biotite schist (Metabasic schist) altered & silicified)	Hard & compact	Very fine grained	Moderately schistosed, few fracture along schistosity, potassic alteration, sheared & brecciated quartz vein	Stringers & patches , veins of chalcopyrite along schistosity & along same channel	
MTB-05			1.00	0.00			Pinkish grey	Granite gneiss	Very hard & compact	Fine grained	Feeble foliation, multiple fracture @~40°-60°, bands of altered chlorite rich zone		Gradational contact
MTB-05	91.00	94.00	2.92	3.00	1.60	54.79	Pinkish grey	Granite gneiss (altered)	Very hard & compact	Very fine grained	Feeble foliation, multiple fracture @~15°-10°, occasionally fragmented core few fracture @~70°-80°, quartz veins	Stringers of chalcopyrite along fracture filling quartz veins at bottom	
MTB-05	94.00	97.00	2.96	3.00	1.05	35.47	Pinkish grey	Granite gneiss (altered)	Very hard & compact	Very fine grained	Feeble moderately developed foliation, multiple low angle fracture (~20°), few fracture @~70°-80°, fragmented /broken core	Massive fracture fillings veins of chalcopyrite & pyrrhotite at bottom	
MTB-05	97.00	100.00	3.06	3.00	1.39	45.42	Pinkish grey	Granite gneiss (altered)	Very hard & compact	Very fine grained	Feeble to moderately developed foliation, highly fracture /fragmented & broken core, multiple fracture @~50°-60°, quartz veins	Stringers of chalcopyrite along fracture filling quartz vein @ 99.10, 98.50	
MTB-05	100.00	103.00	3.00	3.00	2.21	73.67	Pinkish grey	Granite gneiss (altered)	Very hard & compact	Fine grained	Feeble to moderately developed foliation, highly irregularly fracture @ multiple angle rokges fracture (~45°-70°), fragmented core,	Veins of chalcopyrite along some fracture filling quartz vein	
MTB-05	103.00	106.00	2.86	3.00	2.08	72.73	Pinkish grey	Granite gneiss (altered)	Very hard & compact	Fine grained	Feeble foliation, multiple fracture @~45°-70°, fragmented core @ 104.00, occasionally low angle vein of quartz		
MTB-05	106.00	109.00	2.89	3.00	1.59	55.02	Pink grey	Granite gneiss (occasional altered) + quartz veins	Hard & compact	Fine grained	Feeble foliation, low angle fracture @~20°-30°, occasionally irregular fracture along with broken & fragmented core, potassic alteration at place	Massive patches of chalcopyrite & pyrrhotite along fracture filling veins.	
MTB-05	109.00	110.00	0.99	1.00	0.64	64.65	Pink grey	Granite gneiss (occasional altered) + quartz veins	Hard & compact	Fine grained	Feeble foliation, few fractures, fragmented core		
MTB-05	110.00	112.00	0.74	2.00	0.39	52.70	Pink grey	Granite gneiss (occasional altered) + quartz veins	Hard & compact	Fine grained	Fractured & fragmented broken core, core loss,		
MTB-05	112.00	113.00	0.93	1.00	0.47	50.54	Pink grey	Granite gneiss (occasional altered) + quartz veins	Hard & compact	Fine grained	Feeble foliation, fractured & fragmented, broken core, fracture angle @~50° w.rt CA.		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-06	0.00	3.00	1.03	3.00			Yellow brown	Loose sandy top soil	Loose cohesive				
MTB-06	3.00	6.00	1.03	3.00			Yellow brown	Loose sandy top soil	Loose cohesive				
MTB-06	6.00	7.00	0.55	1.00			Yellow brown	Loose sandy top soil	Loose cohesive				
MTB-06	7.00	10.00	1.49	3.00			Yellow grey	Loose fragmented pebbles and boulders of quartzite	Hard & compact	Fine grained	Highly fragmented		
MTB-06	10.00	13.00	2.00	2.09			Yellow grey	Loose fragmented pebbles and boulders of quartzite	Very hard & compact	Very fine grained	Massive highly fractured / fragmented, oxidised along fracture		
MTB-06			0.87	0.91			Yellow brown	Loose soil	Loose & cohesive	Fine grained	Loose		
MTB-06	13.00	16.00	2.08	3.00			Yellow brown	Highly oxidised schistosed rock with partially formed soil	Loose to moderate hard towords bottom	Fine grained	Strongly schistosed, highly oxidised, highly fractured/ fragmented		
MTB-06	16.00	19.00	2.67	3.00			Yellow grey	Quartzite	Very hard & compact	Very fine grained	Massive to feebly foliated, highly fractured & fragmented, oxidised along fracture, angular fragmented boulders /cobbles, pebbles		
MTB-06	19.00	22.00	2.31	3.00			Yellow grey	Quartzite	Very hard & compact	Very fine grained	Massive to feebly foliated, highly fractured & fragmented, oxidised along fracture, angular fragmented boulders /cobbles, pebbles		
MTB-06	22.00	25.00	1.20	1.20			Yellow grey	Quartzite	Very hard & compact	Very fine grained	Massive to feebly foliated, highly fractured & fragmented, oxidised along fracture, angular fragmented boulders /cobbles, pebbles		
MTB-06			1.80	1.80			Yellow brown	Highly weathered schistosed rock with partially to fully formed soil towords bottom	Loose & cohesive	Fine grained	Schistosed, highly oxidised, partially to fully formed soil towords bottom		
MTB-06	25.00	28.00	3.00	3.00			Yellow brown	Loose soil	Loose & cohesive	Fine grained			
MTB-06	28.00	31.00	1.45	3.00			Yellow brown	Loose soil with bands of oxidised schistosed rock at bottom	Loose & cohesive, moderate hard at bottom	Fine grained	Fragments of oxidised schistosed rock at bottom		
MTB-06	31.00	34.00	2.11	3.00	1.19	56.40	Light grey	Chlorite mica schist (biotite chlorite muscovite schist) (kaolinised) + carbonate vein	Hard & compact	Fine -medium grained	Strongly schistosed @20°-40°, highly wavy to sigmoidal schistosity, multiple fracture @~ 30°-40°, almost parallel to schistosity, carbonate veins		
MTB-06	34.00	37.00	2.92	3.00	1.39	47.60	Light grey	Chlorite mica schist (biotite chlorite muscovite schist) (kaolinised) + carbonate vein +bands of biotite -chlorite schist	Hard & compact	Fine -medium grained	Strongly schistosed @~30°-40°, wavy to sigmoidal schistosity, multiple fracture along the schistosity, quartz carbonate vein		
MTB-06	37.00	40.00	3.00	3.00	1.42	47.33	Light grey	Chlorite mica schist (biotite chlorite muscovite schist) (kaolinised) + carbonate vein +bands of biotite -chlorite schist	Hard & compact	Fine grained	Strongly schistosed, multiple low angle fracture @~20°, fractures @~50°, fragmented & broken core, oxidised along fracture		
MTB-06	40.00	43.00	2.00	2.00	0.74	24.67	Light grey	Chlorite biotite muscovite schist (kaolinised) + veins of carbonate	Hard & compact	Very fine grained	Strongly schistosed @~20°-30°, fractured/ splitted along schistosity,		
MTB-06			1.00	1.00			Greenish grey	Metabasic schist (amphibole +biotite - chlorite schist) (silicified)	Very hard & compact	Fine grained	Moderately schistosed @~20°-30°, banded silicified zone, highly fractured @~30°-40°, broken & fragmented zone.	Stringers of Pyrite & Chalcopyrite along schistosity (fracture 0.10% @ 1.00m)	
MTB-06	43.00	46.00	3.00	3.00	0.99	33.00	Greenish grey to grey	Metabasic schist (amphibole +biotite - chlorite schist) (silicified)	Hard & compact	Fine grained	Feeble to moderately schistosed @~20°-30°, fractured along schistosity, also few irregular high angle fracture strongly silicified.	Stringers & veins of Pyrite & Chalcopyrite along local shear zones & schistosity	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-06	46.00	49.00	3.00	3.00	1.79	59.67	Grey to greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist (metabasic schist) (silicified)	Very hard & compact	Very fine grained	Feeble to strongly schistosed @~20°, fracture along schistosity, fragmented & broken core @~47.00	Very rare spces of sulfides (Not worth sampling)	HQ.
MTB-06	49.00	52.00	3.00	3.00	1.40	46.67	Grey to greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist (metabasic schist) (silicified)	Very hard & compact	Very-fine grained	Moderately to strongly schistosed @~20°, fracture along schistosity, also few fracture @~50°-60°, highly fractured & fragmented core.		HQ
MTB-06	52.00	55.00	2.86	3.00	0.93	32.52	Grey to greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist (metabasic schist) (silicified)	Very hard & compact	Fine grained	Moderately to strongly schistosed @~20°-30°, fracture along schistosity, also fracture @(~50°), highly fragmented & broken core, oxidised along fracture	Stringers of Chalcopyrite along schistosity 0.20-0.30% @ 0.20m (54.40-54.60) (Not worth sampling)	HQ core ↑down to 54.00. NQ downwords ↓
MTB-06	55.00	58.00	3.00	3.00	1.33	44.33	Grey to greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist (metabasic schist) (silicified) + garnet	Very hard & compact	Fine grained	Moderately to strongly schistosed @~30°, highly fractured along schistosity, few irregular fracture at comperatively highly angle (~50°-60°), fragmented core, oxidised along few fracture		
MTB-06	58.00	61.00	2.89	3.00	1.49	51.56	Grey to greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist (metabasic schist) (silicified) + garnet	Very hard & compact	Fine grained	Moderately to strongly schistosed @~30°, highly fractured along schistosity, few irregular fracture at comperatively highly angle (~50°-60°), fragmented core, oxidised along few fracture, potassic alteration, slight granitisation effect (??)		
MTB-06	61.00	64.00	2.77	3.00	1.79	64.62	Grey to greenish grey	Quartz feldspathic biotite -chlorite -schist ± amphibole (metabasic -schist) (silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed @~30°, fractured along schistosity, fragmented core, occasionally silicified as bands or zones.	Very rare spces of Chalcopyrite @63.80 (Trace) (Not worth sampling)	
MTB-06	64.00	67.00	2.99	3.00	2.27	75.92	Greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, fracture along schistosity, few fracture @~50°-55° discordant to schistosity, quartz carbonate vein (??)	Veins /stringers of Chalcopyrite along schistosity @~64.30-64.40 @ 0.30%@~20cm (Not worth sampling)	
MTB-06	67.00	70.00	2.97	3.00	2.03	68.35	Greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, fracture along schistosity, few fracture @~50°-55° discordant to schistosity, quartz carbonate vein (??), low angle fracture @~10° @~69.50		
MTB-06	70.00	73.00	2.82	3.00	2.19	77.66	Greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist ± granet (metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°-55°, mostly fractured parallel to schistosity, thin quartz -carbonate veins,		
MTB-06	73.00	76.00	3.00	3.00	2.09	69.67	Greenish grey	Quartz feldspathic amphibole -biotite -chlorite schist ± granet (metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, mostly fractured parallel to schistosity, low angle (~25°) fracture, fragmented core, thin carbonate veins, thick brecciated quartz vein along with silicification at bottom		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-06	76.00	79.00	2.81	3.00	0.56	19.93	Light grey to greenish grey	Micaceos quartz schist + bands of biotite - chlorite - schist (silicified basic schist) + quartz vein	Hard & compact	Fine grained	Moderately schistosed @~35°, multiple fracture @~50°-55°, conjugate fractures, highly fractured, fragmented & broken core, irregular fracture within quartz vein	Minor stringers of Chalcopyrite along schistosity , minor fracture filling patches Chalcopyrite @76.90 (Not worth sampling), Very thin magnetite veins/Stringers at place	
MTB-06	79.00	82.00	3.00	3.00	1.26	42.00	Light grey to greenish grey	Quartz biotite-chlorite schist (strongly silicified) + quartz vein	Hard & compact	Fine grained	Moderately strongly schistosed @~35°-40°, fracture along schistosity, low angle fracture, highly fragmented & broken core at place	Stringers of Chalcopyrite along schistosity & quartz veins	
MTB-06	82.00	85.00	2.83	3.00	0.62	21.91	Light grey to greenish grey	Quartz biotite-chlorite schist (strongly silicified) + quartz vein	Hard & compact	Fine grained	Moderately to strongly schistosed, highly fractured & fragmented, broken core, fracture along schistosity along with other irregular fracture	Stringers of Chalcopyrite , pyronotite & Pyrite along schistosity @~84.10	
MTB-06	85.00	88.00	3.00	3.00	0.65	21.67	Light grey to greenish grey	Quartz -chlorite -biotite schist + quartz vein (strongly altered & silicified)	Very hard & compact	Fine grained	Moderately schistosed @~35°-40°, low angle fracture @~15°-20°, also multiple fracture @~55°-60°, highly fractured & fragmented & broken core, potassic alteration	Stringers of Chalcopyrite along schistosity & fracture filling vein	
MTB-06	88.00	91.00	3.00	3.00	0.73	24.33	Greenish grey	Quartz -chlorite -biotite schist + quartz vein (highly altered & silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed, multiple irregular fracture @~50°-60°, along with low angle fracture, highly fractured & fragmented core, quartz-carbonate vein, potassic alteration	Stringers of Chalcopyrite along schistosity fracture filling patches & veins of Chalcopyrite & Pyrrhotite	
MTB-06	91.00	94.00	3.00	3.00	1.03	34.33	Greenish grey	Feldspathic -biotite -chlorite schist ± amphibole (basic schist) (altered & silicified)	Hard & compact	Fine grained	Feeble schistosity, occasionally grannular,thin carbonate veins, highly fractured & fragmented, broken core	rare stringers of sulfides (Not worth sampling)	
MTB-06	94.00	97.00	3.00	3.00	1.02	34.00	Dark grey	Quartz feldspathic amphibole -biotite - chlorite schist	Hard & compact	Fine grained	Grannular in cross section, Feeble schistosity, low to moderate angle multiple fracture @~20°-40°, broken & fragmented core	rare stringers of Chalcopyrite along thin fracture filling quartz vein also very minor dissemination (Not worth sampling)	
MTB-06	97.00	100.00	3.00	3.00	1.79	59.67	Dark grey	Quartz feldspathic amphibole -biotite - chlorite schist	Hard & compact	Fine grained	Grannular to feebly schistosed at very low angle, few fractures thin erratic quartz vein parallel to schistosity, low angle fracture at (~ 10°-20°) bottom	Very rare dissemination of sulfides at place (Not worth sampling)	
MTB-06	100.00	103.00	3.00	3.00	1.88	62.67	Dark grey	Quartz feldspathic amphibole -biotite - chlorite schist	Hard & compact	Fine grained	Feeble to moderately schistosed @~20°, occasionally grannular quartz veins parallel to schistosity, fracture along schistosity, occasionally fragmented core	Thin stringers of Chalcopyrite along quartz veins also minor dissemination of sulfides along schistosity	
MTB-06	103.00	106.00	1.10	1.10	1.68	56.00	Dark grey	Quartz feldspathic amphibole -biotite - chlorite schist	Hard & compact	Fine grained	Feeble schistosity, mostly fracture along schistosity, few high angle fracture, thin quartz vein	Very rare fine dissemination of sulfides	
MTB-06			1.90	1.90			Greenish grey	Amphibole biotite -chlorite schist (metabasic schist)	Hard & compact	Fine grained	Feeble schistosity at very low angle @~20°, fracture along schistosity, multiple thin quartz vein parallel to schistosity, fractured & broken core	Stringers of Chalcopyrite along fracture filling quartz vein	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-06	106.00	109.00	2.99	3.00	1.82	60.87	Greenish grey	Amphibole -biotite - chlorite schist (metabasic -schist) (silicified at bottom)	Hard & compact	Fine grained	Feeble to moderately schistosed @~20°-30°, fracture along schistosity, few fracture @~50°, fragmented core, potassic alteration at place, silicified towords bottom	Veins & stringers of Chalcopyrite & Pyrrhotite along fracture filling quartz vein, also stringers along schistosity	
MTB-06	109.00	112.00	3.00	3.00	2.03	67.67	Grey to dark grey	Micaceos quartz schist / quartzite	Very hard & compact	Fine grained	Feeble schistosity, massive at place, catein abundant biotite & chlorite at top, highly fractured & fragmented core	Rare stringers of Chalcopyrite along schistosity along with minute dissemination	
MTB-06	112.00	115.00	3.00	3.00	1.14	38.00	Grey to dark grey	Micaceos quartz schist / quartzite	Very hard & compact	Fine grained	Massive to feebly schistosed occasionally grannular texture multiple fracture @~50°-55°, also few low angle fracture, fragmented & broken core	Few minor stringers along schistosity @~112.20	
MTB-06	115.00	118.00	2.99	3.00	0.96	32.11	Greenish grey	Quartz feldspathic amphibole -biotite - chlorite schist + quartz vein (silicified at place)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-55°, highly fractured along schistosity, along with few irregular fracture fragmented & broken core	High concertration of stringers of Chalcopyrite & minor Pyrrhotite along schistosity	
MTB-06	118.00	121.00	3.00	3.00	1.40	46.67	Greenish grey	Quartz feldspathic amphibole -biotite - chlorite schist + quartz vein (silicified at place)	Hard & compact	Fine grained	Moderately schistosed @~50°-70°, fracture along schistosity, irregular sheared & brecciated quartz veins fragmented & broken core	Stringers & veins of Chalcopyrite along schistosity occasionally dissemination	
MTB-06	121.00	124.00	3.00	3.00	0.31	10.33	Grey	Quartz feldspathic chlorite mica schist (silicified & altered)	Hard & compact	Fine grained	Moderately strongly schistosed @~50°-55°, fracture along schistosity, also irregular fracture at different angle rokges from 30°-70°, highly fragmented and broken core sheared & brecciated quartz veins	Fracture filling stringers & veins of Chalcopyrite occasionally along brecciated quartz vein very minute dissemination at places	
MTB-06	124.00	127.00	3.00	3.00	1.05	35.00	Grey	Quartz feldspathic chlorite mica schist (silicified & altered)	Hard & compact	Fine grained	Moderately strongly schistosed @~50°, fracture along schistosity, low angle fracture, highly fractured & fragmented core, thin quartz -carbonate vein, potassic alteration.	Few minor stringers of Chalcopyrite & other sulfides along very thin quartz carbonate veins	
MTB-06	127.00	130.00	3.00	3.00	2.28	76.00	Grey	Quartz feldspathic chlorite mica schist (silicified & altered)	Hard & compact	Fine grained	Moderately strongly schistosed, few fractures parallel to schistosity, occasionally broken core, thin clustered quartz veins parallel to schistosity .	Thin stringers of Pyrite & Chalcopyrite & Pyrrhotite along quartz vein	
MTB-06	130.00	133.00	3.00	3.00	2.08	69.33	Grey	Quartz feldspathic chlorite mica schist (silicified & altered)	Hard & compact	Fine grained	Moderately -strongly schistosed @~50°-55°, fracture along schistosity, few fractures sub - parallel to the CA, thin to thick brecciated quartz veins	Veins & massive patches of Chalcopyrite along with Pyrite & Pyrrhotite along quartz veins	
MTB-06	133.00	136.00	3.00	3.00	2.10	70.00	Grey	Quartz feldspathic chlorite mica schist (silicified & altered)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-55°, fracture along schistosity, irregular fracture filled with quartz vein & sulfide mineralisation, broken & fragmented core zone.	Veins & stringers of sulfides as fracture filling mainly Pyrite & Pyrrhotite with minor Chalcopyrite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-06	136.00	139.00	2.88	3.00	1.33	46.18	Grey	Quartz feldspathic chlorite mica schist (altered & silicified)	Hard & compact	Fine grained	Moderately - strongly schistosed @~50°-55°, multiple fracture @~40°-60°, also fractured parallel to the schistosity, broken & fragmented core, occasionally sheared & brecciated quartz vein	Thin stringers of Pyrrhotite along foliation (Not worth sampling)	
MTB-07	0.00	3.00	0.78	3.00			Brownish grey	Top soil	Loose & cohesive to friable				
MTB-07	3.00	6.00	1.09	3.00			Brownish grey	Top soil	Loose & cohesive to friable				
MTB-07	6.00	9.00	0.89	3.00			Brownish grey	Top soil	Loose & cohesive to friable				
MTB-07	9.00	10.00	0.48	1.00			Brownish grey	Loose soil ± quartz boulders	Loose & cohesive to friable				
MTB-07	10.00	13.00	0.24	0.36			Brownish grey	Highly oxidised schistosed rock	Soft & friable	Fine grained	Schistosed		
MTB-07			1.76	2.64	1.04	59.09	Greenish grey	Quartz feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~20°-30°, multiple fractures @~40°-50°, thin carbonate veins		
MTB-07	13.00	15.00	1.86	2.00	1.12	60.22	Greenish grey	Quartz feldspathic amphibole chlorite biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~20°-25°, low angle fracture @~28°, partially oxidised along fracture, fragmented core		HQ ↑
MTB-07	15.00	16.00	0.84	1.00	0.49	58.33	Greenish grey	Quartz feldspathic amphibole biotite schist (Metabasic schist)	Hard & compact	Fine grained	Feeble to moderately schistosed, fractured & fragmented thin quartz - carbonate veins		↓ NQ
MTB-07	16.00	19.00	2.88	3.00	2.34	81.25	Greenish grey	Quartz feldspathic amphibole biotite schist (Metabasic schist)	Hard & compact	Fine grained	Feeble to moderately schistosed, @~15°-20°, few fracture parallel to the schistosity, splitting at high angle to the CA		
MTB-07	19.00	22.00	2.90	3.00	1.15	39.66	Greenish grey	Quartz feldspathic amphibole biotite schist (Metabasic schist)	Hard & compact	Fine grained	Feeble to moderately schistosed @~20°-30°, fracture along schistosity, fragmented/broken core		
MTB-07	22.00	25.00	2.95	3.00	1.68	56.95	Greenish grey	Quartz feldspathic amphibole biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~30°-35°, multiple fracture parallel to the schistosity, broken & fragmented core, thin quartz - carbonate irregular veins		
MTB-07	25.00	28.00	1.88	1.96	1.14	39.58	Greenish grey	Quartz feldspathic amphibole biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~30°-35°, multiple fracture parallel to the schistosity, broken & fragmented core, thin quartz - carbonate irregular veins		
MTB-07			1.00	1.04			Greyish green	Amphibole biotite chlorite rock /schist ± muscovite (basic rock)	Hard & compact	Fine-medium grained	Massive to feebly schistosed occasionally grannular, multiple fracture @~40°-45°, along with few low angle irregular fracture partially altered		Gradetional contact
MTB-07	28.00	31.00	2.94	3.00	1.73	58.84	Light greenish green	Amphibole biotite chlorite schist/ rock ± muscovite (basic rock /intrusive)	Hard & compact	Fine-medium grained	Massive to feebly schistosed multiple fracture @~40°-45°, also few low angle fracture (~10°), partially altered		
MTB-07	31.00	34.00	3.00	3.00	2.03	67.67	Light greenish green	Amphibole biotite chlorite schist /rock (basic intrusive ?)	Hard & compact	Fine-medium grained	Massive grannular to feebly schistosed,multiple fracture @~40°-45°, low angle fracture filled with carbonate veins, partially altered		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-07	34.00	37.00	2.96	3.00	1.00	33.78	Light greenish green	Amphibole biotite chlorite schist /rock (basic intrusive ?)	Hard & compact	Fine-medium grained	Massive grannular to feebly schistosed, at place, highly fractured @~35°-40°, from 36.00-37.00, fragmented & broken core		
MTB-07	37.00	40.00	0.90	0.90	2.05	68.33	Light greenish green	Amphibole biotite chlorite schist /rock (basic intrusive ?)	Hard & compact	Fine-medium grained	Massive grannular to feebly schistosed, at place, highly fractured @~35°-40°, from 36.00-37.00, fragmented & broken core		Gradetional contact
MTB-07			2.10	2.10			Greenish grey	Quartz feldspathic amphibole chlorite biotite schist ± Garnet	Hard & compact	Fine grained	Strongly schistosed @~30°-35°, fractured along the schistosity, broken & fragmented core, occasionally garnetiferous quartz vein		Gradetional contact
MTB-07	40.00	43.00	2.84	3.00	2.17	76.41	Grey white	Quartz biotite chlorite muscovite /sericite schist + quartz vein (altered)	Hard & compact	Fine grained	Strongly schistosed @~30°-40°, multiple fracture parallel to the schistosity, schistosity parallel quartz veins	Very rare spces of sulfides (Not worth sampling)	
MTB-07	43.00	46.00	3.00	3.00	2.03	67.67	Grey to grey white	Quartz-biotite -chlorite muscovite schist ± Garnet (altered & silicified)	Very hard & compact	Fine grained	Feeble to strongly schistosed @~35°, highly silicified, mostly fractured parallel to the schistosity, few fracture high angle @~50°-60°, quartz veins		
MTB-07	46.00	49.00	2.05	3.00	0.15	7.32	Dark grey	Garnetiferous quartz -chlorite -biotite schist (altered & silicified)	Hard & compact	Fine - coarse grained	Strongly schistosed @~30°-35°, highly fractured & fragmented, SL broken core, quartz veins	Very rare spces of sulfides (Not worth sampling)	
MTB-07	49.00	52.00	2.96	3.00	1.40	47.30	Dark grey with pink patches	Garnetiferous quartz -chlorite -biotite schist (altered & silicified) + bands of quartz schist / quartzite (altered & silicified)	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°-35°, at place strongly silicified, highly fractured parallel to schistosity, fragmented & broken core, large to very large garnet porphyroblasts	Disseminated spces of Chalcopyrite & pyrite along schistosity (Not worth sampling)	
MTB-07	52.00	55.00	2.95	3.00	2.25	76.27	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite (altered)	Hard & compact	Fine -very coarse grained	Feeble schistosity, large garnet porphyroblasts, few fracture@~30°-35°,	Stringers & spces of Chalcopyrite along schistosity	
MTB-07	55.00	58.00	3.00	3.00	1.24	41.33	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite (altered)	Hard & compact	Fine -very coarse grained	Moderately to strongly schistosed, @~30°-40°, w.rt CA large to very large garnet porphyroblasts highly fractured & fragmented broken core	Stringers & disseminated spces of Chalcopyrite along with Pyrrhotite along schistosity 0.10 m @ 0.20 - 0.30 %	
MTB-07	58.00	61.00	2.94	3.00	2.37	80.61	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite	Hard & compact	Fine -very coarse grained	Moderately to strongly developed wavy schistosity, @~30°-40°, large to very large garnet porphyroblasts, irregularly fractured, few fracture along schistosity at places	Stringers & disseminated spces of Chalcopyrite along schistosity	
MTB-07	61.00	64.00	2.99	3.00	1.99	66.56	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite	Hard & compact	Fine -very coarse grained	Moderately to strongly developed wavy schistosity, @~30°-40°, large to very large garnet porphyroblasts, irregularly fractured, few fracture along schistosity at places	Stringers & disseminated spces of Chalcopyrite along schistosity	
MTB-07	64.00	67.00	3.00	3.00	2.01	67.00	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite + quartz vein	Hard & compact	Fine -very coarse grained	Strongly schistosed, ~ wavy schistosity, multiple fracture at angle ranging from 30°-60°, quartz vein parallel to schistosity	Stringers & disseminated spces of Chalcopyrite along schistosity & along inter-porphyroblast region & fractures	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-07	67.00	70.00	2.98	3.00	2.36	79.19	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite + quartz vein	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°-40°, wavy schistosity large to very large garnet porphyroblast, multiple fracture @~50°-70°, low angle fracture @~20°, brecciated quartz veins	Stringers & disseminated spces of Chalcopyrite along schistosity & along inter-porphyroblast region & fractures	
MTB-07	70.00	73.00	3.00	3.00	2.63	87.67	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite + quartz vein	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°, wavy schistosity, large to very large garnet porphyroblasts, fracture @~30°, also multiple fractures @~50°-60°	Minor stringers & disseminated spces @ ~71.60 - 72.00 @ ~0.10 - 0.20 %	
MTB-07	73.00	76.00	2.94	3.00	2.21	75.17	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite + quartz vein	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°, schistosity angle increased to ~45°-50°, towards bottom, multiple fractures following the schistosity place, along with few irregular fracture, large to very large garnet porphyroblasts	Stringers & disseminated spces of Chalcopyrite & Pyrrhotite along schistosity 0.10 - 0.20 %	
MTB-07	76.00	79.00	2.97	3.00	2.21	74.41	Dark grey with pink patches	Garnetiferous- quartz- chlorite- biotite schist ± muscovite + quartz vein (altered & silicified)	Hard & compact	Fine -very coarse grained	Moderately to strongly schistosed large to very large garnet porphyroclasts multiple irregular fracture silicified towards bottom	Stringers & disseminated spces of Chalcopyrite & Pyrrhotite along schistosity 0.10 - 0.20 %	
MTB-07	79.00	82.00	2.77	3.00	1.16	41.88	Dark grey with pink patches	Garnetiferous -quartz -biotite - chlorite schist + quartz vein	Hard & compact	Fine -very coarse grained	Strongly schistosed @~40°-50°, large to very large garnet porphyroblasts fractured along schistosity, low angle fracture (~10°-20°) with oxidation along fracture (limonite encrustation) quartz veins	Rare spces of Chalcopyrite along schistosity @~(79.45 @ Trace %) (Not worth sampling)	
MTB-07	82.00	85.00	2.69	3.00	1.25	46.47	Dark grey with pink patches	Garnetiferous -quartz -biotite - chlorite schist + quartz vein	Hard & compact	Fine-medium grained	Strongly schistosed @ 20°-30°, at top, & ~40°-50°, towards bottom, fractured along schistosity, low angle (20°-25°) fractures along-with oxidation trace, sheared quartz veins	Very rare minute spces of Chalcopyrite along schistosity (Not worth sampling) (Trace)	
MTB-07	85.00	88.00	3.00	3.00	2.56	85.33	Dark grey with pink patches	Garnetiferous -quartz -chlorite - biotite schist	Hard & compact	Fine -very coarse grained	Strongly developed wavy to sigmoidal schistosity @~40°-45°, occasionally larried fracture along schistosity few fractures large to very large garnet porphyroblasts	Stringers & minor disseminated spces of Chalcopyrite along schistosity 86 - 88 (0.10 - 0.20%)	
MTB-07	88.00	91.00	2.73	3.00	2.12	77.66	Dark grey with pink patches	Garnetiferous -quartz -chlorite - biotite schist	Hard & compact	Fine -very coarse grained	Strongly schistosed @~45°-50°, wavy to sigmoidal schistosity, few fractured along schistosity, large to very large garnet porphyroblasts	Disseminated spces & stringers of Chalcopyrite along schistosity (Not worth sampling) 0.20 cm - 0.10-0.20 %	
MTB-07	91.00	94.00	3.12	3.00	1.85	59.29	Dark grey with pink patches	Garnetiferous -quartz -chlorite - biotite schist	Hard & compact	Fine -very coarse grained	Strongly schistosed @~40°-50°, wavy to sigmoidal schistosity, mostly fractured along schistosity place occasionally fragmented core, large to very large garnet porphyroblasts	Very rare spces of sulfides (Not worth sampling),	
MTB-07	94.00	97.00	2.67	3.00	1.20	44.94	Dark grey with pink patches	Garnetiferous -quartz -chlorite - biotite schist	Hard & compact	Fine -very coarse grained	Strongly schistosed highly fractured, fragmented & broken core, sheared & brecciated quartz veins	Stringers & spces of Chalcopyrite & Pyrrhotite along schistosity and as fracture filling within quartz veins	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-07	97.00	100.00	2.92	3.00	1.96	67.12	Pink grey	Garnetiferous -quartz -chlorite - biotite schist + quartz vein	Hard & compact	Fine - coarse grained	Strongly schistosed high abndaner of large garnet porphyroblasts (~ 1-2 cm), few irregular fracture folded quartz veins	Very rare spces of sulfides (Not worth sampling)	
MTB-07	100.00	103.00	3.00	3.00	1.96	65.33	Pink greenish grey	Garnetiferous-quartz -chlorite muscovite schist ± biotite + quartz vein (altered)	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°-40°, wavy to sigmoidal, mostly fracture @~25°-35°, fragmented core, large to very large garnet porphyroblasts slicken lines	Stringers & spces of Chalcopyrite along schistosity and within the fracture of large granet porphyroblasts	
MTB-07	103.00	106.00	2.88	3.00	1.57	54.51	Pink greenish grey	Garnetiferous-quartz -chlorite muscovite schist ± biotite + quartz veins (altered)	Hard & compact	Fine -very coarse grained	Strongly schistosed @~30°-40°, mostly fractured parallel to schistosity, sheared & brecciated quartz veins, large to very large garnet porphyroblasts	Veins & stringers of Chalcopyrite along with disseminated spces of Chalcopyrite along schistosity	
MTB-07	106.00	109.00	3.00	3.00	2.35	78.33	Pink greenish grey	Garnetiferous-quartz -chlorite muscovite schist ± biotite + quartz veins (altered)	Hard & compact	Fine -very coarse grained	Strongly schistosed @~ 35°-45°, mostly fractured along schistosity, wavy to sigmoidal schistosity sheared & brecciated quartz veins large to very large garnet porphyroblasts	Stringers of Chalcopyrite as fracture filling within or adjacent to quartz veins , also along schistosity	
MTB-07	109.00	112.00	2.67	3.00	1.93	72.28	Pink greenish grey	Garnetiferous-quartz -chlorite muscovite schist ± biotite + quartz veins (altered)	Hard & compact	Fine -very coarse grained	Strongly schistosed, large to very large garnet porphyroblasts, fractured along schistosity rare quartz veins		
MTB-08	0.00	3.00	0.29	3.00			Reddish brown	Top soil + boulders of quartzite	Loose & friable				
MTB-08	3.00	4.00	0.70	1.00			Brownish white	Pebbles & fragments of quartzite	Very hard & compact		Massive, highly fragmented		
MTB-08	4.00	7.00	1.24	3.00			Brownish white	Pebbles & fragments of quartzite			Massive, highly fragmented		
MTB-08	7.00	10.00	0.68	3.00			Brownish white	Pebbles & fragments of quartzite			Massive, highly fragmented		
MTB-08	10.00	13.00	1.13	3.00			Yellow	Soil	Soft & conesive		Massive, highly fragmented, occasional bands of weathered parent rock		
MTB-08	13.00	16.00	1.10	3.00			Yellow	Soil	Soft & conesive		Massive, highly fragmented, occasional bands of weathered parent rock		
MTB-08	16.00	19.00	1.72	3.00			Yellowish grey	Soil + bands of highly weathered parant rock	Soft & conesive	Fine grained	Occasional bands of highly weathered parent		
MTB-08	19.00	22.00	1.33	3.00			Yellowish grey	Weathered rock + bands of soil zone	Soft & friable	Fine grained	Massive to feebly schistosed, bands of partially formed soil zone, highly fractured		
MTB-08	22.00	25.00	2.06	3.00			Yellowish grey	Weathered rock + bands of soil zone	Soft & friable	Fine grained	Massive to feebly schistosed, bands of partially formed soil zone, highly fractured		
MTB-08	25.00	28.00	1.62	3.00			Yellowish grey	Weathered & oxidised schistosed rock + bands of quartzite rock fragments	Soft & hard friable	Fine grained	Highly fragmented & broken rock fragments, highly weathered & oxidised		
MTB-08	28.00	31.00	2.00	3.00			Yellowish grey	Highly weathered & oxidised schistosed rock + partially formed soil band	Moderate hard to soft & friable	Very fine grained to fine grained	Highly oxidised friable, fragmented & broken core,		
MTB-08	31.00	34.00	2.02	3.00			Yellowish grey	Highly weathered /oxidised schistosed rock + partially formed soil	Moderate hard to soft & friable	Fine grained	Schistosed, highly fragmented, broken & friable		
MTB-08	34.00	37.00	1.00	1.00	0.96	32.00	Yellowish grey	Highly oxidised schistosed rock	Moderate & friable	Fine grained	Schistosed, highly fractured & fragmeted, broken core		
MTB-08			2.00	2.00			Grey	garnet quartz - chlorite - biotite schist	Hard & compact	Fine grained to very course grained	Very large granet porphyroblarts strongly schistosed @~20° to 30°, fracture along schistosity		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	37.00	40.00	0.70	0.70	1.10	36.67	Greyish white	Talc (?) - chlorite ± biotite schist	Hard & compact	Very fine grained	Strongly schistosed, occasionally fracture		
MTB-08			2.30	2.30			Greenish grey	Quartz - amphibole - chlorite - biotite schist (Metabasic schist)	Very hard & compact	Fine grained	Moderately to strongly schistosed @~30° to 45°, quartz veins parallel to schistosity, silicified at contact, fractured along schistosity		
MTB-08	40.00	43.00	3.00	3.00	0.57	19.00	Greenish grey	Quartz - feldspathic amphibole - chlorite - biotite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~30°, highly fractured & fragmented, broken core @~40.70-42, fracture parallel to schistosity, thin quartz veins		
MTB-08	43.00	46.00	3.00	3.00	1.00	33.33	Greenish grey	Quartz - feldspathic amphibole - chlorite - biotite schist (Metabasic schist)	Very hard & compact	Very fine grained to fine grained	Moderately to strongly schistosed @~30°, highly fractured parallel to schistosity, broken & fragmented core @~44.00-45.40, quartz veins		
MTB-08	46.00	49.00	3.00	3.00	1.17	39.00	Greenish grey to grey	Quartz - feldspathic amphibole - chlorite - biotite schist ± garnet (silicified) + quartz veins	Hard & compact	Fine grained	Moderately to strongly schistosed @~30° to 40°, mostly fractured parallel to schistosity, quartz veins parallel to schistosity	Single veins along with multiple stringers of Pyrite & Chalcopyrite @~48-48.50 @~0.20%	
MTB-08	49.00	52.00	2.94	3.00	0.34	11.56	Greenish grey to grey	Quartz - feldspathic amphibole - chlorite - biotite schist ± garnet (silicified) + quartz veins	Hard & compact	Very fine grained to fine grained	Strongly schistosed @~27° to 30°, mostly fractured parallel to schistosity along with few irregular fracture quartz veins potassic alteration	Stringers & veinlets of Chalcopyrite parallel to schistosity 2.00 ~0.10-0.20%	
MTB-08	52.00	54.00	1.99	2.00	0.70	35.18	Greenish grey to grey	Quartz - feldspathic amphibole - chlorite - biotite schist ± garnet (silicified) + quartz veins	Very hard & compact	Very fine grained to fine grained	Moderately to strongly schistosed @~30° to 35°, fracture parallel to schistosity, thin sher zones, quartz veins	Very rare stringers of Pyrite & Chalcopyrite (Not worth sampling)	↑HQ 54.00 ↓NQ
MTB-08	54.00	55.00	0.97	1.00	0.80	82.47	Greenish grey to grey	Quartz feldspathic chlorite - biotite - schist ± amphibole ± garnet (silicified)	Hard & compact	Fine grained	Moderately schistosed, silicified, quartz veins		
MTB-08	55.00	58.00	3.00	3.00	1.78	59.33	Greenish grey	Quartz feldspathic amphibole chlorite biotite schist + garnet (metabsic) (occasionally silicified)	Hard & compact	Fine grained	Strongly schistosed @~30°, highly altered & silicified, potassic alteration, fracture parallel to schistosity, quartz veins		
MTB-08	58.00	61.00	2.98	3.00	2.09	70.13	Grey to greenish grey	Quartz feldspathic amphibole -chlorite - biotite schist (silicified)	Hard & compact	Fine grained	Strongly schistosed @~25° to 27°, mostly fractured /splitted parallel to schistosity, schistosity parallel quartz vein, altered & silicified		
MTB-08	61.00	64.00	2.94	3.00	1.48	50.34	Grey to greenish grey	Quartz feldspathic amphibole -chlorite - biotite schist (silicified) (occasionally silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed @~30° to 40°, fracture parallel to schistosity, altered & silicified, potassic alteration		
MTB-08	64.00	67.00	2.96	3.00	1.79	60.47	Grey to greenish grey	Garnetiferous quartz biotite chlorite schist + band of Metabasic intrusive @~ 65.00-65.40	Hard & compact	Fine grained to very course grained	Strongly schistosed, wavy to sigmoidal schistosity @~30° to 40°, large granet porphyroblarts fracture parallel to schistosity	Spces & stringers of Chalcopyrite & Pyrite disseminated along schistosity @~64-65.00 (Not worth sampling)	Sharp contact with basic intrusive
MTB-08	67.00	70.00	3.00	3.00	1.76	58.67	Grey to greenish grey	Garnetiferous quartz chlorite biotite schist ± amphibole	Hard & compact	Fine grained to very course grained	Large granet porphyroblarts, strongly schistosed, fracture @ high angle, occasionally fragmented core, potassic alteration towards bottom	Stringers & veins of Chalcopyrite @(~69.00-69.10, 10cm @~0.30-0.50%) (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	70.00	73.00	2.96	3.00	1.71	57.77	Grey to greenish grey	Garnetiferous quartz biotite chlorite schist ± amphibole (altered)	Hard & compact	Fine grained	Storngly schistosed, @~35° to 40°, schistosity parallel fracture along with thin irregular fracture potassic alteration, quartz carbonate vein	Bunch of thin stringers parallel to schistosity @~71.85-72.00 , 15cm @~20% core axis & occasionally sulfides spces (Not worth sampling)	
MTB-08	73.00	76.00	2.98	3.00	2.21	74.16	Grey to greenish grey	Garnetiferous quartz chlorite biotite schist ± amphibole (altered & silicified)	Hard & compact	Fine grained	Strongly schistosed @~30°, few fracture parallel to schistosity, potassic alteration, quartz carbonate veins	Occasionally rare spces & stringers of Chalcopyrite parallel to schistosity (Not worth sampling)	
MTB-08	76.00	79.00	2.91	3.00	1.81	62.20	Grey	Quartz chlorite biotite schist ± amphibole (altered & silicified) + quartz carbonate veins	Hard & compact	Fine grained	Strongly schistosed @~30°, few fracture parallel to schistosity, potassic alteration, quartz carbonate veins	Rare spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-08	79.00	82.00	3.00	3.00	1.52	50.67	Grey	Quartz chlorite biotite schist ± amphibole (altered & silicified) + quartz carbonate veins	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, highly fractured & fragmented, broken core, altered & silicified, potassic alteration, quartz - carbonate veins	Rare spces of Pyrite only	
MTB-08	82.00	85.00	2.98	3.00	2.02	67.79	Greenish grey	Quartz feldspathic amphibole chlorite biotite schist (Metabasic schist)	Very hard & compact	Fine grained	Strongly schistosed @~30° to 35°, few fracture parallel to schistosity,rare quartz veins		
MTB-08	85.00	88.00	2.93	3.00	2.19	74.74	Greenish grey	Quartz feldspathic amphibole chlorite biotite schist (Metabasic schist)	Very hard & compact	Fine grained	Strongly schistosed @~30° to 35°, few fracture parallel to schistosity,rare quartz veins quartz - carbonate vein		
MTB-08	88.00	91.00	3.00	3.00	2.19	73.00	Greenish grey	Feldspathic amphibole chlorite biotite schist (Metabasic schist / Amphibolite	Hard & compact	Fine grained	Moderately to strongly schistosed @~30°, fracture parallel to schistosity, thin carbonate veins		
MTB-08	91.00	94.00	3.00	3.00	2.70	90.00	Greenish grey	Feldspathic amphibole chlorite biotite schist (Metabasic schist / Amphibolite	Very hard & compact	Fine grained	Strongly schistosed, few fractures @ high angle (>70°) thin carbonate veins		
MTB-08	94.00	97.00	2.00	2.00	1.73	57.67	Greenish grey	Feldspathic amphibole chlorite biotite schist (Metabasic schist / Amphibolite	Very hard & compact	Fine grained	Strongly schistosed, few fractures @ high angle (>70°) thin carbonate veins		
MTB-08			1.00	1.00			Grey	Quartz chlorite biotite schist ± amphibole (altered & silicified Metabasic schist	Very hard & compact	Fine grained	Strongly schistosed @~30° to 35°, highly fractured & fragmented, broken core,	Fracture filling veins of Pyrite (Not worth sampling)	Contact marked by quartz veins
MTB-08	97.00	100.00	3.00	3.00	0.83	27.67	Grey	Quartz chlorite biotite schist ± amphibole (altered & silicified Metabasic schist	Very hard & compact	Fine grained	Strongly schistosed ~ 40°, highly fracture parallel to schistosity, also conjugate fracture, fragmented & broken core, highly altered & silicified ?		
MTB-08	100.00	103.00	1.42	1.42	0.74	24.67	Grey	Quartz chlorite biotite schist ± amphibole (altered & silicified Metabasic schist	Very hard & compact	Fine grained	Strongly schistosed ~ 40°, highly fracture parallel to schistosity, also conjugate fracture, fragmented & broken core, highly altered & silicified ?		
MTB-08			1.58	1.58			Greenish grey	Quartz feldspathic amphibole chlorite biotite schist	Very hard & compact	Fine grained	Strongly schistosed @~30°, silicified at contact schistosity parallel fracture, quartz veins		
MTB-08	103.00	106.00	2.99	3.00	1.88	62.88	Greenish grey	Amphibole chlorite biotite schist (Metabasic schist /amphibolite)	Hard & compact	Fine grained	Strongly schistosed @~30°, few fractures, occasionally fragmented core		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	106.00	109.00	2.00	2.00	0.89	29.67	Greenish grey	Amphibolite/Metabasic schist (highly oxidised)	Moderate hard to soft compact to occasionally friable	Fine grained	Strongly schistosed, highly fractured & fragmented, broken friable core, highly oxidised		
MTB-08			1.00	1.00			Grey	Amphibole + biotite + chlorite + epidote schist (?) (altered Metabasic)	Hard & compact	Very fine grained	Strongly schistosed @~30°, fractured along schistosity, quartz carbonate vein		
MTB-08	109.00	112.00	3.00	3.00	2.15	71.67	Grey	Amphibole + biotite + chlorite + epidote schist (?) (altered Metabasic)	Hard & compact	Very fine grained	Strongly schistosed @~30°, fracture parallel to schistosity thin quartz carbonate veins parallel to schistosity		
MTB-08	112.00	115.00	3.00	3.00	1.52	50.67	Grey	Amphibole + biotite + chlorite + epidote schist (?) (altered Metabasic)	Hard & compact	Very fine grained	Strongly schistosed @~30°, fracture parallel to schistosity thin quartz carbonate veins parallel to schistosity fragmented core at bottom		
MTB-08	115.00	118.00	1.50	1.50	0.71	23.67	Grey	Altinolite - biotite - chlorite schist ± epidote	Moderate hard & compact	Fine grained	Strongly schistosed, highly fractured & fragmented, broken core slicken lines		
MTB-08			1.50	1.50			Grey	Amphibole - biotite schist (Metabasic /amphibolite)	Hard & compact	Fine grained	Moderately schistosed, highly fractured @~30° to 35°, fragmented & broken core		
MTB-08	118.00	121.00	3.00	3.00	0.47	15.67	Greenish grey	Amphibole - biotite schist (Metabasic schist /amphibolite)	Very hard & compact	Fine grained	Moderately schistosed, highly fractured /fragmented & broken core, low angle fracture @~30°, occasionally slicken lines		
MTB-08	121.00	124.00	2.99	3.00	0.51	17.06	Greenish grey	Amphibole - biotite schist (Metabasic schist /amphibolite)	Very hard & compact	Fine grained	Moderately schistosed @~30°, highly fractured parallel to schistosity, fragmented & broken core, thin quartz - carbonate veins		
MTB-08	124.00	127.00	2.85	2.85	1.37	45.67	Greenish grey	Amphibole - biotite schist (Metabasic schist /amphibolite)	Very hard & compact	Fine grained	Moderately schistosed @~30°, highly fractured parallel to schistosity, fragmented & broken core, thin quartz - carbonate veins		
MTB-08			0.15	0.15			Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist (?)	Hard & compact	Fine grained	Strongly schistosed @~30°, phyllitic in nature, highly fractured & fragmented, oxidised at contact zone thin carbonate		
MTB-08	127.00	130.00	3.00	3.00	0.61	20.33	Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist (?)	Hard to moderate hard & compact	Fine grained	Strongly schistosed @~30°, phyllitic in nature, highly fractured & fragmented, oxidised at contact zone thin carbonate highly fractured, slicken lines irregular quartz - carbonate veins		
MTB-08	130.00	133.00	2.40	2.40	0.38	12.67	Grey	Chlorite schist ± Amphibole	Moderate hard to soft & friable	Fine grained	Strongly schistosed, highly fractured, crushed, broken & fragmented core, partially to fully oxidised /weathered		
MTB-08			0.60	0.60			Greenish light grey	Amphibole - biotite - chlorite schist ± epidote	Hard & compact	Fine grained	Strongly schistosed @~30°, phyllitic, fractured		
MTB-08	133.00	136.00	1.20	1.20	1.69	56.33	Greenish light grey	Amphibole - biotite - chlorite schist (altered Metabasic)	Hard & compact	Fine grained	Strongly schistosed, fracture parallel to schistosity, oxidised along fracture		
MTB-08			1.80	1.80			Greenish grey	Amphibole - biotite - chlorite schist (Metabasic schist / amphibolite)	Hard & compact	Fine grained	Poorly to moderately schistosed few irregular fracture @ high angle (>50°), rare quartz veins		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	136.00	139.00	3.00	3.00	2.29	76.33	Greenish grey	Amphibole - biotite - chlorite schist (Metabasic schist / amphibolite)	Hard & compact	Fine grained	Moderately schistosed @~30° to 40°, few fractures parallel to schistosity, quartz veins	Thin stringers & spces of Chalcopyrite within the massive Magnetite (Not worth sampling) rare % @0.10	
MTB-08	139.00	142.00	2.00	2.02	2.16	72.73	Greenish grey	Amphibole - biotite - chlorite schist (Metabasic schist / amphibolite)	Hard & compact	Fine grained	Moderately schistosed @~30° to 40°, few fractures parallel to schistosity, quartz veins	Thin stringers & spces of Chalcopyrite within the massive Magnetite (Not worth sampling) rare % @0.10	
MTB-08			0.97	0.98			Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist (?)	Hard & compact	Fine grained	Strongly schistosed @~30°, few fractures/ splitting parallel to schistosity, thin carbonate veins		
MTB-08	142.00	145.00	3.00	3.00	1.89	63.00	Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist (?)	Hard & compact	Fine grained	Strongly schistosed @~30°, few fractures/ splitting parallel to schistosity, thin carbonate veins		
MTB-08	145.00	148.00	3.00	3.00	1.63	54.33	Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist (?)	Hard & compact	Very fine grained	Strongly schistosed @~30°, crenulations, fracture parallel to schistosity, few high angle fracture filled with epidote veins fragmented at bottom		
MTB-08	148.00	151.00	3.00	3.00	1.84	61.33	Greenish grey	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)	Hard & compact	Very fine grained	Strongly schistosed @~30° to 35°, occasionally crenulations, fractured along schistosity, occasionally fragmented core, epidote veins		
MTB-08	151.00	154.00	3.00	3.00	2.36	78.67	Greenish grey	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)	Hard & compact	Very fine grained	Strongly schistosed @~30° to 35°, occasional crenulations, fractured along schistosity, occasionally fragmented core, epidote veins		Petrography MTB-08/P1 (153.90-154.00)
MTB-08	154.00	157.00	2.92	3.00	1.98	67.81	Greenish grey	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)	Hard & compact	Very fine grained	Strongly schistosed @~30° to 35°, occasional crenulations, fractured along schistosity, occasionally fragmented core, epidote veins		
MTB-08	157.00	160.00	3.00	3.00	2.42	80.67	Greenish grey	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)	Hard & compact	Very fine grained	Strongly schistosed @~30° to 35°, occasional crenulations, fractured along schistosity, occasionally fragmented core, epidote veins conjugate fracture, rare quartz veins		
MTB-08	160.00	163.00	3.00	3.00	2.10	70.00	Greenish grey	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)	Hard & compact	Very fine grained	Strongly schistosed @~30° to 35°, occasional crenulations, fractured along schistosity, occasionally fragmented core, epidote veins conjugate fracture, rare quartz veins fragmented & broken core		
MTB-08	163.00	166.00	2.96	3.00	1.05	35.47	Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist ?)	Hard & compact	Fine grained	Strongly schistosed @~20° to 25°, multiple fracture parallel to schistosity, fragmented core, carbonate & epidote veins	Occasionally Magnetite veins / patches (Not worth sampling)	
MTB-08	166.00	169.00	3.00	3.00	0.00	0.00	Greenish light grey	Amphibole - biotite - chlorite schist ± epidote (altered Metabasic schist ?) grades into biotite - chlorite schist at bottom	Hard & compact	Fine grained	Strongly schistosed, highly fractured, parallel to schistosity @~25°, fragmented & broken core, occasionally friable slicken lines		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	169.00	172.00	3.00	3.00	1.42	47.33	Dark greenish grey	Actinolite - biotite - chlorite schist ± fucshite ± epidote	Moderate hard & compact (occasionally friable)	Fine grained	Strongly schistosed @~20° highly fractured /splitted along schistosity fragmented & broken core, slicken lines		
MTB-08	172.00	175.00	2.95	3.00	1.36	46.10	Dark greenish grey	Actinolite - biotite - chlorite schist ± fucshite ± epidote (occasionally grades into biotite chlorite schist)	Moderate hard & compact (occasionally friable)	Fine grained	Strongly schistosed @~25° to 30°, multiple fractured parallel to schistosity, fragmented core, silicified at bottom		
MTB-08	175.00	178.00	2.90	3.00	1.75	60.34	Grey	Quartz - chlorite - biotite schist ± amphibolite (altered & silicified)	Very hard & compact	Fine grained	Moderately to strongly schistosed @~30°, highly fractured/fragmented & broken core, occasional carbonate veins		
MTB-08	178.00	181.00	3.00	3.00	2.24	74.67	Grey to greenish grey	Quartz - amphibole - chlorite - biotite schist (altered & silicified Metabasic schist) (?)	Very hard & compact	Fine grained	Strongly schistosed @~30° to 35°, fractured & fragmented, broken core	Thin disseminated spces , stringers & veinlets of Chalcopyrite along thin zones parallel to schistosity (0.05-0.1%) @3m (Not worth sampling)	
MTB-08	181.00	184.00	3.00	3.00	2.12	70.67	Grey to greenish grey	Quartz - chlorite - biotite schist ± amphibole (altered & silicified) (occasionally granitized)	Very hard & compact	Fine grained	Strongly schistosed @~35° to 40°, multiple fracture @ high angle (>70°) occasionally fragmented core, occasionally granitized /silicified as banded zone	Erratic thin stringers along with disseminated spces of Chalcopyrite along schistosity parallel zones (Not worth sampling)	
MTB-08	184.00	187.00	3.00	3.00	2.53	84.33	Grey to pink grey	Quartz - k-feldspar chlorite - biotite schist (silicified & granitized)	Very hard & compact	Fine grained	Schistosed @~40°, few fractures @ high angle (>70°) granitized & silicified, secondary k - feldsper laths	Thin stringers & crratic fracture filling veins of Chalcopyrite (Not worth sampling)	
MTB-08	187.00	190.00	3.00	3.00	2.27	75.67	Grey to pink grey	Quartz - k-feldspar chlorite - biotite schist (silicified & granitized)	Very hard & compact	Fine grained	Schistosed @~40°, few fractures @ high angle (>70°) granitized & silicified, secondary k - feldsper laths	Disseminated spces & crratic thin stringers along thin veins of Chalcopyrite (Not worth sampling)	
MTB-08	190.00	193.00	3.00	3.00	2.03	67.67	Grey to pink grey	Quartz - k-feldspar chlorite - biotite schist (silicified & granitized)	Very hard & compact	Fine grained	Schistosed @~40°, few fractures @ high angle (>70°) granitized & silicified, secondary k - feldsper laths		
MTB-08	193.00	196.00	3.10	3.00	2.57	82.90	Greenish grey	Quartz - amphibole - chlorite - biotite schist (granitized at places)	Hard & compact	Fine grained	Strongly schistosed @~40°, occasionally granitized as banded zones secondary dotted feldsper few fractures quartz veins	Rare crratic stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-08	196.00	199.00	3.00	3.00	2.73	91.00	Greenish grey	Quartz - amphibole - chlorite - biotite schist (granitized at places) (silicified & granitized)	Very hard & compact	Fine grained	Strongly schistosed @~40°, occasionally granitized as banded zones secondary dotted feldsper few fractures quartz veins	Rare crratic stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-08	199.00	202.00	3.00	3.00	2.28	76.00	Greenish grey	Quartz - amphibole - chlorite - biotite schist (granitized at places) (silicified & granitized)	Very hard & compact	Fine grained	Strongly schistosed @~40°, altered, occasionally granitized few fractures, quartz veins	Stringers & veins of Chalcopyrite along with massive magnetite	
MTB-08	202.00	205.00	3.00	3.00	2.15	71.67	Dark grey	Magnetite bearing quartz - feldspathic mica schist	Very hard & compact	Very fine grained	Moderately to strongly schistosed, altered, quartz veins	Massive magnetite along with stringers of Chalcopyrite & Pyrite as fracture filling.	
MTB-08	205.00	208.00	0.40	0.40	2.55	85.00	Dark grey	Magnetite bearing quartz - feldspathic mica schist	Very hard & compact	Very fine grained	Moderately to strongly schistosed, altered, quartz veins	Massive magnetite along with stringers of Chalcopyrite & Pyrite as fracture filling.	
MTB-08			2.60	2.60			Pink grey	Granite gneiss ± chlorite (occasionally altered along fracture)	Very hard & compact	Fine grained	Massive to feably schistosed, irregular low angle fracture alteration along with secondary chlorite along fracture zone few fracture @~45° to CA	Veins , stringers of Chalcopyrite along fracture	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-08	208.00	211.00	3.00	3.00	2.27	75.67	Pink grey	Granite gneiss (altered along fracture)	Very hard & compact	Fine grained to medium grained	Massive, multiple fracture@~40° to 45°, alteration along fracture with secondary biotite & chlorite	Minor and occaisonal occurence of Chalcopyrite as stringer along fracture zone, altered core (210-210.20) 0.10%@10cm (Not worth sampling)	
MTB-08	211.00	214.00	3.00	3.00	2.42	80.67	Pink grey	Granite gneiss (altered along fracture)	Very hard & compact	Fine grained	Massive, few fracture occasionally fragmented		
MTB-08	214.00	215.00	1.00	1.00	0.99	99.00	Pink grey	Granite gneiss (altered along fracture)	Very hard & compact	Fine grained	Massive, few fracture occasionally fragmented		
MTB-09	0.00	3.00	0.60	3.00			Reddish Brown	Top soil	Loose, friable to cohesive at place	Fine grained			
MTB-09	3.00	6.00	1.05	3.00			Reddish Brown	Top soil	Loose, friable to cohesive at place	Fine grained			
MTB-09	6.00	7.00	0.25	1.00			Reddish Brown	Top soil + quartzite boulder	Loose, friable to cohesive at place	Fine grained			
MTB-09	7.00	10.00	0.44	3.00			Yellowish grey	Top soil + boulder of quartzite	Loose & cohesive	Fine grained			
MTB-09	10.00	13.00	0.37	3.00			Yellowish grey	Highly weathered/oxidised schistosed rock & partially formed soil	Soft & loose & friable	Fine grained	Schistosed		
MTB-09	13.00	16.00	0.89	3.00			Yellowish grey	Highly weathered/oxidised schistosed rock & partially formed soil	Soft to moderate hard, friable at places	Fine grained	schistosed, highly fractured , oxidised		
MTB-09	16.00	17.00	0.74	1.00	0.10	13.51	Greenish grey	Quartz - amphibole - biotite - chlorite schist (partially oxidised) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @ 40°, highly fractured , quartz vein parallel to schistosity , oxidised along fracture		
MTB-09	17.00	19.00	1.78	2.00	0.70	39.33	Greenish grey	Quartz - amphibole - biotite - chlorite schist (partially oxidised) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~40°, fracture along schistosity , sheared at bottom, fragmented core at place , oxidised along fracture		
MTB-09	19.00	20.00	0.83	1.00	0.12	14.46	Greenish grey	Quartz - amphibole - biotite - chlorite schist (partially oxidised) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~40°, fracture along schistosity , sheared at bottom, fragmented core at place , oxidised along fracture		
MTB-09	20.00	22.00	2.29	2.00	1.12	48.91	Greenish grey	Quartz - amphibole - biotite - chlorite schist (altered / silicified metabasic schist	Hard & compact	Fine grained	Strongly schistosed @~25° to 30°, fractured along schistosity , few fracture @~50° to 60°, discordant to schistosity		
MTB-09	22.00	25.00	2.90	3.00	1.06	36.55	Greenish grey	Quartz - amphibole - biotite - chlorite schist (altered / silicified metabasic schist	Hard & compact	Fine grained	Strongly schistosed @~25° to 30°, fractured along schistosity , few fracture @~50° to 60°, discordant to schistosity, occasionally fragmented core , few quartz veins	Very fine stringers of cpy & pyrite along schistosity @~23° - 25°, 2m @~<0.10% (Not worth sampling)	
MTB-09	25.00	28.00	2.86	3.00	1.68	58.74	Greenish grey	amphibole quartz - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 45°, multiple fracture along schistosity , oxidised along few fracture	Very rare & erratic spces & stringers along schistosity place (Not worth sampling)	
MTB-09	28.00	30.00	2.04	2.00	1.10	47.83	Greenish grey	Quartz - feldspathic amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~40° to 45°, few fractures , low angle fracture & fracture parallel to core oxis @~29.50-30.00, oxidised along low angle fracture	Very rare disseminated fine spces of sulfides (Not worth sampling)	
MTB-09	30.00	30.30	0.20	0.30	0.00	0.00	Greenish grey	Quartz - feldspathic amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed		
MTB-09	30.30	31.30	0.99	1.00	0.75	75.76	Greenish grey	Quartz - feldspathic amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Very fine grained	Moderately schistosed @~40° to 50°, few fracture		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-09	31.30	32.30	0.94	1.00	0.71	75.53	Greenish grey	Quartz - feldspathic amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Very fine grained	Moderately schistosed @~40° to 50°, few fracture parallel to schistosity		
MTB-09	32.30	34.00	1.76	1.70	1.33	75.57	Greenish grey	Quartz - feldspathic amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Very fine grained	Moderately schistosed @~40° to 50°, few fracture parallel to schistosity		
MTB-09	34.00	35.00	1.07	1.00	0.26	24.30	Greenish grey	Quartz - biotite - chlorite - schist ± amphibole (altered Metabasic schist)	Hard & compact	Very fine grained to fine grained	Moderately to strongly schistosed @~40° to 50°, highly fractured & fragmented & broken core @~ 34.50-50.00, partial oxidation at fracture zone		
MTB-09	35.00	36.00	0.97	1.00	0.52	53.61	Greenish grey	Quartz feldspathic - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Strongly schistosed @~40° to 50°, few fracture parallel to schistosity		HQ ↑
MTB-09	36.00	37.00	0.98	1.00	0.69	70.41	Greenish grey	Quartz feldspathic - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Strongly schistosed @~40° to 50°, few fracture parallel to schistosity		NQ ↓
MTB-09	37.00	40.00	2.90	3.00	1.56	53.79	Greenish grey	Quartz feldspathic - biotite - chlorite schist (metabaisc schist)	Hard & compact	Very fine grained	Strongly schistosed @~40° to 45°, mostly fractured along schistosity , highly fragmented at middle , oxidation along fragmented zone	Stringers & vein of Chalcopyrite along schistosity	
MTB-09	40.00	43.00	2.99	3.00	2.16	72.24	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~40° to 45°, few fractured along schistosity , secondary feldspathization	Very rare spces of Chalcopyrite (Not worth sampling)	
MTB-09	43.00	46.00	2.93	3.00	1.79	61.09	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~40° to 45°, few fractured along schistosity , secondary feldspathization		
MTB-09	46.00	49.00	2.90	3.00	1.66	57.24	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Moderately schistosed @~30° to 40°, fractured along schistosity , irregular low angle fracture (~20° - 30°), occasionally fragmented core	Stringers & veins of Pyrite & Chalcopyrite @ 47.30-47.50	
MTB-09	49.00	52.00	2.95	3.00	2.10	71.19	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Strongly schistosed, schistosity angle - ~ 30° to 35°, multiple fracture @~35° to 50°.	Rare & errotic dissemination of spces of sulfides (very fine grained) (Not worth sampling)	
MTB-09	52.00	55.00	2.90	3.00	0.84	28.97	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~ 30°, multiple fractureds/splilting along schistosity plane , broken & fragmented core, schistosity parallel quartz vein	Stringers & spces of Chalcopyrite & Pyrite along schistosity	
MTB-09	55.00	58.00	2.76	3.00	1.22	44.20	Greenish grey	Quartz - feldspathic - amphibole - biotite - chlorite schist (metabaisc schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~ 30°, multiple fractureds/splilting along schistosity plane , broken & fragmented core, schistosity parallel quartz vein	Rare stringers & veins of Chalcopyrite along schistosity (Not worth sampling)	
MTB-09	58.00	61.00	2.83	3.00	0.59	20.85	Greenish grey	Quartz - biotite - chlorite schist ± amphibole + bands of basic intrusive @~60.37-61.00 + veins	Hard & compact	Fine grained	Strongly schistosed @~30°, highly fractured along schistosity and other irregular fractures, highly fragmented & broken core	Stringers & disseminated spces of Chalcopyrite at few place (Not worth sampling)	
MTB-09	61.00	64.00	2.80	3.00	1.79	63.93	Grey	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, highly fractured & fragmented , thin to thick (~30cm) quartz veins , sheared & brecciated, fragmented core	Rare spces of sulfides (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-09	64.00	67.00	2.80	3.00	0.55	19.64	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Large garnet porphyroblast , strongly schistosed , multiple fracture , fracture angle ranges from ~20° to 50° , highly fragmented core, sheared quartz veins	Stringers & disseminated spces of Chalcopyrite along schistosity @~66-67.00	
MTB-09	67.00	70.00	3.00	3.00	2.01	67.00	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30° large garnet porphyroblast , occasionally crenulation , fractured along schistosity , sheared quartz vein	Stringers & disseminated spces of Chalcopyrite along schistosity @~66-67.00	
MTB-09	70.00	73.00	2.97	3.00	1.42	47.81	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30°, fractured along schistosity , also few angle fracture (~ 20°) occasionally running parallel to CA, broken & fragmented core, sheared quartz vein	Vein of Chalcopyrite along with stringers along schistosity (70-72)	
MTB-09	73.00	76.00	2.96	3.00	2.20	74.32	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30°, mostly fractured parallel to schistosity , sheared quartz veins , occasionally silicified	Stringers & spces of Chalcopyrite along schistosity (75-76.00)	
MTB-09	76.00	79.00	3.00	3.00	2.10	70.00	Light grey	Garnetiferous - quartz - chlorite - biotite schist (silicified) + quartz vein	Hard & compact	Fine grained	Strongly schistosed , @~30° to 35°, strongly silicified, fractured along schistosity , also few fracture at high angle (>70°) , occasionally fragmented core , sheared quartz veins	Dense stringers & spces of Chalcopyrite along schistosity	
MTB-09	79.00	82.00	2.90	3.00	2.33	80.34	Light grey	Garnetiferous - quartz - chlorite - biotite schist (silicified) + quartz vein	Hard & compact	Fine to very coarse grained	Large garnet porphyroblast , strongly schistosed , @~30° to 40°, few fractures , occasionally silicified , shered quartz veins	Dense stringers & spces of Chalcopyrite along schistosity @ 79.00-80.00, at 80.00-82.00 disseminated spces of Chalcopyrite	
MTB-09	82.00	85.00	2.92	3.00	2.16	73.97	Light grey	Garnetiferous - quartz - chlorite - biotite schist (silicified) + quartz vein	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30°, few fractures , sheared quartz veins , occasionally silicified	Fine disseminated specs, veinlets & stringers of Chalcopyrite	
MTB-09	85.00	88.00	2.98	3.00	2.20	73.83	Light grey	Garnetiferous - quartz - chlorite - biotite schist (silicified) + quartz vein	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30°, few fractures , sheared quartz veins , occasionally silicified	Fine disseminated specs, veinlets & stringers of Chalcopyrite	
MTB-09	88.00	91.00	2.94	3.00	1.67	56.80	Light grey	Garnetiferous - quartz - chlorite - biotite schist (silicified) + quartz vein	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30°, few fractures , sheared quartz veins , occasionally silicified	Fine disseminated specs, veinlets & stringers of Chalcopyrite	
MTB-09	91.00	94.00	3.00	3.00	2.20	73.33	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30° to 40°, occasionally silicified , few fractured along schistosity , occasionally fragmented core	Stringers , veinlets & spces of Chalcopyrite along schistosity	
MTB-09	94.00	97.00	3.00	3.00	2.44	81.33	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30° to 40°, occasionally silicified , few fractured along schistosity , occasionally fragmented core	Spces , stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-09	97.00	100.00	2.92	3.00	2.50	85.62	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~30° to 40°, occasionally silicified , few fractured along schistosity , occasionally fragmented core	Spces , stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-09	100.00	103.00	3.05	3.00	2.53	82.95	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~35° to 40°, fractured along schistosity , sheared quartz veins	Vein & stringers along with minor spces of Chalcopyrite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-09	103.00	106.00	2.91	3.00	2.06	70.79	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~35° to 40°, fractured along schistosity , sheared quartz veins, fragmented core , sheared quartz veins	Minor spces & stringers of Chalcopyrite along schistosity	
MTB-09	106.00	109.00	2.98	3.00	1.61	54.03	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine to very coarse grained	Strongly schistosed @~40°, crenulated, mostly fractured along schistosity , occasionally fragmented core , sheared quartz veins	Spces & stringers of Chalcopyrite along schistosity	
MTB-09	109.00	112.00	2.94	3.00	2.00	68.03	Grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins + bands of Metabasic schist (111.80-112.00)	Hard & compact	Fine to very coarse grained	Strongly schistosed @~40°, crenulated, mostly fractured along schistosity , occasionally fragmented core , sheared quartz veins	Spces & stringers of Chalcopyrite along schistosity	
MTB-09	112.00	115.00	0.70	0.71	2.37	79.80	Greenish grey	Quartz - amphibole - biotite - chlorite schist (metabaisc schist)	Hard & compact	Very fine grained	Moderately schistosed @~40°-45°, few fractures	Spces & stringers of Chalcopyrite along schistosity	
MTB-09			2.27	2.29			Grey with pink patches	Garnetiferous- quartz - chlorite - biotite schist + quartz veins	Hard & compact	Very fine grained	Strongly schistosed , crenulated few fractures along schistosity		
MTB-09	115.00	118.00	3.00	3.00	2.49	83.00	Grey with pink patches	Garnetiferous- quartz - chlorite - biotite schist + quartz veins	Hard & compact	Very fine grained	Strongly schistosed , crenulated few fractures along schistosity sheared quartz veins	Minor stringers of Chalcopyrite along schistosity	
MTB-09	118.00	121.00	2.80	3.00	2.02	72.14	Grey with pink patches	Garnetiferous- quartz - chlorite - biotite schist + quartz veins	Hard & compact	Very fine grained	Strongly schistosed , crenulated few fractures along schistosity sheared quartz veins		
MTB-09	121.00	124.00	3.00	3.00	1.30	43.33	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine to very coarse grained	Strongly schistosed @~35° to 40°, quartz veins	Stringers & veins of Chalcopyrite along schistosity	
MTB-09	124.00	127.00	2.95	3.00	2.15	72.88	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein + band of amphibole - quartz - chlorite schist (Metabasic schist)	Hard & compact	Fine to very coarse grained	Strongly schistosed sheared quartz veins , large garnet porphyroblasts	Rare spces of Chalcopyrite	
MTB-09	127.00	130.00	3.00	3.00	2.15	71.67	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein + band of amphibole - quartz - chlorite schist (Metabasic schist)	Hard & compact	Fine to very coarse grained	Strongly schistosed sheared quartz veins , large garnet porphyroblasts		
MTB-10	0.00	3.00	0.05	3.00			Yellow	Soil	Loose, cohesive				
MTB-10	3.00	6.00	0.10	3.00			Yellow	Soil	Loose, cohesive				
MTB-10	6.00	7.00	0.10	1.00			Yellow	Soil	Loose, cohesive				
MTB-10	7.00	10.00	0.60	3.00			Yellow white	Oxidised quartzite boulder	Hard		Highly fractured & fragmented		Oxidised
MTB-10	10.00	13.00	0.35	3.00			Yellow white	Oxidised quartzite boulder	Hard to soft		Highly fractured & fragmented, core loss		Oxidised
MTB-10	13.00	16.00	0.75	3.00			Yellowish grey	Highly oxidised schistosed rock	Moderate hard to soft & friable	Fine grained	Schistosed strongly oxidised, highly weathered fractured & fragmented core		
MTB-10	16.00	19.00	2.33	3.00			Yellowish grey	Highly oxidised schistosed rock	Moderate hard to soft & friable	Fine grained	Schistosed strongly oxidised, highly weathered fractured & fragmented core		
MTB-10	19.00	22.00	2.49	3.00	0.10	4.02	Yellowish grey to grey	Highly oxidised schistosed rock	Hard & compact		Schistosed, highly weathered & oxidised fractured & friable		
MTB-10	22.00	25.00	2.84	3.00	0.30	10.56	Greenish grey	Quartz-feldspathic- amphibole - biotite - chlorite - schist (altered & silicified metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 40°, highly fractured & fragmented, broken core, oxidised along fracture		
MTB-10	25.00	28.00	2.70	3.00	0.69	25.56	Greenish grey	Quartz-feldspathic- amphibole - biotite - chlorite - schist (altered & silicified metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 40°, highly fractured & fragmented, broken core, oxidised along fracture		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-10	28.00	31.00	2.93	3.00	1.30	44.37	Greenish grey	Quartz-feldspathic- amphibole - biotite - chlorite - schist (altered & silicified metabasic schist)	Hard & compact	Fine grained	Highly fractured & fragmented, strongly schistosed, @~30°, oxidised along fracture		
MTB-10	31.00	34.00	2.85	3.00	1.05	36.84	Greenish grey	Quartz-feldspathic- amphibole - biotite - chlorite - schist (altered & silicified metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35° w.rt CA, highly fragmented @ middle, fractured along schistosity, quartz veins oxidised along fracture		
MTB-10	34.00	37.00	2.95	3.00	0.34	11.53	Greenish grey	Amphibole quartz - biotite - chlorite - schist (altered & silicified) + quartz veins (Altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, highly fractured parallel to CA, fragmented & broken core, oxidised along fracture		
MTB-10	37.00	40.00	2.93	3.00	0.40	13.65	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, highly fractured along schistosity, broken & fragmented core, partially to fully oxidised along fracture zone		
MTB-10	40.00	43.00	3.00	3.00	0.22	7.33	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, highly fractured parallel to schistosity, also few irregular fracture broken & fragmented core, sheared quartz veins		
MTB-10	43.00	46.00	3.00	3.00	1.56	52.00	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, @~30° to 35°, highly fractured along the schistosity, fragmented & broken core, minor sheared quartz veins		
MTB-10	46.00	49.00	3.00	3.00	2.04	68.00	Greenish grey	Quartz-feldspathic -amphibole - chlorite - biotite schist (Metabasic schist)	Very hard & compact	Fine grained	Strongly schistosed, @~30° to 40°, few fractured along schistosity, silicified at place thin quartz veins		
MTB-10	49.00	51.00	1.82	2.00	1.42	78.02	Greenish grey to grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~35°, fracture parallel to schistosity, thin quartz veins, occasionally silicified		HQ ↑
MTB-10	51.00	52.00	0.90	1.00	0.60	66.67	Greenish grey to grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~35°, fracture parallel to schistosity, thin quartz veins, occasionally silicified		NQ↓
MTB-10	52.00	55.00	2.95	3.00	1.26	42.71	Greenish grey to grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Very hard & compact	Fine grained	Strongly to moderately schistosed @~30° to 35°, w.rt CA, irregulary fractured, fragmented & broken core, oxidised along fracture		
MTB-10	55.00	58.00	3.00	3.00	2.09	69.67	Greenish grey to grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, fractured & splitted along schistosity, occasionally silicified, oxidised along few fracture	Single vein (2-3m) of Chalcopyrite @~56.00 along with fine stringers (Not worth sampling) disseminated	
MTB-10	58.00	61.00	2.85	3.00	1.86	65.26	Greenish grey to grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, fractured along schistosity, occasionally, broken & fragmented core, thin quartz veins parallel to schistosity		
MTB-10	61.00	64.00	2.88	3.00	0.26	9.03	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35° w.rt CA, fractured & splitted along schistosity multiple low angle (~ 20° to 30°) fracture discordant to foliation broken & fragmented core, corbonate vein along fracture.		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-10	64.00	67.00	2.70	3.00	0.65	24.07	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~35° to 40°, highly fractured & fragmented, broken core, multiple thin & sheared quartz veins		
MTB-10	67.00	70.00	3.00	3.00	1.83	61.00	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°, occasionally silicified zone, fracture parallel to schistosity, thin quartz veins	Minor stringers of Pyrite & Chalcopyrite (Not worth sampling)	
MTB-10	70.00	73.00	2.97	3.00	2.25	75.76	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~20° to 40°, mostly fractured/splitted along schistosity, low angle fracture filled with clayey (?) material, thin quartz veins		
MTB-10	73.00	76.00	2.95	3.00	2.02	68.47	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 35°, mostly fractured/splitted along schistosity, occasionally silicified, quartz veins	Rare & erratic dissemination of fine stringers of Chalcopyrite (Not worth sampling)	
MTB-10	76.00	79.00	3.00	3.00	1.75	58.33	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°, mostly fractured/splitted parallel to schistosity, occasionally broken & fragmented core, thin sheared quartz veins along schistosity	Rare & very erratic dissemination of fine stringers of Chalcopyrite (Not worth sampling)	
MTB-10	79.00	82.00	3.00	3.00	1.72	57.33	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°, mostly fractured/splitted parallel to schistosity, occasionally broken & fragmented core, thin sheared quartz veins along schistosity, occasionally silicified	Very rare stringers & veins of Pyrite & Chalcopyrite (Not worth sampling)	
MTB-10	82.00	85.00	2.97	3.00	1.94	65.32	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°, mostly fractured/splitted parallel to schistosity, occasionally broken & fragmented core, thin sheared quartz veins along schistosity, occasionally silicified		
MTB-10	85.00	88.00	2.90	3.00	2.38	82.07	Greenish grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°, mostly fractured/splitted parallel to schistosity, occasionally broken & fragmented core, thin sheared quartz veins along schistosity, occasionally silicified		
MTB-10	88.00	91.00	2.98	3.00	1.88	63.09	Greenish grey	Quartz-feldspathic - chlorite - biotite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30° to 40°, occasionally silicified, folded thick quartz veins	Very rare dissemination of sulfides (Not worth sampling)	
MTB-10	91.00	94.00	3.00	3.00	0.83	27.67	Greenish dark grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) +Quartz-feldspathic vein	Hard & compact	Fine grained	Strongly schistosed@~30° to 45°, wavy schistosity, fractured & fragmented core, sheared & folded quartz veins	Minor disseminated spces of Pyrite & Chalcopyrite along sheared quartz vein (Not worth sampling)	
MTB-10	94.00	97.00	3.00	3.00	1.93	64.33	Greenish dark grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) Quartz-feldspathic vein	Hard & compact	Fine grained	Strongly schistosed fractured along schistosity, sheared quartz veins	Brass coloured massive fracture filling nature(?) Pyrrhotite/Pentlandite (?) (magnetic in nature),	
MTB-10	97.00	100.00	2.85	3.00	2.15	75.44	Greenish dark grey	Quartz-feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed@~35° to 40°, few fracture along schistosity	Very rare spces of sulfides (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-10	100.00	103.00	2.97	3.00	0.70	23.57	Greenish grey	Amphibole - biotite - chlorite schist (Metabasic schist)	Hard & compact	Very fine grained to fine grained	Moderately schistosed multiple fracture @ 45° to 50°, also few low angle fracture (~20°) broken & fragmented core	Very rare spces of sulfides (Not worth sampling)	
MTB-10	103.00	106.00	3.00	3.00	1.80	60.00	Dark grey to pink patches	Garnetiferous - quartz - chlorite - biotite schist + bands of chlorite schist	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast strongly schistosed @~20° to 30°, fractured along schistosity, occasionally fragmented core	Stringers of Chalcopyrite along schistosity	
MTB-10	106.00	109.00	3.00	3.00	2.47	82.33	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist ± amphibole (altered & silicified)	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~20° to 30°, mostly fractured along schistosity	Irregular & erratic dissemination of spces & stringers of Chalcopyrite along schistosity	
MTB-10	109.00	112.00	3.00	3.00	2.12	70.67	Greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast strongly schistosed @~20° to 30°, wavy schistosity few fracture @~60° to 70°, sheared quartz veins	Irregular & erratic dissemination of spces & stringers of Chalcopyrite along schistosity	
MTB-10	112.00	115.00	2.93	3.00	2.16	73.72	Greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~ 20° to 30°, fracture parallel to schistosity, along with few fracture at high angle (~60° to 70°) occasionally fragmented core sheared & folded quartz veins	Irregular & erratic dissemination of spces & stringers of Chalcopyrite along schistosity	
MTB-10	115.00	118.00	2.88	3.00	2.38	82.64	Greenish grey with pink patches	Garnetiferous quartz - biotite - chlorite schist ± amphibole	Hard & compact	Fine grained to very coarse grained	Strongly schistosed@~30° to 35°, fractured along schistosity, quartz vein parallel to schistosity	Irregular & erratic dissemination of spces & stringers of Chalcopyrite along schistosity	
MTB-10	118.00	121.00	3.00	3.00	2.73	91.00	Greenish grey with pink patches	Garnetiferous quartz - biotite - chlorite schist ± amphibole	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30° to 40°, fractured along schistosity, sheared quartz vein parallel to schistosity	Irregular & erratic dissemination of spces & stringers of Chalcopyrite along schistosity	
MTB-10	121.00	124.00	2.87	3.00	2.17	75.61	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30° to 45°, fractured along schistosity	Minor stringers of Chalcopyrite along inter - porphyroblast zone @~121.90 rare & erratic dissemination of spces of sulfides rest of the core (Not worth sampling) < 0.05 %	
MTB-10	124.00	127.00	2.99	3.00	1.85	61.87	Grey to greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Large to garnet porphyroblast, strongly schistosed @~30° to 40°, few fracture, occasionally fragmented core, quartz veins	Disseminated spces & stringers of Chalcopyrite along schistosity,occering in a zonned manner	
MTB-10	127.00	130.00	3.00	3.00	2.32	77.33	Grey to greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Large to garnet porphyroblast, strongly schistosed @~30° to 40°, few fracture, occasionally fragmented core, quartz veins	Stringers & spces of Chalcopyrite along schistosity occering in a zonned manner, erratic & irregular in nature	
MTB-10	130.00	133.00	2.93	3.00	1.98	67.58	Grey to greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Large to garnet porphyroblasts strongly schistosed @~30° to 40°, fractured along schistosity along with irregular fracture, occasionally fragmented core, quartz vein	Stringers & spces of Chalcopyrite along schistosity occasionally as erratic zone & also as dissemination	
MTB-10	133.00	136.00	3.00	3.00	2.71	90.33	Grey to greenish grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, few fracture occasionally fragmented	Stringers & spces of Chalcopyrite along schistosity occasionally as erratic zone & also as dissemination	
MTB-10	136.00	139.00	3.00	3.00	2.61	87.00	Dark grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist	Hard & compact	Fine grained to very coarse grained	Large to garnet porphyroblast strongly schistosed @~30° to 40°, fractured along schistosity	Minor stringers & disseminated spces of Chalcopyrite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-10	139.00	142.00	2.90	3.00	2.55	87.93	Dark grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, wavy schistosity,few fractures	Stringers & spces of Chalcopyrite along schistosity occasionally as erratic zones & disseminated manner,	
MTB-10	142.00	145.00	2.87	3.00	2.30	80.14	Dark grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, wavy schistosity,few fractures	Stringers & spces of Chalcopyrite along schistosity occasionally as erratic zones & disseminated manner,	
MTB-10	145.00	148.00	3.00	3.00	2.10	70.00	Dark grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~20° to 40°, fractured along schistosity,sheared & brecciated quartz veins	Minor stringers & spces of Chalcopyrite at few place	
MTB-10	148.00	151.00	2.97	3.00	2.65	89.23	Dark grey with pink patches	Garnetiferous - quartz - chlorite - biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~20° to 40°, fractured along schistosity,sheared & brecciated quartz veins	Minor stringers & spces of Chalcopyrite at few place	
MTB-10	151.00	154.00	2.97	3.00	2.37	79.80	Dark greenish grey along with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30° to 40°, fractured along schistosity, sheared quartz veins	Minor occerenes of disseminated spces of Chalcopyrite	
MTB-10	154.00	157.00	3.00	3.00	2.34	78.00	Dark greenish grey along with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30° to 40°, fractured along schistosity, sheared quartz veins	Stringers & spces of Chalcopyrite along schistosity	
MTB-10	157.00	160.00	2.90	3.00	1.83	63.10	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblasts strongly schistosed @~30°, fractured along schistosity, fragmented core quartz vein	Disseminated spces & stringers of Chalcopyrite along schistosity 157-158 @ 0.10-20%	
MTB-10	160.00	163.00	2.95	3.00	1.76	59.66	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblasts strongly schistosed @~30°, fractured along schistosity, fragmented core quartz vein	Rare spces of Chalcopyrite (Not worth sampling)	
MTB-10	163.00	166.00	3.00	3.00	2.05	68.33	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30° to 40°, fractured along schistosity, sheared quartz veins	Rare spces of Chalcopyrite (Not worth sampling)	
MTB-10	166.00	169.00	2.98	3.00	2.04	68.46	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast, strongly schistosed @~30° to 35°, mostly fractured/splitted along schistosity, few quartz vein	Very rare spces & stringers of sulfides (Not worth sampling)	
MTB-10	169.00	172.00	3.00	3.00	1.84	61.33	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast, strongly schistosed @~30° to 35°, mostly fractured/splitted along schistosity, few quartz vein, fragmented core	Spces & stringers of Chalcopyrite along schistosity at bottom	
MTB-10	172.00	175.00	3.00	3.00	2.58	86.00	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast, strongly schistosed @~30° to 35°, mostly fractured/splitted along schistosity, few quartz vein, fragmented core	Spces & stringers of Chalcopyrite along schistosity	
MTB-10	175.00	178.00	3.00	3.00	2.59	86.33	Greenish grey with pink patches	Garnetiferous - quartz - biotite - chlorite + quartz vein	Hard & compact	Fine grained to very coarse grained	Large garnet porphyroblast, strongly schistosed @~30° to 35°, mostly fractured/splitted along schistosity, few quartz vein, fragmented core	Rare spces of Chalcopyrite (Not worth sampling)	
MTB-10	178.00	180.00	2.02	2.00	1.19	58.91	Grey	Garnetiferous + kyanite bearing Banded quartzite	Hard & compact	Fine grained	Massive to feebly schistosed, banded, alternate garnet & kyanite bearing band, fractured & fragmented core,		
MTB-11	0.00	3.00	0.22	3.00			Yellowish grey	Top soil	Soft loose & conesive				
MTB-11	3.00	6.00	0.26	3.00			Yellowish grey	Top soil	Soft loose & conesive				

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-11	6.00	9.00	0.27	3.00			Yellowish grey	Top soil	Soft loose & conesive				
MTB-11	9.00	10.00	0.16	1.00			White	Quartzite boulder	Hard & compact	Fine grained	Massive		
MTB-11	10.00	13.00	0.30	3.00			Yellow greenish grey	Weathered schistosed rock	Soft loose & friable	Fine grained	schistosed		
MTB-11	13.00	16.00	0.69	3.00			Yellow greenish grey	Weathered schistosed rock	Soft loose & friable	Fine grained	Schistosed, highly fractured, fragmented & friable oxidised		
MTB-11	16.00	19.00	3.00	3.00	1.66	55.33	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~30°, fractured along schistosity, occasional fragmented core, oxidised at top		
MTB-11	19.00	22.00	3.00	3.00	0.82	27.33	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~35° to 40°, wavy /crenulated, multiple fracture along schistosity, fragmented core oxidised along fracture	Few minor veins of Pyrite & Chalcopyrite @20.00 (Not Worth Sampling)	
MTB-11	22.00	25.00	3.00	3.00	0.96	32.00	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, fractured along schistosity, low angle fracture (~20°) oxidation along low angle fracture fragmented core,	Rare specs & stringers of sulfides (Not Worth Sampling)	
MTB-11	25.00	28.00	3.00	3.00	0.95	31.67	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°, highly fractured along schistosity, fragmented & broken core, highly oxidised along fractured zone	Rare specs & stringers of sulfides along schistosity & adjacent to quartz veins (Not Worth Sampling) 27.95-28.05 @~<0.10%	
MTB-11	28.00	31.00	3.00	3.00	1.97	65.67	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40° wrt CA, fractured along schistosity, low angle fracture, quartz - carbonate vein @~30°	Minor stringers & veinlets of Pyrite & Chalcopyrite along schistosity	
MTB-11	31.00	34.00	2.85	3.00	1.60	56.14	Greenish grey	Quartz feldspathic amphibole biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40° to 50°, fractured along schistosity, along with few irregular fracture fragmented core	Stringers & specs of Chalcopyrite & Pyrite along schistosity @~33-34.00 < 0.10 %(Not Worth Sampling)	
MTB-11	34.00	36.00	1.82	2.00	0.94	51.65	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40° to 45°, fractured along schistosity, few fracture @50° discordant to schistosity, oxidation along fracture, folded quartz vein		↑ HQ
MTB-11	36.00	37.00	0.99	1.00	0.68	68.69	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, few irregular fractures	Very rare specs of sulfides (Not Worth Sampling)	↑HQ ↓NQ
MTB-11	37.00	40.00	2.85	3.00	1.14	40.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45° to 50°, fractured along schistosity, along with few irregular fracture altered & silicified		
MTB-11	40.00	43.00	2.90	3.00	0.70	24.14	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, highly fractured & fragmented along schistosity, broken core, schistosity parallel quartz vein	Minor veins of sulfides (pyrite & Chalcopyrite)@41.20 (10cm @0.10 %)	
MTB-11	43.00	46.00	2.88	3.00	1.63	56.60	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45° to 50°, fractured along schistosity, quartz vein, silicified at place.	Minor isolated veins & stringers of Chalcopyrite along schistosity - 3m <0.05% (Not Worth Sampling)	
MTB-11	46.00	49.00	2.94	3.00	1.66	56.46	Greenish grey	Quartz feldspathic biotite + chlorite schist ± amphibole + quartz vein (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45° to 50°, fractured/splilted parallel to schistosity, along with few irregular fracture, quartz vein, oxidation along few fracture		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-11	49.00	52.00	2.94	3.00	1.76	59.86	Greenish grey	Quartz feldspathic biotite + chlorite schist ± amphibole + quartz vein (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, fractured along schistosity, low angle fracture (~10° to 15°) @49.70 schistosity parallel quartz veins	Isolated veins of sulfides (pyrite & Chalcopyrite)@51.75 , 50cm @<0.10% (Not Worth Sampling)	
MTB-11	52.00	55.00	3.00	3.00	1.02	34.00	Greenish grey	Quartz feldspathic biotite + chlorite schist ± amphibole + quartz vein (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50° to 55°, multiple fractures/spliltings along schistosity, fragmented core, schistosity parallel quartz veins	Very rare specs & isolated stringers of Chalcopyrite & Pyrite (Not Worth Sampling) 3m @~< 0.05 %	
MTB-11	55.00	58.00	3.00	3.00	1.95	65.00	Greenish grey	Quartz feldspathic biotite + chlorite schist ± amphibole + quartz vein (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50° to 55°, multiple fractures/spliltings along schistosity, fragmented core, schistosity parallel quartz veins	Very rare specs & isolated stringers of Chalcopyrite & Pyrite (Not Worth Sampling) 3m @~< 0.05 %	At place oxidised /weathered & friable
MTB-11	58.00	61.00	3.00	3.00	1.30	43.33	Greenish grey	Quartz feldspathic biotite + chlorite schist ± amphibole + quartz vein (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50° to 55°, multiple fractures/spliltings along schistosity, fragmented core, schistosity parallel quartz veins	Rare isolated stringers of Chalcopyrite & Pyrite @ (59-60) along schistosity <0.05% (Not Worth Sampling)	
MTB-11	61.00	64.00	2.93	3.00	1.75	59.73	Greenish grey	Quartz feldspathic biotite chlorite schist (altered metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~, mostly fractured along schistosity, fragmented core, silicified		
MTB-11	64.00	67.00	2.95	3.00	1.26	42.71	Greenish grey	Quartz feldspathic biotite chlorite schist (altered metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~, mostly fractured along schistosity, fragmented core, silicified	Rare & isolated specs of sulfides (Not Worth Sampling)	
MTB-11	67.00	70.00	2.90	3.00	1.55	53.45	Greenish grey	Garnetiferous quartz chlorite biotite schist + bands of basic intrusives	Hard & compact	Fine grained	Strongly schistosed @~50° to 55°, fractured along schistosity, fragmented core, sheared & brecciated quartz veins	Rare specs of Chalcopyrite along quartz vein, along with few isolated stringers along schistosity (Not Worth Sampling)	
MTB-11	70.00	73.00	2.85	3.00	1.97	69.12	Greenish grey	Garnetiferous quartz chlorite biotite schist + quartz veins (altered & silicified)	Hard & compact	Fine medium grained	Strongly schistosed @~50°, schistosity parallel sheared & brecciated quartz veins fractured along schistosity	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11	73.00	76.00	2.81	3.00	1.63	58.01	Greenish grey	Garnetiferous quartz chlorite biotite schist + quartz veins (altered & silicified)	Hard & compact	Fine medium grained	Strongly schistosed @~50°, schistosity parallel sheared & brecciated quartz veins fractured along schistosity	Minor isolated specs & stringers along schistosity adjacent to quartz veins & garnet porphyroblast (Not Worth Sampling)	
MTB-11	76.00	79.00	2.90	3.00	1.37	47.24	Dark grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz vein occasionally silicified	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45° to 50°, fractured along schistosity, few fracture at low angle (~30°) quartz vein	Minor isolated specs & stringers along schistosity & garnet porphyroblast	
MTB-11	79.00	82.00	2.99	3.00	1.90	63.55	Dark grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz vein occasionally silicified	Hard & compact	Fine grained to very course grained	Large garnet porphyroblast strongly schistosed @~45° to 50°, low angle fracture @20°-30° with oxidation fracture (limonite)	Stringers , veins & specs of Chalcopyrite along schistosity	
MTB-11	82.00	85.00	2.95	3.00	1.69	57.29	Dark grey with pink patches	Garnetiferous quartz mica chlorite schist + bands of metabasic schist	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45°-50°, fractured along schistosity, fragmented core at top, quartz veins parallel to schistosity	Rare isolated stringers & specs of Chalcopyrite aong schistosity adjacent to porphyroblast (Not Worth Sampling)	
MTB-11	85.00	88.00	2.94	3.00	2.12	72.11	Dark grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45° to 50°, multiple fractures along schistosity, sheared & folded quartz veins	Rare isolated stringers & specs of Chalcopyrite aong schistosity adjacent to porphyroblast (Not Worth Sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-11	88.00	91.00	3.00	3.00	1.97	65.67	Dark grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz veins (occasionally silicified)	Hard & compact	Fine grained to very course grained	Strongly schistosed, wavy schistosity, fractured/splilting along schistosity, sheared & folded quartz veins parallel to schistosity	Stringers & specs of Chalcopyrite along schistosity 90-91 @<0.10% (Not Worth Sampling)	
MTB-11	91.00	94.00	3.00	3.00	2.10	70.00	Greenish grey with pink patches	Alternate bands (intercalation) of Garnetiferous quartz mica schist & metabasic schist	Hard & compact	Fine grained to course grained	Moderately to strongly schistosed @~50°, few fractured along schistosity, sheared quartz vein @~20cm	Rare specs & stringers of Chalcopyrite (Not Worth Sampling)	
MTB-11	94.00	97.00	3.00	3.00	2.27	75.67	Grey & pink grey	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Large to very large garnet porphyroblast, cluster of garnet porphyroblast @ 94-95, strongly schistosed few fracture parallel to schistosity quartz veins	Rare specs & stringers of Chalcopyrite (Not Worth Sampling)	
MTB-11	97.00	100.00	2.99	3.00	2.08	69.57	Grey & pink grey	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Strongly schistosed@~50°-65°, fractured along schistosity, crenulation, sheared & folded schistosity parallel quartz veins	Rare stringers & specs of Chalcopyrite along schistosity (Not Worth Sampling)	
MTB-11	100.00	103.00	3.00	3.00	2.00	66.67	Grey & pink grey	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Large garnet porphyroblasts occuring as cluster, strongly schistosed @~50°-55°, multiple fracture parallel to schistosity, quartz veins	Very minor disseminated specs (isolated zones)of Chalcopyrite (Not Worth Sampling)	
MTB-11	103.00	106.00	3.00	3.00	2.00	66.67	Grey & pink grey	Garnetiferous quartz mica chlorite schist + multiple bands of metabasic schist 103.90-104.00, 104.80-104.90, 106.50-106.75	Hard & compact	Fine grained to very course grained	Garnet porphyroblast occuring as cluster moderately to strongly schistosed @~50°-55°, occasionally fargmented core, quartz veins	Disseminated specs & stringers along garnet clusters	
MTB-11	106.00	109.00	3.00	3.00	2.37	79.00	Pink grey	Garnetiferous quartz mica chlorite schist + bands of metabasic @106.25-106.37	Hard & compact	Fine grained to very course grained	Garnet porphyroblast occuring as cluster, strongly schistosed @~50°, fractured along schistosity quartz veins	Stringers & disseminated specs of Chalcopyrite along garnet clusters divided in isolated zones (Not Worth Sampling)	
MTB-11	109.00	112.00	3.00	3.00	1.84	61.33	Pink grey	Garnetiferous quartz chlorite mica schist + band of metabasic @~109.68-110.10	Hard & compact	Fine grained to very course grained	Strongly schistosed, cluster of garnet porphyroblast, fractured along schistosity, low angle fracture (~20°) @ metabasic schist, occasionally fragmented core.	Very minor isolated stringers (Not Worth Sampling)	
MTB-11	112.00	115.00	2.99	3.00	2.37	79.26	Pink grey	Garnetiferous quartz mica chlorite schist		Fine grained to very course grained	Strongly schistosed,wavy /crenulated schistosity, garnet cluster, folded quartz veins	Rare disseminated specs & stringers along schistosity & garnet clusters (Not Worth Sampling)	
MTB-11	115.00	118.00	3.00	3.00	1.91	63.67	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist + band of metabasic @115.30-116.10	Hard & compact	Fine grained to very course grained	Moderately to strongly schistosed @~50°-55°, mostly fracture/splilted along schistosity, low angle fracture (~20°-30°), fragmented core.	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11	118.00	121.00	3.00	3.00	1.60	53.33	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to course grained	Strongly schistosed @~50°-55°, fractured & fragmented core, schistosity parallel quartz veins	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11	121.00	124.00	2.93	3.00	1.56	53.24	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Strongly schistosed @~50°, fractured along schistosity, also few angle fracture (~30°), sheared & brecciated quartz veins	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11	124.00	127.00	1.59	3.00	1.78	61.81	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist + quartz veins	Hard & compact	Fine grained to very course grained	Strongly schistosed, garnet porphyroblast cluster fractured/fragmented core	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11			0.80				Greenish grey	Amphibole biotite chlorite schist/Amphibolite (Basic intrusive)	Very hard & compact	Very fine grained	Feeble - moderately schistosed few fracture	Rare specs & stringers of Chalcopyrite	Sharp contact

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-11			0.49				Grey	Garnetiferous quartzite	Very hard & compact	Very fine grained	Massive to feeble schistosed, fractured & fragmented core	Veins & stringers of Chalcopyrite & Pyrite	Sharp contact @~40°
MTB-11	127.00	130.00	0.30	3.00	0.96	32.00	Grey	Garnetiferous quartzite	Very hard & compact	Very fine grained	Massive to feeble schistosed, fractured & fragmented core		
MTB-11			1.70				Greenish grey	Amphibole biotite chlorite schist/Amphibolite (Basic intrusive)	Very hard & compact	Very fine grained	feeble to moderately schistosed @~40°, multiple conjugate fracture @~45°-40°, quartz veins		
MTB-11			1.00				Grey	Garnetiferous quartzite ± mica ± chlorite ± kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed highly fractured @~45°-50°, also low angle fracture (~05°-10°) fragmented & broken core at bottom		
MTB-11	130.00	133.00	3.00	3.00	1.33	44.33	Grey	Garnetiferous quartzite ± bands of Garnetiferous quartz mica schist	Very hard & compact	Fine grained to course grained	Massive, multiple fracture @~45°-50°,highly fracture, fragmented & broken core at middle	Very rare specs of Chalcopyrite in garnet schist band	
MTB-11	133.00	136.00	1.68	3.00	1.55	55.76	Grey with pink patches	Garnetiferous quartz chlorite mica schist	Very hard & compact	Very fine grained to course grained	Strongly schistosed @~45°-50°, fractured along schistosity	Veins & stringers of Chalcopyrite along schistosity	
MTB-11			1.10				Grey	Garnetiferous quartzite ± Kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed at place highly fractured @~45°-50°, fragmented & broken core,		
MTB-11	136.00	139.00	3.00	3.00	1.77	59.00	Grey	Garnetiferous quartzite ± Kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed multiple fractures @~45°-50°, fragmented core.	Isolated stringers of Chalcopyrite along fracture in quartzite @138.95 (Not Worth Sampling)	
MTB-11	139.00	142.00	3.00	3.00	1.76	58.67	Grey	Garnetiferous quartzite ± Kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed multiple fractures @~45°-50°, fragmented core.	Isolated veins of Chalcopyrite along fracture @141.70 (Not Worth Sampling)	
MTB-11	142.00	145.00	2.98	3.00	1.79	60.07	Grey	Garnetiferous quartzite + bands of Garnetiferous chlorite schist	Very hard & compact	Fine grained to course grained	Massive, schistosed in the garnet chlorite schist band, multiple fractures @~45°-50°, low angle fractured @~20°-30°, fragmented & broken core.	Very rare isolated stringers of sulfides	
MTB-11	145.00	148.00	3.00	3.00	0.00	0.00	Grey	Garnetiferous quartzite	Very hard & compact	Fine grained	Massive to feebly schistosed highly fractured, fracture angle @~40°-50°, low angle fracture (~10°-15°) fragmented core.	Fracture filling stringers & veins of Chalcopyrite	
MTB-11	148.00	151.00	1.00	3.00	1.14	38.00	Grey	Garnetiferous quartzite	Very hard & compact	Fine grained	Massive to feebly schistosed highly fractured, fracture angle @~40°-50°, low angle fracture (~10°-15°) fragmented core.	Rare stringers of Chalcopyrite	
MTB-11			2.00				Grey with pink patches	Garnetiferous quartz mica chlorite schist	Very hard & compact	Fine grained to very course grained	Schistosed, highly fractured @~50°-60°, fragmented core .	Rare specs & stringers of Chalcopyrite (Not Worth Sampling)	
MTB-11	151.00	154.00	2.99	3.00	0.98	32.78	Grey	Garnetiferous quartz chlorite mica schist + quartz vein (occasionally silicified)	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45°-50°, multiple fractures along schistosity, sheared quartz veins parallel to schistosity		
MTB-11	154.00	157.00	2.96	3.00	2.23	75.34	Grey	Garnetiferous quartz chlorite mica schist + quartz vein (occasionally silicified)	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45°-50°, multiple fractures along schistosity, sheared quartz veins parallel to schistosity	Very rare specs of Chalcopyrite (Not Worth Sampling)	
MTB-11	157.00	160.00	1.87	3.00	1.50	50.00	Grey	Garnetiferous quartz chlorite mica schist + quartz vein (occasionally silicified)	Hard & compact	Fine grained to very course grained	Strongly schistosed @~45°-50°, multiple fractures along schistosity, sheared quartz veins parallel to schistosity		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-11			1.13				Grey	Garnetiferous + Kyanite banded quartzite	Hard & compact	Fine grained to medium grained	Massive to feebly schistosed at place quartz veins fractured @~50°.		
MTB-11	160.00	163.00	3.00	3.00	1.25	41.67	Grey	Garnetiferous + Kyanite banded quartzite	Hard & compact	Very fine grained	Massive, highly fractured @~50°-70°, along with low angle fractures @~20°-30°, highly fragmented & broken core.	Rare Stringers of Chalcopyrite along fracture	
MTB-11	163.00	166.00	2.94	3.00	1.17	39.80	Grey	Garnetiferous + Kyanite banded quartzite + bands of Garnetiferous chlorite mica schist	Hard & compact	Very fine grained	Massive to feebly schistosed fracture parallel to CA, fragmented & broken core	Stringers of Chalcopyrite along contact zone & along schistosity	
MTB-11	166.00	169.00	2.94	3.00	2.33	79.25	Grey	Garnetiferous + Kyanite bearing quartzite	Hard & compact	Fine grained to course grained	Massive to feebly schistosed @~50°-50°, few fractures		
MTB-11	169.00	170.00	1.23	1.00	0.70	56.91	Grey	Garnetiferous + Kyanite bearing quartzite	Hard & compact	Fine grained to course grained	Massive to feebly schistosed @~50°-50°, few fractures		
MTB-12	0.00	3.00	1.17	3.00			Reddish brown	Loose soil (gritty + pebbly)	Loose				
MTB-12	3.00	6.00	1.20	3.00			Brown to yellow	Loose soil + quartzite boulder	Loose				
MTB-12	6.00	9.00	0.99	3.00			Yellow brown	Sandy to clayey Soil	Loose & conesive				
MTB-12	9.00	10.00	0.50	1.00			Yellow brown	Sandy to clayey Soil	Loose & conesive				
MTB-12	10.00	11.20	0.96	1.20			Greenish grey	Quartz - biotite - chlorite schist ± amphibole (metabaisc schist)	Moderate hard & compact	Fine grained	Strongly schistosed @50°- 55° fractured, partially oxidised along fracture		
MTB-12	11.20	12.00	0.42	0.80			Greenish grey	Quartz - biotite - chlorite schist ± amphibole (metabaisc schist)	Moderate hard & compact	Fine grained	Strongly schistosed @50°- 55° fractured, partially oxidised along fracture		
MTB-12	12.00	13.00	1.01	1.00			Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) + quartz veins	Moderate hard & compact	Fine grained	Moderately to strongly schistosed @~35°- 40°, multiple fractured along schistosity, few fracture at > 70° w.rt CA, oxidised along fracture folded quartz veins		
MTB-12	13.00	14.50	0.49	1.50			Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) + quartz veins	Moderate hard & compact occasionally loose & friable	Fine grained	Schistosed highly fractured & fragmented partially to fully weathered /oxidised		
MTB-12	14.50	15.00	0.58	0.50			Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) + quartz veins	Moderate hard & compact occasionally loose & friable	Fine grained	Schistosed highly fractured & fragmented partially to fully weathered /oxidised		
MTB-12	15.00	16.00	0.66	1.00			Greenish grey	Quartz - feldspathic -biotite - chlorite schist (metabaisc schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fractured & fragmented, weathered & oxidised along fracture		
MTB-12	16.00	17.70	1.27	1.70			Greenish grey	Quartz - feldspathic -biotite - chlorite schist (metabaisc schist)		Fine grained	Strongly schistosed @~50°, highly fractured & fragmented, weathered & oxidised along fracture		
MTB-12	17.70	19.30	1.45	1.60			Greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fractured & fragmented few fractured parallel to CA, weathered /oxidised along schistosity		
MTB-12	19.30	21.00	1.43	1.70	0.54	37.76	Greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fractured & fragmented few fractured parallel to CA, weathered /oxidised along schistosity		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-12	21.00	22.50	1.35	1.50	0.19	14.07	Greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°, fractured along schistosity, also fracture at low angle (~5°) w.rt CA, fragmented core, highly oxidised & partially converted to soil at bottom		
MTB-12	22.50	25.00	1.60	2.50	0.00	0.00	Yellow grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Soft & friable	Fine grained	Schistosed, highly fragmented & friable, weathered & oxidised		
MTB-12	25.00	26.50	1.26	1.50	0.21	16.67	Greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fractured & fragmented, oxidised along fracture fragmented & broken core,		
MTB-12	26.50	28.00	1.59	1.50	0.47	29.56	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-60°, highly fractured & fragmented & broken core, oxidation along fracture folded quartz veins		
MTB-12	28.00	29.00	0.99	1.00	0.44	44.44	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed fractured		
MTB-12	29.00	31.00	1.99	2.00	1.12	56.28	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°, multiple fractured parallel to schistosity, broken & fragmented core, oxidised along schistosity folded quartz veins		
MTB-12	31.00	33.50	2.35	2.50	0.62	26.38	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed fractured parallel to schistosity few low angle fracture (~5°-10°) occasionally fragmented & broken core, irregular quartz veins		
MTB-12	33.50	34.50	0.99	1.00	0.71	71.72	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed fractured parallel to schistosity few low angle fracture (~5°-10°) occasionally fragmented & broken core, irregular quartz veins		
MTB-12	34.50	37.50	2.76	3.00	0.62	22.46	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Moderate hard to soft , compact to friable at place	Fine grained	Strongly schistosed, highly fractured & fragmented & broken core, occasionally friable due to oxidation, quartz - carbonate veins		
MTB-12	37.50	38.70	1.09	1.20		0.00	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) (altered)	Moderate hard & compact	Fine grained	Strongly schistosed @~55°-60°, fractured along schistosity, irregular fracture filling quartz - carbonate veins		
MTB-12	38.70	40.50	1.60	1.80	0.33	20.63	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist) (altered &silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°-60°, multiple fractures along schistosity, conjugate fracture, oxidised along few fracture		
MTB-12	40.50	42.50	2.04	2.00	0.66	32.35	Greenish grey + pink spots	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - coarse grained	Moderately to strongly schistosed @~50°-60°, fractured parallel to schistosity, highly fragmented & broken core @ top ~50 cm, quartz carbonate veins	Rare specs of sulfides (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-12	42.50	43.50	1.01	1.00	0.55	54.46	Greenish grey + pink spots	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - very coarse grained	Moderately to strongly schistosed, few fracture @~40°-50°, oxidation fractured along fracture (limonite)	Disseminated specs of Chalcopyrite along with fine stringers of Pyrite & Chalcopyrite along schistosity	
MTB-12	43.50	45.00	1.47	1.50	0.89	60.54	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - very coarse grained	Moderately to strongly schistosity wavy schistosity, fracture @~40°-50°, oxidation along fracture	Disseminated specs & fine small stringers of Chalcopyrite & Pyrite along schistosity	HQ ↑
MTB-12	45.00	46.50	1.37	1.50	0.65	47.45	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - very coarse grained	Moderately to strongly schistosed wavy schistosity, fractured & fragmented at places, oxidation along fracture	Minor dissemination of Chalcopyrite at top	NQ ↓
MTB-12	46.50	49.50	2.62	3.00	0.25	9.54	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - very coarse grained	Moderately to strongly schistosed wavy schistosity, fractured & fragmented at places, oxidation along fracture	Very rare specs & graines of sulfides (Not worth sampling)	
MTB-12	49.50	51.00	1.16	1.50	0.11	9.48	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained - coarse grained	Moderately to strongly schistosed @~50°-60°, fractured along schistosity, occasionally fragmented core at place		
MTB-12	51.00	52.50	1.19	1.50	0.30	25.21	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist +bands of metabasic intrusive	Hard & compact	Fine grained - coarse grained	Moderately to strongly schistosed @~50°-60°, fractured along schistosity, occasionally fragmented core at place	Rare stringers & specs of Chalcopyrite at bottom (Not worth sampling) 0.20cm @~<0.10%	
MTB-12	52.50	55.50	2.39	3.00	0.59	24.69	Light greenish grey	Quartz - biotite - chlorite schist ± Garnet (altered Metabasic schist)	Hard & compact	Fine grained - coarse grained	Moderately to strongly schistosed @~50°, highly fractured & fragmented broken core, quartz veins	Isolated stringers & specs of Chalcopyrite at top (Not worth sampling)	
MTB-12	55.50	56.50	0.91	1.00	0.45	49.45	Light greenish grey	Quartz - biotite -chlorite schist (altered Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed, irregular fractured		
MTB-12	56.50	58.50	2.01	2.00	0.89	44.28	Light greenish grey	Quartz - biotite -chlorite schist (altered Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed,fractured & fragmented core		
MTB-12	58.50	61.50	3.07	3.00	0.67	21.82	Light greenish grey	Quartz - biotite -chlorite schist (altered Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~40°-50°, low angle fracture (~20°-30°), highly fragmented & broken core, occasional crenulation		
MTB-12	61.50	64.00	1.31	1.48	0.94	71.76	Light greenish grey	Quartz - biotite -chlorite schist (altered Metabasic schist)	Hard & compact	Fine grained	Moderately to strongly schistosed @~40°-50°, low angle fracture (~20°-30°), highly fragmented & broken core, occasional crenulation		
MTB-12			0.90	1.02			Pink grey	Garnetiferous - quartz - biotite - chlorite schist (altered & silicified)	Hard & compact	Fine grained - coarse grained	Few fracture, fragmented & broken core,	Very rare specs of sulfides (dissemination) at 63-64 <0.10% (Not worth sampling)	
MTB-12	64.00	67.00	0.80	0.80	1.04	130.00	Pink grey	Garnetiferous - quartz - biotite - chlorite schist (silicified)	Hard & compact	Fine grained	Strongly schistosed @~50°, few fracture.	Very rare dissemination of Chalcopyrite (Not worth sampling)	
MTB-12			2.20	2.20		0.00	Light greenish grey	Quartz - biotite - chlorite schist	Hard & compact	Fine grained	Moderately schistosed varried schistosity angle, highly fractured, fragmented & broken core, low angle fracture at few place		
MTB-12	67.00	70.00	2.90	3.00	0.97	33.45	Light greenish grey	Quartz - biotite - chlorite schist	Hard & compact	Fine grained	Moderately schistosed varried schistosity angle, highly fractured, fragmented & broken core, low angle fracture at few place		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-12	70.00	71.00	0.94	1.00	0.25	26.60	Light greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, folled quartz veins, few fractures		
MTB-12	71.00	74.00	2.93	3.00	2.23	76.11	Light greenish grey	Quartz - feldspathic - biotite - chlorite schist (Metabasic schist) silicified	Hard & compact	Fine grained	Strongly schistosed, folled quartz veins, silicified, few fracture along schistosity		
MTB-12	74.00	77.00	3.01	3.00	1.91	63.46	Light greenish grey	Quartz - biotite - chlorite schist + bands of basic intrusive	Hard & compact	Very fine grained to fine grained	Moderately to strongly schistosed, strongly schistosed @~40°-45°, folled quartz veins, multiple fracture parallel to schistosity	Fracture filling veins of Chalcopyrite along quartz vein with in basic intrusive 74.70-75.00 (0.20-0.30%)	
MTB-12	77.00	80.00	2.83	3.00	2.19	77.39	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained	Strongly schistosity, @~50°-60°, multiple fracture parallel to schistosity, quartz veins fragmented core	Stringers & disseminated specs of Chalcopyrite along schistosity	
MTB-12	80.00	83.00	2.90	3.00	2.22	76.55	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained	Strongly schistosed, wavy to crenulated schistosity, sheared & brecciated to folded quartz veins few fracture	Stringers & disseminated specs of Chalcopyrite along schistosity	
MTB-12	83.00	85.50	2.25	2.50	1.32	58.67	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained	Strongly schistosed, wavy to crenulated schistosity, sheared & brecciated to folded quartz veins few fracture	Stringers & disseminated specs of Chalcopyrite along schistosity	
MTB-12	85.50	88.00	1.00	1.01	0.71	71.00	Greenish grey + pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine grained	Strongly schistosed, wavy to crenulated schistosity, sheared & brecciated to folded quartz veins few fracture	Rare specs of Chalcopyrite (Not worth sampling)	
MTB-12			1.47	1.49			Grey	Banded quartzite ± Garnet ± kyanite	Very hard & compact	Fine grained	Massive to very feeble schistosity multiple fracture @~40°-45°,		
MTB-12	88.00	91.00	3.05	3.00	0.83	27.21	Grey	Banded quartzite ± Garnet ± kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed, highly fractured & fragmented broken core, fracture angle @~ 45° w.rt CA.	Rare stringers & specs of mainly Pyrite along with minor Chalcopyrite (Not worth sampling)	
MTB-12	91.00	94.00	3.03	3.00	0.88	29.04	Grey	Banded quartzite ± Garnet ± kyanite	Very hard & compact	Fine grained	Massive to feebly schistosed, multiple fracture @~50°-70°, few fracture parallel to CA @~92.00-92.50 fragmented & broken core	Rare isolated stringers of Chalcopyrite @~93.00 (Not worth sampling)	
MTB-12	94.00	95.00	1.48	1.00	0.66	44.59	Grey	Garnetiferous - quartz - mica - chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~50°,occasionally biotite & chlorite rich, fractured & fragmented core,	Very rare specs of sulfides along schistosity	
MTB-13	0.00	3.00	0.14	3.00			Brown	Top soil	Soft friable				
MTB-13	3.00	6.00	0.15	3.00			Brown	Top soil	Soft friable				
MTB-13	6.00	9.00	0.09	3.00			White	Loose boulder of quartz					
MTB-13	9.00	10.00	0.08	1.00			White	Loose boulder of quartz					
MTB-13	10.00	12.50	0.17	2.50			Yellow	Sandy soil with quartz boulder	Soft friable				
MTB-13	12.50	14.50	0.27	2.00			Reddish brown	Weathered /oxidised schistosed rock + soil	Soft friable to compact at place	Fine grained	Fractured, oxidised		
MTB-13	14.50	15.50	0.61	1.00			Reddish brown	Oxidised schistosed rock	Soft & friable to compact/cohesive				
MTB-13	15.50	16.00	0.42	0.50			Yellow brown	Weathered oxidised schistosed rock	Soft friable to conesive	Fine grained	Schistosed		
MTB-13	16.00	17.00	0.43	1.00			Yellow brown	Weathered oxidised schistosed rock	Soft friable to conesive				
MTB-13	17.00	18.50	0.89	1.50			Yellow brown	Weathered oxidised schistosed rock	Soft friable to conesive				
MTB-13	18.50	19.00	0.33	0.50			Yellow brown	Weathered oxidised schistosed rock	Soft friable to conesive	Fine grained	Schistosed		
MTB-13	19.00	21.50	0.83	2.50			Yellow grey	Partially weathered/oxidised schistosed rock		Fine grained	Schistosed, highly fractured & fragmented, limonite strain along fracture		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-13	21.50	22.00	0.25	0.50			Yellow grey	Quartz - biotite - chlorite schist (metabaisc schist) partially oxidised	Moderate hard & compact	Fine grained	Schistosed, highly fractured, partially oxidised		
MTB-13	22.00	25.00	3.00	3.00			Yellow greenish grey	Quartz - biotite - chlorite schist (partially oxidised)	Moderate hard & compact	Fine grained	Strongly schistosed, highly fractured, fragmented & broken core, partially to fully oxidised occasionally friable		
MTB-13	25.00	28.00	3.00	3.00	1.87	62.33	Greenish grey	Quartz - biotite - chlorite schist ± Amphibole (silicified)	Hard & compact	Fine grained	Strongly schistosed @~40°-50°, altered & silicified, few fracture along schistosity, occasionally crenulation		
MTB-13	28.00	31.00	2.87	3.00	1.66	57.84	Greenish grey	Quartz - biotite - chlorite schist ± Amphibole (silicified)	Hard & compact	Fine - medium grained	Strongly schistosed @~40°-45°, fractured and fragmented at places, are fragmented core, oxidation along fracture	Dissemination of Chalcopyrite & Pyrite at bottom	
MTB-13	31.00	33.00	1.88	2.00	2.24	119.15	Greenish grey	Quartz - biotite - chlorite schist ± Amphibole ± Garnet (silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed @~40°-45°, fractured along schistosity, few irregular fracture oxidised along fracture	Disseminated spces & stringers of Pyrite Chalcopyrite along schistosity	HQ ↑
MTB-13	33.00	34.00	1.04	1.00	0.92	88.46	Grey with pink patches	Garnetiferous - quartz biotite - chlorite schist	Hard & compact	Fine - medium grained	Strongly schistosed @~30°-40°, occasionally variable w.r.t CA, fractured along schistosity	Stringers & veins of Chalcopyrite along with Pyrite along schistosity	NQ ↓
MTB-13	34.00	37.00	2.92	3.00	2.07	70.89	Grey with pink patches	Garnetiferous - quartz biotite - chlorite schist (altered & silicified)	Hard & compact	Fine - medium grained	Strongly schistosed @~30°, few fracture along schistosity, occasionally fragmented,sheared quartz veins	Minor disseminated spces & stringers along schistosity	
MTB-13	37.00	40.00	2.58	3.00	1.46	56.59	Grey with pink patches	Garnetiferous - quartz biotite - chlorite schist (altered & silicified)	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~30°-40°, fractured along schistosity, along with few high angle fracture (>70°), occasionally fragmented core, sheared quartz veins	Stringers & veins of Chalcopyrite along schistosity & inter porphyroblart area	
MTB-13	40.00	43.00	2.48	3.00	1.30	52.42	Grey with pink patches	Garnetiferous - quartz biotite - chlorite schist (altered & silicified) + thick quartz vein @~40.45-42.00	Hard & compact	Fine grained	Moderately schistosed @~40°-50°, quartz vein is massive, highly fractured & fragmented, multiple fracture @~40°-50°,	Fine dissemination & isolated stringers of Chalcopyrite along schistosity	
MTB-13	43.00	46.00	2.96	3.00	2.63	88.85	Grey with pink patches	Garnetiferous quartz biotite chlorite schist	Hard & compact	Fine - coarse grained	Moderately schistosed @~50°, few fractured along schistosity, cluster of large garnet	Rare to minor dissemination of Chalcopyrite along with isolated stringers at 45.90 (Not worth sampling)	
MTB-13	46.00	49.00	3.00	3.00	2.37	79.00	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist (silicified at places)	Hard & compact	Fine - coarse grained	Moderately schistosed @~45°-50°, fracture parallel to schistosity occasionally fragmented & broken core, silicified at bottom	Very rare isolated spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-13	49.00	52.00	3.00	3.00	2.27	75.67	Grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered & silicified)	Hard & compact	Fine - coarse grained	Moderately schistosed @~50°, few fracture at 45°-50°, few fractures are discordant to schistosity, occasionally fragmented core.	Very rare isolated spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-13	52.00	55.00	2.96	3.00	2.23	75.34	Grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered & silicified)	Hard & compact	Fine - coarse grained	Moderately schistosed, few fractures along schistosity, occasionally fragmented core	Very rare spces of Chalcopyrite (Not worth sampling)	
MTB-13	55.00	58.00	3.00	3.00	1.30	43.33	Grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered & silicified) + bands of chlorite schist @~56.30-57.00	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~50°, fractured along schistosity, fragmented core, sheared quartz vein along schistosity	Very rare isolated stringers of Chalcopyrite @ 55.15 (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-13	58.00	61.00	3.00	3.00	1.89	63.00	Grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered & silicified) + bands of Garnetiferous quartzite	Hard & compact	Fine - very coarse grained	Moderately to strongly schistosed, fractured, fragmented core, at place strongly silicified	Very rare spces of sulfides (Not worth sampling)	
MTB-13	61.00	64.00	3.00	3.00	1.85	61.67	Grey to greenish grey with pink patches	Garnetiferous - quartz - mica - chlorite schist + bands of Quartzite (altered) + quartz vein	Hard & compact	Fine - very coarse grained	Moderately schistosed, strongly silicified, highly fractured & fragmented, towards bottom multiple isolated quartz veins	Isolated stringers & veins of Chalcopyrite @~61.20,61.80 @ 63.40,63.60	
MTB-13	64.00	67.00	2.00	2.00	1.65	55.00	Grey	Garnetiferous - quartzite ± kya	Very hard & compact	Fine grained	Mostly fractured at high angle (>80°), fragmented core		
MTB-13			1.00	1.00			Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine - coarse grained	Strongly schistosed, fractured & fragmented core		
MTB-13	67.00	70.00	2.99	3.00	0.90	30.10	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist (silicified at places) + bands of Quartzite	Hard & compact	Fine - coarse grained	Moderately schistosed @~40°-50°, highly fractured along schistosity, fragmented & broken core quartz veins		
MTB-13	70.00	73.00	0.35	3.00	0.00	0.00	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist (silicified at places) + bands of Quartzite	Hard & compact	Fine - coarse grained	Moderately schistosed @~50°, highly fractured, fragmented & broken core, core loss		
MTB-13	73.00	76.00	2.89	3.00	1.44	49.83	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist (silicified at places) + bands of Quartzite	Hard & compact	Fine - coarse grained	Moderately schistosed @~50°, highly fractured & fragmented core, broken core sheared & brecciated quartz veins	Minor spces of sulfides (Not worth sampling)	
MTB-13	76.00	79.00	2.83	3.00	1.22	43.11	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~50°-60°, multiple fracture @~45°, highly fragmented & broken core, sheared quartz veins	Minor disseminated spces & stringers of Chalcopyrite along foliation & inter - porphyroblart area (Not worth sampling)	
MTB-13	79.00	82.00	2.96	3.00	2.09	70.61	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist + quartz vein	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~50°-60°, fractured parallel to schistosity, few fracture @ low angle (~20°-30°)	Minor disseminated spces & stringers of Chalcopyrite along foliation & inter - porphyroblart area (Not worth sampling)	
MTB-13	82.00	85.00	2.90	3.00	2.44	84.14	Light greenish grey with pink patches	Garnetiferous - quartz - mica - chlorite schist + quartz vein	Hard & compact	Fine - very coarse grained	Moderately to strongly schistosed @~40°-50°, wavy schistosity, few fracture parallel to schistosity, occasionally fragmented core at bottom	Minor spces & fine stringers of Chalcopyrite along schistosity (Not worth sampling)	
MTB-13	85.00	88.00	2.96	3.00	2.05	69.26	Light greenish grey with pink patches	Garnetiferous - quartz - mica - chlorite schist + quartz vein	Hard & compact	Fine - very coarse grained	Moderately to strongly schistosed @~50°, few fractures, occasionally fragmented & broken core @~87.00 sheared quartz veins	Stringers & isolated veins of Chalcopyrite along schistosity and as gap filling	
MTB-13	88.00	91.00	2.98	3.00	2.71	90.94	Grey with pink patches	Garnetiferous - quartz - mica - chlorite schist + quartz vein	Hard & compact	Fine - coarse grained	Moderately schistosed, cluster of loose to very coarse grained garnet porphyroblast few fracture,	Fine stringers of Chalcopyrite at top (Not worth sampling)	
MTB-13	91.00	94.00	2.90	3.00	2.13	73.45	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine - coarse grained	Moderately to schistosed @~50°, wavy schistosity, few fracture parallel to schistosity, at place fragmented	Isolated spces & stringers of Chalcopyrite @~91.70-91.20 @~<0.10-0.20%	
MTB-13	94.00	97.00	2.81	3.00	1.83	65.12	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~50°, fractured along schistosity, low angle fracture (~ 10°) w.r.t CA, at place fragmented & broken core,	Isolated spces & stringers of Chalcopyrite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-13	97.00	100.00	2.99	3.00	2.24	74.92	Grey with pink patches	Garnetiferous - quartz - biotite - chlorite schist (altered& silicified)	Hard & compact	Fine - coarse grained	Moderately schistosed @~50°, few fracture @ high angle (> 70°) fragmented core at top	Rare isolated stringers of Chalcopyrite along schistosity / inter - pophyroblart area (Not worth sampling)	
MTB-13	100.00	103.00	2.90	3.00	2.19	75.52	Grey with pink patches	Garnetiferous - quartz - chlorite -biotite schist	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~50°, wavy & crenulated, fractured along schistosity, cluster of large garnet porphyroblasts	Stringers & isolated veins of Chalcopyrite	
MTB-13	103.00	106.00	2.97	3.00	1.36	45.79	Light greenish grey with pink patches	Garnetiferous - quartz - mica (muscovite + sericite) - chlorite schist (altered /chloritized	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed @~40°-50°, multiple fractured along schistosity, few low angle fracture @ (~ 20°-30°), fragmented core,	Few stringers of Chalcopyrite along schistosity	
MTB-13	106.00	109.00	3.00	3.00	1.69	56.33	Light greenish grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered /chloritized)	Hard & compact	Fine - coarse grained	Strongly schistosed @~40°-50°, fractured along schistosity, low angle fracture occasionally fragmented core, garnet cluster	Very rare spces of Chalcopyrite (Not worth sampling)	
MTB-13	109.00	110.00	1.00	1.00	0.18	18.00	Light greenish grey with pink patches	Garnetiferous - quartz - mica - chlorite schist (altered /chloritized) + quartz veins	Hard & compact	Fine - coarse grained	Moderately to strongly schistosed highly fractured & fragmented quartz veins		
MTB-14	0.00	3.00	0.25	3.00			Brown	Top soil	Loose & cohesive				
MTB-14	3.00	6.00	0.45	3.00			Yellow brown	Soil	Loose & cohesive				
MTB-14	6.00	9.00	0.90	3.00			Yellow grey	Wheatered/oxidised schistosed rock	Moderate hard & fragmented	Fine grained	Schistosed highly fractured, fragmented & friable		
MTB-14	9.00	10.00	0.36	1.00			Yellow grey	Wheatered/oxidised schistosed rock		Fine grained	Schistosed highly fractured, fragmented & friable		Partially formed soil
MTB-14	10.00	13.00	1.44	3.00			Yellowish grey	Partially oxidised metabasic schist	Hard & fragmented	Fine grained	Schistosed,highly fractured & fragmented, core loss, partially to fully oxidised		
MTB-14	13.00	16.00	1.87	3.00			Yellowish grey	Partially oxidised metabasic schist	Hard & fragmented	Fine grained	Schistosed @~45°, highly fractured, fragmented & broken core, core loss, partially oxidised		
MTB-14	16.00	19.00	2.70	3.00	0.60	22.22	Yellowish grey	Quartz feldspathic biotite chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, highly fractured along schistosity		
MTB-14	19.00	21.00	1.95	2.00	1.25	64.10	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°, fractured along schistosity, thin quartz veins parallel to schistosity	Very few spces of sulfides (Not worth sampling)	
MTB-14	21.00	24.00	2.98	3.00	1.65	55.37	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, multiple fracture parallel to schistosity, few fracture @~40°-50°, discordant to schistoisty, contain carbonate vein filling	Rare isolated stringers & few spces of sulfides(Not worth sampling)	
MTB-14	24.00	27.00	2.71	3.00	0.88	32.47	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, highly fractured & fragmented & broken core, thin schistosity parallel quartz veins	Stringers & veins of mainly Pyrite along with minor Chalcopyrite along schistosity (Not worth sampling)	
MTB-14	27.00	30.00	3.00	3.00	1.94	64.67	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~, fractured/splilted along schistosity, fragmented core at top, carbonate vein along thin low angle (~20°) fracture, multiple thin schistosity parallel	Isolated stringers of Chalcopyrite along with Pyrite along schistosity (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-14	30.00	31.00	1.02	1.00	0.73	71.57	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed, few schistosity parallel fracture multiple thin quartz veins	Very few minor stringers of Chalcopyrite along with few spces (Not worth sampling)	HQ ↑ NQ↓
MTB-14	31.00	34.00	3.00	3.00	1.84	61.33	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°, multiple fracture/splilting along schistosity place, multiple quartz - carbonate veins parallel to schistosity, few fracture @~20°-40°, discordant to schistosity	Very rare minor stringers of Chalcopyrite along schistosity & disseminate spces of Chalcopyrite along schistosity (Not worth sampling)	
MTB-14	34.00	37.00	3.00	3.00	2.04	68.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, fracture along schistosity along with few irregular fracture at place, quartz veins	Very rare spces of sulfides (Not worth sampling)	
MTB-14	37.00	40.00	3.00	3.00	1.27	42.33	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed, fracture along schistosity, sheared & brecciated quartz veins		
MTB-14	40.00	43.00	3.00	3.00	1.44	48.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fracture along schistosity, also multiple low angle fracture @~20°-30°, filled with carbonate veins, occasionally fragmented core,	Stringers & veins of Pyrite along with quartz veins at few isolated place (Not worth sampling)	
MTB-14	43.00	46.00	3.00	3.00	1.98	66.00	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein (altered & silicified)	Hard & compact	Fine grained	Moderately schistosed @~50°, silicified, multiple fracture parallel to schistosity, low angle fracture (~20°-30°) filled with carbonate veins, thin quartz veins	Stringers & dissemination spces of Chalcopyrite & Pyrite along schistosity ,	
MTB-14	46.00	49.00	3.00	3.00	1.55	51.67	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein (altered & silicified)	Hard & compact	Fine grained	Moderately to strongly schistosed @~50°, highly fractured along schistosity, sheared quartz veins parallel to schistosity, occasionally fragmented core,	Few isolated stringers of Pyrite (Not worth sampling)	
MTB-14	49.00	52.00	2.99	3.00	0.36	12.04	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, highly fractured, fragmented & broken core, mostly fractured parallel to schistosity along with irregular low angle fracture, occasionally brecciated core, solidified by carbonate vein material		
MTB-14	52.00	55.00	2.96	3.00	0.86	29.05	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, fracture along schistosity, also multiple irregular fracture from low angle (~20°) to high angle (~70°), occasional fragmented & broken core	Single isolated stringers of Chalcopyrite along with Pyrite @~54.60 (Not worth sampling)	
MTB-14	55.00	58.00	2.98	3.00	1.43	47.99	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, few fracture along schistosity	Veins of Pyrite & minor isolated stringers of Chalcopyrite 1m @~ 0.05-0.10 % (Not worth sampling)	
MTB-14	58.00	61.00	2.99	3.00	1.56	52.17	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, fracture/splilting parallel to schistosity, few irregular fracture, brecciated quartz veins	Thick stringers & veins of Chalcopyrite & Pyrite @ 59.10 0.50cm @~0.50-0.60 %	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-14	61.00	64.00	3.00	3.00	2.69	89.67	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) (silicified) + quartz carbnate veins	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, fracture /splilting along schistosity, low angle fracture @~20°-30°, occasional fragmented core, quartz - carbonate veins	Very rare spces of Chalcopyrite & Pyrite (Not worth sampling)	Potassic alteration
MTB-14	64.00	67.00	3.00	3.00	1.09	36.33	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (occasionally silicified) + quartz carbonate veins	Hard & compact	Fine grained	Strongly schistosed@~50°, fracture along schistosity, also multiple fracture @~30°-40°, filled with quartz veins cohesive, solidified brecciated zone @~65.50-65.80, oxidation along few low angle fracture	Very rare spces of sulfides (Not worth sampling)	
MTB-14	67.00	70.00	2.99	3.00	1.99	66.56	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (occasionally silicified) + quartz veins	Hard & compact	Fine grained	Strongly schistosed @~40°, fracture/splilting along schistosity, schistosity parallel quartz veins	Isolated stringers of Chalcopyrite along with Pyrite & pyrrhotite @~67.70 (Not worth sampling)	
MTB-14	70.00	73.00	2.91	3.00	2.29	78.69	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (occasionally silicified) + quartz veins	Hard & compact	Fine grained	Strongly schistosed @~40°, fracture/splilting along schistosity, schistosity parallel quartz veins		
MTB-14	73.00	76.00	3.00	3.00	2.42	80.67	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (occasionally silicified) + quartz veins	Hard & compact	Fine grained	Strongly schistosed @~40°, fracture/splilting along schistosity, schistosity parallel quartz veins	Very rare spces of sulfides (Not worth sampling)	
MTB-14	76.00	79.00	3.00	3.00	1.60	53.33	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, highly splilted/fractured along schistosity fragmented core	Very rare spces & stringers of sulfides (Not worth sampling)	
MTB-14	79.00	82.00	3.00	3.00	1.57	52.33	Greenish grey	Quartz feldspathic biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Fine grained	Strongly schistosed @~40°-45°, highly fractured along schistosity, fragmented & broken core at place quartz veins	Massive magnetite patches @79.10 very rare spces of sulfides (Not worth sampling)	
MTB-14	82.00	85.00	3.00	3.00	1.52	50.67	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, fractured along schistosity, few low angle fracture (~ 20°-30°), occasional microfoldings quartz veins	Isolated stringers of Chalcopyrite & pyrrhotite @ 83.70-83.30 (Not worth sampling)	
MTB-14	85.00	88.00	2.87	3.00	1.34	46.69	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) (altered & silicified)	Hard & compact	Fine grained	Strongly schistosed ~ multiple fracture parallel to schistosity, schistosity parallel quartz veins	Isolated stringers of sulfides at few place @85.80 (Not worth sampling)	
MTB-14	88.00	91.00	3.00	3.00	1.90	63.33	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole + bands of amphibole biotite chlorite schist + quartz veins (altered & silicified)	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, schistosity parallel quartz veins silicified low angle fracture	Occasionally isolated rare spces of sulfides (pyrite , Chalcopyrite) (Not worth sampling)	
MTB-14	91.00	94.00	3.00	3.00	1.90	63.33	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole + bands of amphibole biotite chlorite schist + quartz veins (altered & silicified) + quartz veins	Hard & compact	Fine grained	Strongly schistosed, @~50°, highly fracture @~40°-50°, @~92.50 fragmented & broken core, slicken lines	Occasionally isolated rare spces of sulfides (pyrite , Chalcopyrite) (Not worth sampling)	
MTB-14	94.00	97.00	3.00	3.00	1.28	42.67	Greenish grey to grey	Quartz biotite chlorite schist + quartz veins	Hard & compact	Fine grained	Strongly schistosed @~50°, fractured along schistosity, sheared & brecciated quartz veins	Isolated stringers of Pyrite & Chalcopyrite @96.90 (Not worth sampling)	
MTB-14	97.00	100.00	3.00	3.00	2.03	67.67	Greenish grey to grey	Quartz biotite chlorite schist ± Garnet (quartz veins)	Hard & compact	Fine grained	Strongly schistosed, fractured along schistosity, sheared & brecciated quartz veins	Occasionally rare dissemination spces of Chalcopyrite & Pyrite large Pyrite grains @ 98.80 along with quartz veins (Not worth sampling)	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-14	100.00	103.00	2.40	3.00	2.08	86.67	Grey with pink patches	Quartz biotite chlorite schist ± Garnet (quartz veins)	Hard & compact	Fine grained	Strongly schistosed, fractured along schistosity, sheared & brecciated quartz veins	Rare spces of Chalcopyrite (Not worth sampling)	
MTB-14			0.55			0.00	Grey with pink patches	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~50°, wavy schistosity	Dissemination of Chalcopyrite spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-14	103.00	106.00	2.88	3.00	1.46	50.69	Grey with pink patches	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~50°, large garnet porphyroblast fractured along schistosity, few irregular fracture, occasional fragmented core, schistosity parallel quartz veins	Dissemination of Chalcopyrite spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-14	106.00	109.00	2.88	3.00	1.92	66.67	Grey with pink patches	Garnetiferous quartz chlorite mica schist + band of quartzite	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~45°-50°, few fracture parallel to schistosity, sheared quartz vein occasionally microfolded	Stringers & dissemination spces of Chalcopyrite	
MTB-14	109.00	112.00	3.00	3.00	2.20	73.33	Pink grey	Garnetiferous quartz chlorite mica schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, fracture along schistosity	Fracture filling veins of Chalcopyrite @ 110.40-110.60, stringers of Chalcopyrite along schistosity	
MTB-14	112.00	115.00	2.99	3.00	2.01	67.22	Pink grey	Garnetiferous quartz chlorite mica schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, wavy schistosity, cluster of garnet porphyroblast, brecciated quartz veins	Stringers & dissemination spces of Chalcopyrite along schistosity	
MTB-14	115.00	118.00	3.00	3.00	0.99	33.00	Pink grey	Garnetiferous quartz chlorite mica schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Strongly schistosed highly fractured & fragmented broken core, low angle fracture near parallel to CA, brecciated quartz veins	Isolated stringers of Chalcopyrite @115.90, 116.50 (Not worth sampling)	
MTB-14	118.00	121.00	3.00	3.00	2.22	74.00	Pink grey	Garnetiferous quartz chlorite mica schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, large granet porphyroblast clusters few fracture at high angle (>70°), chloritization at place	Rare isolated stringers of Chalcopyrite at very few place (Not worth sampling)	
MTB-14	121.00	124.00	3.00	3.00	2.32	77.33	Pink grey	Garnetiferous quartz chlorite mica schist + quartz vein	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, large granet porphyroblast clusters few fracture at high angle (>70°), chloritization at place	Stringers of Chalcopyrite along quartz vein along schistosity & porphyroblart cluster	
MTB-14	124.00	127.00	3.00	3.00	2.23	74.33	Pink grey	Garnetiferous quartz chlorite mica schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, large garnet porphyroblast occasionally accuring as clusters few fractures brecciated quartz veins	Stringers of Chalcopyrite along schistosity & inter porphyroblart area	
MTB-14	127.00	130.00	3.00	3.00	2.36	78.67	Grey with pink patches	Garnetiferous quartz chlorite mica schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, large garnet porphyroblast occasionally accuring as clusters few fractures brecciated quartz veins	Stringers of Chalcopyrite along schistosity at top	
MTB-14	130.00	133.00	3.00	3.00	2.23	74.33	Grey with pink patches	Garnetiferous quartz chlorite mica schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, large garnet porphyroblast occasionally accuring as clusters few fractures brecciated quartz veins	Isolated stringers & dissemination spces of Chalcopyrite along schistosity	
MTB-14	133.00	136.00	3.00	3.00	2.47	82.33	Grey with pink patches	Garnetiferous quartz chlorite mica schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~45°-50°, few fractures along schistosity, large garnet porphyroblast occasionally clustered quartz veins	Stringers of Chalcopyrite along schistosity & porphyroblart cluster	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-14	136.00	139.00	2.98	3.00	2.31	77.52	Grey with pink patches	Garnetiferous quartz chlorite mica schist + quartz veins	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, few fractures, large garnet porphyroblast, occasionally chloritized sheared & brecciated quartz veins	Few stringers & veins of Chalcopyrite along schistosity	
MTB-14	139.00	142.00	2.94	3.00	2.26	76.87	Grey to greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°, few fracture, large garnet porphyroblast, strongly chloritized minor sheared quartz veins	Isolated stringers at few place, magnetite cuhedral grains , erratically distributed	# Radioactive zones
MTB-14	142.00	145.00	3.00	3.00	2.62	87.33	Grey to greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°, few fracture, large garnet porphyroblast, strongly chloritized minor sheared quartz veins	Disseminated spces & isolated stringers of Chalcopyrite along schistosity	
MTB-14	145.00	148.00	3.00	3.00	2.11	70.33	Grey to greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~ very low angle (~10°-20°) schistosity parallel curvy fracture @ 147.70, fragmented core, large to very large garnet porphyroblasts	Stringers of Chalcopyrite along schistosity & porphyroblart cluster	
MTB-14	148.00	151.00	3.00	3.00	2.18	72.67	Grey to greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~30°-40°, low angle fracture at few place fragmented core, large garnet porphyroblast, quartz veins	Disseminated stringers & spces of Chalcopyrite along schistosity	
MTB-14	151.00	154.00	3.00	3.00	2.31	77.00	Grey to greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, wavy schistosity, fractured along schistosity, large garnet porphyroblast sheared quartz veins	Disseminated spces of Chalcopyrite along schistosity	
MTB-14	154.00	157.00	3.00	3.00	2.32	77.33	Grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained	Strongly schistosed @~45°-50°, wavy to sigmoidal schistosity large garnet porphyroblast silicified few fracture along schistosity	Very rare spces of Chalcopyrite along schistosity	
MTB-14	157.00	160.00	2.95	3.00	2.23	75.59	Grey with pink patches	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~45°, fractured along schistosity, large garnet porphyroblast sheared quartz veins, occasionally microfolds	Stringers of Pyrite & Chalcopyrite along schistosity	
MTB-14	160.00	163.00	2.98	3.00	1.80	60.40	Grey with pink patches	Garnetiferous quartz chlorite biotite schist + bands of metabasic schist @~161.70-162.30	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~45°, large garnet porphyroblast fractured along schistosity	Rare isolated stringers of Chalcopyrite along schistosity at few place	sharp contact with metabasic band
MTB-14	163.00	166.00	2.86	3.00	2.24	78.32	Grey with pink patches	Garnetiferous quartz chlorite biotite schist (silicified ?)	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~45°-50°, few fractured along schistosity, sheared quartz veins	Rare spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-14	166.00	169.00	2.78	3.00	1.29	46.40	Grey with pink patches	Garnetiferous quartz chlorite biotite schist (silicified ?) +metabasic band @166.50-168.10	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, fractured & fragmented along schistosity large garnet porphyroblast at bottom	Rare stringers of Chalcopyrite along schistosity & at contact of metabasic schist (Not worth sampling)	Sharp contact with the metabasic band
MTB-14	169.00	172.00	3.00	3.00	1.90	63.33	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed large to very large garnet porphyroblast occasionally clustered few fractures fragmented at bottom	Isolated stringers of Chalcopyrite at few place (Not worth sampling)	
MTB-14	172.00	175.00	2.94	3.00	2.18	74.15	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained to coarse grained	Garnet porphyroblast cluster strongly schistosed few fractures	Rare stringers of Chalcopyrite along schistosity (Not worth sampling) < 0.05-0.10 %	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-14	175.00	178.00	2.97	3.00	2.60	87.54	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed, large garnet porphyroblast occasionally accuring as clusters few fractures @ (~50°-80°) sheared quartz veins	Very few spces of Chalcopyrite along schistosity along with erratic stringers (Not worth sampling)	Disseminated magnetite grains
MTB-14	178.00	181.00	2.96	3.00	2.45	82.77	Pink grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed, cluster of large garnet porphyroblast, silicified, few fracture@~50°, strongly chloritized at places	Stringers & spces of Chalcopyrite along garnet cluster 0.60 @~0.20-0.30	
MTB-14	181.00	184.00	2.97	3.00	2.55	85.86	Pink grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed, cluster of large garnet porphyroblast, silicified, few fracture@~50°, strongly chloritized at places	Stringers & spces of Chalcopyrite along schistosity	
MTB-14	184.00	187.00	2.88	3.00	2.18	75.69	Pink greenish grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed @~40°-50°, large - very large garnet porphyroblast occasionally making clusters few fracture parallel to schistosity sheared & folded quartz veins	Very few spces of Chalcopyrite erratically distributed (Not worth sampling)	
MTB-14	187.00	190.00	3.00	3.00	1.93	64.33	Pink greenish grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, cluster of large garnet porphyroblast, fractured & fragmented, strongly chloritized sheared & brecciated quartz vein	Very few stringers & spces of Chalcopyrite at bottom	
MTB-14	190.00	193.00	3.00	3.00	2.45	81.67	Pink greenish grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, cluster of large garnet porphyroblast, fractured & fragmented, strongly chloritized sheared & brecciated quartz vein	Stringers of Chalcopyrite along schistosity at top to middle	
MTB-14	193.00	196.00	3.00	3.00	2.10	70.00	Pink greenish grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, cluster of large garnet porphyroblast, fractured & fragmented, strongly chloritized sheared & brecciated quartz vein	Few isolated stringers along schistosity & garnet cluster	
MTB-14	196.00	199.00	2.98	3.00	2.63	88.26	Pink greenish grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, wavy & anastonosing schistosity, large to very large garnet porphyroblast making cluster few fracture, sheared quartz veins	Rare stringers of Chalcopyrite (Not worth sampling)	
MTB-14	199.00	200.00	1.00	1.00	0.76	76.00	Pink grey	Garnetiferous quartz chlorite biotite schist	Hard & compact	Fine grained to very coarse grained	Strongly schistosed, wavy schistosity, few fractures	Rare spces of Chalcopyrite (Not worth sampling)	
MTB-15	0.00	1.00	0.20	1.00			Yellow grey	Top soil	Loose & conesive	Fine medium grained			
MTB-15	1.00	3.00	0.23	2.00			Yellow grey	Top soil	Loose & conesive	Fine medium grained			
MTB-15	3.00	4.00	0.16	1.00			Yellow grey	Top soil	Loose & conesive	Fine medium grained			
MTB-15	4.00	6.00	0.20	2.00			Yellow grey	Top soil	Loose & conesive	Fine medium grained			
MTB-15	6.00	9.00	0.22	3.00			Grey	Quartzite pebble & boulder	Hard fragmented	Fine grained			
MTB-15	9.00	10.50	0.08	1.50			Grey	Quartzite pebble & boulder	Hard fragmented	Fine grained			
MTB-15	10.50	13.50	0.52	3.00			Grey	Loose sandy soil	Loose & conesive	Fine grained			
MTB-15	13.50	16.50	0.41	3.00			Yellowish grey	Loose soil	Loose & conesive	Fine grained			
MTB-15	16.50	17.50	0.75	1.00			Yellowish grey	Soil + quartz pebbles & boulder	Loose & conesive	Fine grained			
MTB-15	17.50	19.50	0.87	2.00			Yellow brownish grey	Oxidised / weathered schistosed rock	Moderate hard & fragmented	Fine grained	Schistosed, highly fractured & fragmented limonitic stain /encrustation		
MTB-15	19.50	21.00	0.95	1.50			Yellow brownish grey	Oxidised / weathered schistosed rock	Soft to hard & fragmented & friable	Fine grained	Schistosed, highly weathered & oxidised highly fractured & fragmented friable core, limonitic encrustation		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-15	21.00	23.00	0.84	2.00			Yellow brownish grey	Oxidised / weathered schistosed rock	Soft to hard & fragmented & friable	Fine grained	Schistosed, highly weathered & oxidised highly fractured & fragmented friable core, limonitic encrustation		
MTB-15	23.00	23.50	0.63	0.50			Yellow brown	Weathered & oxidised schistosed rock	Moderate hard to soft & friable	Fine grained	Schistosed, highly oxidised, fractured & broken core, limonitic encrustation		
MTB-15	23.50	24.60	0.86	1.10			Yellow brown	Weathered & oxidised schistosed rock	Moderate hard to soft & friable	Fine grained	Schistosed, highly oxidised, fractured & broken core, limonitic encrustation		
MTB-15	24.60	25.20	0.84	0.60			Yellow grey	Partially oxidised Metabasic schist	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented & broken core, oxidised along fracture, occasionally silicified		
MTB-15	25.20	26.00	0.84	0.80			Yellow grey	Partially oxidised Metabasic schist	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented & broken core, oxidised along fracture, occasionally silicified		
MTB-15	26.00	26.60	0.57	0.60			Yellow grey	Partially oxidised Metabasic schist	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented & broken core, oxidised along fracture, occasionally silicified		
MTB-15	26.60	27.50	0.68	0.90			Brownish grey	Partially oxidised Metabasic schist	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented, oxidised /weathered along fractured zone		
MTB-15	27.50	28.50	0.41	1.00			Brownish grey	Partially oxidised Metabasic schist	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented, oxidised /weathered along fractured zone		
MTB-15	28.50	29.00	0.42	0.50			Brown grey	Highly oxidised /Metabasic schistosed rock	Soft loose & friable	Fine grained	Schistosed, highly fragmented, oxidised, friable at places		
MTB-15	29.00	30.00	0.54	1.00			Brown grey	Highly oxidised /Metabasic schistosed rock	Soft loose & friable	Fine grained	Schistosed, highly fragmented, oxidised, friable at places		
MTB-15	30.00	31.80	1.02	1.80			Yellow grey & brownish grey	Highly oxidised /Metabasic schistosed rock	Soft to moderate hard & friable	Fine grained	Schistosed, highly fractured & fragmented, broken core, occasionally friable, oxidised & weathered		
MTB-15	31.80	32.70	0.71	0.90			Yellow brownish grey	Oxidised / weathered schistosed rock	Soft to moderate hard & friable	Fine grained	Highly weathered & oxidised, highly fractured & fragmented, occasionally friable		
MTB-15	32.70	34.00	0.91	1.30			Yellow brownish grey	Oxidised / weathered schistosed rock	Soft to moderate hard & friable	Fine grained	Highly weathered & oxidised, highly fractured & fragmented, occasionally friable		
MTB-15	34.00	36.50	2.31	2.50	0.55	23.81	Greenish grey	Quartz biotite chlorite schist (kaolinised ?) (Altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~55°-60°, occasionally silicified, fracture along schistosity few fracture@~20° w.rt CA oxidation along fracture		
MTB-15	36.50	37.80	1.35	1.30	0.59	43.70	Greenish grey	Quartz biotite chlorite schist (kaolinised ?) (Altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~55°-60°, fractured along schistosity, thin irregular hairline fracture filled with clay (?) material		
MTB-15	37.80	39.00	1.14	1.20	0.47	41.23	Greenish grey	Quartz biotite chlorite schist (kaolinised ?) (Altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~55°-60°, fractured along schistosity, thin irregular hairline fracture filled with clay (?) material		
MTB-15	39.00	41.00	1.92	2.00	0.43	22.40	Greenish grey	Quartz biotite chlorite schist kaolinised ? (Altered Metabasic schist)	Hard & compact	Very fine to fine grained	Strongly schistosed @~60°, fractured along schistosity, highly fractured /faulted (?) zone at bottom, slickenlines, crushed core		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-15	41.00	42.50	1.51	1.50	0.29	19.21	Greenish grey	Quartz biotite chlorite schist kaolinised ? (Altered Metabasic schist)	Hard & compact	Very fine to fine grained	Moderate to strongly schistosed, highly fractured & fragmented & broken core at top, oxidation along fracture zone silicified at bottom		
MTB-15	42.50	43.50	1.04	1.00	0.33	31.73	Greenish grey	Quartz biotite chlorite schist (Altered Metabasic schist) (silicified at place)	Hard & compact	Fine grained	Moderate to strongly schistosed @~60°, fracture @~20°-30°, oxidation along fracture	Fine stringers & dissemination of Chalcopyrite Pyrite	
MTB-15	43.50	45.00	1.44	1.50	0.68	47.22	Greenish grey	Quartz biotite chlorite schist (Altered Metabasic schist) (silicified at place)	Hard & compact	Fine grained	Moderately schistosed @~60°, fractured along schistosity, multiple low angle fracture(~20°-40°) oxidation along low angle fracture	Very rare stringers & dissemination of Chalcopyrite Pyrite (Not worth sampling)	↑HQ
MTB-15	45.00	46.00	1.04	1.00	0.18	17.31	Greenish grey	Quartz biotite chlorite schist (Altered Metabasic schist) (silicified at place)	Hard & compact	Fine grained	Moderately schistosed @~55°-60°, fractured along schistosity, few irregular fracture, fragmented core,	Very rare stringers & dissemination of Chalcopyrite Pyrite (Not worth sampling)	↓ NQ
MTB-15	46.00	49.00	2.99	3.00	1.53	51.17	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~60°, mostly fractured along schistosity, low angle fracture along with fracture parallel to CA, fragmented core, oxidation along fracture	Minor stringers & rare dissemination specs of Chalcopyrite & Pyrite (Not worth sampling)	
MTB-15	49.00	52.00	2.94	3.00	0.69	23.47	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~60°, mostly fractured along schistosity, low angle fracture along with fracture parallel to CA, fragmented core, oxidation along fracture	Rare isolated spces & stringers of Chalcopyrite (Not worth sampling)	
MTB-15	52.00	53.50	1.08	1.50	0.61	56.48	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~60°, fractured along schistosity,	Stringers & veins of Pyrite & Chalcopyrite along schistosity	
MTB-15	53.50	54.70	1.52	1.20	0.10	6.58	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~55°-60°, irregular fracture parallel to CA, carbonate filling along fracture	Stringers & veins (fracture filling) of Pyrite along with Chalcopyrite	
MTB-15	54.70	55.40	0.60	0.70	0.00	0.00	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed, highly fractured & fragmented core, fracture parallel to CA	Stringers of Pyrite along with minor Chalcopyrite	
MTB-15	55.40	56.30	0.86	0.90	0.37	43.02	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~60°, fragmented core, at bottom	Veins & minor dissemination of Chalcopyrite along schistosity	
MTB-15	56.30	57.50	0.86	1.20	1.05	122.09	Greenish grey	Quartz biotite chlorite schist (silicified) (Altered Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~50°-60°, fracture @~20°-40°, w.rt CA limonitic stain along fracture also fracture along schistosity plane	Stringers of Chalcopyrite along schistosity	
MTB-15	57.50	59.30	1.17	1.80	0.89	76.07	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~55°-60°, thin schistosity parallel to quartz vein	Very minor stringers & dissemination specs of Chalcopyrite along schistosity (Not worth sampling)	
MTB-15	59.30	59.50	0.23	0.20	0.10	43.48	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~55°-60°, thin schistosity parallel to quartz vein	Very minor stringers & dissemination specs of Chalcopyrite along schistosity (Not worth sampling)	
MTB-15	59.50	60.50	1.06	1.00	0.66	62.26	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Moderately schistosed @~55°-60°, fractured along schistosity, thin quartz vein parallel to schistosity	Veins of Pyrite , Pyrrhotite along schistosity (Not worth sampling)	
MTB-15	60.50	61.50	1.00	1.00	0.81	81.00	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Very fine grained	Moderately schistosed @~50°-55°, few irregular fracture, schistosity, parallel quartz vein		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-15	61.50	63.56	2.06	2.06	1.63	79.13	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Moderately schistosed @~50°, fracture parallel to schistosity, sheared quartz veins		
MTB-15	63.50	64.00	0.54	0.50	0.18	33.33	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Schistosed, fracture @~40°,	Very rare specs of sulfides (Not worth sampling)	
MTB-15	64.00	66.00	2.05	2.00	1.61	78.54	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Moderately schistosed @~50°, few fracture parallel to schistosity,fracture@~40°, @~64.50, schistosity parallel quartz vein		
MTB-15	66.00	66.50	0.50	0.50	0.43	86.00	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Fine grained	Moderately schistosed @~50°, quartz veins		
MTB-15	66.50	68.00	1.50	1.50	1.14	76.00	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Moderate to strongly schistosed @~50°, at place silicified /granitized (?), thin pseudotachylite veins @~67.00 fracture parallel to schistosity	Isolated veins of Chalcopyrite @~67.90	
MTB-15	68.00	69.50	1.52	1.50	1.08	71.05	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Moderate to strongly schistosed @~50°, at place silicified /granitized (?), thin pseudotachylite veins, fracture parallel to schistosity	Stringers of Chalcopyrite along schistosity	
MTB-15	69.50	72.50	2.83	3.00	2.31	81.63	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine grained	Strongly schistosed @~50°, multiple fracture/splitting along schistosity, thin quartz veins parallel to schistosity	Minor isolated stringers of Chalcopyrite along schistosity	
MTB-15	72.50	75.50	3.02	3.00	1.80	59.60	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine to fine grained	Strongly schistosed @~50°-55°, multiple fracture parallel to schistosity,fragmented core thin quartz veins	Minor to rare specs of Chalcopyrite along schistosity (Not worth sampling), Veins of Magnetite	
MTB-15	75.50	77.50	2.00	2.00	0.95	47.50	Greenish grey to grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) + quartz vein	Hard & compact	Very fine to fine grained	Strongly schistosed @~50°-55°, fracture parallel to schistosity low angle fracture (~20°-30°) @ 76.40, 77.30, thin quartz veins parallel to schistosity	Stringers of Pyrite & Chalcopyrite along schistosity, thin Magnetite veins and patches	
MTB-15	77.50	80.50	3.00	3.00	2.34	78.00	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) occasionally silicified	Hard & compact	Fine grained	Strongly schistosity @~50°-55°, few fractures parallel to schistosity low angle fracture (~30°) @~78.80 quartz vein parallel to schistosity	Stringers & fracture filling massive veins of Chalcopyrite, thin Magnetite veins and patches	
MTB-15	80.50	83.50	3.00	3.00	2.49	83.00	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) occasionally silicified	Hard & compact	Fine grained	Moderately schistosed @~50° occasionally massive silicified & altered (?) multiple fracture along schistosity	Stringers & fracture filling massive veins of Chalcopyrite, few disseminated magnetite grains	
MTB-15	83.50	85.50	2.03	2.00	1.38	67.98	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) occasionally silicified	Hard & compact	Fine grained	Moderately schistosed @~50° occasionally massive silicified & altered (?) multiple fracture along schistosity	Minor thin stringers of Chalcopyrite along schistosity, disseminated magnetite grains/specs	
MTB-15	85.50	88.50	2.93	3.00	2.14	73.04	Greenish grey	Quartz biotite chlorite schist ± amphibole (Metabasic schist) occasionally silicified	Hard & compact	Fine grained	Moderately schistosed @~50°, multiple splilting /fracture parallel to schistosity, silicified / granitized (?) at bottom, low angle fractures are occasionally filled with carbonate vein	Thin to thick stringers of Chalcopyrite along schistosity, occasional thin magnetite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-15	88.50	91.50	3.00	3.00	1.67	55.67	Grey to pink grey	Granite Gneiss with bands of Metabasic schist	Hard & compact	Fine grained	Massive to feebly foliated @~50°, highly fragmented along schistosity brecciated zone @~89.90-90.40	Thick fracture /brecciated filling massive vein & stringers of Chalcopyrite along with Pyrite, Pyrrhotite and Magnetite, also dissemination of magnetite throuhout the core length	
MTB-15	91.50	94.50	3.00	3.00	2.06	68.67	Grey	Granite Gneiss	Very hard & compact	Fine to medium grained	Massive to feebly foliated, thin micaceous intercalations, multiple fracture @~60°-80°,	Minor thin stringers of Chalcopyrite along schistosity & veins, veins and dissemination magnetite grains/specs	
MTB-15	94.50	97.50	3.00	3.00	2.38	79.33	Grey	Granite Gneiss	Very hard & compact	Fine to medium grained	Massive to feebly foliated, thin micaceus intercations, irregular fracture, fragmented core, low angle fracture	Fracture filling veins of Chalcopyrite @~94.50-94.10 & other places, thin magnetite veins	
MTB-15	97.50	100.00	3.00	2.50	2.23	74.33	Grey	Granite Gneiss	Very hard & compact	Fine grained	Massive,few fracture @~60°-80°, quartz carbonate vein		
MTB-16	0.00	9.00	0.27	9.00			Yellow brown	Top soil	Loose & conesive				
MTB-16	9.00	10.00	0.50	1.00			Yellow brown	Top soil + fragments of quartzite	Loose & conesive	Fine grained	Quartzite is massive & fragmented oxidised		
MTB-16	10.00	13.00	0.40	3.00			Yellow brown	Top soil + fragments of quartzite	Loose & conesive	Fine grained	Quartzite is massive & fragmented oxidised		HQ
MTB-16	13.00	16.00	1.75	3.00			Yellow brown	Soil + oxidised fragments of quartzite at top	Loose & conesive		Quartzite is massive, fragmented & oxidised , limonite hairline in soil		HQ
MTB-16	16.00	19.00	1.20	3.00			Yellow greenish grey	Soil + oxidised schistosed rock	Loose & conesive	Fine grained			HQ
MTB-16			0.60				Greenish grey	Oxidised basic rock	Moderate hard & compact	Fine grained	Schistosed , highly fractured & fragmented		
MTB-16	19.00	22.00	2.30	3.00			Greenish grey	Oxidised basic schist /rock	Moderate hard & compact	Fine grained	Feeble schistosity , highly irregularly fractured , also fracture parallel to CA, highly fragmented & broken core, core loss		HQ
MTB-16	22.00	25.00	2.90	3.00			Greenish grey	Oxidised basic schist /rock	Moderate hard & compact	Fine grained	Feeble schistosity , highly irregularly fractured , also fracture parallel to CA, highly fragmented & broken core, core loss		
MTB-16	25.00	28.00	2.84	3.00	0.64	22.54	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole (Metabasic schist)	Hard & compact	Fine grained	Feeble schistosity , at place massive , highly fractured, fragmented & broken core at top , oxidation & limonitic stain along fracture		
MTB-16	28.00	31.00	2.20	3.00	0.00	0.00	Greenish grey	Garnetiferous - quartz - biotite chlorite schist ± amphibole (Metabasic schist) + bands of partially formed soil	Moderate hard & compact	Fine grained	Strongly schistosed @~40°-50°, fully to partially oxidised at place. highly fractured & fragmented & broken core, core loss		
MTB-16	31.00	34.00	2.60	3.00	0.80	30.77	Greenish grey	Garnetiferous - quartz - feldspathic - biotite - chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, highly irregularly fracture, also fractured along schistosity , fragmented & broken core at top , oxidation along fracture		
MTB-16	34.00	37.00	3.04	3.00	0.69	22.70	Greenish grey	Quartz - feldspathic - biotite - chlorite schist ± amphibole ± Garnetiferous (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed 20°-30°, highly fracture @~50°-70°, occasionally fragmented core, oxidation along fracture place , sheared quartz veins		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-16	37.00	40.00	3.09	3.00	0.83	26.86	Greenish grey	Garnetiferous - quartz - biotite - chlorite schist ± amphibole (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed , large garnet porphyroblast , highly fracture, fragmented & broken core strongly oxidised along fracture zone @~37.80-38.63		Gradletional contact with the metabasic schist
MTB-16	40.00	43.00	2.78	3.00	0.50	17.99	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~30°-40°, large garnet porphyroblast , highly fracture @~20°-30°, slicken lines at bottom , fragmented & broken core, oxidation along fracture		
MTB-16	43.00	46.00	0.97	0.99	0.99	33.67	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed , large garnet porphyroblast , highly fractured		
MTB-16			1.97	2.01			Greenish grey	Quartz biotite chlorite schist ± amphibole ± Garnetiferous (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @ 40°-50°, fractured along schistosity , fragmented core, quartz veins		
MTB-16	46.00	49.00	0.92	0.95	0.84	28.77	Greenish grey	Quartz biotite chlorite schist ± amphibole ± Garnetiferous (altered Metabasic schist)	Moderate hard & compact occasionally friable	Fine grained	Strongly schistosed , fractured & fragmented , highly oxidised friable core		
MTB-16			2.00	2.05			Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed , large garnet porphyroblast , clusters fractured along schistosity , folded quartz veins		
MTB-16	49.00	52.00	3.00	3.00	1.60	53.33	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist (altered) + quartz veins	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~40°, wavy schistosity , fractured along schistosity , also few irregular fracture at low angle, oxidation along fracture		
MTB-16	52.00	55.00	3.00	3.00	2.04	68.00	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist (altered) + quartz veins	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~40°, wavy schistosity , fractured along schistosity , also few irregular fracture at low angle, oxidation along fracture		
MTB-16	55.00	58.00	3.09	3.00	1.07	34.63	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist (altered) + quartz veins	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~45°-50°, highly fracture & fragmented & broken core @ 57.00 - 58.00 , low angle fracture (~0°-10°)		
MTB-16	58.00	61.00	2.80	3.00	0.84	30.00	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist (altered) + quartz veins (altered & silcified)	Hard & compact	Fine grained to coarse grained	Strongly schistosed @ 30°-50°, crenulations , micro-foldings , highly fracture at low angle @~10°-20° @ 59.40-69.40 fragmented core , quartz veins	Rare spces of sulfides (Not worth sampling)	
MTB-16	61.00	64.00	2.00	2.00	1.30	43.33	Greenish grey with pink patches	Garnetiferous quartz mica chlorite schist (altered) + quartz veins (altered & silcified)	Hard & compact	Fine grained to coarse grained	Strongly schistosed @ 40°-50°, fractured along schistosity , silicified , sheared & brecciated quartz veins	Stringers & veins of Pyrite	
MTB-16			1.00	1.00		0.00	Green	Biotite chlorite schist ± amphibole	Hard & compact	Fine grained	Strongly schistosed @~30°, fragmented core , thin quartz veins	Stringers & veins of Pyrite	Sharp contact
MTB-16	64.00	67.00	3.00	3.00	2.14	71.33	Greenish grey	Quartz chlorite schist ± biotite ± amphibole (silicified) + bands of quartz biotite schist	Hard & compact	Fine grained	Strongly schistosed @~50°, at 66 - 67.00 schistosity angle is very low @~ 10°- to CA, fragmented core, multiple fracture @~ 40°-45° @ 64-65.00		

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-16	67.00	70.00	2.98	3.00	1.06	35.57	Grey to greenish grey	Quartz biotite chlorite schist ± amphibole (silicified)	Very hard & compact	Fine grained	Feably schistosed , occasionally massive , highly irregularly fractured & fragmented core, thin folded quartz veins	Minor stringers & spces of Pyrite	
MTB-16	70.00	73.00	2.94	3.00	2.40	81.63	Greenish grey	Quartz biotite chlorite schist ± amphibole (altered)	Hard & compact	Very fine grained	Massive to feably schistosed , fracture @~ 70°-80°,	Minor stringers & spces of Pyrite	
MTB-16	73.00	76.00	1.10	1.13	1.10	37.67	Grey	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Stronlgy schistosed , large garnet porphyroblast , fragmented core,	Replacement of sulfides stringers minor very small spces of sulfides (Not worth sampling)	
MTB-16			1.82	1.87			Grey	Quartzite ± biotite ± chlorite	Very hard & compact	Fine grained	Massive to feably schistosed , highly fractured & fragmented , multiple low angle fracture @20°		
MTB-16	76.00	79.00	2.96	3.00	1.37	46.28	Grey to pink patches	Garnetiferous quartzite + bands of Garnetiferous quartz mica chlorite schist	Hard & compact	fine grained	Massive to feably schistosed fractures at irregular angle , fragmented core,		
MTB-16	79.00	82.00	2.99	3.00	1.25	41.81	Grey to pink patches	Intercalations between Garnetiferous quartz mica chlorite schist & Garnetiferous quartzite	Hard & compact	Fine grained to coarse grained	Massive to strongly schistosed @~ 50°-55°, fractured along schistosity , low angle fracture (~20°) @ 80.30, fragmented core,		
MTB-16	82.00	85.00	0.50	0.50	0.20	40.00	Grey to pink patches	Garnetiferous quartz mica chlorite schist	Hard & compact	Fine grained to coarse grained	Strongly schistosed @~50°, fracture & fragmented core,		
MTB-16			2.49	2.50			Grey	Garnetiferous quartzite (banded)	Hard & compact	Fine grained	Massive , highly fractured @~40°-55°, highly fragmented & broken core, oxidised along fracture (limonite stain)		
MTB-16	85.00	88.00	2.93	3.00	1.16	39.59	Grey	Garnetiferous quartzite (banded)	Hard & compact	Fine grained	Massive , highly fractured @~40°-55°, highly fragmented & broken core, oxidised along fracture (limonite stain)		
MTB-17	0.00	6.00	0.22	6.00			Yellow	Top soil	Loose & cohesive				
MTB-17	6.00	12.00	0.30	6.00			Yellow	Top soil	Loose & cohesive				Fault zone (?)
MTB-17	12.00	13.00	0.60	1.00			Yellow	Top soil	Loose & cohesive				
MTB-17	13.00	16.00	1.45	3.00			Yellow	Top soil	Loose & cohesive				
MTB-17	16.00	19.00	0.88	3.00			Yellow grey	Top soil	Loose & cohesive				
MTB-17	19.00	22.00	0.60	3.00			Yellow brown	Top soil	Loose & cohesive				
MTB-17	22.00	25.00	1.02	3.00			Yellow	Soil	Loose & cohesive		At place friable		
MTB-17	25.00	28.00	0.80	3.00			Brownish grey	Soil + pebbles of quartzite	Soft loose & cohesive				
MTB-17	28.00	31.00	1.03	3.00			Brownish grey	Soil + pebbles of quartzite	Soft loose & cohesive		At place friable		
MTB-17	31.00	34.00	0.37	3.00			Brownish grey	Soil + pebbles of quartzite	Soft loose & cohesive		At place friable		
MTB-17	34.00	37.00	0.40	3.00			Grey	Soil + pebbles of quartzite	Loose & friable				
MTB-17	37.00	40.00	0.37	3.00			Yellow grey	Oxidised pebble, boulders of quartzite	Hard & fragmented		Highly fragmented		
MTB-17	40.00	43.00	0.38	3.00			Yellow grey	Soil + fragmented quartz pebbles & boulders	Hard to soft, loose , friable		Highly fragmented		
MTB-17	43.00	46.00	0.20	3.00			Yellow	Soil + fragmented oxidised rock	Soft cohesive to loose at place		Highly fragmented		
MTB-17	46.00	49.00	0.29	3.00			Yellow brown	Highly oxidised schistosed rock + soil	Soft cohesive to loose at place		Highly fragmented		
MTB-17	49.00	52.00	0.83	3.00			Yellow brown	Soil + highly oxidised schistosed rock fragments	Soft cohesive to loose at place	Fine grained	Fragmented, friable		
MTB-17	52.00	55.00	1.00	3.00			Light grey	Soil + quartz boulders	Soft loose & cohesive to friable				
MTB-17	55.00	58.00	0.76	3.00			Light grey	Soil + quartz boulders	Soft loose & cohesive to friable				

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-17	58.00	61.00	0.42	0.88			Grey	Oxidised Metabasic rock/schist ?	Soft compact	Fine grained	Massive to feebly schistosed, fractured		
MTB-17			0.71	1.49			Brown grey	Loose sendy soil	Loose & friable				
MTB-17			0.30	0.63			Grey white	Quartz vein	Hard & compact	Very fine grained	Massive, highly fractured & fragmented		
MTB-17	61.00	64.00	1.22	3.00			Greenish grey	Highly oxidised schistosed Metabasic rock + partially formed soil	Moderate hard to soft compact	Fine grained	Massive to feebly schistosed, highly oxidised, highly fractured & fragmented		Crused core (?)
MTB-17	64.00	67.00	1.12	3.00			Greenish grey	Highly oxidised schistosed Metabasic rock + partially formed soil	Moderate hard to soft compact	Fine grained	Massive to feebly schistosed, highly fractured & fragmented highly oxidised /weathered	Fractured filling massive patches & veins of Chalcopyrite	Fault zone (?)
MTB-17	67.00	70.00	0.35	3.00			Yellow	Soil	Loose & friable				Fault zone (?)
MTB-17	70.00	73.00	0.82	3.00			Greenish grey	Partially to fully oxidised Metabasic schist + soil band	Hard & compact	Fine grained	Schistosed, highly fractured & fragmented, crushed core (?) slicken lines	Stringers of Chalcopyrite along some fragmented core	HQ↑ ↓NQ
MTB-17	73.00	76.00	0.32	3.00				Oxidised schistosed rock + quartz vein	Hard fragmented	Fine grained	Highly fragmented, core loss		
MTB-17	76.00	79.00	2.46	3.00	0.58	23.58	Pink grey	Granitoid rock (Granite gneiss)	Hard & compact	Fine grained	Strongly foliated @~30°, highly fractured & fragmented, broken core, 2 sets of fracture @~35°-40° & ~50°-55° conjugate to each other, brecciated zone at place		
MTB-17	79.00	82.00	2.80	3.00	0.56	20.00	Pink to pinkish grey at place	Granitoid rock (Granite gneiss)	Hard & compact	Fine grained	Foliated @~ 40°, highly fractured, fractured along @~50° & 40° few irregular fracture, highly fragmented core	Isolated Magnetite veins or patches @ 81.20	K-feldsper rich granitoid rock
MTB-17	82.00	85.00	2.99	3.00	1.40	46.82	Pink to pinkish grey	Granite gneiss + bands of quartz biotite chlorite schist at bottom	Hard & compact	Fine- medium grained	Strongly foliated @~45°, fracture parallel to foliated, also fracture @~50° oblique to foliation place, highly fragmented broken core	Stringers of Chalcopyrite along schistosity at quartz biotite chlorite schist 0.10cm @ 0.30-0.50%	
MTB-17	85.00	88.00	2.83	3.00	0.50	17.67	Grey	Granite gneiss [at place altered (chloritised)] + bands of chlorite biotite bands	Hard & compact	Fine grained	Strongly foliated @~40-50°, highly fractured & fragmented, low angle fracture, broken core, fracture angle @~ 40°-50°, occasionally irregular in nature	Rare occasional of Magnetite veins	
MTB-17	88.00	91.00	1.70	1.78	0.47	16.38	Grey	Granite gneiss [at place altered (chloritised)] + bands of chlorite biotite bands	Hard & compact	Fine grained	Strongly foliated @~40-50°, highly fractured & fragmented, low angle fracture, broken core, fracture angle @~ 40°-50°, occasionally irregular in nature	Rare occasional of Magnetite veins	
MTB-17			1.17	1.22			Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist) (at place altered)	Hard & compact	Fine grained	Strongly foliated /schistosed @~50°, highly fractured along schistosity, occasionally irregular fractured, fragmented core, slicken lines, silicified at place		
MTB-17	91.00	94.00	2.90	3.00	0.65	22.41	Greenish grey	Quartz feldspathic biotite chlorite schist (Metabasic schist) (at place altered) + silicified /granitized (?) 91.63 - 92.90	Hard & compact	Fine grained	Strongly foliated @~ 50°, highly fragmented along schistosity, fracture parallel to CA, highly fragmented & broken core @ 91.70-92.50	Few stringers & spces of Chalcopyrite (Not worth sampling)	
MTB-17	94.00	97.00	2.89	3.00	1.92	66.44		Quartz feldspathic biotite chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~50°, fractured along schistosity, crenulation fragmented core	Stringers & veins of Chalcopyrite along with pyrrnotite	

Bh.No.	From (m)	To (m)	Rec. Thick (m)	Ext. Len	RQD L	RQD (%)	Colour	Lithology	Physical Properties	Grain size	Sturcture/Texture	Mineralogy	Remarks
MTB-17	97.00	100.00	2.84	3.00	0.80	28.17	Greenish grey	Quartz feldspathic biotite chlorite schist	Hard & compact	Fine grained	Strongly schistosed @~50°, highly fractured & fragmented, broken core, slicken lines, potassic altered	Few minor stringers of Chalcopyrite Magnetite patches	
MTB-17	100.00	103.00	2.85	3.00	1.38	48.42	Grey	Biotite chlorite quartz schist (silicified basic schist ?)	Hard & compact	Fine grained	Moderately schistosed @~50°, highly fracture @~40°- 60°, occasionally fragmented core, brecciated quartz veins	Massive patches of Chalcopyrite @~ 100.30-100.40 Magnetite veins & patches	
MTB-17	103.00	106.00	2.50	2.50	1.89	63.00	Grey	Biotite chlorite quartz schist / quartzite	Hard & compact	Fine grained	Feeble schistosity @~45°-50°, mostly fractured along schistosity, few conjugate fracture	Massive patches of Chalcopyrite along with occasionally stringers , associated with pyrrnotite & Magnetite	
MTB-17			0.50	0.50			Greenish grey	Quartz biotite chlorite schist (Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°, fractured along schistosity, brecciated quartz veins	Massive Magnetite vein parallel to schistosity at bottom	
MTB-17	106.00	109.00	2.89	3.00	1.67	57.79	Greenish grey	Quartz biotite chlorite schist (Metabasic schist) (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @~50°-55°, multiple fracture parallel to schistosity, altered & silicified at place few irregular fracture	Minor Magnetite patches / veins	
MTB-17	109.00	112.00	2.93	3.00	2.13	72.70	Greenish grey	Quartz biotite chlorite schist + quartz veins (accasionally silicified) (altered Metabasic schist)	Hard & compact	Fine grained	Strongly schistosed @ variable angle due to microfolding/crenulations, fractured along schistosity, schistosity parallel quartz veins fragmented at bottom	Veins of Pyrite & Chalcopyrite at bottom, also occasionally Magnetite patches	
MTB-17	112.00	115.00	2.83	3.00	1.63	57.60	Greenish grey	Quartz feldspathic biotite chlorite rock ± amphybole (Metabasic schist /rock (silicified) , quartz veins	Hard & compact	Fine grained	Massive to very feeble foliation at place multiple irregular fracture @~ 35°-50°, occasionally fragmented core, brecciated quartz vein at top	Massive Chalcopyrite , Pyrrhotite , along with massive Magnetite, Magnetite grains distributed throughout the core	
MTB-17	115.00	118.00	2.99	3.00	2.35	78.60	Greenish grey	Quartz feldspathic biotite chlorite rock ± amphybole (Metabasic schist /rock (silicified) , quartz veins + bands of quartzite @ ~116.00 - 116.50	Hard & compact	Fine grained	Massive fracture @~40°-50°, occasionally silicified,	Patches of massive Magnetite	
MTB-17	118.00	121.00	2.99	3.00	2.27	75.92	Grey	Intercalation of quartzite & massive basic rock intrusive/amphibolite	Hard & compact	Fine grained	Massive, irregular fracture @~50°-60°, occasionally fragmented core	Few patches of Magnetite along with rare stringers of Chalcopyrite	
MTB-17	121.00	123.00	2.24	2.00	1.94	86.61	Grey	Biotite chlorite quartzite + bands of basic rock intrusive/amphibolite	Hard & compact	Fine grained	Massive, irregular fracture @~50°-60°, occasionally fragmented core	Few patches of Magnetite along with rare stringers of Chalcopyrite	

Details of Summarized lithologs of boreholes drilled by MECL in Thakurdih Area-1 Block, District - East Singhbhum, Jharkhand

BH. No.	Depth (m)			Lithology
	From	To	Rec.Thick.	
MTB-01	0.00	25.00	25.00	Soil
MTB-01	25.00	31.00	6.00	Oxidised/Weathered schistosed rock
MTB-01	31.00	108.00	77.00	Metabasic schist
MTB-02	0.00	6.00	6.00	Soil
MTB-02	6.00	16.00	10.00	Oxidised/Weathered schistosed rock
MTB-02	16.00	75.00	59.00	Metabasic schist
MTB-02	75.00	105.00	30.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-03	0.00	13.00	13.00	Soil
MTB-03	13.00	16.00	3.00	Oxidised/Weathered schistosed rock
MTB-03	16.00	36.60	20.60	Metabasic schist
MTB-03	36.60	115.00	78.40	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-04	0.00	19.00	19.00	Soil
MTB-04	19.00	22.00	3.00	Oxidised/Weathered schistosed rock
MTB-04	22.00	41.50	19.50	Metabasic schist
MTB-04	41.50	97.00	55.50	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-05	0.00	22.00	22.00	Soil
MTB-05	22.00	30.00	8.00	Oxidised/Weathered schistosed rock
MTB-05	30.00	90.00	60.00	Metabasic schist
MTB-05	90.00	113.00	23.00	Granite Gneiss
MTB-06	0.00	13.00	13.00	Soil
MTB-06	13.00	16.00	3.00	Oxidised/Weathered schistosed rock
MTB-06	16.00	23.20	7.20	Quartzite
MTB-06	23.20	25.00	1.80	Oxidised/Weathered schistosed rock
MTB-06	25.00	31.00	6.00	Soil
MTB-06	31.00	42.00	11.00	Quartz feldspathic amphibole -biotite - chlorite schist (Altered and silicified basic
MTB-06	42.00	46.00	4.00	Metabasic schist
MTB-06	46.00	106.00	60.00	Quartz feldspathic amphibole -biotite - chlorite schist (Altered basic schist)
MTB-06	106.00	109.00	3.00	Metabasic schist
MTB-06	109.00	115.00	6.00	Micaceous Quartz schist/Quartzite
MTB-06	115.00	139.00	24.00	Quartz feldspathic chlorite mica schist (silicified & altered)±Amphibole
MTB-07	0.00	10.00	10.00	Soil
MTB-07	10.00	11.25	1.25	Oxidised/Weathered schistosed rock
MTB-07	11.25	27.00	15.75	Metabasic schist
MTB-07	27.00	37.90	10.90	Amphibolite/Basic intrusive?
MTB-07	37.90	46.00	8.10	Quartz biotite chlorite muscovite /sericite schist ±Amphibole (Altered Basic schist?)
MTB-07	46.00	112.00	66.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-08	0.00	19.00	19.00	Soil +Pebbles of Quartzite
MTB-08	19.00	35.00	16.00	Oxidised/Weathered schistosed rock
MTB-08	35.00	64.00	29.00	Quartz feldspathic amphibole -biotite - chlorite schist (Altered basic schist)± Garnet
MTB-08	64.00	76.00	12.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein + Bands of Metabasic schist
MTB-08	76.00	101.50	25.50	Quartz-feldspathic biotite chlorite schist ±Amphibole (Altered Basic schist?)
MTB-08	101.50	175.00	73.50	Amphibole - biotite - chlorite schist ± epidote (?) (altered Metabasic schist?)
MTB-08	175.00	202.00	27.00	Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized)
MTB-08	202.00	205.40	3.40	Magnetite bearing quartz - feldspathic mica schist
MTB-08	205.40	215.00	9.60	Granite Gneiss
MTB-09	0.00	10.00	10.00	Soil
MTB-09	10.00	16.00	6.00	Oxidised/Weathered schistosed rock
MTB-09	16.00	61.00	45.00	Metabasic schist
MTB-09	61.00	130.00	69.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein + Bands of Metabasic schist
MTB-10	0.00	13.00	13.00	Soil
MTB-10	13.00	22.00	9.00	Oxidised/Weathered schistosed rock

BH. No.	Depth (m)			Lithology
	From	To	Rec.Thick.	
MTB-10	22.00	103.00	81.00	Metabasic schist/Altered metabasic schist (?)
MTB-10	103.00	178.00	75.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-10	178.00	180.00	2.00	Garnet + kya banded quartzite
MTB-11	0.00	10.00	10.00	Soil
MTB-11	10.00	16.00	6.00	Oxidised/Weathered schistosed rock
MTB-11	16.00	67.00	51.00	Metabasic schist/Altered metabasic schist (?)
MTB-11	67.00	125.50	58.50	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-11	125.50	126.50	1.00	Amphibolite/Basic intrusive?
MTB-11	126.50	127.30	0.80	Granet quartzite
MTB-11	127.30	129.00	1.70	Amphibolite/Basic intrusive?
MTB-11	129.00	149.00	20.00	Garnet + kya banded quartzite
MTB-11	149.00	158.87	9.87	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-11	158.87	170.00	11.13	Granet + kya banded quartzite
MTB-12	0.00	10.00	10.00	Soil
MTB-12	10.00	40.50	30.50	Metabasic schist
MTB-12	40.50	52.50	12.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-12	52.50	77.00	24.50	Quartz - feldspathic - biotite - chlorite schist±Amphibole (Altered metabasic schist)
MTB-12	77.00	86.50	9.50	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-12	86.50	94.00	7.50	Granet + kya banded quartzite
MTB-12	94.00	95.00	1.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-13	0.00	12.50	12.50	Soil
MTB-13	12.50	21.50	9.00	Oxidised/Weathered schistosed rock
MTB-13	21.50	33.00	11.50	Metabasic schist/Altered metabasic schist (?)
MTB-13	33.00	64.00	31.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-13	64.00	66.00	2.00	Granet + kya banded quartzite
MTB-13	66.00	110.00	44.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)
MTB-14	0.00	6.00	6.00	Soil
MTB-14	6.00	10.00	4.00	Oxidised/Weathered schistosed rock
MTB-14	10.00	97.00	87.00	Metabasic schist/ Ocassionally altered metabasic schist + Bands of Amphibolite/Basic
MTB-14	97.00	200.00	103.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)
MTB-15	0.00	17.50	17.50	Soil +Pebbles/fragments of Quartzite
MTB-15	17.50	34.00	16.50	Oxidised/Weathered schistosed rock
MTB-15	34.00	57.50	23.50	Quartz - feldspathic - biotite - chlorite schist±Amphibole (Altered/silicified metabasic schist)
MTB-15	57.50	88.50	31.00	Metabasic schist+Qtz vein
MTB-15	88.50	100.00	11.50	Granite Gneiss
MTB-16	0.00	18.00	18.00	Soil + fragments of schistosed rock
MTB-16	18.00	25.00	7.00	Oxidised/Weathered schistosed rock
MTB-16	25.00	40.00	15.00	Metabasic schist/Ocasionally altered metabasic schist
MTB-16	40.00	44.00	4.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-16	44.00	47.00	3.00	Metabasic schist/Altered metabasic schist (?)
MTB-16	47.00	63.00	16.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-16	63.00	73.00	10.00	Quartz feldspathic amphibole -biotite - chlorite schist (Altered basic schist)± Garnet
MTB-16	73.00	74.00	1.00	Garnetiferous Qtz-Chl-Mica schist+Qtz vein
MTB-16	74.00	88.00	14.00	Granet + kya banded quartzite + Bands of Garnetiferous Qtz-Chl-Mica schist
MTB-17	0.00	61.00	61.00	Soil + Pebbles and Boulders of Quartzite, Qtz vein and oxidised schistosed rock
MTB-17	61.00	76.00	15.00	Oxidised/Weathered schistosed rock +bands of Soil zone in between
MTB-17	76.00	89.70	13.70	Granite Gneiss
MTB-17	89.70	118.00	28.30	Quartz feldspathic amphibole -biotite - chlorite schist (Altered and silicified basic
MTB-17	118.00	123.00	5.00	Chlorite-Mica Quartzite+Bands of Basic intrusive/Amphibolite

Details of the Chemical Analysis for Copper, Lead, Zinc, Nickel, Cobalt, Molybdenum, and Tungsten of Primary Samples of the borehoels drilled by MECL (Present G3 Exploration) in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
Borehole No: MTB-01												
1	MTB-01/01	41.50	42.00	0.49	0.50	0.01	<0.01	0.01	0.07	0.01	<0.01	<0.01
2	MTB-01/02	42.00	42.50	0.49	0.50	<0.01	<0.01	0.01	0.07	0.01	<0.01	<0.01
3	MTB-01/03	42.50	43.00	0.50	0.50	0.11	<0.01	0.01	0.12	0.01	<0.01	<0.01
4	MTB-01/04	43.00	43.50	0.50	0.50	0.05	<0.01	0.01	0.06	0.01	<0.01	<0.01
5	MTB-01/05	43.50	44.00	0.50	0.50	0.01	<0.01	0.01	0.04	0.01	<0.01	<0.01
6	MTB-01/06	44.00	44.50	0.50	0.50	0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
7	MTB-01/07	51.00	51.50	0.47	0.50	0.02	<0.01	0.01	0.04	0.01	<0.01	<0.01
8	MTB-01/08	51.50	52.00	0.47	0.50	0.11	<0.01	0.01	0.05	0.01	<0.01	<0.01
9	MTB-01/09	52.00	52.50	0.48	0.50	0.02	<0.01	0.01	0.03	0.01	<0.01	<0.01
10	MTB-01/10	52.50	53.00	0.48	0.50	0.02	<0.01	0.01	0.04	0.01	<0.01	0.01
11	MTB-01/11	53.00	53.50	0.48	0.50	0.05	<0.01	0.01	0.05	<0.01	<0.01	<0.01
12	MTB-01/12	53.50	54.00	0.48	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
13	MTB-01/13	54.00	54.50	0.48	0.50	0.10	<0.01	0.01	0.05	0.01	<0.01	<0.01
14	MTB-01/14	54.50	55.00	0.48	0.50	0.20	<0.01	0.01	0.03	0.01	<0.01	<0.01
15	MTB-01/15	55.00	55.50	0.49	0.50	0.01	<0.01	0.01	0.04	0.01	<0.01	<0.01
16	MTB-01/16	55.50	56.50	0.98	1.00	0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
17	MTB-01/17	56.50	57.50	0.98	1.00	0.08	<0.01	0.01	0.03	0.01	<0.01	<0.01
18	MTB-01/18	57.50	58.00	0.49	0.50	0.43	<0.01	0.01	0.04	0.01	<0.01	<0.01
19	MTB-01/19	58.00	58.50	0.50	0.50	0.17	<0.01	0.01	0.04	0.01	<0.01	<0.01
20	MTB-01/20	58.50	59.50	1.00	1.00	0.05	<0.01	0.01	0.03	0.01	<0.01	<0.01
21	MTB-01/21	65.50	66.50	1.00	1.00	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
22	MTB-01/22	66.50	67.00	0.50	0.50	0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
23	MTB-01/23	67.00	67.50	0.44	0.50	0.06	<0.01	0.01	0.05	0.01	<0.01	<0.01
24	MTB-01/24	67.50	68.50	0.88	1.00	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
25	MTB-01/25	71.50	72.50	0.96	1.00	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
26	MTB-01/26	72.50	73.00	0.48	0.50	0.02	<0.01	0.01	0.03	0.01	<0.01	<0.01
27	MTB-01/27	73.00	73.50	0.49	0.50	0.02	<0.01	0.01	0.03	0.01	<0.01	<0.01
28	MTB-01/28	73.50	74.00	0.49	0.50	0.04	<0.01	0.01	0.04	0.01	<0.01	<0.01
29	MTB-01/29	74.00	74.50	0.49	0.50	0.03	<0.01	0.01	0.03	0.01	<0.01	<0.01
30	MTB-01/30	97.00	98.00	0.99	1.00	0.02	<0.01	0.01	0.03	<0.01	<0.01	<0.01
31	MTB-01/31	98.00	99.00	0.99	1.00	0.04	<0.01	0.01	0.05	0.01	<0.01	<0.01
32	MTB-01/32	99.00	100.00	1.00	1.00	<0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
33	MTB-01/33	100.00	101.00	1.00	1.00	0.02	<0.01	0.01	0.03	<0.01	<0.01	0.01
34	MTB-01/34	101.00	102.00	1.00	1.00	0.12	<0.01	0.01	0.03	0.01	<0.01	<0.01
35	MTB-01/35	102.00	103.00	1.00	1.00	0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
Borehole No: MTB-02												
36	MTB-02/01	22.00	23.00	0.96	1.00	0.02	<0.01	0.01	0.11	0.01	<0.01	<0.01
37	MTB-02/02	23.00	23.50	0.48	0.50	0.06	<0.01	0.01	0.10	0.01	<0.01	<0.01
38	MTB-02/03	23.50	24.00	0.47	0.50	0.11	<0.01	<0.01	0.14	0.01	<0.01	<0.01
39	MTB-02/04	24.00	25.00	0.96	1.00	0.02	<0.01	0.01	0.07	0.01	<0.01	<0.01
40	MTB-02/05	63.00	64.00	0.97	1.00	0.04	<0.01	<0.01	0.03	0.01	<0.01	<0.01
41	MTB-02/06	64.00	64.50	0.48	0.50	0.04	<0.01	<0.01	0.04	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
43	MTB-02/08	65.00	65.50	0.48	0.50	0.07	<0.01	0.01	0.06	0.01	<0.01	0.01
44	MTB-02/09	65.50	66.00	0.47	0.50	0.27	<0.01	0.01	0.06	0.01	<0.01	<0.01
45	MTB-02/10	66.00	66.50	0.48	0.50	0.03	<0.01	<0.01	0.05	0.01	<0.01	<0.01
46	MTB-02/11	66.50	67.00	0.47	0.50	0.04	<0.01	0.01	0.05	0.01	<0.01	<0.01
47	MTB-02/12	67.00	67.50	0.48	0.50	0.03	<0.01	<0.01	0.04	0.01	<0.01	0.01
48	MTB-02/13	67.50	68.50	0.96	1.00	0.09	<0.01	0.01	0.06	0.01	<0.01	<0.01
49	MTB-02/14	79.00	80.00	0.86	1.00	0.15	<0.01	<0.01	0.03	0.01	<0.01	<0.01
50	MTB-02/15	80.00	80.50	0.43	0.50	0.19	<0.01	0.01	0.03	0.01	<0.01	0.01
51	MTB-02/16	80.50	81.00	0.43	0.50	0.40	<0.01	0.01	0.04	0.01	<0.01	<0.01
52	MTB-02/17	81.00	81.50	0.44	0.50	0.31	<0.01	<0.01	0.04	0.01	<0.01	<0.01
53	MTB-02/18	81.50	82.00	0.43	0.50	0.32	<0.01	0.01	0.04	0.01	<0.01	<0.01
54	MTB-02/19	82.00	82.50	0.50	0.50	0.81	<0.01	0.01	0.11	0.03	0.01	<0.01
55	MTB-02/20	82.50	83.00	0.50	0.50	0.26	<0.01	0.01	0.04	0.02	<0.01	0.01
56	MTB-02/21	83.00	83.50	0.50	0.50	0.11	<0.01	0.01	0.03	0.01	<0.01	<0.01
57	MTB-02/22	83.50	84.00	0.50	0.50	0.23	<0.01	0.01	0.04	0.01	<0.01	<0.01
58	MTB-02/23	84.00	84.50	0.50	0.50	0.46	<0.01	0.01	0.05	0.02	<0.01	0.01
59	MTB-02/24	84.50	85.00	0.50	0.50	0.42	<0.01	0.01	0.10	0.02	<0.01	<0.01
60	MTB-02/25	85.00	85.50	0.50	0.50	0.41	<0.01	0.01	0.08	0.03	0.01	<0.01
61	MTB-02/26	85.50	86.00	0.50	0.50	0.42	<0.01	0.01	0.06	0.02	<0.01	<0.01
62	MTB-02/27	86.00	86.50	0.50	0.50	0.25	<0.01	<0.01	0.03	0.02	<0.01	<0.01
63	MTB-02/28	86.50	87.00	0.50	0.50	0.27	<0.01	<0.01	0.03	0.01	<0.01	<0.01
64	MTB-02/29	87.00	88.00	0.88	1.00	0.04	<0.01	0.01	0.02	0.01	<0.01	<0.01
65	MTB-02/30	91.50	92.50	0.98	1.00	0.10	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
66	MTB-02/31	92.50	93.00	0.49	0.50	0.15	<0.01	0.01	0.02	0.01	<0.01	<0.01
67	MTB-02/32	93.00	93.50	0.49	0.50	0.28	<0.01	0.01	0.02	0.01	<0.01	<0.01
68	MTB-02/33	93.50	94.00	0.49	0.50	0.11	<0.01	0.01	0.02	0.01	<0.01	<0.01
69	MTB-02/34	94.00	94.50	0.50	0.50	0.32	<0.01	0.01	0.03	0.01	<0.01	<0.01
70	MTB-02/35	94.50	95.33	0.82	0.83	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
71	MTB-02/36	95.33	96.16	0.81	0.83	0.12	<0.01	0.01	0.03	0.01	<0.01	<0.01
72	MTB-02/37	96.16	96.66	0.49	0.50	0.19	<0.01	0.01	0.03	0.01	<0.01	<0.01
73	MTB-02/38	96.66	97.66	0.99	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
Borehole No: MTB-03												
74	MTB-03/01	34.36	35.36	1.00	1.00	0.05	<0.01	<0.01	0.04	0.01	<0.01	<0.01
75	MTB-03/02	35.36	35.86	0.50	0.50	0.04	<0.01	<0.01	0.05	0.01	<0.01	<0.01
76	MTB-03/03	35.86	36.36	0.50	0.50	0.06	<0.01	<0.01	0.04	0.01	<0.01	<0.01
77	MTB-03/04	36.36	36.86	0.50	0.50	0.14	<0.01	<0.01	0.07	0.01	<0.01	0.01
78	MTB-03/05	36.86	37.86	1.00	1.00	0.12	<0.01	<0.01	0.08	0.01	<0.01	<0.01
79	MTB-03/06	39.00	40.00	1.00	1.00	0.06	<0.01	<0.01	0.01	0.01	<0.01	<0.01
80	MTB-03/07	40.00	40.50	0.49	0.50	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
81	MTB-03/08	40.50	41.00	0.48	0.50	0.15	<0.01	<0.01	0.02	0.01	<0.01	<0.01
82	MTB-03/09	41.00	41.50	0.49	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
83	MTB-03/10	41.50	42.00	0.48	0.50	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
84	MTB-03/11	42.00	42.50	0.49	0.50	0.19	<0.01	<0.01	0.02	0.01	<0.01	<0.01
85	MTB-03/12	42.50	43.00	0.48	0.50	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
86	MTB-03/13	43.00	44.00	1.00	1.00	0.22	<0.01	0.01	0.02	0.01	0.01	<0.01
87	MTB-03/14	44.00	45.00	1.00	1.00	0.04	<0.01	0.01	0.01	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
89	MTB-03/16	49.50	50.50	0.96	1.00	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
90	MTB-03/17	50.50	51.00	0.48	0.50	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
91	MTB-03/18	51.00	51.50	0.48	0.50	0.33	<0.01	<0.01	0.03	0.01	<0.01	<0.01
92	MTB-03/19	51.50	52.00	0.48	0.50	0.86	<0.01	<0.01	0.03	0.02	<0.01	<0.01
93	MTB-03/20	52.00	52.50	0.49	0.50	0.56	<0.01	<0.01	0.04	0.02	<0.01	<0.01
94	MTB-03/21	52.50	53.00	0.48	0.50	0.94	<0.01	<0.01	0.03	0.01	<0.01	<0.01
95	MTB-03/22	53.00	53.50	0.49	0.50	0.07	<0.01	0.01	0.02	0.01	<0.01	<0.01
96	MTB-03/23	53.50	54.00	0.48	0.50	0.14	<0.01	0.01	0.01	0.01	<0.01	<0.01
97	MTB-03/24	54.00	55.00	0.97	1.00	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
98	MTB-03/25	55.00	55.50	0.51	0.50	0.06	<0.01	0.01	0.01	0.01	<0.01	<0.01
99	MTB-03/26	55.50	56.00	0.51	0.50	0.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
100	MTB-03/27	56.00	56.50	0.51	0.50	0.03	<0.01	0.01	0.03	0.02	<0.01	<0.01
101	MTB-03/28	56.50	57.50	1.02	1.00	<0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
102	MTB-03/29	57.50	58.00	0.51	0.50	0.13	<0.01	0.01	0.03	0.01	<0.01	<0.01
103	MTB-03/30	58.00	59.00	0.94	1.00	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
104	MTB-03/31	59.00	59.50	0.47	0.50	0.28	<0.01	<0.01	0.02	0.01	<0.01	<0.01
105	MTB-03/32	59.50	60.00	0.47	0.50	0.07	<0.01	0.01	0.02	0.01	<0.01	<0.01
106	MTB-03/33	60.00	60.50	0.47	0.50	0.11	<0.01	<0.01	0.02	0.01	<0.01	<0.01
107	MTB-03/34	60.50	61.50	0.99	1.00	0.07	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
108	MTB-03/35	61.50	62.50	1.04	1.00	0.15	<0.01	<0.01	0.02	0.01	<0.01	<0.01
109	MTB-03/36	62.50	63.00	0.52	0.50	0.24	<0.01	<0.01	0.05	0.02	<0.01	<0.01
110	MTB-03/37	63.00	64.00	1.04	1.00	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
111	MTB-03/38	64.00	65.00	1.00	1.00	0.19	<0.01	<0.01	0.03	0.01	<0.01	<0.01
112	MTB-03/39	65.00	66.00	1.00	1.00	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
113	MTB-03/40	66.00	67.00	1.00	1.00	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
114	MTB-03/41	67.00	68.00	1.01	1.00	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
115	MTB-03/42	68.00	69.00	1.01	1.00	0.10	<0.01	<0.01	0.03	0.01	<0.01	<0.01
116	MTB-03/43	69.00	70.00	1.01	1.00	0.13	<0.01	<0.01	0.03	0.01	<0.01	<0.01
117	MTB-03/44	70.00	71.00	0.98	1.00	0.21	<0.01	0.01	0.03	0.01	<0.01	<0.01
118	MTB-03/45	71.00	72.00	0.98	1.00	0.02	<0.01	0.03	0.02	0.01	<0.01	<0.01
119	MTB-03/46	72.00	73.00	0.98	1.00	0.05	<0.01	0.01	0.02	0.01	<0.01	<0.01
120	MTB-03/47	73.00	74.00	0.88	1.00	0.07	<0.01	<0.01	0.02	<0.01	<0.01	0.01
121	MTB-03/48	74.00	75.00	0.88	1.00	0.04	<0.01	<0.01	0.02	0.02	<0.01	<0.01
122	MTB-03/49	75.00	75.50	0.44	0.50	0.04	<0.01	<0.01	0.03	0.02	<0.01	<0.01
123	MTB-03/50	75.50	76.00	0.44	0.50	0.15	<0.01	<0.01	0.03	0.02	<0.01	<0.01
124	MTB-03/51	76.00	76.50	0.50	0.50	0.25	<0.01	<0.01	0.04	0.02	<0.01	<0.01
125	MTB-03/52	76.50	77.00	0.50	0.50	0.08	<0.01	<0.01	0.03	0.01	<0.01	<0.01
126	MTB-03/53	77.00	77.50	0.50	0.50	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
127	MTB-03/54	77.50	78.00	0.50	0.50	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
128	MTB-03/55	78.00	78.50	0.50	0.50	0.45	<0.01	<0.01	0.03	0.02	<0.01	<0.01
129	MTB-03/56	78.50	79.00	0.50	0.50	0.16	<0.01	<0.01	0.02	0.01	<0.01	0.01
130	MTB-03/57	79.00	79.40	0.40	0.40	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
131	MTB-03/58	79.40	79.80	0.40	0.40	1.34	<0.01	<0.01	0.03	0.02	<0.01	<0.01
132	MTB-03/59	79.80	80.80	1.00	1.00	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
133	MTB-03/60	80.80	81.20	0.40	0.40	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
134	MTB-03/61	81.20	81.60	0.40	0.40	0.52	<0.01	0.01	0.02	0.02	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
136	MTB-03/63	103.70	104.70	0.97	1.00	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
137	MTB-03/64	104.70	105.20	0.49	0.50	0.74	<0.01	<0.01	0.03	0.01	<0.01	<0.01
138	MTB-03/65	105.20	105.70	0.48	0.50	0.14	<0.01	<0.01	0.02	0.02	<0.01	<0.01
139	MTB-03/66	105.70	106.70	1.00	1.00	0.12	<0.01	0.01	0.02	0.01	<0.01	<0.01
Borehole No: MTB-04												
140	MTB-04/01	42.00	43.00	0.99	1.00	0.05	<0.01	<0.01	0.03	0.01	0.01	<0.01
141	MTB-04/02	43.00	43.50	0.49	0.50	0.33	<0.01	<0.01	0.03	0.01	<0.01	<0.01
142	MTB-04/03	43.50	44.00	0.48	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
143	MTB-04/04	44.00	44.50	0.49	0.50	0.08	<0.01	<0.01	0.03	0.01	<0.01	<0.01
144	MTB-04/05	44.50	45.50	0.97	1.00	0.04	<0.01	<0.01	0.03	0.01	<0.01	<0.01
145	MTB-04/06	45.50	46.00	0.49	0.50	0.27	<0.01	<0.01	0.03	0.01	<0.01	<0.01
146	MTB-04/07	46.00	47.00	0.95	1.00	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
147	MTB-04/08	49.00	50.00	1.00	1.00	0.14	<0.01	<0.01	0.02	0.01	<0.01	<0.01
148	MTB-04/09	50.00	50.50	0.50	0.50	0.21	<0.01	<0.01	0.03	0.01	<0.01	<0.01
149	MTB-04/10	50.50	51.00	0.50	0.50	0.46	<0.01	0.01	0.04	0.02	<0.01	<0.01
150	MTB-04/11	51.00	52.00	1.00	1.00	0.18	<0.01	<0.01	0.04	0.01	<0.01	<0.01
151	MTB-04/12	52.00	52.50	0.50	0.50	0.29	<0.01	0.01	0.06	0.02	<0.01	<0.01
152	MTB-04/13	52.50	53.00	0.50	0.50	0.41	<0.01	0.01	0.08	0.03	<0.01	<0.01
153	MTB-04/14	53.00	53.50	0.50	0.50	0.24	<0.01	<0.01	0.03	0.01	<0.01	<0.01
154	MTB-04/15	53.50	54.00	0.50	0.50	0.26	<0.01	<0.01	0.01	0.01	<0.01	<0.01
155	MTB-04/16	54.00	54.50	0.50	0.50	0.29	<0.01	<0.01	0.13	0.04	0.01	<0.01
156	MTB-04/17	54.50	55.00	0.50	0.50	0.89	<0.01	<0.01	0.14	0.04	0.01	<0.01
157	MTB-04/18	55.00	55.50	0.50	0.50	0.77	<0.01	0.01	0.12	0.03	0.01	<0.01
158	MTB-04/19	55.50	56.00	0.50	0.50	0.11	<0.01	<0.01	0.05	0.02	<0.01	<0.01
159	MTB-04/20	56.00	56.50	0.50	0.50	0.38	<0.01	<0.01	0.06	0.02	<0.01	<0.01
160	MTB-04/21	56.50	57.00	0.50	0.50	0.09	<0.01	<0.01	0.02	0.01	<0.01	<0.01
161	MTB-04/22	57.00	57.50	0.50	0.50	0.66	<0.01	<0.01	0.06	0.02	<0.01	<0.01
162	MTB-04/23	57.50	58.00	0.50	0.50	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
163	MTB-04/24	58.00	58.50	0.50	0.50	0.20	<0.01	0.01	0.03	0.01	<0.01	<0.01
164	MTB-04/25	58.50	59.00	0.50	0.50	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01
165	MTB-04/26	59.00	59.50	0.50	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
166	MTB-04/27	59.50	60.00	0.50	0.50	0.19	<0.01	0.01	0.03	0.01	<0.01	<0.01
167	MTB-04/28	60.00	60.50	0.50	0.50	0.37	<0.01	<0.01	0.04	0.02	<0.01	<0.01
168	MTB-04/29	60.50	61.00	0.50	0.50	0.24	<0.01	0.01	0.04	0.01	<0.01	<0.01
169	MTB-04/30	61.00	61.50	0.50	0.50	0.43	<0.01	0.01	0.04	0.02	<0.01	<0.01
170	MTB-04/31	61.50	62.00	0.50	0.50	0.15	<0.01	<0.01	0.02	0.01	<0.01	<0.01
171	MTB-04/32	62.00	62.50	0.50	0.50	1.11	<0.01	0.01	0.05	0.02	<0.01	<0.01
172	MTB-04/33	62.50	63.00	0.50	0.50	0.08	<0.01	<0.01	0.03	0.02	0.01	<0.01
173	MTB-04/34	63.00	63.50	0.50	0.50	0.22	<0.01	<0.01	0.03	0.02	<0.01	<0.01
174	MTB-04/35	63.50	64.00	0.50	0.50	0.09	<0.01	<0.01	0.05	0.02	<0.01	<0.01
175	MTB-04/36	64.00	64.50	0.50	0.50	0.40	<0.01	0.01	0.06	0.02	<0.01	<0.01
176	MTB-04/37	64.50	65.00	0.50	0.50	0.69	<0.01	0.01	0.06	0.03	<0.01	<0.01
177	MTB-04/38	65.00	65.50	0.50	0.50	0.18	<0.01	0.01	0.05	0.02	<0.01	<0.01
178	MTB-04/39	65.50	66.00	0.50	0.50	0.40	<0.01	<0.01	0.07	0.03	<0.01	<0.01
179	MTB-04/40	66.00	66.50	0.50	0.50	0.37	<0.01	<0.01	0.05	0.02	<0.01	<0.01
180	MTB-04/41	66.50	67.00	0.50	0.50	0.42	<0.01	0.01	0.07	0.03	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
182	MTB-04/43	67.50	68.00	0.49	0.50	0.21	<0.01	0.01	0.04	0.02	<0.01	<0.01
183	MTB-04/44	68.00	68.50	0.49	0.50	0.39	<0.01	0.01	0.04	0.02	<0.01	<0.01
184	MTB-04/45	68.50	69.50	0.98	1.00	0.21	<0.01	0.01	0.03	0.02	<0.01	<0.01
185	MTB-04/46	69.50	70.00	0.49	0.50	0.21	<0.01	0.01	0.04	0.02	<0.01	<0.01
186	MTB-04/47	70.00	71.00	0.97	1.00	0.08	<0.01	0.01	0.03	0.01	<0.01	<0.01
187	MTB-04/48	71.00	72.00	0.97	1.00	0.11	<0.01	0.01	0.03	0.01	<0.01	<0.01
188	MTB-04/49	72.00	73.00	0.97	1.00	0.05	<0.01	0.01	0.03	0.01	<0.01	<0.01
189	MTB-04/50	73.00	73.50	0.50	0.50	0.45	<0.01	0.01	0.03	0.01	<0.01	<0.01
190	MTB-04/51	73.50	74.00	0.50	0.50	0.23	<0.01	0.01	0.03	0.01	<0.01	<0.01
191	MTB-04/52	74.00	74.50	0.50	0.50	0.17	<0.01	0.01	0.02	0.01	<0.01	<0.01
192	MTB-04/53	74.50	75.00	0.50	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
193	MTB-04/54	75.00	75.50	0.50	0.50	0.18	<0.01	0.01	0.02	0.01	<0.01	<0.01
194	MTB-04/55	75.50	76.00	0.50	0.50	0.22	<0.01	0.01	0.02	0.01	<0.01	<0.01
195	MTB-04/56	76.00	76.50	0.50	0.50	0.19	<0.01	0.01	0.02	0.02	<0.01	<0.01
196	MTB-04/57	76.50	77.00	0.50	0.50	0.25	<0.01	0.01	0.02	0.02	<0.01	<0.01
197	MTB-04/58	77.00	77.50	0.50	0.50	0.17	<0.01	0.01	0.03	0.01	<0.01	<0.01
198	MTB-04/59	77.50	78.25	0.75	0.75	0.34	<0.01	0.01	0.02	0.01	<0.01	<0.01
199	MTB-04/60	78.25	79.00	0.75	0.75	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
200	MTB-04/61	79.00	79.50	0.49	0.50	0.14	<0.01	0.01	0.02	0.01	<0.01	<0.01
201	MTB-04/62	79.50	80.00	0.49	0.50	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
202	MTB-04/63	80.00	80.50	0.49	0.50	0.28	<0.01	0.01	0.02	0.01	<0.01	<0.01
203	MTB-04/64	80.50	81.00	0.49	0.50	0.34	<0.01	0.01	0.03	0.01	<0.01	<0.01
204	MTB-04/65	81.00	82.00	0.98	1.00	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
Borehole No: MTB-05												
205	MTB-05/01	69.00	70.00	1.00	1.00	0.05	<0.01	0.01	0.01	0.01	<0.01	<0.01
206	MTB-05/02	70.00	70.50	0.49	0.50	0.19	<0.01	0.01	0.03	0.01	<0.01	0.01
207	MTB-05/03	70.50	71.00	0.49	0.50	0.14	<0.01	0.01	0.05	<0.01	0.01	<0.01
208	MTB-05/04	71.00	71.50	0.49	0.50	0.07	<0.01	0.01	0.02	<0.01	<0.01	<0.01
209	MTB-05/05	71.50	72.00	0.49	0.50	0.09	<0.01	0.01	0.01	0.01	0.01	<0.01
210	MTB-05/06	72.00	72.50	0.49	0.50	0.12	<0.01	0.01	0.02	0.01	<0.01	<0.01
211	MTB-05/07	72.50	73.00	0.49	0.50	0.21	<0.01	0.01	0.02	0.01	0.01	<0.01
212	MTB-05/08	73.00	73.50	0.50	0.50	0.14	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
213	MTB-05/09	73.50	74.00	0.50	0.50	0.06	<0.01	0.01	0.03	0.01	<0.01	<0.01
214	MTB-05/10	74.00	74.50	0.50	0.50	0.06	<0.01	0.01	0.03	0.01	<0.01	<0.01
215	MTB-05/11	74.50	75.50	1.00	1.00	0.02	<0.01	<0.01	0.03	0.01	<0.01	<0.01
216	MTB-05/12	75.50	76.50	0.98	1.00	0.02	<0.01	0.01	0.01	<0.01	<0.01	<0.01
217	MTB-05/13	76.50	77.50	0.98	1.00	0.08	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
218	MTB-05/14	77.50	78.00	0.49	0.50	0.03	<0.01	0.01	0.01	<0.01	<0.01	<0.01
219	MTB-05/15	78.00	78.50	0.49	0.50	0.33	<0.01	0.01	0.02	0.01	<0.01	<0.01
220	MTB-05/16	78.50	79.00	0.49	0.50	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
221	MTB-05/17	79.00	80.00	0.97	1.00	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
222	MTB-05/18	80.00	80.50	0.49	0.50	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
223	MTB-05/19	80.50	81.00	0.48	0.50	0.87	<0.01	0.01	0.02	0.01	0.01	<0.01
224	MTB-05/20	81.00	81.50	0.49	0.50	1.30	<0.01	<0.01	0.02	0.01	<0.01	<0.01
225	MTB-05/21	81.50	82.00	0.40	0.50	0.08	<0.01	0.01	0.01	0.01	<0.01	<0.01
226	MTB-05/22	82.00	83.00	0.99	1.00	0.06	<0.01	0.01	0.01	<0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
228	MTB-05/24	84.00	84.50	0.49	0.50	0.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
229	MTB-05/25	84.50	85.00	0.50	0.50	0.06	<0.01	0.01	0.01	0.01	<0.01	<0.01
230	MTB-05/26	85.00	85.50	0.49	0.50	0.31	<0.01	0.01	0.01	<0.01	<0.01	<0.01
231	MTB-05/27	85.50	86.00	0.49	0.50	0.39	<0.01	0.01	0.03	0.01	<0.01	<0.01
232	MTB-05/28	86.00	86.50	0.49	0.50	0.14	<0.01	0.01	0.03	0.01	<0.01	<0.01
233	MTB-05/29	86.50	86.90	0.40	0.40	0.21	<0.01	0.01	0.03	0.01	<0.01	<0.01
234	MTB-05/30	86.90	87.30	0.40	0.40	5.29	<0.01	0.01	0.08	0.02	0.01	<0.01
235	MTB-05/31	87.30	87.70	0.40	0.40	5.27	<0.01	0.01	0.10	0.03	0.02	<0.01
236	MTB-05/32	87.70	88.20	0.47	0.50	0.95	<0.01	0.01	0.07	0.02	<0.01	<0.01
237	MTB-05/33	88.20	88.70	0.49	0.50	0.33	<0.01	0.01	0.05	0.02	<0.01	<0.01
238	MTB-05/34	88.70	89.20	0.48	0.50	2.96	<0.01	0.01	0.07	0.01	0.01	<0.01
239	MTB-05/35	89.20	89.70	0.48	0.50	1.35	<0.01	0.01	0.07	0.01	0.01	<0.01
240	MTB-05/36	89.70	90.20	0.49	0.50	1.40	<0.01	0.01	0.04	0.01	<0.01	<0.01
241	MTB-05/37	90.20	90.70	0.48	0.50	0.27	<0.01	0.01	0.03	<0.01	<0.01	<0.01
242	MTB-05/38	90.70	91.20	0.48	0.50	0.08	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
243	MTB-05/39	91.20	91.70	0.48	0.50	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
244	MTB-05/40	91.70	92.20	0.49	0.50	0.12	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
245	MTB-05/41	92.20	92.70	0.48	0.50	0.03	<0.01	0.01	0.01	<0.01	<0.01	<0.01
246	MTB-05/42	92.70	93.20	0.49	0.50	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
247	MTB-05/43	93.20	93.70	0.48	0.50	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
248	MTB-05/44	93.70	94.20	0.49	0.50	0.46	0.01	0.01	0.02	<0.01	<0.01	<0.01
249	MTB-05/45	94.20	95.20	1.98	1.00	0.17	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
250	MTB-05/46	95.20	96.20	0.99	1.00	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
251	MTB-05/47	96.20	96.50	0.30	0.30	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
252	MTB-05/48	96.50	97.00	0.49	0.50	3.91	0.01	0.01	0.09	0.02	0.01	<0.01
253	MTB-05/49	97.00	98.00	1.00	1.00	0.11	<0.01	0.01	0.02	<0.01	<0.01	0.01
254	MTB-05/50	98.00	98.50	0.50	0.50	0.11	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
255	MTB-05/51	98.50	99.00	0.50	0.50	0.56	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
256	MTB-05/52	99.00	99.50	0.50	0.50	1.26	<0.01	<0.01	0.03	0.01	<0.01	<0.01
257	MTB-05/53	99.50	100.00	0.50	0.50	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
258	MTB-05/54	100.00	101.00	1.00	1.00	0.24	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
259	MTB-05/55	104.50	105.50	0.95	1.00	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
260	MTB-05/56	105.50	106.00	0.48	0.50	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
261	MTB-05/57	106.00	106.50	0.48	0.50	2.48	<0.01	<0.01	0.09	<0.01	<0.01	<0.01
262	MTB-05/58	106.50	107.00	0.48	0.50	0.10	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
263	MTB-05/59	107.00	107.50	0.48	0.50	1.32	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
264	MTB-05/60	107.50	108.00	0.48	0.50	2.88	0.01	0.01	0.07	0.02	<0.01	<0.01
265	MTB-05/61	108.00	109.00	0.96	1.00	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Borehole No: MTB-06												
266	MTB-06/01	41.00	42.00	1.00	1.00	0.01	<0.01	0.01	0.23	0.01	<0.01	<0.01
267	MTB-06/02	42.00	42.50	0.50	0.50	0.11	<0.01	<0.01	0.06	0.01	0.01	<0.01
268	MTB-06/03	42.50	43.00	0.50	0.50	0.18	<0.01	<0.01	0.12	0.02	0.01	<0.01
269	MTB-06/04	43.00	43.50	0.50	0.50	0.30	<0.01	<0.01	0.10	0.03	<0.01	<0.01
270	MTB-06/05	43.50	44.00	0.50	0.50	0.20	<0.01	<0.01	0.17	0.05	<0.01	<0.01
271	MTB-06/06	44.00	44.50	0.50	0.50	0.32	<0.01	<0.01	0.26	0.06	<0.01	<0.01
272	MTB-06/07	44.50	45.00	0.50	0.50	0.14	<0.01	<0.01	0.19	0.04	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
274	MTB-06/09	45.50	46.00	0.50	0.50	0.29	<0.01	<0.01	0.06	0.02	<0.01	<0.01
275	MTB-06/10	46.00	46.50	0.50	0.50	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
276	MTB-06/11	46.50	47.50	1.00	1.00	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01
277	MTB-06/12	78.50	79.50	0.98	1.00	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
278	MTB-06/13	79.50	80.00	0.50	0.50	0.28	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
279	MTB-06/14	80.00	80.30	0.30	0.30	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
280	MTB-06/15	80.30	80.80	0.50	0.50	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
281	MTB-06/16	80.80	81.80	1.00	1.00	0.03	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
282	MTB-06/17	81.80	82.40	0.58	0.60	0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
283	MTB-06/18	82.40	83.00	0.56	0.60	0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
284	MTB-06/19	83.00	83.50	0.47	0.50	0.06	<0.01	0.01	0.03	0.01	<0.01	<0.01
285	MTB-06/20	83.50	84.00	0.47	0.50	0.08	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
286	MTB-06/21	84.00	84.50	0.47	0.50	1.64	<0.01	<0.01	0.03	0.01	0.01	<0.01
287	MTB-06/22	84.50	85.00	0.47	0.50	0.24	<0.01	<0.01	0.02	0.01	<0.01	<0.01
288	MTB-06/23	85.00	85.50	0.50	0.50	0.27	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
289	MTB-06/24	85.50	86.00	0.50	0.50	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
290	MTB-06/25	86.00	86.50	0.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
291	MTB-06/26	86.50	87.00	0.50	0.50	0.12	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
292	MTB-06/27	87.00	87.50	0.50	0.50	0.39	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
293	MTB-06/28	87.50	88.00	0.50	0.50	0.21	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
294	MTB-06/29	88.00	88.50	0.50	0.50	0.32	<0.01	<0.01	0.03	0.01	<0.01	<0.01
295	MTB-06/30	88.50	89.00	0.50	0.50	0.59	<0.01	<0.01	0.03	0.01	<0.01	<0.01
296	MTB-06/31	89.00	89.50	0.50	0.50	4.22	<0.01	<0.01	0.06	0.02	<0.01	<0.01
297	MTB-06/32	89.50	90.00	0.50	0.50	0.78	<0.01	<0.01	0.05	0.01	<0.01	<0.01
298	MTB-06/33	90.00	90.50	0.50	0.50	0.05	<0.01	<0.01	0.03	0.01	<0.01	<0.01
299	MTB-06/34	90.50	91.00	0.50	0.50	0.47	<0.01	<0.01	0.03	0.01	<0.01	<0.01
300	MTB-06/35	91.00	91.50	0.50	0.50	0.03	<0.01	<0.01	0.03	0.01	<0.01	<0.01
301	MTB-06/36	91.50	92.50	1.00	1.00	0.02	<0.01	<0.01	0.03	0.01	<0.01	<0.01
302	MTB-06/37	103.00	104.00	1.00	1.00	0.02	<0.01	<0.01	0.03	0.01	<0.01	<0.01
303	MTB-06/38	104.00	104.50	0.50	0.50	0.24	<0.01	<0.01	0.06	0.01	<0.01	<0.01
304	MTB-06/39	104.50	105.00	0.50	0.50	0.19	<0.01	<0.01	0.03	0.01	<0.01	<0.01
305	MTB-06/40	105.00	105.50	0.50	0.50	0.14	<0.01	<0.01	0.03	0.01	<0.01	<0.01
306	MTB-06/41	105.50	106.00	0.50	0.50	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
307	MTB-06/42	106.00	106.50	0.50	0.50	0.04	<0.01	<0.01	0.03	0.01	<0.01	<0.01
308	MTB-06/43	106.50	107.00	0.50	0.50	0.18	<0.01	<0.01	0.03	0.01	<0.01	<0.01
309	MTB-06/44	107.00	107.50	0.50	0.50	0.23	<0.01	<0.01	0.03	0.01	<0.01	<0.01
310	MTB-06/45	107.50	108.00	0.50	0.50	0.08	<0.01	<0.01	0.03	0.01	<0.01	<0.01
311	MTB-06/46	108.00	108.50	0.50	0.50	0.16	<0.01	<0.01	0.02	0.01	0.01	<0.01
312	MTB-06/47	108.50	109.00	0.49	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
313	MTB-06/48	109.00	109.50	0.50	0.50	0.10	<0.01	<0.01	0.03	0.01	<0.01	<0.01
314	MTB-06/49	109.50	110.00	0.50	0.50	0.10	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
315	MTB-06/50	110.00	111.00	1.00	1.00	0.13	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
316	MTB-06/51	114.00	115.00	1.00	1.00	0.07	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
317	MTB-06/52	115.00	115.50	0.50	0.50	0.03	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
318	MTB-06/53	115.50	116.00	0.50	0.50	0.41	<0.01	<0.01	0.03	0.01	<0.01	<0.01
319	MTB-06/54	116.00	116.50	0.50	0.50	0.15	<0.01	<0.01	0.03	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
321	MTB-06/56	117.00	117.50	0.50	0.50	1.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
322	MTB-06/57	117.50	118.00	0.49	0.50	0.50	<0.01	<0.01	0.03	0.01	<0.01	<0.01
323	MTB-06/58	118.00	118.50	0.50	0.50	0.44	<0.01	<0.01	0.02	0.01	<0.01	<0.01
324	MTB-06/59	118.50	119.50	1.00	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
325	MTB-06/60	119.50	120.00	0.50	0.50	0.05	<0.01	<0.01	0.02	0.01	<0.01	0.01
326	MTB-06/61	120.00	120.50	0.50	0.50	0.15	<0.01	<0.01	0.03	0.01	<0.01	<0.01
327	MTB-06/62	120.50	121.00	0.50	0.50	0.58	<0.01	<0.01	0.02	0.01	<0.01	<0.01
328	MTB-06/63	121.00	121.50	0.50	0.50	0.83	<0.01	<0.01	0.02	0.01	<0.01	<0.01
329	MTB-06/64	121.50	122.00	0.50	0.50	1.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
330	MTB-06/65	122.00	122.60	0.60	0.60	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
331	MTB-06/66	122.60	123.20	0.60	0.60	0.13	<0.01	<0.01	0.04	0.01	<0.01	<0.01
332	MTB-06/67	123.20	123.80	0.60	0.60	0.09	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
333	MTB-06/68	123.80	124.30	0.50	0.50	0.27	<0.01	<0.01	0.02	0.01	0.01	<0.01
334	MTB-06/69	124.30	124.80	0.50	0.50	0.10	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
335	MTB-06/70	124.80	125.80	1.00	1.00	0.06	<0.01	<0.01	0.01	0.01	<0.01	<0.01
336	MTB-06/71	125.80	126.80	1.00	1.00	0.12	<0.01	<0.01	0.01	0.01	<0.01	<0.01
337	MTB-06/72	126.80	127.80	1.00	1.00	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
338	MTB-06/73	127.80	128.30	0.50	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
339	MTB-06/74	128.30	128.80	0.50	0.50	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
340	MTB-06/75	128.80	129.30	0.50	0.50	0.28	<0.01	<0.01	0.01	0.01	<0.01	<0.01
341	MTB-06/76	129.30	129.80	0.50	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
342	MTB-06/77	129.80	130.55	0.75	0.75	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
343	MTB-06/78	130.55	131.30	0.75	0.75	0.04	<0.01	<0.01	0.01	<0.01	<0.01	0.01
344	MTB-06/79	131.30	131.80	0.50	0.50	0.14	<0.01	<0.01	0.01	0.01	<0.01	<0.01
345	MTB-06/80	131.80	132.30	0.50	0.50	0.51	<0.01	<0.01	0.03	0.02	<0.01	<0.01
346	MTB-06/81	132.30	132.80	0.50	0.50	0.45	<0.01	<0.01	0.03	0.02	<0.01	<0.01
347	MTB-06/82	132.80	133.30	0.50	0.50	0.29	<0.01	<0.01	0.01	0.01	<0.01	<0.01
348	MTB-06/83	133.30	133.80	0.50	0.50	0.08	<0.01	<0.01	0.02	0.01	<0.01	<0.01
349	MTB-06/84	133.80	134.30	0.50	0.50	0.10	<0.01	<0.01	0.03	0.02	<0.01	<0.01
350	MTB-06/85	134.30	134.80	0.50	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
351	MTB-06/86	134.80	135.30	0.50	0.50	0.07	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
352	MTB-06/87	135.30	136.30	1.00	1.00	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-07												
353	MTB-07/01	46.50	47.50	0.69	1.00	0.04	<0.01	<0.01	0.03	0.01	<0.01	<0.01
354	MTB-07/02	47.50	48.25	0.51	0.75	0.29	<0.01	<0.01	0.05	0.02	0.01	<0.01
355	MTB-07/03	48.25	49.00	0.51	0.75	0.17	<0.01	<0.01	0.04	0.02	<0.01	<0.01
356	MTB-07/04	49.00	50.00	0.98	1.00	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
357	MTB-07/05	50.00	50.60	0.59	0.60	0.15	<0.01	<0.01	0.04	0.01	<0.01	0.04
358	MTB-07/06	50.60	51.20	0.59	0.60	0.10	<0.01	<0.01	0.06	0.02	<0.01	<0.01
359	MTB-07/07	51.20	51.70	0.50	0.50	0.55	<0.01	0.01	0.07	0.03	0.01	<0.01
360	MTB-07/08	51.70	52.10	0.40	0.40	0.01	<0.01	0.01	0.06	0.02	<0.01	<0.01
361	MTB-07/09	52.10	52.60	0.49	0.50	0.22	<0.01	<0.01	0.03	0.01	0.01	<0.01
362	MTB-07/10	52.60	53.10	0.49	0.50	0.28	<0.01	<0.01	0.02	0.01	<0.01	<0.01
363	MTB-07/11	53.10	53.60	0.49	0.50	0.48	<0.01	<0.01	0.03	0.01	<0.01	0.01
364	MTB-07/12	53.60	54.10	0.49	0.50	0.84	<0.01	<0.01	0.05	0.02	<0.01	<0.01
365	MTB-07/13	54.10	54.60	0.49	0.50	0.09	<0.01	0.01	0.03	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
367	MTB-07/15	55.10	55.80	0.69	0.70	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
368	MTB-07/16	55.80	56.50	0.69	0.70	0.11	<0.01	<0.01	0.02	0.01	<0.01	<0.01
369	MTB-07/17	56.50	57.00	0.49	0.50	0.31	<0.01	<0.01	0.03	0.01	<0.01	<0.01
370	MTB-07/18	57.00	57.50	0.50	0.50	1.41	<0.01	<0.01	0.06	0.02	0.01	<0.01
371	MTB-07/19	57.50	58.00	0.50	0.50	0.27	<0.01	<0.01	0.03	0.01	<0.01	<0.01
372	MTB-07/20	58.00	58.50	0.49	0.50	0.16	<0.01	<0.01	0.03	0.01	0.01	<0.01
373	MTB-07/21	58.50	59.00	0.49	0.50	0.22	<0.01	0.01	0.04	0.02	<0.01	<0.01
374	MTB-07/22	59.00	59.50	0.49	0.50	0.38	<0.01	<0.01	0.03	0.01	<0.01	<0.01
375	MTB-07/23	59.50	60.00	0.49	0.50	0.18	<0.01	<0.01	0.02	0.01	<0.01	<0.01
376	MTB-07/24	60.00	60.50	0.49	0.50	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
377	MTB-07/25	60.50	61.00	0.49	0.50	0.18	<0.01	<0.01	0.05	0.02	0.01	<0.01
378	MTB-07/26	61.00	61.50	0.50	0.50	0.18	<0.01	<0.01	0.05	0.01	<0.01	<0.01
379	MTB-07/27	61.50	62.00	0.50	0.50	0.36	<0.01	<0.01	0.04	0.02	<0.01	<0.01
380	MTB-07/28	62.00	62.50	0.50	0.50	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
381	MTB-07/29	62.50	63.00	0.50	0.50	0.03	<0.01	<0.01	0.05	0.02	<0.01	<0.01
382	MTB-07/30	63.00	63.50	0.50	0.50	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
383	MTB-07/31	63.50	64.00	0.50	0.50	0.29	<0.01	<0.01	0.04	0.02	<0.01	<0.01
384	MTB-07/32	64.00	64.50	0.50	0.50	1.33	<0.01	<0.01	0.06	0.03	0.02	<0.01
385	MTB-07/33	64.50	65.00	0.50	0.50	0.13	<0.01	0.01	0.04	0.02	<0.01	<0.01
386	MTB-07/34	65.00	65.50	0.50	0.50	0.75	<0.01	<0.01	0.05	0.03	<0.01	<0.01
387	MTB-07/35	65.50	66.00	0.50	0.50	0.44	<0.01	<0.01	0.05	0.02	0.01	<0.01
388	MTB-07/36	66.00	66.50	0.50	0.50	0.27	<0.01	<0.01	0.03	0.02	<0.01	<0.01
389	MTB-07/37	66.50	67.00	0.50	0.50	0.34	<0.01	<0.01	0.02	0.01	<0.01	<0.01
390	MTB-07/38	67.00	67.50	0.50	0.50	0.04	<0.01	<0.01	0.02	0.02	<0.01	<0.01
391	MTB-07/39	67.50	68.00	0.50	0.50	4.94	<0.01	<0.01	0.06	0.04	0.01	<0.01
392	MTB-07/40	68.00	68.50	0.50	0.50	1.42	<0.01	<0.01	0.03	0.03	0.01	<0.01
393	MTB-07/41	68.50	69.50	0.99	1.00	0.16	<0.01	<0.01	0.01	0.01	<0.01	<0.01
394	MTB-07/42	69.50	70.50	0.99	1.00	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
395	MTB-07/43	70.50	71.50	1.00	1.00	0.08	<0.01	<0.01	0.02	0.01	<0.01	<0.01
396	MTB-07/44	71.50	72.00	0.50	0.50	0.17	<0.01	0.01	0.05	0.02	<0.01	<0.01
397	MTB-07/45	72.00	72.50	0.50	0.50	0.05	<0.01	<0.01	0.03	0.02	<0.01	<0.01
398	MTB-07/46	72.50	73.50	1.00	1.00	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
399	MTB-07/47	73.50	74.00	0.50	0.50	0.35	<0.01	0.01	0.04	0.02	<0.01	<0.01
400	MTB-07/48	74.00	74.50	0.50	0.50	0.36	<0.01	<0.01	0.03	0.01	<0.01	<0.01
401	MTB-07/49	74.50	75.00	0.50	0.50	0.24	<0.01	<0.01	0.02	0.01	<0.01	<0.01
402	MTB-07/50	75.00	75.50	0.50	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
403	MTB-07/51	75.50	76.00	0.50	0.50	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
404	MTB-07/52	76.00	76.50	0.49	0.50	0.43	<0.01	<0.01	0.06	0.02	<0.01	0.01
405	MTB-07/53	76.50	77.00	0.50	0.50	0.30	<0.01	<0.01	0.06	0.02	<0.01	<0.01
406	MTB-07/54	77.00	77.50	0.50	0.50	0.13	<0.01	0.01	0.03	0.01	0.01	<0.01
407	MTB-07/55	77.50	78.00	0.50	0.50	0.23	<0.01	0.01	0.03	0.01	<0.01	<0.01
408	MTB-07/56	78.00	79.00	0.98	1.00	0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
409	MTB-07/57	79.00	80.00	0.93	1.00	0.34	<0.01	<0.01	0.03	0.01	<0.01	<0.01
410	MTB-07/58	80.00	81.00	0.93	1.00	0.06	<0.01	<0.01	0.03	0.01	<0.01	<0.01
411	MTB-07/59	85.50	86.50	1.00	1.00	0.08	<0.01	0.01	0.03	0.01	<0.01	<0.01
412	MTB-07/60	86.50	87.00	0.50	0.50	0.22	<0.01	0.01	0.03	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
414	MTB-07/62	87.50	88.00	0.50	0.50	0.17	<0.01	0.01	0.03	0.01	0.01	<0.01
415	MTB-07/63	88.00	89.00	1.00	1.00	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
416	MTB-07/64	93.00	94.00	1.00	1.00	0.07	<0.01	0.01	0.02	0.01	<0.01	<0.01
417	MTB-07/65	94.00	94.50	0.42	0.50	0.09	<0.01	0.01	0.03	0.01	<0.01	<0.01
418	MTB-07/66	94.50	95.00	0.42	0.50	0.49	<0.01	0.01	0.03	0.02	<0.01	<0.01
419	MTB-07/67	95.00	95.50	0.42	0.50	0.57	<0.01	0.01	0.02	0.01	<0.01	0.01
420	MTB-07/68	95.50	96.00	0.42	0.50	0.06	<0.01	0.01	0.02	0.02	<0.01	<0.01
421	MTB-07/69	96.00	97.00	1.00	1.00	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
422	MTB-07/70	97.00	97.50	0.49	0.50	0.24	<0.01	0.01	0.02	0.01	<0.01	<0.01
423	MTB-07/71	97.50	98.00	0.49	0.50	0.15	<0.01	0.01	0.03	0.01	<0.01	<0.01
424	MTB-07/72	98.00	99.00	1.00	1.00	0.07	<0.01	<0.01	0.01	0.01	<0.01	<0.01
425	MTB-07/73	99.00	100.00	1.00	1.00	0.07	<0.01	0.01	0.03	0.01	<0.01	<0.01
426	MTB-07/74	100.00	100.50	0.50	0.50	0.52	<0.01	0.01	0.03	0.01	<0.01	<0.01
427	MTB-07/75	100.50	101.00	0.50	0.50	0.05	<0.01	0.01	0.05	0.02	<0.01	<0.01
428	MTB-07/76	101.00	101.50	0.50	0.50	0.08	<0.01	0.01	0.05	0.02	<0.01	<0.01
429	MTB-07/77	101.50	102.00	0.50	0.50	0.68	<0.01	0.01	0.05	0.01	<0.01	<0.01
430	MTB-07/78	102.00	102.50	0.50	0.50	0.41	<0.01	0.01	0.04	0.01	<0.01	<0.01
431	MTB-07/79	102.50	103.00	0.50	0.50	0.34	<0.01	0.01	0.03	0.02	<0.01	<0.01
432	MTB-07/80	103.00	103.50	0.50	0.50	0.34	<0.01	0.01	0.05	0.02	<0.01	<0.01
433	MTB-07/81	103.50	104.00	0.50	0.50	0.97	<0.01	0.01	0.05	0.01	<0.01	<0.01
434	MTB-07/82	104.00	104.50	0.50	0.50	0.82	<0.01	0.01	0.05	0.01	<0.01	<0.01
435	MTB-07/83	104.50	105.00	0.50	0.50	0.74	<0.01	<0.01	0.03	0.01	<0.01	<0.01
436	MTB-07/84	105.00	106.00	1.00	1.00	0.27	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
437	MTB-07/85	106.00	106.50	0.49	0.50	0.57	<0.01	<0.01	0.03	0.01	<0.01	<0.01
438	MTB-07/86	106.50	107.00	0.49	0.50	0.47	<0.01	<0.01	0.04	0.02	<0.01	<0.01
439	MTB-07/87	107.00	107.50	0.49	0.50	0.58	<0.01	<0.01	0.04	0.02	<0.01	<0.01
440	MTB-07/88	107.50	108.00	0.49	0.50	0.26	<0.01	0.01	0.03	0.01	<0.01	<0.01
441	MTB-07/89	108.00	108.50	0.49	0.50	0.41	<0.01	0.01	0.03	0.01	<0.01	<0.01
442	MTB-07/90	108.50	109.00	0.49	0.50	0.70	<0.01	0.01	0.04	0.02	<0.01	<0.01
443	MTB-07/91	109.00	110.00	1.00	1.00	0.17	<0.01	0.01	0.03	0.02	<0.01	<0.01
Borehole No: MTB-08												
444	MTB-08/01	46.50	47.50	1.00	1.00	0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01
445	MTB-08/02	47.50	48.00	0.50	0.50	0.25	<0.01	0.01	0.01	0.03	<0.01	<0.01
446	MTB-08/03	48.00	48.50	0.50	0.50	1.11	<0.01	0.01	0.04	0.10	<0.01	<0.01
447	MTB-08/04	48.50	49.00	0.50	0.50	0.93	<0.01	0.01	0.04	0.11	<0.01	<0.01
448	MTB-08/05	49.00	49.50	0.49	0.50	1.08	<0.01	0.01	0.04	0.13	<0.01	<0.01
449	MTB-08/06	49.50	50.00	0.49	0.50	0.55	<0.01	0.01	0.03	0.06	<0.01	<0.01
450	MTB-08/07	50.00	50.50	0.49	0.50	0.90	<0.01	0.01	0.04	0.08	<0.01	<0.01
451	MTB-08/08	50.50	51.00	0.49	0.50	1.59	<0.01	0.01	0.04	0.07	<0.01	<0.01
452	MTB-08/09	51.00	52.00	0.98	1.00	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
453	MTB-08/10	177.00	178.00	1.00	1.00	0.03	<0.01	<0.01	0.01	0.01	0.01	<0.01
454	MTB-08/11	178.00	178.50	0.50	0.50	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
455	MTB-08/12	178.50	179.00	0.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
456	MTB-08/13	179.00	179.50	0.50	0.50	0.16	<0.01	<0.01	0.02	0.01	<0.01	<0.01
457	MTB-08/14	179.50	180.00	0.50	0.50	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
458	MTB-08/15	180.00	181.00	1.00	1.00	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
460	MTB-08/17	182.00	183.00	1.00	1.00	0.15	<0.01	0.01	0.02	0.01	0.01	<0.01
461	MTB-08/18	183.00	183.50	0.50	0.50	0.23	<0.01	0.01	0.02	<0.01	0.01	<0.01
462	MTB-08/19	183.50	184.00	0.50	0.50	0.07	<0.01	0.01	0.01	<0.01	<0.01	<0.01
463	MTB-08/20	184.00	184.50	0.50	0.50	0.14	<0.01	0.01	0.02	0.01	0.02	<0.01
464	MTB-08/21	184.50	185.00	0.50	0.50	0.07	<0.01	0.01	0.02	0.01	<0.01	<0.01
465	MTB-08/22	185.00	185.50	0.50	0.50	0.09	<0.01	<0.01	0.02	0.01	<0.01	<0.01
466	MTB-08/23	185.50	186.00	0.50	0.50	0.10	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
467	MTB-08/24	186.00	186.50	0.50	0.50	0.08	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
468	MTB-08/25	186.50	187.00	0.50	0.50	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
469	MTB-08/26	187.00	187.50	0.50	0.50	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
470	MTB-08/27	187.50	188.00	0.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
471	MTB-08/28	188.00	188.50	0.50	0.50	0.42	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
472	MTB-08/29	188.50	189.00	0.50	0.50	0.11	<0.01	0.01	0.01	<0.01	<0.01	<0.01
473	MTB-08/30	189.00	189.50	0.50	0.50	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
474	MTB-08/31	189.50	190.50	1.00	1.00	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
475	MTB-08/32	197.00	198.00	1.00	1.00	0.08	<0.01	0.01	0.01	0.01	<0.01	<0.01
476	MTB-08/33	198.00	198.50	0.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
477	MTB-08/34	198.50	199.00	0.50	0.50	0.09	<0.01	<0.01	0.01	<0.01	<0.01	0.01
478	MTB-08/35	199.00	199.50	0.50	0.50	0.78	<0.01	0.01	0.03	0.01	<0.01	<0.01
479	MTB-08/36	199.50	200.00	0.50	0.50	0.19	<0.01	0.01	0.01	<0.01	<0.01	<0.01
480	MTB-08/37	200.00	200.50	0.50	0.50	3.28	<0.01	0.01	0.12	0.01	0.01	<0.01
481	MTB-08/38	200.50	201.00	0.50	0.50	2.41	<0.01	<0.01	0.18	0.02	0.01	<0.01
482	MTB-08/39	201.00	201.50	0.50	0.50	1.37	<0.01	<0.01	0.06	0.02	<0.01	<0.01
483	MTB-08/40	201.50	202.00	0.50	0.50	0.03	<0.01	<0.01	0.06	0.02	<0.01	0.01
484	MTB-08/41	202.00	202.50	0.49	0.50	0.65	<0.01	<0.01	0.01	0.01	<0.01	0.02
485	MTB-08/42	202.50	203.00	0.49	0.50	0.27	<0.01	<0.01	0.02	0.02	<0.01	<0.01
486	MTB-08/43	203.00	203.50	0.49	0.50	1.89	0.01	<0.01	0.03	<0.01	<0.01	0.02
487	MTB-08/44	203.50	204.00	0.49	0.50	1.50	<0.01	<0.01	0.01	0.01	<0.01	<0.01
488	MTB-08/45	204.00	204.50	0.49	0.50	2.86	<0.01	0.01	0.07	0.01	<0.01	<0.01
489	MTB-08/46	204.50	205.00	0.49	0.50	0.44	<0.01	<0.01	0.06	0.02	0.02	<0.01
490	MTB-08/47	205.00	205.50	0.50	0.50	2.77	<0.01	<0.01	0.08	0.01	0.16	<0.01
491	MTB-08/48	205.50	206.00	0.50	0.50	0.36	0.01	0.01	0.03	0.01	<0.01	<0.01
492	MTB-08/49	206.00	206.50	0.50	0.50	1.18	0.01	0.01	0.06	0.01	0.12	<0.01
493	MTB-08/50	206.50	207.00	0.50	0.50	0.20	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
494	MTB-08/51	207.00	208.00	1.00	1.00	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Borehole No: MTB-09												
495	MTB-09/01	65.50	66.50	1.00	1.00	0.04	<0.01	<0.01	0.03	0.02	<0.01	<0.01
496	MTB-09/02	66.50	67.00	0.50	0.50	0.19	<0.01	<0.01	0.03	0.01	<0.01	<0.01
497	MTB-09/03	67.00	67.50	0.50	0.50	0.19	<0.01	<0.01	0.03	0.01	0.01	<0.01
498	MTB-09/04	67.50	68.50	1.00	1.00	0.04	<0.01	<0.01	0.03	0.01	<0.01	<0.01
499	MTB-09/05	68.50	69.00	0.50	0.50	0.31	<0.01	<0.01	0.03	0.01	<0.01	<0.01
500	MTB-09/06	69.00	69.50	0.50	0.50	0.04	<0.01	<0.01	0.04	0.01	<0.01	<0.01
501	MTB-09/07	69.50	70.00	0.50	0.50	0.35	<0.01	<0.01	0.04	0.01	0.02	<0.01
502	MTB-09/08	70.00	70.50	0.50	0.50	0.21	<0.01	<0.01	0.04	0.01	<0.01	<0.01
503	MTB-09/09	70.50	71.00	0.50	0.50	0.06	<0.01	<0.01	0.03	0.01	<0.01	<0.01
504	MTB-09/10	71.00	71.50	0.50	0.50	0.15	<0.01	<0.01	0.04	0.01	0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
506	MTB-09/12	72.25	73.00	0.75	0.75	0.01	<0.01	<0.01	0.03	0.01	0.01	<0.01
507	MTB-09/13	73.00	74.00	1.00	1.00	<0.01	<0.01	<0.01	0.02	0.01	0.01	<0.01
508	MTB-09/14	74.00	75.00	1.00	1.00	0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
509	MTB-09/15	75.00	75.50	0.50	0.50	0.45	<0.01	<0.01	0.03	0.01	0.04	<0.01
510	MTB-09/16	75.50	76.00	0.50	0.50	0.11	<0.01	<0.01	0.03	0.01	<0.01	<0.01
511	MTB-09/17	76.00	76.50	0.50	0.50	0.19	<0.01	<0.01	0.02	0.01	<0.01	<0.01
512	MTB-09/18	76.50	77.00	0.50	0.50	0.09	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
513	MTB-09/19	77.00	77.50	0.50	0.50	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
514	MTB-09/20	77.50	78.00	0.50	0.50	0.19	<0.01	<0.01	0.03	0.01	<0.01	<0.01
515	MTB-09/21	78.00	78.50	0.50	0.50	0.55	<0.01	<0.01	0.05	0.01	0.01	<0.01
516	MTB-09/22	78.50	79.25	0.75	0.75	0.06	<0.01	0.01	0.05	0.01	<0.01	<0.01
517	MTB-09/23	79.25	79.75	0.49	0.50	0.17	<0.01	0.01	0.02	0.01	<0.01	<0.01
518	MTB-09/24	79.75	80.75	0.97	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
519	MTB-09/25	80.75	81.25	0.49	0.50	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
520	MTB-09/26	81.25	82.25	0.97	1.00	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
521	MTB-09/27	85.00	86.00	0.99	1.00	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
522	MTB-09/28	86.00	86.50	0.50	0.50	0.06	<0.01	<0.01	0.03	0.02	<0.01	<0.01
523	MTB-09/29	86.50	87.00	0.50	0.50	0.23	<0.01	<0.01	0.04	0.02	<0.01	<0.01
524	MTB-09/30	87.00	88.00	1.00	1.00	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
525	MTB-09/31	88.00	88.50	0.49	0.50	0.28	<0.01	0.01	0.03	0.01	<0.01	<0.01
526	MTB-09/32	88.50	89.00	0.49	0.50	0.36	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
527	MTB-09/33	89.00	89.50	0.49	0.50	0.18	<0.01	0.01	0.03	0.01	<0.01	<0.01
528	MTB-09/34	89.50	90.00	0.49	0.50	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
529	MTB-09/35	90.00	90.50	0.49	0.50	0.08	<0.01	<0.01	0.03	0.01	<0.01	<0.01
530	MTB-09/36	90.50	91.00	0.49	0.50	0.30	<0.01	<0.01	0.04	0.02	<0.01	<0.01
531	MTB-09/37	91.00	91.75	0.75	0.75	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
532	MTB-09/38	91.75	92.50	0.75	0.75	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
533	MTB-09/39	92.50	93.00	0.50	0.50	0.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
534	MTB-09/40	93.00	93.50	0.50	0.50	0.23	<0.01	0.01	0.02	0.01	<0.01	<0.01
535	MTB-09/41	93.50	94.00	0.50	0.50	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
536	MTB-09/42	94.00	95.00	1.00	1.00	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
537	MTB-09/43	99.50	100.50	0.49	1.00	0.08	<0.01	<0.01	0.01	0.01	<0.01	<0.01
538	MTB-09/44	100.50	101.00	0.49	0.50	0.54	<0.01	<0.01	0.01	0.01	<0.01	<0.01
539	MTB-09/45	101.00	101.50	0.49	0.50	1.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
540	MTB-09/46	101.50	102.00	0.49	0.50	0.02	<0.01	<0.01	0.01	0.01	<0.01	0.01
541	MTB-09/47	102.00	103.00	1.00	1.00	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
542	MTB-09/48	110.00	111.00	1.00	1.00	0.15	<0.01	<0.01	0.02	0.01	<0.01	<0.01
543	MTB-09/49	111.00	111.50	0.50	0.50	0.27	<0.01	<0.01	0.02	0.01	<0.01	<0.01
544	MTB-09/50	111.50	112.25	0.75	0.75	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
545	MTB-09/51	112.25	113.00	0.75	0.75	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
546	MTB-09/52	113.00	113.50	0.50	0.50	0.16	<0.01	0.01	0.02	0.01	<0.01	<0.01
547	MTB-09/53	113.50	114.00	0.50	0.50	0.12	<0.01	<0.01	0.01	0.01	<0.01	<0.01
548	MTB-09/54	114.00	114.50	0.50	0.50	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
549	MTB-09/55	114.50	115.00	0.50	0.50	0.17	<0.01	<0.01	0.02	0.01	<0.01	<0.01
550	MTB-09/56	115.00	115.50	0.50	0.50	0.29	<0.01	<0.01	0.02	0.01	<0.01	<0.01
551	MTB-09/57	115.50	116.50	1.00	1.00	0.05	<0.01	0.01	0.02	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
553	MTB-09/59	122.50	123.00	0.50	0.50	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
554	MTB-09/60	123.00	123.50	0.50	0.50	0.50	<0.01	0.01	0.02	0.01	<0.01	<0.01
555	MTB-09/61	123.50	124.00	0.50	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
556	MTB-09/62	124.00	124.50	0.50	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
557	MTB-09/63	124.50	125.50	1.00	1.00	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-10												
558	MTB-10/001	90.00	91.00	1.00	1.00	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
559	MTB-10/002	91.00	91.50	0.50	0.50	0.17	<0.01	<0.01	0.04	0.01	<0.01	<0.01
560	MTB-10/003	91.50	92.00	0.50	0.50	0.27	<0.01	<0.01	0.06	0.01	<0.01	<0.01
561	MTB-10/004	92.00	93.00	1.00	1.00	0.06	<0.01	<0.01	0.05	0.01	<0.01	<0.01
562	MTB-10/005	93.00	93.50	0.50	0.50	0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
563	MTB-10/006	93.50	94.00	0.50	0.50	0.10	<0.01	<0.01	0.07	0.02	<0.01	<0.01
564	MTB-10/007	94.00	94.50	0.50	0.50	0.05	<0.01	<0.01	0.40	0.08	<0.01	<0.01
565	MTB-10/008	94.50	95.50	1.00	1.00	0.06	<0.01	<0.01	0.09	0.02	0.01	<0.01
566	MTB-10/009	103.50	104.50	1.00	1.00	0.02	<0.01	<0.01	0.04	0.02	<0.01	<0.01
567	MTB-10/010	104.50	105.00	0.50	0.50	0.38	<0.01	<0.01	0.04	0.01	<0.01	<0.01
568	MTB-10/011	105.00	105.50	0.50	0.50	0.01	<0.01	0.01	0.03	0.01	<0.01	<0.01
569	MTB-10/012	105.50	106.50	1.00	1.00	0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
570	MTB-10/013	106.50	107.50	1.00	1.00	<0.01	<0.01	<0.01	0.02	0.01	<0.01	0.01
571	MTB-10/014	107.50	108.00	0.50	0.50	0.03	<0.01	<0.01	0.03	0.01	<0.01	<0.01
572	MTB-10/015	108.00	108.50	0.50	0.50	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
573	MTB-10/016	108.50	109.00	0.50	0.50	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
574	MTB-10/017	109.00	109.50	0.50	0.50	0.06	<0.01	<0.01	0.04	0.01	<0.01	<0.01
575	MTB-10/018	109.50	110.00	0.50	0.50	0.37	<0.01	<0.01	0.03	0.01	<0.01	<0.01
576	MTB-10/019	110.00	111.00	1.00	1.00	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
577	MTB-10/020	111.00	112.00	1.00	1.00	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
578	MTB-10/021	112.00	112.75	0.71	0.75	0.03	<0.01	<0.01	0.03	0.01	0.02	<0.01
579	MTB-10/022	112.75	113.25	0.48	0.50	0.13	<0.01	<0.01	0.03	0.01	0.01	<0.01
580	MTB-10/023	113.25	113.75	0.48	0.50	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
581	MTB-10/024	113.75	114.25	0.48	0.50	0.24	<0.01	<0.01	0.02	0.01	<0.01	<0.01
582	MTB-10/025	114.25	114.75	0.48	0.50	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
583	MTB-10/026	114.75	115.50	0.72	0.75	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
584	MTB-10/027	115.50	116.50	0.96	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
585	MTB-10/028	116.50	117.00	0.48	0.50	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
586	MTB-10/029	117.00	117.50	0.48	0.50	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
587	MTB-10/030	117.50	118.00	0.48	0.50	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
588	MTB-10/031	118.00	119.00	0.97	1.00	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
589	MTB-10/032	122.50	123.50	1.00	1.00	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
590	MTB-10/033	123.50	124.00	0.50	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
591	MTB-10/034	124.00	124.50	0.50	0.50	0.09	<0.01	0.01	0.02	0.01	<0.01	<0.01
592	MTB-10/035	124.50	125.00	0.50	0.50	0.03	<0.01	0.01	0.02	0.01	<0.01	<0.01
593	MTB-10/036	125.00	125.50	0.50	0.50	0.11	<0.01	0.01	0.03	0.01	<0.01	<0.01
594	MTB-10/037	125.50	126.00	0.50	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
595	MTB-10/038	126.00	126.50	0.50	0.50	0.20	<0.01	<0.01	0.03	0.01	<0.01	<0.01
596	MTB-10/039	126.50	127.00	0.50	0.50	0.13	<0.01	0.01	0.03	0.01	<0.01	<0.01
597	MTB-10/040	127.00	127.50	0.50	0.50	0.02	<0.01	0.01	0.03	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
599	MTB-10/042	128.00	128.50	0.50	0.50	0.18	<0.01	0.01	0.04	0.02	<0.01	<0.01
600	MTB-10/043	128.50	129.00	0.50	0.50	0.07	<0.01	0.01	0.03	0.01	<0.01	<0.01
601	MTB-10/044	129.00	130.00	1.00	1.00	0.01	<0.01	0.01	0.02	0.02	<0.01	<0.01
602	MTB-10/045	130.00	130.50	0.49	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
603	MTB-10/046	130.50	131.00	0.49	0.50	0.09	<0.01	0.01	0.03	0.01	<0.01	<0.01
604	MTB-10/047	131.00	131.50	0.49	0.50	0.40	<0.01	<0.01	0.04	0.02	<0.01	<0.01
605	MTB-10/048	131.50	132.00	0.49	0.50	0.11	<0.01	0.01	0.04	0.02	<0.01	<0.01
606	MTB-10/049	132.00	132.50	0.49	0.50	0.19	<0.01	<0.01	0.05	0.01	<0.01	<0.01
607	MTB-10/050	132.50	133.00	0.49	0.50	0.16	<0.01	<0.01	0.03	0.02	<0.01	<0.01
608	MTB-10/051	133.00	133.50	0.50	0.50	0.10	<0.01	<0.01	0.03	0.01	<0.01	<0.01
609	MTB-10/052	133.50	134.00	0.50	0.50	0.22	<0.01	0.01	0.06	0.02	<0.01	<0.01
610	MTB-10/053	134.00	134.50	0.50	0.50	0.07	<0.01	<0.01	0.03	0.02	<0.01	<0.01
611	MTB-10/054	134.50	135.00	0.50	0.50	0.27	<0.01	0.01	0.05	0.02	<0.01	<0.01
612	MTB-10/055	135.00	135.50	0.50	0.50	0.19	<0.01	0.01	0.05	0.02	<0.01	<0.01
613	MTB-10/056	135.50	136.00	0.50	0.50	0.51	<0.01	0.01	0.05	0.03	<0.01	<0.01
614	MTB-10/057	136.00	136.50	0.50	0.50	0.14	<0.01	0.01	0.04	0.02	<0.01	<0.01
615	MTB-10/058	136.50	137.00	0.50	0.50	0.35	<0.01	0.01	0.04	0.02	<0.01	<0.01
616	MTB-10/059	137.00	137.50	0.50	0.50	0.54	<0.01	0.01	0.05	0.02	<0.01	<0.01
617	MTB-10/060	137.50	138.50	1.00	1.00	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
618	MTB-10/061	138.50	139.00	0.50	0.50	0.21	<0.01	0.01	0.04	0.02	<0.01	<0.01
619	MTB-10/062	139.00	139.50	0.48	0.50	0.30	<0.01	0.01	0.04	0.02	<0.01	<0.01
620	MTB-10/063	139.50	140.00	0.48	0.50	0.55	<0.01	0.01	0.04	0.02	<0.01	<0.01
621	MTB-10/064	140.00	140.50	0.48	0.50	0.29	<0.01	0.01	0.04	0.02	<0.01	<0.01
622	MTB-10/065	140.50	141.00	0.48	0.50	0.83	<0.01	0.01	0.12	0.04	<0.01	<0.01
623	MTB-10/066	141.00	141.50	0.49	0.50	0.03	<0.01	0.01	0.03	0.02	<0.01	<0.01
624	MTB-10/067	141.50	142.00	0.49	0.50	1.08	<0.01	0.01	0.06	0.02	<0.01	<0.01
625	MTB-10/068	142.00	142.50	0.48	0.50	0.47	<0.01	0.01	0.04	0.02	<0.01	<0.01
626	MTB-10/069	142.50	143.00	0.48	0.50	0.19	<0.01	0.01	0.04	0.02	<0.01	<0.01
627	MTB-10/070	143.00	143.50	0.48	0.50	0.19	<0.01	<0.01	0.03	0.02	<0.01	<0.01
628	MTB-10/071	143.50	144.00	0.48	0.50	0.34	<0.01	0.01	0.04	0.01	<0.01	<0.01
629	MTB-10/072	144.00	144.50	0.48	0.50	0.39	<0.01	0.01	0.04	0.02	<0.01	<0.01
630	MTB-10/073	144.50	145.00	0.48	0.50	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
631	MTB-10/074	145.00	145.75	0.75	0.75	0.11	<0.01	0.01	0.02	0.01	<0.01	<0.01
632	MTB-10/075	145.75	146.50	0.75	0.75	0.07	<0.01	0.01	0.01	0.01	<0.01	<0.01
633	MTB-10/076	146.50	147.00	0.50	0.50	0.07	<0.01	0.01	0.01	0.01	<0.01	<0.01
634	MTB-10/077	147.00	147.50	0.50	0.50	0.10	<0.01	0.01	0.02	0.01	<0.01	<0.01
635	MTB-10/078	147.50	148.00	0.50	0.50	0.03	<0.01	0.01	0.02	0.01	<0.01	<0.01
636	MTB-10/079	148.00	148.50	0.50	0.50	0.15	<0.01	0.01	0.02	0.01	<0.01	<0.01
637	MTB-10/080	148.50	149.50	1.00	1.00	0.04	<0.01	0.01	0.01	0.01	<0.01	<0.01
638	MTB-10/081	154.00	155.00	1.00	1.00	0.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
639	MTB-10/082	155.00	155.50	0.50	0.50	0.05	<0.01	0.01	0.02	0.01	<0.01	<0.01
640	MTB-10/083	155.50	156.00	0.50	0.50	0.27	<0.01	0.01	0.02	0.01	<0.01	<0.01
641	MTB-10/084	156.00	156.50	0.50	0.50	0.22	<0.01	0.01	0.02	0.01	<0.01	<0.01
642	MTB-10/085	156.50	157.00	0.50	0.50	0.20	<0.01	0.01	0.03	0.01	<0.01	<0.01
643	MTB-10/086	157.00	157.50	0.50	0.50	0.13	<0.01	0.01	0.02	0.01	<0.01	<0.01
644	MTB-10/087	157.50	158.00	0.50	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
646	MTB-10/089	169.50	170.50	1.00	1.00	0.14	<0.01	0.02	0.02	0.01	<0.01	<0.01
647	MTB-10/090	170.50	171.00	0.50	0.50	0.40	<0.01	0.02	0.03	0.01	<0.01	<0.01
648	MTB-10/091	171.00	171.50	0.50	0.50	0.34	<0.01	0.02	0.02	0.01	<0.01	<0.01
649	MTB-10/092	171.50	172.00	0.50	0.50	0.22	<0.01	0.02	0.02	0.01	<0.01	<0.01
650	MTB-10/093	172.00	172.50	0.50	0.50	0.05	<0.01	0.02	0.02	0.01	<0.01	<0.01
651	MTB-10/094	172.50	173.00	0.50	0.50	0.02	<0.01	0.02	0.02	0.01	<0.01	<0.01
652	MTB-10/095	173.00	174.00	1.00	1.00	0.08	<0.01	0.02	0.01	0.01	<0.01	<0.01
Borehole No: MTB-11												
653	MTB-11/01	75.00	76.00	0.94	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
654	MTB-11/02	76.00	76.50	0.49	0.50	0.15	<0.01	<0.01	0.03	0.01	<0.01	<0.01
655	MTB-11/03	76.50	77.37	0.85	0.87	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
656	MTB-11/04	77.37	78.25	0.85	0.88	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
657	MTB-11/05	78.25	78.75	0.49	0.50	0.28	<0.01	0.01	0.02	0.02	<0.01	<0.01
658	MTB-11/06	78.75	79.25	0.49	0.50	0.28	<0.01	<0.01	0.02	0.01	<0.01	<0.01
659	MTB-11/07	79.25	79.75	0.50	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
660	MTB-11/08	79.75	80.25	0.50	0.50	0.14	0.02	<0.01	0.01	0.01	<0.01	<0.01
661	MTB-11/09	80.25	80.75	0.50	0.50	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
662	MTB-11/10	80.75	81.25	0.50	0.50	0.07	<0.01	<0.01	0.01	0.01	<0.01	<0.01
663	MTB-11/11	81.25	81.75	0.50	0.50	0.05	<0.01	<0.01	0.02	0.01	<0.01	<0.01
664	MTB-11/12	81.75	82.25	0.50	0.50	0.19	<0.01	0.01	0.02	0.01	<0.01	<0.01
665	MTB-11/13	82.25	83.25	1.00	1.00	0.03	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
666	MTB-11/14	101.00	102.00	1.00	1.00	0.09	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
667	MTB-11/15	102.00	102.50	0.50	0.50	0.17	<0.01	0.01	0.02	0.01	<0.01	<0.01
668	MTB-11/16	102.50	103.00	0.50	0.50	0.16	<0.01	<0.01	0.01	0.01	<0.01	<0.01
669	MTB-11/17	103.00	103.50	0.50	0.50	0.19	<0.01	<0.01	0.01	0.01	<0.01	<0.01
670	MTB-11/18	103.50	104.00	0.50	0.50	0.26	<0.01	0.01	0.02	0.01	<0.01	<0.01
671	MTB-11/19	104.00	104.50	0.50	0.50	0.15	<0.01	0.01	0.02	0.01	<0.01	<0.01
672	MTB-11/20	104.50	105.00	0.50	0.50	0.18	<0.01	0.01	0.02	0.01	<0.01	<0.01
673	MTB-11/21	105.00	105.50	0.50	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
674	MTB-11/22	105.50	106.00	0.50	0.50	0.06	<0.01	0.01	0.01	0.01	<0.01	<0.01
675	MTB-11/23	106.00	106.50	0.50	0.50	0.24	<0.01	0.01	0.02	0.01	<0.01	<0.01
676	MTB-11/24	106.50	107.50	1.00	1.00	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
677	MTB-11/25	124.50	125.50	0.96	1.00	0.03	<0.01	0.01	0.01	<0.01	<0.01	<0.01
678	MTB-11/26	125.50	126.00	0.48	0.50	0.02	<0.01	0.02	0.01	0.01	<0.01	<0.01
679	MTB-11/27	126.00	126.50	0.48	0.50	0.22	<0.01	0.03	0.01	0.01	<0.01	0.01
680	MTB-11/28	126.50	127.00	0.48	0.50	0.06	<0.01	0.04	<0.01	0.01	<0.01	<0.01
681	MTB-11/29	127.00	128.00	1.00	1.00	0.03	<0.01	0.03	0.01	<0.01	<0.01	<0.01
682	MTB-11/30	131.50	132.50	1.00	1.00	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
683	MTB-11/31	132.50	133.00	0.50	0.50	0.02	<0.01	0.02	0.01	0.01	<0.01	<0.01
684	MTB-11/32	133.00	133.50	0.46	0.50	0.11	<0.01	0.03	0.02	0.02	<0.01	<0.01
685	MTB-11/33	133.50	134.00	0.47	0.50	0.64	<0.01	0.02	0.01	0.01	<0.01	<0.01
686	MTB-11/34	134.00	135.00	0.93	1.00	0.05	<0.01	0.01	0.01	<0.01	<0.01	<0.01
687	MTB-11/35	141.50	142.50	1.00	1.00	0.22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
688	MTB-11/36	142.50	143.00	0.50	0.50	0.38	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
689	MTB-11/37	143.00	143.50	0.50	0.50	0.62	<0.01	0.01	0.01	<0.01	<0.01	<0.01
690	MTB-11/38	143.50	144.50	0.98	1.00	0.10	<0.01	0.02	0.01	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
692	MTB-11/40	145.50	146.00	0.50	0.50	0.19	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
693	MTB-11/41	146.00	146.50	0.50	0.50	0.67	<0.01	0.01	0.01	0.01	<0.01	<0.01
694	MTB-11/42	146.50	147.00	0.50	0.50	0.25	<0.01	0.01	0.01	<0.01	<0.01	<0.01
695	MTB-11/43	147.00	147.50	0.50	0.50	0.14	<0.01	0.01	0.01	<0.01	<0.01	<0.01
696	MTB-11/44	147.50	148.00	0.50	0.50	0.59	<0.01	0.01	0.01	<0.01	<0.01	<0.01
697	MTB-11/45	148.00	148.50	0.50	0.50	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
698	MTB-11/46	148.50	149.00	0.50	0.50	0.18	<0.01	<0.01	0.01	0.01	<0.01	<0.01
699	MTB-11/47	149.00	150.00	0.50	1.00	0.04	<0.01	0.03	<0.01	0.01	<0.01	<0.01
700	MTB-11/48	110.00	111.00	1.00	1.00	0.28	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
701	MTB-11/49	111.00	111.50	0.50	0.50	0.30	<0.01	0.02	0.01	0.01	<0.01	<0.01
702	MTB-11/50	111.50	112.25	0.75	0.75	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
703	MTB-11/51	112.25	113.00	0.75	0.75	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-12												
704	MTB-12/001	41.50	42.50	1.00	1.00	0.08	<0.01	0.02	0.02	0.01	<0.01	<0.01
705	MTB-12/002	42.50	43.00	0.50	0.50	0.08	<0.01	0.02	0.02	0.01	<0.01	<0.01
706	MTB-12/003	43.00	43.50	0.50	0.50	0.11	<0.01	0.02	0.02	0.01	<0.01	<0.01
707	MTB-12/004	43.50	44.00	0.50	0.50	0.08	<0.01	0.02	0.02	0.01	<0.01	<0.01
708	MTB-12/005	44.00	44.50	0.49	0.50	0.09	<0.01	0.02	0.02	0.01	<0.01	<0.01
709	MTB-12/006	44.50	45.00	0.49	0.50	0.23	<0.01	0.02	0.02	0.01	<0.01	<0.01
710	MTB-12/007	45.00	45.50	0.45	0.50	0.03	<0.01	0.02	0.02	0.01	<0.01	<0.01
711	MTB-12/008	45.50	46.00	0.45	0.50	0.22	<0.01	0.02	0.02	0.01	<0.01	<0.01
712	MTB-12/009	46.00	46.50	0.45	0.50	0.06	<0.01	0.01	0.02	0.01	<0.01	<0.01
713	MTB-12/010	46.50	47.50	0.87	1.00	0.05	<0.01	0.01	0.02	0.01	<0.01	<0.01
714	MTB-12/011	73.50	74.50	1.00	1.00	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01
715	MTB-12/012	74.50	75.00	0.50	0.50	0.11	<0.01	0.01	0.01	0.01	<0.01	<0.01
716	MTB-12/013	75.00	75.50	0.50	0.50	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
717	MTB-12/014	75.50	76.25	0.75	0.75	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01
718	MTB-12/015	76.25	77.00	0.75	0.75	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
719	MTB-12/016	77.00	77.75	0.71	0.75	0.03	<0.01	0.01	0.02	0.01	<0.01	<0.01
720	MTB-12/017	77.75	78.50	0.71	0.75	0.03	<0.01	0.01	0.02	0.01	<0.01	<0.01
721	MTB-12/018	78.50	79.50	0.94	1.00	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
722	MTB-12/019	79.50	80.00	0.48	0.50	0.20	<0.01	0.01	0.02	0.01	<0.01	<0.01
723	MTB-12/020	80.00	80.50	0.44	0.50	0.03	<0.01	0.01	0.01	0.01	<0.01	<0.01
724	MTB-12/021	80.50	81.00	0.48	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
725	MTB-12/022	81.00	81.50	0.49	0.50	0.69	<0.01	0.01	0.02	0.01	<0.01	<0.01
726	MTB-12/023	81.50	82.00	0.48	0.50	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
727	MTB-12/024	82.00	82.50	0.49	0.50	0.20	<0.01	0.01	0.02	0.01	<0.01	<0.01
728	MTB-12/025	82.50	83.00	0.48	0.50	0.08	<0.01	0.01	0.01	0.01	<0.01	<0.01
729	MTB-12/026	83.00	83.50	0.45	0.50	0.08	<0.01	0.01	0.01	0.01	<0.01	<0.01
730	MTB-12/027	83.50	84.50	0.90	1.00	0.02	<0.01	0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-13												
731	MTB-13/001	29.50	30.50	0.96	1.00	0.30	<0.01	<0.01	0.03	0.01	<0.01	<0.01
732	MTB-13/002	30.50	31.00	0.48	0.50	0.25	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
733	MTB-13/003	31.00	31.50	0.48	0.50	0.54	<0.01	<0.01	0.03	0.01	<0.01	<0.01
734	MTB-13/004	31.50	32.00	0.49	0.50	0.40	<0.01	<0.01	0.04	0.01	<0.01	<0.01
735	MTB-13/005	32.00	32.50	0.48	0.50	0.84	<0.01	<0.01	0.05	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
737	MTB-13/007	33.00	33.50	0.50	0.50	0.77	<0.01	<0.01	0.09	0.01	0.01	<0.01
738	MTB-13/008	33.50	34.00	0.50	0.50	3.24	<0.01	<0.01	0.11	0.01	0.01	<0.01
739	MTB-13/009	34.00	34.50	0.49	0.50	0.30	<0.01	<0.01	0.07	0.01	<0.01	<0.01
740	MTB-13/010	34.50	35.00	0.49	0.50	0.14	<0.01	<0.01	0.08	0.01	<0.01	<0.01
741	MTB-13/011	35.00	36.00	0.98	1.00	0.01	<0.01	0.01	0.07	<0.01	<0.01	<0.01
742	MTB-13/012	36.00	37.00	0.98	1.00	0.04	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
743	MTB-13/013	37.00	37.50	0.43	0.50	0.17	<0.01	<0.01	0.02	0.01	<0.01	<0.01
744	MTB-13/014	37.50	38.00	0.43	0.50	0.35	<0.01	<0.01	0.02	0.01	<0.01	<0.01
745	MTB-13/015	38.00	38.50	0.43	0.50	0.36	<0.01	<0.01	0.04	0.01	0.01	<0.01
746	MTB-13/016	38.50	39.00	0.43	0.50	0.04	<0.01	0.01	0.04	0.01	<0.01	<0.01
747	MTB-13/017	39.00	39.50	0.43	0.50	0.05	<0.01	0.01	0.04	0.01	<0.01	<0.01
748	MTB-13/018	39.50	40.00	0.43	0.50	0.14	<0.01	<0.01	0.04	0.01	<0.01	<0.01
749	MTB-13/019	40.00	41.00	0.83	1.00	0.04	<0.01	0.01	0.03	0.01	<0.01	<0.01
750	MTB-13/020	60.00	61.00	1.00	1.00	0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01
751	MTB-13/021	61.00	61.50	0.50	0.50	0.39	<0.01	<0.01	0.03	0.01	<0.01	<0.01
752	MTB-13/022	61.50	62.00	0.50	0.50	0.42	<0.01	<0.01	0.04	0.01	<0.01	<0.01
753	MTB-13/023	62.00	62.50	0.50	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
754	MTB-13/024	62.50	63.50	1.00	1.00	0.09	<0.01	<0.01	0.02	<0.01	0.01	<0.01
755	MTB-13/025	82.50	83.50	0.96	1.00	0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01
756	MTB-13/026	83.50	84.00	0.48	0.50	0.23	<0.01	<0.01	0.02	0.02	<0.01	<0.01
757	MTB-13/027	84.00	84.50	0.48	0.50	0.08	<0.01	<0.01	0.01	0.01	<0.01	<0.01
758	MTB-13/028	84.50	85.00	0.48	0.50	0.05	<0.01	0.01	0.02	0.02	<0.01	<0.01
759	MTB-13/029	85.00	85.50	0.49	0.50	0.30	<0.01	<0.01	0.03	0.01	<0.01	0.39
760	MTB-13/030	85.50	86.00	0.49	0.50	0.68	<0.01	<0.01	0.02	0.01	<0.01	<0.01
761	MTB-13/031	86.00	86.50	0.49	0.50	0.59	<0.01	<0.01	0.04	0.01	<0.01	<0.01
762	MTB-13/032	86.50	87.00	0.49	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
763	MTB-13/033	87.00	88.00	0.97	1.00	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
764	MTB-13/034	100.00	101.00	0.91	1.00	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
765	MTB-13/035	101.00	101.50	0.49	0.50	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
766	MTB-13/036	101.50	102.00	0.48	0.50	0.13	<0.01	0.01	0.02	0.01	<0.01	<0.01
767	MTB-13/037	102.00	102.50	0.49	0.50	0.17	<0.01	0.01	0.02	0.01	<0.01	<0.01
768	MTB-13/038	102.50	103.00	0.48	0.50	0.83	<0.01	0.01	0.02	0.01	<0.01	<0.01
769	MTB-13/039	103.00	103.50	0.50	0.50	0.35	<0.01	<0.01	0.02	0.01	<0.01	<0.01
770	MTB-13/040	103.50	104.00	0.50	0.50	0.12	<0.01	0.01	0.01	0.01	<0.01	<0.01
771	MTB-13/041	104.00	105.00	0.99	1.00	0.04	<0.01	0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-14												
772	MTB-14/001	101.44	102.44	0.98	1.00	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
773	MTB-14/002	102.44	103.00	0.55	0.56	0.26	<0.01	0.01	0.03	0.01	0.01	<0.01
774	MTB-14/003	103.00	103.50	0.48	0.50	0.18	<0.01	<0.01	0.03	0.01	<0.01	<0.01
775	MTB-14/004	103.50	104.00	0.49	0.50	0.07	<0.01	<0.01	0.02	0.02	<0.01	<0.01
776	MTB-14/005	104.00	104.50	0.48	0.50	0.04	<0.01	<0.01	0.02	0.02	<0.01	<0.01
777	MTB-14/006	104.50	105.00	0.49	0.50	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
778	MTB-14/007	105.00	106.00	0.97	1.00	0.02	<0.01	<0.01	0.02	0.01	<0.01	<0.01
779	MTB-14/008	106.00	106.75	0.73	0.75	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
780	MTB-14/009	106.75	107.50	0.73	0.75	0.05	<0.01	<0.01	0.04	0.01	<0.01	<0.01
781	MTB-14/010	107.50	108.00	0.49	0.50	0.16	<0.01	<0.01	0.03	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
783	MTB-14/012	108.50	109.00	0.49	0.50	0.07	<0.01	<0.01	0.02	0.01	<0.01	<0.01
784	MTB-14/013	109.00	109.50	0.50	0.50	0.29	<0.01	<0.01	0.02	0.01	<0.01	<0.01
785	MTB-14/014	109.50	110.00	0.50	0.50	0.09	<0.01	<0.01	0.03	0.01	<0.01	<0.01
786	MTB-14/015	110.00	110.50	0.50	0.50	1.56	<0.01	<0.01	0.11	0.05	<0.01	<0.01
787	MTB-14/016	110.50	111.00	0.50	0.50	1.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
788	MTB-14/017	111.00	111.50	0.50	0.50	0.18	<0.01	<0.01	0.02	0.02	<0.01	<0.01
789	MTB-14/018	111.50	112.00	0.50	0.50	0.29	<0.01	<0.01	0.02	0.01	<0.01	<0.01
790	MTB-14/019	112.00	112.50	0.50	0.50	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
791	MTB-14/020	112.50	113.00	0.50	0.50	0.26	<0.01	0.01	0.01	0.01	<0.01	<0.01
792	MTB-14/021	113.00	113.50	0.50	0.50	0.22	<0.01	0.01	0.02	0.01	<0.01	<0.01
793	MTB-14/022	113.50	114.00	0.50	0.50	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
794	MTB-14/023	114.00	114.50	0.50	0.50	0.18	<0.01	<0.01	0.01	0.01	<0.01	<0.01
795	MTB-14/024	114.50	115.00	0.50	0.50	0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01
796	MTB-14/025	115.00	115.50	0.50	0.50	0.03	<0.01	0.01	0.01	<0.01	<0.01	<0.01
797	MTB-14/026	115.50	116.00	0.50	0.50	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
798	MTB-14/027	116.00	116.50	0.50	0.50	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
799	MTB-14/028	116.50	117.50	1.00	1.00	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
800	MTB-14/029	117.50	118.50	1.00	1.00	0.06	<0.01	0.01	0.02	0.02	<0.01	<0.01
801	MTB-14/030	118.50	119.00	0.50	0.50	0.14	<0.01	0.02	0.01	0.01	<0.01	<0.01
802	MTB-14/031	119.00	119.50	0.50	0.50	0.11	<0.01	0.01	0.01	0.01	<0.01	<0.01
803	MTB-14/032	119.50	120.25	0.75	0.75	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
804	MTB-14/033	120.25	121.00	0.75	0.75	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
805	MTB-14/034	121.00	121.50	0.50	0.50	1.49	<0.01	<0.01	0.02	0.01	<0.01	<0.01
806	MTB-14/035	121.50	122.00	0.50	0.50	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
807	MTB-14/036	122.00	122.50	0.50	0.50	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
808	MTB-14/037	122.50	123.00	0.50	0.50	0.43	<0.01	<0.01	0.02	0.01	<0.01	<0.01
809	MTB-14/038	123.00	123.75	0.75	0.75	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
810	MTB-14/039	123.75	124.25	0.50	0.50	0.80	<0.01	<0.01	0.03	0.02	<0.01	<0.01
811	MTB-14/040	124.25	124.75	0.50	0.50	0.03	<0.01	0.01	0.03	0.01	<0.01	<0.01
812	MTB-14/041	124.75	125.25	0.50	0.50	0.11	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
813	MTB-14/042	125.25	125.75	0.50	0.50	0.16	<0.01	<0.01	0.03	0.01	<0.01	<0.01
814	MTB-14/043	125.75	126.25	0.50	0.50	0.03	<0.01	<0.01	0.02	0.01	<0.01	<0.01
815	MTB-14/044	126.25	126.75	0.50	0.50	0.27	<0.01	<0.01	0.03	0.02	<0.01	<0.01
816	MTB-14/045	126.75	127.75	1.00	1.00	0.21	<0.01	<0.01	0.03	0.01	<0.01	<0.01
817	MTB-14/046	127.75	128.75	1.00	1.00	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
818	MTB-14/047	128.75	129.75	1.00	1.00	0.08	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
819	MTB-14/048	129.75	130.25	0.50	0.50	0.19	<0.01	<0.01	0.05	0.01	0.01	<0.01
820	MTB-14/049	130.25	130.75	0.50	0.50	0.19	<0.01	<0.01	0.03	0.01	<0.01	<0.01
821	MTB-14/050	130.75	131.25	0.50	0.50	0.05	<0.01	<0.01	0.02	0.01	<0.01	<0.01
822	MTB-14/051	131.25	132.00	0.75	0.75	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
823	MTB-14/052	132.00	132.75	0.75	0.75	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
824	MTB-14/053	132.75	133.25	0.50	0.50	0.15	<0.01	<0.01	0.02	0.01	<0.01	<0.01
825	MTB-14/054	133.25	133.75	0.50	0.50	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
826	MTB-14/055	133.75	134.25	0.50	0.50	0.07	<0.01	0.01	0.01	0.02	<0.01	<0.01
827	MTB-14/056	134.25	134.75	0.50	0.50	0.29	<0.01	0.01	0.02	0.02	<0.01	<0.01
828	MTB-14/057	134.75	135.25	0.50	0.50	0.11	<0.01	<0.01	0.02	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
830	MTB-14/059	135.75	136.25	0.50	0.50	0.75	<0.01	<0.01	0.03	0.02	<0.01	<0.01
831	MTB-14/060	136.25	136.75	0.50	0.50	0.24	<0.01	<0.01	0.04	0.02	<0.01	<0.01
832	MTB-14/061	136.75	137.25	0.50	0.50	0.11	<0.01	<0.01	0.03	0.02	<0.01	<0.01
833	MTB-14/062	137.25	137.75	0.50	0.50	0.37	<0.01	<0.01	0.03	0.02	<0.01	<0.01
834	MTB-14/063	137.75	138.25	0.50	0.50	0.78	<0.01	<0.01	0.03	0.02	<0.01	<0.01
835	MTB-14/064	138.25	138.75	0.50	0.50	0.27	<0.01	<0.01	0.03	0.02	<0.01	<0.01
836	MTB-14/065	138.75	139.75	0.98	1.00	0.06	<0.01	<0.01	0.03	0.01	<0.01	<0.01
837	MTB-14/066	139.75	140.75	0.98	1.00	0.12	<0.01	<0.01	0.03	0.01	<0.01	<0.01
838	MTB-14/067	140.75	141.75	0.98	1.00	0.11	<0.01	<0.01	0.03	0.02	<0.01	<0.01
839	MTB-14/068	141.75	142.75	0.99	1.00	0.04	<0.01	<0.01	0.01	0.02	<0.01	<0.01
840	MTB-14/069	142.75	143.75	1.00	1.00	0.12	<0.01	<0.01	0.02	0.02	<0.01	0.01
841	MTB-14/070	143.75	144.25	0.50	0.50	0.20	<0.01	<0.01	0.02	0.01	<0.01	<0.01
842	MTB-14/071	144.25	144.75	0.50	0.50	0.23	<0.01	<0.01	0.02	0.01	<0.01	<0.01
843	MTB-14/072	144.75	145.25	0.50	0.50	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
844	MTB-14/073	145.25	145.75	0.50	0.50	0.23	<0.01	<0.01	0.01	0.01	<0.01	<0.01
845	MTB-14/074	145.75	146.25	0.50	0.50	0.32	<0.01	<0.01	0.02	0.02	<0.01	<0.01
846	MTB-14/075	146.25	146.75	0.50	0.50	0.18	<0.01	<0.01	0.02	0.01	<0.01	<0.01
847	MTB-14/076	146.75	147.25	0.50	0.50	0.05	<0.01	<0.01	0.01	0.01	<0.01	<0.01
848	MTB-14/077	147.25	148.00	0.75	0.75	0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
849	MTB-14/078	148.00	148.50	0.50	0.50	0.04	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
850	MTB-14/079	148.50	149.00	0.50	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	0.01
851	MTB-14/080	149.00	149.50	0.50	0.50	0.11	<0.01	<0.01	0.02	0.01	<0.01	<0.01
852	MTB-14/081	149.50	150.00	0.50	0.50	0.10	<0.01	0.01	0.02	0.01	<0.01	<0.01
853	MTB-14/082	150.00	150.50	0.50	0.50	0.04	<0.01	<0.01	0.02	0.01	<0.01	<0.01
854	MTB-14/083	150.50	151.50	1.00	1.00	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
855	MTB-14/084	151.50	152.00	0.50	0.50	0.09	<0.01	<0.01	0.01	0.01	<0.01	<0.01
856	MTB-14/085	152.00	152.50	0.50	0.50	0.16	<0.01	<0.01	0.01	0.01	<0.01	<0.01
857	MTB-14/086	152.50	153.00	0.50	0.50	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
858	MTB-14/087	153.00	154.00	1.00	1.00	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
859	MTB-14/088	177.00	178.00	1.00	1.00	0.11	<0.01	<0.01	0.01	0.01	<0.01	<0.01
860	MTB-14/089	178.00	178.50	0.50	0.50	0.40	<0.01	<0.01	0.02	0.02	<0.01	<0.01
861	MTB-14/090	178.50	179.00	0.50	0.50	0.12	<0.01	<0.01	0.01	0.01	<0.01	<0.01
862	MTB-14/091	179.00	180.00	1.00	1.00	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
863	MTB-14/092	180.00	181.00	1.00	1.00	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
864	MTB-14/093	181.00	181.50	0.50	0.50	0.47	<0.01	<0.01	0.03	0.01	<0.01	<0.01
865	MTB-14/094	181.50	182.00	0.50	0.50	0.63	<0.01	<0.01	0.03	0.02	<0.01	<0.01
866	MTB-14/095	182.00	182.50	0.50	0.50	0.59	<0.01	<0.01	0.03	0.01	<0.01	<0.01
867	MTB-14/096	182.50	183.00	0.49	0.50	0.07	<0.01	<0.01	0.01	0.01	<0.01	<0.01
868	MTB-14/097	183.00	184.00	0.98	1.00	0.21	<0.01	<0.01	0.01	0.01	<0.01	<0.01
869	MTB-14/098	189.00	190.00	1.00	1.00	0.12	<0.01	<0.01	0.02	0.01	<0.01	<0.01
870	MTB-14/099	190.00	190.50	0.50	0.50	0.20	<0.01	0.01	0.02	0.01	<0.01	<0.01
871	MTB-14/100	190.50	191.00	0.50	0.50	0.64	<0.01	0.01	0.02	0.01	<0.01	<0.01
872	MTB-14/101	191.00	192.00	1.00	1.00	0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
873	MTB-14/102	192.00	193.00	1.00	1.00	0.08	<0.01	0.01	0.02	0.01	<0.01	<0.01
874	MTB-14/103	193.00	193.50	0.50	0.50	0.14	<0.01	0.01	0.03	0.01	<0.01	<0.01
875	MTB-14/104	193.50	194.00	0.50	0.50	0.15	<0.01	0.01	0.02	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
877	MTB-14/106	194.50	195.00	0.50	0.50	0.11	<0.01	0.01	0.01	0.01	<0.01	<0.01
878	MTB-14/107	195.00	196.00	1.00	1.00	0.16	<0.01	0.01	0.01	0.01	<0.01	<0.01
Borehole No: MTB-15												
879	MTB-15/001	41.50	42.50	1.00	1.00	0.09	<0.01	0.01	0.07	0.02	<0.01	<0.01
880	MTB-15/002	42.50	43.00	0.50	0.50	0.18	<0.01	<0.01	0.02	0.01	<0.01	<0.01
881	MTB-15/003	43.00	43.50	0.50	0.50	0.19	<0.01	0.01	0.03	0.01	<0.01	<0.01
882	MTB-15/004	43.50	44.50	0.98	1.00	0.08	<0.01	<0.01	0.01	<0.01	0.01	<0.01
883	MTB-15/005	51.00	52.00	0.98	1.00	0.06	<0.01	<0.01	0.01	0.01	<0.01	<0.01
884	MTB-15/006	52.00	52.50	0.50	0.50	0.14	<0.01	<0.01	0.01	0.01	<0.01	<0.01
885	MTB-15/007	52.50	53.00	0.50	0.50	0.20	<0.01	0.01	0.02	0.01	<0.01	<0.01
886	MTB-15/008	53.00	53.50	0.50	0.50	0.13	<0.01	0.01	0.02	0.01	<0.01	<0.01
887	MTB-15/009	53.50	53.90	0.40	0.40	0.30	<0.01	<0.01	0.01	0.01	<0.01	<0.01
888	MTB-15/010	53.90	54.30	0.40	0.40	0.28	<0.01	0.01	0.02	0.01	<0.01	<0.01
889	MTB-15/011	54.30	54.70	0.40	0.40	1.44	<0.01	0.01	0.02	0.01	<0.01	<0.01
890	MTB-15/012	54.70	55.40	0.60	0.70	0.28	<0.01	0.01	0.02	0.01	<0.01	<0.01
891	MTB-15/013	55.40	55.85	0.41	0.45	0.03	<0.01	0.01	0.01	0.01	<0.01	<0.01
892	MTB-15/014	55.85	56.30	0.41	0.45	0.36	<0.01	0.01	0.02	0.02	<0.01	<0.01
893	MTB-15/015	56.30	56.80	0.50	0.50	0.09	<0.01	0.01	0.01	0.01	<0.01	<0.01
894	MTB-15/016	56.80	57.30	0.50	0.50	0.29	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
895	MTB-15/017	57.30	57.80	0.50	0.50	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
896	MTB-15/018	57.80	58.30	0.50	0.50	0.13	<0.01	<0.01	0.01	0.01	0.01	<0.01
897	MTB-15/019	58.30	59.30	1.00	1.00	0.18	<0.01	0.01	0.01	0.01	<0.01	<0.01
898	MTB-15/020	66.50	67.50	1.00	1.00	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
899	MTB-15/021	67.50	68.50	1.00	1.00	0.13	<0.01	<0.01	0.01	0.01	<0.01	<0.01
900	MTB-15/022	68.50	69.00	0.50	0.50	0.25	<0.01	0.01	0.02	0.01	<0.01	<0.01
901	MTB-15/023	69.00	69.50	0.50	0.50	0.32	<0.01	<0.01	0.02	0.01	<0.01	<0.01
902	MTB-15/024	69.50	70.00	0.47	0.50	0.04	<0.01	<0.01	0.01	0.01	<0.01	<0.01
903	MTB-15/025	70.00	70.50	0.48	0.50	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
904	MTB-15/026	70.50	71.00	0.47	0.50	0.04	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
905	MTB-15/027	71.00	71.50	0.48	0.50	0.23	<0.01	0.01	0.01	0.01	<0.01	<0.01
906	MTB-15/028	71.50	72.50	0.94	1.00	0.03	<0.01	<0.01	0.01	0.01	<0.01	<0.01
907	MTB-15/029	72.50	73.50	1.00	1.00	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
908	MTB-15/030	73.50	74.50	1.00	1.00	0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01
909	MTB-15/031	74.50	75.50	1.00	1.00	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
910	MTB-15/032	75.50	76.00	0.50	0.50	0.16	<0.01	<0.01	0.02	0.01	<0.01	<0.01
911	MTB-15/033	76.00	76.50	0.50	0.50	0.13	<0.01	<0.01	0.04	0.02	<0.01	<0.01
912	MTB-15/034	76.50	77.00	0.50	0.50	0.15	<0.01	<0.01	0.04	0.02	<0.01	<0.01
913	MTB-15/035	77.00	77.50	0.50	0.50	0.11	<0.01	<0.01	0.04	0.01	<0.01	<0.01
914	MTB-15/036	77.50	78.00	0.50	0.50	0.35	<0.01	<0.01	0.04	0.01	<0.01	<0.01
915	MTB-15/037	78.00	78.50	0.50	0.50	0.93	<0.01	<0.01	0.06	0.01	<0.01	<0.01
916	MTB-15/038	78.50	79.00	0.50	0.50	0.95	0.01	<0.01	0.06	0.02	<0.01	<0.01
917	MTB-15/039	79.00	79.50	0.50	0.50	1.29	<0.01	<0.01	0.06	0.02	<0.01	<0.01
918	MTB-15/040	79.50	80.00	0.50	0.50	0.39	<0.01	<0.01	0.04	0.02	<0.01	<0.01
919	MTB-15/041	80.00	80.50	0.50	0.50	1.21	<0.01	<0.01	0.09	0.02	<0.01	<0.01
920	MTB-15/042	80.50	81.00	0.50	0.50	0.35	<0.01	<0.01	0.04	0.01	<0.01	<0.01
921	MTB-15/043	81.00	81.50	0.50	0.50	0.64	<0.01	<0.01	0.05	0.01	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
923	MTB-15/045	82.00	82.50	0.50	0.50	0.11	<0.01	<0.01	0.02	0.01	<0.01	<0.01
924	MTB-15/046	82.50	83.00	0.50	0.50	0.21	<0.01	<0.01	0.02	0.01	<0.01	<0.01
925	MTB-15/047	83.00	83.50	0.50	0.50	0.37	<0.01	<0.01	0.04	0.01	<0.01	<0.01
926	MTB-15/048	83.50	84.00	0.50	0.50	0.08	<0.01	<0.01	0.02	0.01	<0.01	<0.01
927	MTB-15/049	84.00	84.50	0.50	0.50	0.61	<0.01	<0.01	0.03	0.01	<0.01	<0.01
928	MTB-15/050	84.50	85.00	0.50	0.50	0.05	<0.01	<0.01	0.03	0.01	<0.01	<0.01
929	MTB-15/051	85.00	85.50	0.50	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
930	MTB-15/052	85.50	86.50	0.98	1.00	0.10	<0.01	0.01	0.02	0.01	<0.01	<0.01
931	MTB-15/053	86.50	87.00	0.49	0.50	0.09	<0.01	0.01	0.02	0.01	<0.01	<0.01
932	MTB-15/054	87.00	87.50	0.49	0.50	0.27	<0.01	<0.01	0.05	0.01	<0.01	<0.01
933	MTB-15/055	87.50	88.00	0.49	0.50	0.48	<0.01	<0.01	0.04	0.01	<0.01	<0.01
934	MTB-15/056	88.00	88.50	0.49	0.50	0.41	<0.01	<0.01	0.03	0.01	<0.01	<0.01
935	MTB-15/057	88.50	89.00	0.50	0.50	1.42	<0.01	<0.01	0.07	0.01	<0.01	<0.01
936	MTB-15/058	89.00	89.50	0.50	0.50	0.26	<0.01	<0.01	0.02	0.01	<0.01	<0.01
937	MTB-15/059	89.50	90.00	0.50	0.50	2.14	<0.01	0.01	0.10	0.02	<0.01	<0.01
938	MTB-15/060	90.00	90.50	0.50	0.50	4.43	<0.01	0.01	0.14	0.03	0.01	<0.01
939	MTB-15/061	90.50	91.00	0.50	0.50	0.14	<0.01	<0.01	0.03	0.01	0.01	<0.01
940	MTB-15/062	91.00	91.50	0.50	0.50	0.26	<0.01	<0.01	0.02	<0.01	0.02	<0.01
941	MTB-15/063	91.50	92.50	1.00	1.00	0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
942	MTB-15/064	92.50	93.50	1.00	1.00	0.11	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
943	MTB-15/065	93.50	94.00	0.50	0.50	0.09	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
944	MTB-15/066	94.00	94.50	0.50	0.50	0.40	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
945	MTB-15/067	94.50	95.00	0.50	0.50	2.87	<0.01	0.01	0.06	0.01	<0.01	<0.01
946	MTB-15/068	95.00	96.00	1.00	1.00	0.06	<0.01	<0.01	0.03	0.01	<0.01	<0.01
947	MTB-15/069	96.00	96.50	0.50	0.50	0.08	<0.01	<0.01	0.03	0.01	<0.01	<0.01
948	MTB-15/070	96.50	97.00	0.50	0.50	0.26	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
949	MTB-15/071	97.00	97.50	0.50	0.50	0.33	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
950	MTB-15/072	97.50	98.50	1.00	1.00	0.10	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Borehole No: MTB-16												
951	MTB-16/001	61.30	62.30	1.00	1.00	0.13	<0.01	0.25	0.01	0.01	<0.01	<0.01
952	MTB-16/002	62.30	62.80	0.50	0.50	0.13	<0.01	0.28	0.01	0.01	<0.01	<0.01
953	MTB-16/003	62.80	63.30	0.50	0.50	0.17	<0.01	0.21	0.01	0.01	<0.01	<0.01
954	MTB-16/004	63.30	63.80	0.50	0.50	0.52	<0.01	0.18	0.01	0.01	<0.01	<0.01
955	MTB-16/005	63.80	64.30	0.50	0.50	0.35	<0.01	0.18	<0.01	0.01	<0.01	<0.01
956	MTB-16/006	64.30	65.30	1.00	1.00	0.12	<0.01	0.17	0.01	0.01	<0.01	<0.01
957	MTB-16/007	65.30	66.30	1.00	1.00	0.07	<0.01	0.06	0.01	<0.01	<0.01	0.01
958	MTB-16/008	66.30	67.30	1.00	1.00	0.02	<0.01	0.04	0.01	0.01	<0.01	<0.01
959	MTB-16/009	67.30	68.30	1.00	1.00	0.04	<0.01	0.03	0.01	0.01	<0.01	<0.01
960	MTB-16/010	68.30	69.00	0.70	0.70	0.04	<0.01	0.04	0.01	<0.01	<0.01	<0.01
961	MTB-16/011	69.00	69.50	0.50	0.50	0.11	<0.01	0.08	0.01	<0.01	<0.01	<0.01
962	MTB-16/012	69.50	70.00	0.50	0.50	0.15	<0.01	0.09	0.01	0.01	<0.01	<0.01
963	MTB-16/013	70.00	70.50	0.49	0.50	0.17	<0.01	0.11	0.01	0.02	<0.01	<0.01
964	MTB-16/014	70.50	71.00	0.49	0.50	0.06	<0.01	0.08	0.01	0.01	<0.01	<0.01
965	MTB-16/015	71.00	71.50	0.49	0.50	0.08	<0.01	0.08	0.01	0.01	<0.01	<0.01
966	MTB-16/016	71.50	72.00	0.49	0.50	0.04	<0.01	0.07	0.01	0.02	<0.01	0.01
967	MTB-16/017	72.00	72.50	0.49	0.50	0.10	<0.01	0.08	0.01	0.02	<0.01	<0.01

Sl. No.	Sample No.	Depth (m)		Rec. Thickness (m)	Thickness (m)	Grade (%)						
		From	To			Cu	Pb	Zn	Ni	Co	Mo	W
969	MTB-16/019	73.00	73.50	0.48	0.50	0.14	<0.01	0.05	0.01	0.01	<0.01	<0.01
970	MTB-16/020	73.50	74.50	0.98	1.00	0.09	<0.01	0.03	0.01	0.01	<0.01	<0.01
Borehole No: MTB-17												
971	MTB-17/001	89.77	90.77	0.95	1.00	0.17	<0.01	<0.01	0.04	0.01	<0.01	<0.01
972	MTB-17/002	90.77	91.77	0.97	1.00	0.17	<0.01	<0.01	0.03	0.01	<0.01	<0.01
973	MTB-17/003	91.77	92.77	0.97	1.00	0.10	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
974	MTB-17/004	92.77	93.18	0.40	0.41	0.95	<0.01	<0.01	0.03	0.01	<0.01	<0.01
975	MTB-17/005	93.18	93.59	0.40	0.41	0.53	<0.01	0.01	0.03	0.01	<0.01	<0.01
976	MTB-17/006	93.59	94.00	0.40	0.41	0.16	<0.01	<0.01	0.03	0.01	<0.01	<0.01
977	MTB-17/007	94.00	94.50	0.48	0.50	0.21	<0.01	<0.01	0.02	0.01	<0.01	<0.01
978	MTB-17/008	94.50	95.00	0.49	0.50	0.80	<0.01	<0.01	0.03	0.01	<0.01	<0.01
979	MTB-17/009	95.00	95.50	0.48	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
980	MTB-17/010	95.50	96.00	0.48	0.50	1.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
981	MTB-17/011	96.00	96.50	0.48	0.50	0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01
982	MTB-17/012	96.50	97.00	0.49	0.50	0.76	<0.01	<0.01	0.02	0.01	<0.01	<0.01
983	MTB-17/013	97.00	97.75	0.71	0.75	0.13	<0.01	<0.01	0.02	0.01	<0.01	<0.01
984	MTB-17/014	97.75	98.50	0.71	0.75	0.23	<0.01	<0.01	0.02	0.01	<0.01	<0.01
985	MTB-17/015	98.50	99.25	0.71	0.75	0.29	<0.01	0.01	0.03	0.02	<0.01	<0.01
986	MTB-17/016	99.25	100.00	0.72	0.75	0.14	<0.01	<0.01	0.03	0.02	<0.01	<0.01
987	MTB-17/017	100.00	100.50	0.47	0.50	2.04	<0.01	0.01	0.04	0.03	0.01	<0.01
988	MTB-17/018	100.50	101.00	0.48	0.50	0.66	<0.01	<0.01	0.02	0.01	<0.01	<0.01
989	MTB-17/019	101.00	101.50	0.47	0.50	0.06	<0.01	<0.01	0.02	0.01	<0.01	<0.01
990	MTB-17/020	101.50	102.00	0.48	0.50	0.08	<0.01	<0.01	0.02	0.01	<0.01	<0.01
991	MTB-17/021	102.00	102.50	0.47	0.50	0.10	<0.01	<0.01	0.02	0.01	<0.01	<0.01
992	MTB-17/022	102.50	103.00	0.48	0.50	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
993	MTB-17/023	103.00	103.50	0.50	0.50	0.96	<0.01	<0.01	0.01	0.01	0.03	<0.01
994	MTB-17/024	103.50	104.00	0.50	0.50	0.29	<0.01	<0.01	0.02	0.02	0.03	<0.01
995	MTB-17/025	104.00	104.50	0.50	0.50	0.05	<0.01	<0.01	0.01	0.01	<0.01	<0.01
996	MTB-17/026	104.50	105.00	0.50	0.50	0.02	<0.01	<0.01	0.01	0.01	<0.01	<0.01
997	MTB-17/027	105.00	105.50	0.50	0.50	0.05	<0.01	<0.01	0.01	0.01	<0.01	<0.01
998	MTB-17/028	105.50	106.00	0.50	0.50	0.26	<0.01	<0.01	0.11	0.06	0.39	<0.01
999	MTB-17/029	106.00	106.50	0.48	0.50	0.05	<0.01	<0.01	0.02	0.02	0.06	<0.01
1000	MTB-17/030	106.50	107.25	0.72	0.75	0.02	<0.01	<0.01	0.02	0.02	<0.01	<0.01
1001	MTB-17/031	107.25	108.00	0.72	0.75	<0.01	<0.01	0.01	0.03	0.02	0.27	<0.01
1002	MTB-17/032	108.00	109.00	0.96	1.00	0.01	<0.01	<0.01	0.03	0.01	<0.01	<0.01
1003	MTB-17/033	109.00	109.50	0.49	0.50	0.06	<0.01	<0.01	0.03	0.01	<0.01	<0.01
1004	MTB-17/034	109.50	110.00	0.49	0.50	0.04	<0.01	<0.01	0.04	0.01	<0.01	<0.01
1005	MTB-17/035	110.00	110.50	0.49	0.50	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
1006	MTB-17/036	110.50	111.00	0.49	0.50	0.01	<0.01	<0.01	0.02	0.01	0.02	<0.01
1007	MTB-17/037	111.00	111.50	0.49	0.50	0.02	<0.01	<0.01	0.02	0.01	0.08	<0.01
1008	MTB-17/038	111.50	112.00	0.48	0.50	0.88	<0.01	0.01	0.04	0.02	0.01	<0.01
1009	MTB-17/039	112.00	112.50	0.47	0.50	3.53	<0.01	0.01	0.04	0.03	<0.01	<0.01
1010	MTB-17/040	112.50	113.00	0.47	0.50	0.01	<0.01	0.01	0.04	0.01	<0.01	<0.01
1011	MTB-17/041	113.00	114.00	0.94	1.00	0.02	<0.01	0.01	0.05	0.01	<0.01	<0.01

Details of the Chemical Analysis for Copper of Primary Samples of the previous borehoels drilled by MECL (2022-2023) in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand

Sl. No.	Sample No.	Depth (m)		Thickness (m)	Grade (%)
		From	To		Cu
Borehole No: MTCB-09					
1	MTCB09/1	73.28	73.88	0.60	0.03
2	MTCB09/2	73.88	74.48	0.60	0.14
3	MTCB09/3	74.48	75.08	0.60	0.09
4	MTCB09/4	75.08	75.78	0.70	0.11
5	MTCB09/5	75.78	76.40	0.62	0.23
6	MTCB09/6	76.40	77.40	1.00	0.21
7	MTCB09/7	77.40	78.40	1.00	0.30
8	MTCB09/8	78.40	79.00	0.60	0.29
9	MTCB09/9	79.00	80.00	1.00	0.05
10	MTCB09/10	80.00	81.00	1.00	0.03
11	MTCB09/11	81.00	82.00	1.00	0.02
12	MTCB09/12	82.00	82.50	0.50	0.15
13	MTCB09/13	82.50	83.00	0.50	0.27
14	MTCB09/14	83.00	84.00	1.00	0.04
15	MTCB10/1	73.00	74.00	1.00	0.00
16	MTCB10/2	74.00	75.00	1.00	0.02
Borehole No: MTCB-10					
17	MTCB10/3	75.00	75.60	0.60	0.75
18	MTCB10/4	75.60	76.60	1.00	0.31
19	MTCB10/5	76.60	77.20	0.60	0.17
20	MTCB10/6	77.20	77.80	0.60	0.16
21	MTCB10/7	77.80	78.40	0.60	0.19
22	MTCB10/8	78.40	79.00	0.60	0.38
23	MTCB10/9	79.00	79.60	0.60	0.85
24	MTCB10/10	79.60	80.20	0.60	2.44
25	MTCB10/11	80.20	81.10	0.90	0.09
26	MTCB10/12	81.10	82.00	0.90	0.04
Borehole No: MTCB-11					
27	MTCB11/1	62.50	63.50	1.00	0.04
28	MTCB11/2	63.50	64.50	1.00	0.09
29	MTCB11/3	64.50	65.50	1.00	0.03
30	MTCB11/4	65.50	66.50	1.00	0.12
31	MTCB11/5	66.50	67.50	1.00	0.07
32	MTCB11/6	77.90	78.90	1.00	0.07
33	MTCB11/7	78.90	79.50	0.60	0.15
34	MTCB11/8	79.50	80.30	0.80	0.14
35	MTCB11/9	80.30	81.30	1.00	0.12

Sl. No.	Sample No.	Depth (m)		Thickness (m)	Grade (%)
		From	To		Cu
36	MTCB11/10	81.30	82.30	1.00	0.00
37	MTCB11/11	82.30	83.30	1.00	0.00
38	MTCB11/12	83.30	84.30	1.00	0.00
39	MTCB11/13	84.30	84.90	0.60	0.18
40	MTCB11/14	84.90	85.50	0.60	0.24
41	MTCB11/15	85.50	86.50	1.00	0.03
42	MTCB11/16	86.50	87.50	1.00	0.04

Comparision of Borehole core Primary Sample Analysis Vs External Check Sample Analysis for Copper, Lead, Zinc, Nickel, Molybdenum, Cobalt & Tungsten in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand.

Primary Sample No.	External Check Sample No.	Depth (m)		Thick-ness (m)	Cu (%)			Pb (%)		Zn (%)		Ni (%)		Mo (%)		Co (%)		W (%)	
		From	To		Primary	Check	Diff. (Check-Primary)	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check
MTB-01/03	MTB01CH01	42.50	43.00	0.50	0.111	0.080	-27.602	<0.01	0.008	0.008	0.005	0.121	0.048	<0.01	0.001	0.011	0.006	<0.01	ND
MTB-01/10	MTB01CH02	52.50	53.00	0.50	0.021	0.020	-3.382	<0.01	0.006	0.011	0.006	0.037	0.015	<0.01	ND	0.007	0.003	0.006	ND
MTB-01/14	MTB01CH03	54.50	55.00	0.50	0.203	0.170	-16.256	<0.01	0.009	0.007	0.006	0.027	0.013	<0.01	ND	0.008	0.005	<0.01	ND
MTB-02/02	MTB02CH01	23.00	23.50	0.50	0.060	0.030	-50.000	<0.01	0.006	0.007	0.004	0.099	0.029	<0.01	ND	0.006	0.005	<0.01	ND
MTB-02/11	MTB02CH02	66.50	67.00	0.50	0.045	0.030	-32.886	<0.01	0.009	0.006	0.004	0.053	0.018	<0.01	ND	0.005	0.007	<0.01	0.002
MTB-02/19	MTB02CH03	82.00	82.50	0.50	0.812	0.420	-48.257	<0.01	0.011	0.006	0.004	0.111	0.042	0.006	0.002	0.025	0.015	<0.01	ND
MTB-02/25	MTB02CH04	85.00	85.50	0.50	0.409	0.280	-31.473	<0.01	0.011	0.010	0.005	0.077	0.025	0.008	0.002	0.027	0.012	<0.01	ND
MTB-03/13	MTB03CH01	43.00	44.00	1.00	0.222	0.190	-14.453	<0.01	0.010	0.007	0.003	0.020	0.008	0.007	0.004	0.012	0.009	<0.01	ND
MTB-03/21	MTB03CH02	52.50	53.00	0.50	0.936	0.630	-32.671	<0.01	0.011	<0.01	0.003	0.028	0.014	<0.01	ND	0.015	0.011	<0.01	ND
MTB-03/22	MTB03CH03	53.00	53.50	0.50	0.068	0.090	33.136	<0.01	0.009	0.011	0.003	0.016	0.006	<0.01	ND	0.010	0.008	<0.01	0.004
MTB-03/52	MTB03CH04	76.50	77.00	0.50	0.084	0.090	7.271	<0.01	0.010	<0.01	0.002	0.030	0.014	<0.01	ND	0.008	0.009	<0.01	0.001
MTB-03/58	MTB03CH05	79.40	79.80	0.40	1.340	0.810	-39.566	<0.01	0.008	<0.01	0.003	0.025	0.013	<0.01	0.002	0.019	0.011	<0.01	ND
MTB-03/61	MTB03CH06	81.20	81.60	0.40	0.521	0.320	-38.591	<0.01	0.010	0.005	0.004	0.023	0.011	<0.01	ND	0.017	0.011	<0.01	ND
MTB-03/64	MTB03CH07	104.70	105.20	0.50	0.741	0.550	-25.746	<0.01	0.007	<0.01	0.003	0.027	0.014	<0.01	ND	0.012	0.009	<0.01	0.001
MTB-04/13	MTB04CH01	52.50	53.00	0.50	0.411	0.310	-24.648	<0.01	0.009	0.006	0.003	0.078	0.049	<0.01	0.003	0.027	0.018	<0.01	ND
MTB-04/17	MTB04CH02	54.50	55.00	0.50	0.890	0.600	-32.569	<0.01	0.011	<0.01	0.004	0.138	0.100	0.005	0.003	0.041	0.033	<0.01	ND
MTB-04/18	MTB04CH03	55.00	55.50	0.50	0.768	0.510	-33.628	<0.01	0.010	0.006	0.003	0.121	0.079	0.005	0.004	0.034	0.026	<0.01	ND
MTB-04/32	MTB04CH04	62.00	62.50	0.50	1.110	0.800	-27.947	<0.01	0.008	0.005	0.004	0.055	0.035	<0.01	ND	0.024	0.015	<0.01	ND
MTB-04/37	MTB04CH05	64.50	65.00	0.50	0.693	0.540	-22.033	<0.01	0.009	0.006	0.004	0.056	0.036	<0.01	ND	0.026	0.018	<0.01	ND
MTB-04/59	MTB04CH06	77.50	78.25	0.75	0.336	0.250	-25.507	<0.01	0.008	0.009	0.007	0.021	0.009	<0.01	0.001	0.009	0.008	<0.01	0.010
MTB-05/19	MTB05CH01	80.50	81.00	0.50	0.868	0.800	-7.877	<0.01	0.005	0.005	0.009	0.016	0.008	0.006	0.003	0.007	0.007	<0.01	ND
MTB-05/20	MTB05CH02	81.00	81.50	0.50	1.297	1.040	-19.790	<0.01	0.004	<0.01	0.012	0.015	0.007	<0.01	0.001	0.006	0.005	<0.01	ND
MTB-05/35	MTB05CH03	89.20	89.70	0.50	1.350	1.060	-21.476	<0.01	0.009	0.005	0.012	0.074	0.038	0.008	0.006	0.008	0.008	<0.01	ND
MTB-05/57	MTB05CH04	106.00	106.50	0.50	2.482	1.990	-19.810	<0.01	0.005	<0.01	0.017	0.087	0.053	<0.01	0.001	<0.01	0.004	<0.01	ND
MTB-05/59	MTB05CH05	107.00	107.50	0.50	1.323	1.230	-7.001	<0.01	0.004	<0.01	0.012	0.029	0.016	<0.01	0.001	<0.01	0.004	<0.01	ND
MTB-05/60	MTB05CH06	107.50	108.00	0.50	2.878	2.460	-14.521	0.008	0.007	0.010	0.024	0.070	0.046	<0.01	0.001	0.019	0.014	<0.01	ND
MTB-06/04	MTB06CH01	43.00	43.50	0.50	0.300	0.290	-3.366	<0.01	0.008	<0.01	0.003	0.102	0.064	<0.01	0.002	0.033	0.022	<0.01	0.001
MTB-06/13	MTB06CH02	79.50	80.00	0.50	0.281	0.300	6.952	<0.01	0.005	<0.01	0.003	0.015	0.008	<0.01	ND	<0.01	0.002	<0.01	0.001

Primary Sample No.	External Check Sample No.	Depth (m)		Thick-ness (m)	Cu (%)			Pb (%)		Zn (%)		Ni (%)		Mo (%)		Co (%)		W (%)	
		From	To		Primary	Check	Diff. (Check-Primary)	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check
MTB-06/31	MTB06CH03	89.00	89.50	0.50	4.217	2.850	-32.415	<0.01	0.007	<0.01	0.030	0.061	0.034	<0.01	0.002	0.024	0.013	<0.01	ND
MTB-06/32	MTB06CH04	89.50	90.00	0.50	0.777	0.550	-29.206	<0.01	0.010	<0.01	0.005	0.045	0.021	<0.01	0.001	0.012	0.007	<0.01	ND
MTB-06/44	MTB06CH05	107.00	107.50	0.50	0.227	0.190	-16.189	<0.01	0.011	<0.01	0.003	0.032	0.016	<0.01	ND	0.010	0.006	<0.01	ND
MTB-06/56	MTB06CH06	117.00	117.50	0.50	1.006	0.780	-22.488	<0.01	0.008	<0.01	0.003	0.032	0.019	<0.01	0.002	0.010	0.007	<0.01	ND
MTB-06/62	MTB06CH07	120.50	121.00	0.50	0.581	0.500	-13.867	<0.01	0.006	<0.01	0.002	0.020	0.009	<0.01	0.001	0.010	0.005	<0.01	ND
MTB-06/63	MTB06CH08	121.00	121.50	0.50	0.831	0.650	-21.772	<0.01	0.007	<0.01	0.002	0.019	0.010	<0.01	0.001	0.010	0.006	<0.01	ND
MTB-06/68	MTB06CH09	123.80	124.30	0.50	0.274	0.250	-8.592	<0.01	0.006	<0.01	0.001	0.021	0.011	0.010	0.003	0.010	0.006	<0.01	0.001
MTB-07/07	MTB07CH01	51.20	51.70	0.50	0.553	0.420	-24.023	<0.01	0.009	0.010	0.003	0.066	0.031	0.014	0.009	0.025	0.013	<0.01	ND
MTB-07/12	MTB07CH02	53.60	54.10	0.50	0.835	0.540	-35.360	<0.01	0.010	<0.01	0.004	0.049	0.025	<0.01	0.002	0.023	0.015	<0.01	0.001
MTB-07/18	MTB07CH03	57.00	57.50	0.50	1.410	0.930	-34.038	<0.01	0.009	<0.01	0.004	0.058	0.030	0.010	0.003	0.021	0.014	<0.01	ND
MTB-07/39	MTB07CH04	67.50	68.00	0.50	4.939	3.340	-32.379	<0.01	0.009	<0.01	0.007	0.056	0.037	0.014	0.009	0.042	0.031	<0.01	ND
MTB-07/40	MTB07CH05	68.00	68.50	0.50	1.422	0.980	-31.098	<0.01	0.011	<0.01	0.003	0.032	0.019	0.010	0.006	0.027	0.018	<0.01	ND
MTB-07/67	MTB07CH06	95.00	95.50	0.50	0.569	0.330	-42.014	<0.01	0.005	0.010	0.002	0.015	0.004	<0.01	0.001	0.013	0.004	0.010	0.006
MTB-07/80	MTB07CH07	103.00	103.50	0.50	0.341	0.300	-11.894	<0.01	0.010	0.010	0.004	0.047	0.020	<0.01	0.001	0.015	0.010	<0.01	0.001
MTB-07/83	MTB07CH08	104.50	105.00	0.50	0.738	0.650	-11.924	<0.01	0.005	<0.01	0.004	0.026	0.012	<0.01	ND	0.010	0.005	<0.01	ND
MTB-07/87	MTB07CH09	107.00	107.50	0.50	0.580	0.460	-20.703	<0.01	0.010	<0.01	0.006	0.041	0.016	<0.01	0.001	0.015	0.010	<0.01	ND
MTB-08/06	MTB08CH01	49.50	50.00	0.50	0.554	0.450	-20.703	<0.01	0.006	0.005	0.005	0.026	0.017	<0.01	0.001	0.060	0.055	<0.01	0.002
MTB-08/07	MTB08CH02	50.00	50.50	0.50	0.903	0.850	-20.703	<0.01	0.010	0.008	0.007	0.036	0.025	<0.01	ND	0.081	0.075	<0.01	ND
MTB-08/28	MTB08CH03	188.00	188.50	0.50	0.425	0.410	-20.703	<0.01	0.005	<0.01	0.004	0.009	0.004	<0.01	0.001	<0.01	0.003	<0.01	ND
MTB-08/40	MTB08CH04	201.50	202.00	0.50	0.033	0.030	-20.703	<0.01	0.014	<0.01	0.005	0.056	0.028	<0.01	0.002	0.018	0.007	0.006	0.001
MTB-08/42	MTB08CH05	202.50	203.00	0.50	0.268	0.160	-20.703	<0.01	0.042	<0.01	0.006	0.021	0.024	<0.01	ND	0.019	0.006	<0.01	0.002
MTB-08/45	MTB08CH06	204.00	204.50	0.50	2.856	1.890	-20.703	<0.01	0.020	0.005	0.009	0.067	0.041	<0.01	0.002	0.011	0.012	<0.01	ND
MTB-09/06	MTB09CH01	69.00	69.50	0.50	0.037	0.040	-20.703	<0.01	0.009	<0.01	0.003	0.037	0.016	<0.01	0.002	0.014	0.007	<0.01	ND
MTB-09/07	MTB09CH02	69.50	70.00	0.50	0.348	0.320	-20.703	<0.01	0.009	<0.01	0.003	0.036	0.018	0.017	0.008	0.010	0.008	<0.01	ND
MTB-09/37	MTB09CH03	91.00	91.75	0.75	0.123	0.120	-20.703	<0.01	0.009	<0.01	0.004	0.016	0.008	<0.01	ND	0.010	0.007	<0.01	ND
MTB-09/54	MTB09CH04	114.00	114.50	0.50	0.067	0.050	-20.703	<0.01	0.009	<0.01	0.004	0.016	0.007	<0.01	ND	0.014	0.008	<0.01	ND
MTB-09/62	MTB09CH05	124.00	124.50	0.50	0.102	0.100	-20.703	<0.01	0.009	<0.01	0.004	0.017	0.008	<0.01	ND	0.010	0.007	<0.01	ND
MTB-10/07	MTB10CH01	94.00	94.50	0.50	0.046	0.030	-20.703	<0.01	0.013	<0.01	0.005	0.403	0.314	<0.01	0.001	0.077	0.063	<0.01	ND
MTB-10/11	MTB10CH02	105.00	105.50	0.50	0.013	0.020	-20.703	<0.01	0.008	0.006	0.003	0.027	0.012	<0.01	0.001	0.012	0.007	<0.01	0.001
MTB-10/23	MTB10CH03	113.25	113.75	0.50	0.013	0.020	-20.703	<0.01	0.007	<0.01	0.003	0.024	0.008	<0.01	0.001	<0.01	0.006	<0.01	0.001
MTB-10/36	MTB10CH04	125.00	125.50	0.50	0.114	0.120	-20.703	<0.01	0.008	0.005	0.005	0.030	0.014	<0.01	0.001	0.013	0.009	<0.01	ND

Primary Sample No.	External Check Sample No.	Depth (m)		Thick-ness (m)	Cu (%)			Pb (%)		Zn (%)		Ni (%)		Mo (%)		Co (%)		W (%)	
		From	To		Primary	Check	Diff. (Check-Primary)	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check
MTB-10/37	MTB10CH05	125.50	126.00	0.50	0.058	0.060	-20.703	<0.01	0.007	0.005	0.005	0.025	0.012	<0.01	0.001	0.012	0.008	<0.01	ND
MTB-10/40	MTB10CH06	127.00	127.50	0.50	0.025	0.030	-20.703	<0.01	0.008	0.005	0.004	0.026	0.011	<0.01	0.001	0.010	0.007	<0.01	ND
MTB-10/50	MTB10CH07	132.50	133.00	0.50	0.155	0.130	-20.703	<0.01	0.007	<0.01	0.005	0.034	0.020	<0.01	0.003	0.017	0.009	<0.01	ND
MTB-10/65	MTB10CH08	140.50	141.00	0.50	0.831	0.680	-20.703	<0.01	0.011	0.008	0.007	0.119	0.102	<0.01	0.001	0.040	0.034	<0.01	ND
MTB-10/67	MTB10CH09	141.50	142.00	0.50	1.080	0.810	-20.703	<0.01	0.010	0.007	0.007	0.064	0.048	<0.01	0.001	0.023	0.021	<0.01	ND
MTB-10/93	MTB10CH10	172.00	172.50	0.50	0.054	0.060	-20.703	<0.01	0.007	0.018	0.013	0.021	0.009	<0.01	ND	0.010	0.005	<0.01	ND
MTB-11/28	MTB11CH01	126.50	127.00	0.50	0.055	0.050	-20.703	<0.01	0.002	0.036	0.025	<0.01	0.002	<0.01	0.001	0.006	0.003	<0.01	0.002
MTB-11/35	MTB11CH02	141.50	142.50	1.00	0.215	0.200	-20.703	<0.01	0.001	<0.01	0.004	<0.01	0.002	<0.01	ND	<0.01	0.002	<0.01	0.001
MTB-11/37	MTB11CH03	143.00	143.50	0.50	0.621	0.820	-20.703	<0.01	0.003	0.009	0.008	0.008	0.004	<0.01	ND	<0.01	0.004	<0.01	0.002
MTB-11/48	MTB11CH04	110.00	111.00	1.00	0.279	0.020	-20.703	<0.01	0.003	<0.01	0.003	0.007	0.002	<0.01	ND	<0.01	0.004	<0.01	ND
MTB-11/50	MTB11CH05	111.50	112.25	0.75	0.013	0.020	-20.703	<0.01	0.003	<0.01	0.002	<0.01	0.002	<0.01	ND	<0.01	0.003	<0.01	0.001
MTB-12/012	MTB12CH01	74.50	75.00	0.50	0.106	0.090	-20.703	<0.01	0.004	0.007	0.005	0.014	0.005	<0.01	ND	0.008	0.003	<0.01	0.001
MTB-12/013	MTB12CH02	75.00	75.50	0.50	<0.01	0.010	-20.703	<0.01	0.006	0.008	0.005	0.017	0.006	<0.01	ND	0.009	0.003	<0.01	0.001
MTB-12/022	MTB12CH03	81.00	81.50	0.50	0.688	0.680	-20.703	<0.01	0.008	0.013	0.010	0.020	0.009	<0.01	ND	0.010	0.006	<0.01	ND
MTB-13/001	MTB13CH01	29.50	30.50	1.00	0.299	0.240	-20.703	<0.01	0.003	<0.01	0.001	0.032	0.014	<0.01	ND	0.010	0.004	<0.01	0.001
MTB-13/002	MTB13CH02	30.50	31.00	0.50	0.255	0.200	-20.703	<0.01	0.004	<0.01	0.001	0.019	0.009	<0.01	0.001	<0.01	0.003	<0.01	0.001
MTB-13/008	MTB13CH03	33.50	34.00	0.50	3.236	2.470	-20.703	<0.01	0.011	<0.01	0.006	0.108	0.056	0.009	0.006	0.014	0.011	<0.01	ND
MTB-13/038	MTB13CH04	102.50	103.00	0.50	0.829	0.740	-20.703	<0.01	0.008	0.005	0.006	0.024	0.014	<0.01	0.001	0.014	0.009	<0.01	ND
MTB-15/011	MTB15CH01	108.50	109.00	0.50	1.436	1.220	-20.703	<0.01	0.007	0.008	0.009	0.024	0.013	<0.01	0.002	0.009	0.007	<0.01	ND
MTB-15/014	MTB15CH02	110.00	110.50	0.50	0.357	0.330	-20.703	<0.01	0.010	0.009	0.008	0.021	0.012	<0.01	0.002	0.017	0.013	<0.01	ND
MTB-15/025	MTB15CH03	110.50	111.00	0.50	0.030	0.030	-20.703	<0.01	0.007	<0.01	0.004	0.006	0.003	<0.01	0.002	<0.01	0.003	<0.01	ND
MTB-15/044	MTB15CH04	112.00	112.50	0.50	1.013	0.830	-20.703	<0.01	0.011	0.005	0.006	0.070	0.041	<0.01	0.001	0.027	0.019	<0.01	ND
MTB-15/057	MTB15CH05	121.00	121.50	0.50	1.416	1.250	-20.703	<0.01	0.011	<0.01	0.007	0.070	0.043	<0.01	0.002	0.014	0.009	<0.01	0.001
MTB-15/059	MTB15CH06	135.75	136.25	0.50	2.136	1.510	-20.703	<0.01	0.010	0.005	0.007	0.097	0.065	<0.01	0.002	0.018	0.014	<0.01	ND
MTB-15/060	MTB15CH07	145.75	146.25	0.50	4.429	3.370	-20.703	<0.01	0.016	0.011	0.013	0.135	0.092	0.010	0.007	0.025	0.019	<0.01	ND
MTB-14/012	MTB14CH01	181.00	181.50	0.50	0.066	0.040	-20.703	<0.01	0.009	<0.01	0.002	0.016	0.007	<0.01	0.001	0.009	0.007	<0.01	0.001
MTB-14/015	MTB14CH02	182.00	182.50	0.50	1.556	1.090	-20.703	<0.01	0.014	<0.01	0.003	0.114	0.093	<0.01	0.001	0.052	0.042	<0.01	ND
MTB-14/016	MTB14CH03	54.30	54.70	0.40	1.120	0.840	-20.703	<0.01	0.012	<0.01	0.002	0.024	0.016	<0.01	ND	0.013	0.012	<0.01	ND
MTB-14/019	MTB14CH04	55.85	56.30	0.45	0.011	0.010	-20.703	<0.01	0.011	<0.01	0.002	0.008	0.004	<0.01	ND	0.015	0.008	<0.01	0.001
MTB-14/034	MTB14CH05	70.00	70.50	0.50	1.490	1.130	-20.703	<0.01	0.014	<0.01	0.003	0.017	0.010	<0.01	ND	0.010	0.011	<0.01	ND
MTB-14/059	MTB14CH06	81.50	82.00	0.50	0.750	0.250	-20.703	<0.01	0.012	<0.01	0.002	0.030	0.009	<0.01	ND	0.021	0.009	<0.01	ND

Primary Sample No.	External Check Sample No.	Depth (m)		Thick-ness (m)	Cu (%)			Pb (%)		Zn (%)		Ni (%)		Mo (%)		Co (%)		W (%)	
		From	To		Primary	Check	Diff. (Check-Primary)	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check	Primary	Check
MTB-14/074	MTB14CH07	88.50	89.00	0.50	0.324	0.570	-20.703	<0.01	0.011	<0.01	0.002	0.021	0.017	<0.01	0.002	0.016	0.011	<0.01	ND
MTB-14/093	MTB14CH08	89.50	90.00	0.50	0.471	0.310	-20.703	<0.01	0.013	<0.01	0.003	0.030	0.015	<0.01	0.001	0.013	0.010	<0.01	ND
MTB-14/095	MTB14CH09	90.00	90.50	0.50	0.592	0.380	-20.703	<0.01	0.014	<0.01	0.002	0.032	0.017	<0.01	ND	0.013	0.014	<0.01	ND
MTB-16/004	MTB16CH01	63.30	63.80	0.50	0.524	0.360	-20.703	<0.01	0.018	0.182	0.091	0.009	0.004	<0.01	ND	0.013	0.010	<0.01	ND
MTB-16/005	MTB16CH02	63.80	64.30	0.50	0.352	0.260	-20.703	<0.01	0.009	0.176	0.073	<0.01	0.004	<0.01	ND	0.011	0.008	<0.01	ND
MTB-17/004	MTB17CH01	92.77	93.18	0.41	0.947	0.670	-20.703	<0.01	0.012	<0.01	0.003	0.031	0.017	<0.01	0.001	0.007	0.006	<0.01	ND
MTB-17/008	MTB17CH02	94.50	95.00	0.50	0.796	0.650	-20.703	<0.01	0.014	<0.01	0.003	0.027	0.016	<0.01	0.001	0.009	0.008	<0.01	ND
MTB-17/010	MTB17CH03	95.50	96.00	0.50	1.014	0.680	-20.703	<0.01	0.014	<0.01	0.004	0.034	0.022	<0.01	0.001	0.014	0.009	<0.01	ND
MTB-17/012	MTB17CH04	96.50	97.00	0.50	0.757	0.560	-20.703	<0.01	0.012	<0.01	0.004	0.024	0.012	<0.01	ND	0.008	0.006	<0.01	ND
MTB-17/018	MTB17CH05	100.50	101.00	0.50	0.657	0.460	-20.703	<0.01	0.007	<0.01	0.003	0.020	0.009	<0.01	0.001	0.013	0.008	<0.01	ND
MTB-17/039	MTB17CH06	112.00	112.50	0.50	3.531	2.440	-20.703	<0.01	0.026	0.008	0.007	0.038	0.030	<0.01	0.003	0.026	0.014	<0.01	ND

Statement showing Borehole wise intersected mineralized zones at 0.2%,0.5% &1% Cu cut-off in Thakurdih Area-1 Block, District- East Singhbhum, Jharkhand.

Mineralised zones intersected At 0.2% Cu cut-off					
S.No.	**BH.No.**	**From (m)**	**To (m)**	**Thickness (m)**	**Cu %**
1	MTB-01	54.50	55.00	0.50	0.20
2	MTB-01	57.50	58.00	0.50	0.43
3	MTB-02	64.50	65.00	0.50	0.21
4	MTB-02	65.50	66.00	0.50	0.27
5	MTB-02	80.50	87.00	6.50	0.36
6	MTB-02	93.00	94.50	1.50	0.24
7	MTB-03	43.00	44.00	1.00	0.22
8	MTB-03	50.50	53.50	3.00	0.46
9	MTB-03	59.00	59.50	0.50	0.28
10	MTB-03	62.50	63.00	0.50	0.24
11	MTB-03	65.00	66.00	1.00	0.20
12	MTB-03	70.00	71.00	1.00	0.21
13	MTB-03	76.00	81.60	5.60	0.25
14	MTB-04	43.00	43.50	0.50	0.33
15	MTB-04	45.50	46.00	0.50	0.27
16	MTB-04	50.00	81.00	31.00	0.27
17	MTB-05	72.50	73.00	0.50	0.21
18	MTB-05	78.00	81.50	3.50	0.39
19	MTB-05	85.00	101.00	16.00	0.59
20	MTB-05	105.50	109.00	3.50	0.97
21	MTB-06	43.00	46.00	3.00	0.23
22	MTB-06	79.50	80.00	0.50	0.28
23	MTB-06	84.00	91.00	7.00	0.57
24	MTB-06	104.00	104.50	0.50	0.24
25	MTB-06	107.00	107.50	0.50	0.23
26	MTB-06	115.50	124.30	8.80	0.46
27	MTB-06	128.80	133.30	4.50	0.20
28	MTB-07	47.50	68.50	21.00	0.37
29	MTB-07	73.50	80.00	6.50	0.23
30	MTB-07	86.50	87.00	0.50	0.22
31	MTB-07	94.50	109.00	14.50	0.36
32	MTB-08	47.50	51.00	3.50	0.92
33	MTB-08	183.00	183.50	0.50	0.23
34	MTB-08	188.00	188.50	0.50	0.42
35	MTB-08	199.00	207.00	8.00	1.21
36	MTB-09	68.50	70.50	2.00	0.23

S.No.	BH.No.	From (m)	To (m)	Thickness (m)	Cu %
37	MTB-09	75.00	78.50	3.50	0.24
38	MTB-09	88.00	91.00	3.00	0.20
39	MTB-09	93.00	93.50	0.50	0.23
40	MTB-09	100.50	101.50	1.00	0.81
41	MTB-09	111.00	111.50	0.50	0.27
42	MTB-09	115.00	115.50	0.50	0.29
43	MTB-09	123.00	123.50	0.50	0.50
44	MTB-10	91.50	92.00	0.50	0.27
45	MTB-10	104.50	105.00	0.50	0.38
46	MTB-10	109.50	110.00	0.50	0.37
47	MTB-10	113.75	114.25	0.50	0.24
48	MTB-10	126.00	126.50	0.50	0.20
49	MTB-10	131.00	145.00	14.00	0.30
50	MTB-10	155.50	157.00	1.50	0.23
51	MTB-10	170.50	172.00	1.50	0.32
52	MTB-11	78.25	79.25	1.00	0.28
53	MTB-11	103.50	104.00	0.50	0.26
54	MTB-11	106.00	106.50	0.50	0.24
55	MTB-11	126.00	126.50	0.50	0.22
56	MTB-11	133.50	134.00	0.50	0.64
57	MTB-11	141.50	148.00	6.50	0.31
58	MTB-11	110.00	111.50	1.50	0.29
59	MTB-12	44.50	45.00	0.50	0.20
60	MTB-12	45.50	46.00	0.50	0.22
61	MTB-12	79.50	80.00	0.50	0.20
62	MTB-12	81.00	82.50	1.50	0.30
63	MTB-12	79.50	81.50	2.00	0.23
64	MTB-13	29.50	38.50	9.00	0.46
65	MTB-13	37.50	38.50	1.00	0.35
66	MTB-13	61.00	62.00	1.00	0.41
67	MTB-13	83.50	86.50	3.00	0.32
68	MTB-13	102.50	103.50	1.00	0.59
69	MTB-14	102.44	103.00	0.56	0.26
70	MTB-14	108.00	116.50	8.50	0.28
71	MTB-14	121.00	127.75	6.75	0.31
72	MTB-14	134.25	138.75	4.50	0.37
73	MTB-14	143.75	146.75	3.00	0.21
74	MTB-14	178.00	184.00	6.00	0.24
75	MTB-15	52.50	57.30	4.80	0.32
76	MTB-15	68.50	69.50	1.00	0.29

S.No.	BH.No.	From (m)	To (m)	Thickness (m)	Cu %
77	MTB-15	71.00	71.50	0.50	0.23
78	MTB-15	77.50	97.50	20.00	0.53
79	MTB-16	63.60	64.30	0.70	0.44
80	MTB-17	92.77	106.00	13.23	0.38
81	MTB-17	111.50	112.50	1.00	1.80
82	MTCB-09	75.78	79.00	3.22	0.26
83	MTCB-09	82.50	83.00	0.50	0.27
84	MTCB-10	75.00	80.20	5.20	0.63
85	MTCB-11	84.90	85.50	0.60	0.24

Mineralised zones intersected At 0.5% Cu cut-off

S.No.	BH.No.	From (m)	To (m)	Thickness (m)	Cu %
1	MTB-02	81.50	82.50	1.00	0.57
2	MTB-03	51.00	53.50	2.50	0.55
3	MTB-03	79.40	79.80	0.40	1.34
4	MTB-03	81.20	81.60	0.40	0.52
5	MTB-04	54.50	56.50	2.00	0.54
6	MTB-04	57.00	57.50	0.50	0.66
7	MTB-04	61.00	62.50	1.50	0.56
8	MTB-04	64.00	65.00	1.00	0.55
9	MTB-04	66.50	67.50	1.00	0.51
10	MTB-05	80.00	81.50	1.50	0.73
11	MTB-05	86.90	90.20	3.30	1.68
12	MTB-05	96.50	99.50	3.00	0.81
13	MTB-05	105.50	108.00	2.50	1.34
14	MTB-06	84.00	85.50	1.50	0.71
15	MTB-06	88.00	90.50	2.50	0.89
16	MTB-06	116.50	122.00	5.50	0.63
17	MTB-06	131.80	132.30	0.50	0.51
18	MTB-07	51.20	51.70	0.50	0.55
19	MTB-07	52.60	54.10	1.50	0.53
20	MTB-07	56.50	58.50	2.00	0.54
21	MTB-07	64.00	68.50	4.50	0.83
22	MTB-07	94.50	95.50	1.00	0.53
23	MTB-07	100.00	100.50	0.50	0.52
24	MTB-07	101.50	109.00	7.50	0.52
25	MTB-08	47.50	51.00	3.50	0.92
26	MTB-08	199.00	206.50	7.50	1.28
27	MTB-09	78.00	78.50	0.50	0.55
28	MTB-09	100.50	101.50	1.00	0.81
29	MTB-09	123.00	123.50	0.50	0.50
30	MTB-10	135.50	136.00	0.50	0.51
31	MTB-10	137.00	137.50	0.50	0.54
32	MTB-10	139.50	142.00	2.50	0.55
33	MTB-11	133.50	134.00	0.50	0.64
34	MTB-11	142.50	143.50	1.00	0.50
35	MTB-11	146.00	146.50	0.50	0.67
36	MTB-11	147.50	148.00	0.50	0.59
37	MTB-12	81.00	81.50	0.50	0.69

S.No.	BH.No.	From (m)	To (m)	Thickness (m)	Cu %
38	MTB-13	31.00	34.00	3.00	1.01
39	MTB-13	85.00	86.50	1.50	0.52
40	MTB-13	102.50	103.50	1.00	0.59
41	MTB-14	109.00	112.00	3.00	0.59
42	MTB-14	121.00	123.00	2.00	0.58
43	MTB-14	123.75	124.25	0.50	0.80
44	MTB-14	135.25	136.25	1.00	0.57
45	MTB-14	137.25	138.25	1.00	0.57
46	MTB-14	181.00	182.50	1.50	0.56
47	MTB-15	53.50	55.40	1.90	0.53
48	MTB-15	78.00	84.50	6.50	0.63
49	MTB-15	88.00	91.00	3.00	1.18
50	MTB-17	92.77	97.00	4.23	0.50
51	MTB-17	100.00	103.50	3.50	0.56
52	MTCB-10	75.00	80.20	5.20	0.63

Mineralised zones intersected At 1.0 % Cu cut-off

S.No.	BH.No.	From (m)	To (m)	Thickness (m)	Cu %
1	MTB-03	79.40	79.80	0.40	1.34
2	MTB-04	62.00	62.50	0.50	1.11
3	MTB-05	81.00	81.50	0.50	1.30
4	MTB-05	86.90	90.20	3.30	1.68
5	MTB-05	96.50	97.00	0.50	2.72
6	MTB-05	99.00	99.50	0.50	1.26
7	MTB-05	105.50	108.00	2.50	1.34
8	MTB-06	84.00	84.50	0.50	1.64
9	MTB-06	88.00	90.00	2.00	1.10
10	MTB-06	116.50	118.50	2.00	1.02
11	MTB-06	121.50	122.00	0.50	1.12
12	MTB-07	57.00	57.50	0.50	1.41
13	MTB-07	64.00	64.50	0.50	1.33
14	MTB-07	66.50	68.50	2.00	1.13
15	MTB-08	48.00	51.00	3.00	1.03
16	MTB-08	200.00	206.50	6.50	1.41
17	MTB-09	101.00	101.50	0.50	1.08
18	MTB-10	141.50	142.00	0.50	1.08
19	MTB-13	31.00	34.00	3.00	1.01
20	MTB-14	110.00	111.00	1.00	1.33
21	MTB-14	121.00	121.50	0.50	1.49
22	MTB-15	54.30	54.70	0.40	1.44
23	MTB-15	79.00	79.50	0.50	1.29
24	MTB-15	80.00	80.50	0.50	1.21
25	MTB-15	81.50	82.00	0.50	1.01
26	MTB-15	88.00	91.00	3.00	1.18
27	MTB-15	94.50	95.00	0.50	2.72
28	MTB-17	95.50	96.00	0.50	1.01
29	MTB-17	100.00	100.50	0.50	2.04
30	MTCB-10	79.60	80.20	0.60	2.44

Statement Showing Borehole wise Ore Zones at 0.2% Cu cut-off (With 2m minimum stoping width and 3.0 m Non-ore parting) in Thakurdih Area-1 Block, District- East Singhbhum, Jharkhand (by MECL & GSI)

Section No.	Borehole No.	Lode No.	Depth of Intersection (m)		Thick-ness (m)	True Thick-ness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	29.50	38.50	9.00	7.28	0.46	Northern band
S2-S2'	MTB-13	NB4	83.50	86.50	3.00	2.29	0.32	
S3-S3'	MTB-03	NB6	50.50	53.50	3.00	2.19	0.46	
S3-S3'	MTB-03	NB4	76.00	81.60	5.60	4.16	0.25	
S3-S3'	MTB-14	NB6	108.00	116.50	8.50	6.31	0.28	
S3-S3'	MTB-14	NB5	121.00	127.75	6.75	4.93	0.31	
S3-S3'	MTB-14	NB5A	134.25	138.75	4.50	3.12	0.37	
S3-S3'	MTB-14	NB4	143.75	146.75	3.00	2.08	0.21	
S3-S3'	MTB-14	NB3	178.00	184.00	6.00	4.16	0.24	
S4-S4'	MTB-09	NB4	75.00	78.50	3.50	2.60	0.24	
S4-S4'	MTB-09	NB3	88.00	91.00	3.00	2.22	0.20	
S5-S5'	MTB-11	NB3	141.50	148.00	6.50	4.83	0.31	
S6-S6'	MTB-07	NB3	47.50	68.50	21.00	15.35	0.37	
S6-S6'	MTB-07	NB2	73.50	80.00	6.50	4.75	0.22	
S6-S6'	MTB-07	NB1	94.50	109.00	14.50	10.60	0.36	
S7-S7'	MTB-02	NB1	80.50	87.00	6.50	5.57	0.36	
S9-S9'	MTB-04	NB1	50.00	81.00	31.00	27.62	0.27	
S9-S9'	MTB-10	NB1	131.00	145.00	14.00	12.36	0.30	
S14-S14'	MTCB-10	NB1	75.00	80.20	5.20	3.98	0.63	
S15-S15'	MTB-06	SB5	43.00	46.00	3.00	2.76	0.23	Southern band
S15-S15'	MTB-06	SB4	84.00	91.00	7.00	6.44	0.57	
S15-S15'	MTB-06	SB3	115.50	124.30	8.80	8.10	0.46	
S15-S15'	MTB-06	SB2	128.80	133.30	4.50	4.14	0.20	
S16-S16'	MTB-17	SB1	92.77	106.00	13.23	11.21	0.38	
S17-S17'	MTCB-09	SB2	75.78	79.00	3.22	2.19	0.26	
S18-S18'	MTB-05	SB2	78.00	81.50	3.50	2.10	0.39	
S18-S18'	MTB-05	SB1	85.00	101.00	16.00	11.70	0.59	
S18-S18'	MTB-08	SB3	47.50	51.00	3.50	2.10	0.92	
S18-S18'	MTB-08	SB1A	199.00	207.00	8.00	4.47	1.21	
S19-S19'	MTB-15	SB2	52.50	57.30	4.80	4.11	0.32	
S19-S19'	MTB-15	SB1	77.50	97.50	20.00	17.14	0.53	

Copper (Cu) Ore Zones at 0.5% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Section No.	Borehole No.	Lode	Depth of Intersection (m)		Thick-ness (m)	True Thickness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	31.00	34.00	3.00	2.45	1.01	Northern band
S3-S3'	MTB-14	NB6	109.00	112.00	3.00	2.45	0.59	
S6-S6'	MTB-07	NB3	64.00	68.50	4.50	3.29	0.83	
S6-S6'	MTB-07	NB1	101.50	109.00	7.50	5.48	0.52	
S9-S9'	MTB-10	NB1	139.50	142.00	2.50	2.24	0.55	
S14-S14'	MTCB-10	NB1	75.00	80.20	5.20	3.98	0.63	
S15-S15'	MTB-06	SB4	88.00	90.50	2.50	2.30	0.89	Southern band
S15-S15'	MTB-06	SB3	116.50	122.00	5.50	5.06	0.63	
S16-S16'	MTB-17	SB1	92.77	97.00	4.23	3.58	0.50	
S16-S16'	MTB-17	SB1	100.00	103.50	3.50	2.96	0.56	
S18-S18'	MTB-08	SB3	47.50	51.00	3.50	2.10	0.92	
S18-S18'	MTB-08	SB1A	199.00	206.50	7.50	4.19	1.28	
S19-S19'	MTB-15	SB1	78.00	84.50	6.50	5.57	0.63	
S19-S19'	MTB-15	SB1	88.00	91.00	3.00	2.57	1.18	

Copper (Cu) Ore zones at 1% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Section No.	Borehole No.	Lode	Depth of Intersection (m)		Thickness (m)	True Thickness (m)	Grade (%) Cu	Remarks
			From	To				
S2-S2'	MTB-13	NB6	31.00	34.00	3.00	2.45	1.01	Northern band
S18-S18'	MTB-08	SB1A	200.00	206.50	6.50	3.63	1.41	Southern band
S19-S19'	MTB-15	SB1	88.00	91.00	3.00	2.57	1.18	

Details of Analytical Results of Composite Samples for 34 Elements analysis by ICP-MS method of boreholes drilled by MECL in Thakurdih Area-1 Block, District-East Singbhum, Jharkhand

For 0.5% Cu Cut-off Zones

S.No	BH No	Sample No	Lode No.	Rock type	From (m)	To (m)	Thickness (m)	Cu %	PPM (LOD = 0.1 PPM)																																						
									Li	Be	Sc	Cr	Co	Ni	Cu	Zn	Se	Rb	Sr	Y	Zr	Nb	Mo	In	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Pb	Th	U	Total REE	Total REE+Y+Sc
1	MTB-03	MTBCOM5/01	NB6	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	51.00	53.50	2.50	0.55	23.98	1.11	23.21	76.79	120.16	156.40	0.57%	44.86	1.98	175.13	23.89	106.69	643.76	9.04	0.78	0.67	334.34	219.14	333.08	39.49	138.16	26.80	7.62	26.17	4.38	25.35	4.54	11.74	1.85	10.39	1.42	2.04	7.14	6.39	850.11	980.02
2	MTB-05	MTBCOM5/02	SB1	Metabasic schist	86.90	90.20	3.30	1.68	35.46	3.38	26.32	94.71	136.37	433.46	2.30%	80.50	3.41	228.16	47.92	212.82	268.84	8.10	44.01	0.71	413.39	145.83	232.35	28.97	109.20	26.69	2.97	35.10	7.64	52.68	9.45	23.68	3.57	18.62	2.30	7.33	9.71	55.49	699.05	938.19
3	MTB-05	MTBCOM5/03	SB1	Granite Gneiss	96.50	99.50	3.00	0.81	21.09	5.78	7.83	45.81	57.56	227.16	0.99%	58.44	2.64	93.68	74.45	102.28	489.85	8.48	14.39	0.34	366.07	216.29	327.88	40.43	148.36	31.45	3.09	31.04	5.33	29.57	4.55	10.53	1.52	8.48	1.11	17.32	20.41	13.41	859.62	969.73
4	MTB-05	MTBCOM5/04	Local	Granite Gneiss	105.50	108.00	2.50	1.34	20.11	5.18	7.08	59.16	66.16	301.36	1.29%	68.56	2.02	96.90	78.68	84.25	574.50	10.45	3.95	0.41	494.52	106.23	167.06	20.04	72.45	15.12	1.69	16.84	3.23	20.03	3.48	8.88	1.35	7.38	0.95	17.44	16.71	10.95	444.72	536.05
5	MTB-06	MTBCOM5/05	SB4	Quartz feldspathic amphibole - biotite - chlorite schist (Altered basic schist)	88.00	90.50	2.50	0.89	35.56	2.52	27.66	115.52	84.51	236.77	1.14%	647.80	1.05	215.73	88.05	40.39	365.96	5.06	10.54	0.25	267.11	93.34	146.82	17.05	58.29	10.62	1.64	10.80	2.01	12.01	1.90	4.47	0.66	3.73	0.46	6.26	26.49	63.74	363.81	431.86
6	MTB-06	MTBCOM5/06	SB3	Quartz feldspathic chlorite mica schist (silicified & altered) ±Amphibole	116.50	122.00	5.50	0.63	37.53	2.31	37.27	135.29	74.05	145.17	0.60%	35.72	1.23	188.53	68.73	67.25	358.14	8.07	5.67	0.29	343.61	125.26	197.08	23.74	86.14	16.93	3.04	16.03	2.73	16.52	2.93	7.86	1.24	7.16	0.95	3.04	15.14	14.37	507.63	612.14
7	MTB-07	MTBCOM5/07	NB3	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	64.00	68.50	4.50	0.83	24.31	1.54	21.83	70.29	205.52	230.56	1.14%	125.62	3.29	162.93	23.75	108.74	614.76	7.53	45.55	0.55	296.27	463.30	734.19	100.93	335.90	51.67	7.22	41.64	6.23	30.21	4.74	11.34	1.75	9.75	1.33	1.87	7.28	132.41	1800.21	1930.78
8	MTB-07	MTBCOM5/08	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	101.50	109.00	7.50	0.52	11.93	0.39	18.98	131.41	108.06	197.25	0.51%	80.16	0.89	21.43	17.37	42.35	365.14	5.67	7.89	0.48	56.48	53.46	93.55	11.00	39.62	8.32	2.23	8.72	1.60	9.25	1.74	4.82	0.81	4.85	0.72	1.98	5.79	10.65	240.67	301.99
9	MTB-08	MTBCOM5/09	SB3	Quartz feldspathic amphibole - biotite - chlorite schist (Altered basic schist)± Garnet	48.00	51.00	3.00	1.03	23.58	1.07	7.09	92.11	0.13%	325.66	1.24%	130.35	2.42	116.23	34.53	52.95	811.10	11.27	6.50	0.88	536.16	247.34	395.42	46.79	160.95	27.66	3.04	22.34	3.35	15.89	2.41	5.23	0.82	4.82	0.72	4.40	25.41	24.32	936.77	996.81
10	MTB-08	MTBCOM5/10	1A	Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized)	199.00	206.50	7.50	1.28	22.86	2.95	24.41	155.09	129.81	582.98	1.54%	75.19	7.79	182.84	52.79	313.91	292.46	13.83	192.97	0.56	296.96	1089.45	1713.45	235.95	832.97	132.67	10.52	118.87	18.76	94.62	13.66	29.50	3.87	19.27	2.48	13.72	63.95	100.38	4316.04	4654.36
11	MTB-10	MTBCOM5/11	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	139.50	142.00	2.50	0.55	27.87	1.75	27.74	142.51	288.03	634.22	0.71%	250.82	2.62	224.20	23.66	55.07	268.56	4.24	9.83	0.39	379.30	274.41	432.32	58.29	168.12	29.67	3.65	22.09	3.15	15.76	2.41	5.83	0.90	5.18	0.72	3.59	4.94	6.68	1022.48	1105.30
12	MTB-13	MTBCOM5/12	NB6	Metabasic schist/Altered metabasic schist (?)	31.00	34.00	3.00	1.01	12.62	1.84	25.03	917.99	96.60	465.81	1.42%	63.16	2.22	155.44	32.73	95.89	234.15	3.86	49.02	0.96	279.51	58.50	111.81	13.60	51.15	12.20	2.16	15.47	3.32	22.32	4.20	11.16	1.80	10.16	1.37	1.98	6.33	131.76	319.21	440.12
13	MTB-14	MTBCOM5/13	NB6	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	109.00	112.00	3.00	0.59	30.15	1.84	17.76	59.71	228.74	339.40	0.73%	45.02	2.10	259.51	53.48	66.51	631.40	7.55	3.93	0.47	717.25	179.15	275.34	32.67	113.13	21.53	3.69	18.45	2.82	15.52	2.72	7.19	1.09	6.19	0.85	2.21	8.21	7.46	680.35	764.62
14	MTB-15	MTBCOM5/14	SB1	Metabasic schist+Qtz vein	78.00	84.50	6.50	0.63	32.38	2.10	31.76	121.94	142.35	366.60	0.75%	50.46	2.12	254.43	111.41	141.35	338.25	7.86	10.71	0.44	537.16	191.11	304.49	36.60	127.16	25.05	2.74	24.99	4.89	32.24	6.11	16.11	2.51	13.64	1.77	3.08	8.51	119.85	789.42	962.53
15	MTB-15	MTBCOM5/15	SB1	Granite Gneiss	88.00	91.00	3.00	1.18	32.50	3.55	15.91	86.81	133.34	659.59	1.78%	77.92	5.27	184.88	100.76	223.33	467.09	10.62	67.47	0.58	599.68	441.82	725.54	104.43	376.32	67.25	6.04	64.45	11.41	65.44	10.28	23.77	3.38	17.55	2.12	9.12	20.45	102.56	1919.80	2159.03
16	MTB-17	MTBCOM5/16	SB1	Quartz feldspathic amphibole - biotite - chlorite schist (Altered and silicified basic schist)±Qtz vein	92.77	97.00	4.23	0.50	49.20	1.93	45.83	422.16	101.48	204.75	0.61%	60.91	0.75	423.27	43.62	58.82	128.52	6.14	4.65	0.24	394.50	29.34	53.07	6.46	23.89	5.66	1.07	6.98	1.63	12.57	2.61	7.36	1.26	7.70	1.01	2.49	5.72	17.58	160.60	265.25
17	MTB-17	MTBCOM5/17	SB1	Quartz feldspathic amphibole - biotite - chlorite schist (Altered and silicified basic schist)±Qtz vein	100.00	103.50	3.50	0.56	27.11	5.86	11.96	72.88	137.08	149.63	0.73%	54.85	1.25	141.63	128.07	27.20	624.74	11.63	52.84	0.19	408.14	106.67	166.75	19.61	67.91	12.50	1.66	10.98	1.77	9.10	1.35	3.12	0.46	2.58	0.36	8.31	31.28	39.81	404.81	443.97

For 0.2% Cu Cut-off Zones

S.No	BH No	Sample No	Lode No.	Rock type	From (m)	To(m)	Thickness (m)	Cu%	PPM (LOD = 0.1 PPM) Li	Be	Sc	Cr	Co	Ni	Cu	Zn	Se	Rb	Sr	Y	Zr	Nb	Mo	In	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Pb	Th	U	Total REE	Total REE+Y+Sc
1	MTB-02	MTBCOM2/01	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	80.50	87.00	6.50	0.36	31.73	1.30	28.93	110.76	124.79	248.31	0.28	72.91	1.86	244.16	51.05	86.21	162.76	4.85	15.02	0.23	395.19	330.10	525.95	69.47	202.61	36.34	4.40	28.90	4.41	21.97	3.51	8.95	1.30	7.39	0.99	4.28	5.66	16.72	1246.28	1361.42
2	MTB-03	MTBCOM2/02	NB6	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	50.50	53.50	3.00	0.46	22.87	1.63	22.99	60.06	112.31	140.89	0.44	35.79	2.15	159.08	21.98	119.04	636.74	10.06	0.63	0.61	292.55	211.28	334.64	39.70	139.28	27.69	7.67	26.40	4.50	25.38	4.70	13.04	1.95	11.36	1.57	4.08	8.41	6.85	849.17	991.20
3	MTB-03	MTBCOM2/03	NB4	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	76.00	81.60	5.60	0.25	23.07	0.49	23.92	91.62	97.49	116.64	0.26	36.65	1.34	196.58	18.47	81.78	492.67	6.95	9.57	0.55	392.93	109.41	171.00	20.35	74.08	16.00	4.26	16.46	2.88	18.90	3.12	8.61	1.26	7.41	1.02	4.22	9.14	6.57	454.74	560.44
4	MTB-04	MTBCOM2/04	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	50.00	81.00	31.00	0.27	29.14	1.30	30.16	142.77	141.01	268.70	0.28	65.48	2.34	230.82	29.33	63.60	236.59	4.45	15.18	0.27	345.73	335.01	544.90	69.84	208.19	38.19	4.89	27.37	3.73	16.60	2.65	6.90	0.99	5.92	0.79	4.50	6.48	20.99	1265.98	1359.73
5	MTB-05	MTBCOM2/05	SB2	Metabasic schist	78.00	81.50	3.50	0.39	13.39	2.81	9.07	42.64	38.97	52.16	0.32	55.13	0.86	109.12	150.95	74.20	786.31	10.48	15.52	0.26	634.26	129.79	208.03	23.49	79.89	14.75	1.99	13.46	2.38	14.66	2.86	8.09	1.25	7.34	0.98	8.27	21.16	27.89	508.97	592.24
6	MTB-05	MTBCOM2/06	SB1	Metabasic schist	85.00	101.00	16.00	0.59	23.47	2.68	14.58	51.64	64.60	211.13	0.74	76.84	1.80	144.03	66.48	105.17	553.99	9.12	18.06	0.29	476.20	154.45	246.15	29.65	106.58	22.68	2.29	23.19	4.21	24.17	4.33	11.27	1.63	9.34	1.22	18.83	17.33	19.26	641.15	760.91
7	MTB-05	MTBCOM2/07	Local	Granite Gneiss	105.50	109.00	3.50	0.97	17.75	4.64	6.67	42.05	48.52	230.63	0.88	49.56	1.63	99.13	67.31	80.39	627.52	10.58	3.67	0.29	535.45	101.82	164.97	19.29	68.99	14.33	1.56	15.25	2.86	17.08	3.15	8.20	1.23	7.04	0.92	15.83	18.69	10.31	426.71	513.77
8	MTB-06	MTBCOM2/08	SB5	Metabasic schist	43.00	46.00	3.00	0.23	21.25	2.97	12.91	89.69	367.13	0.12	0.20	43.66	2.76	146.26	185.21	126.80	759.85	11.35	16.65	0.26	753.56	179.06	282.00	34.30	124.67	27.93	3.19	30.26	5.91	35.61	6.07	14.65	1.98	10.40	1.27	5.79	24.17	156.24	757.30	897.00
9	MTB-06	MTBCOM2/09	SB4	Quartz feldspathic amphibole - biotite - chlorite schist (Altered basic schist)	84.00	91.00	7.00	0.57	29.62	3.74	20.91	93.78	62.69	176.81	0.62	46.87	0.84	159.90	135.05	35.81	604.17	7.60	22.67	0.16	261.08	76.59	125.92	14.53	51.07	9.81	1.45	9.69	1.69	9.34	1.56	3.92	0.55	3.33	0.45	6.98	27.47	36.74	309.92	366.64
10	MTB-06	MTBCOM2/10	SB3	Quartz feldspathic chlorite mica schist (silicified & altered)±Amphibole	115.50	124.30	8.80	0.46	35.74	2.32	36.16	110.92	78.70	162.68	0.45	55.39	1.25	231.61	58.50	72.84	470.39	9.23	11.25	0.27	456.64	113.77	186.44	22.46	82.12	16.56	2.98	15.61	2.72	16.26	3.03	8.31	1.27	7.60	1.07	5.87	20.32	26.44	480.19	589.19
11	MTB-06	MTBCOM2/11	SB2	Quartz feldspathic chlorite mica schist (silicified & altered)±Amphibole	128.80	133.30	4.50	0.20	27.83	2.60	27.96	43.69	93.54	109.69	0.19	22.87	0.86	271.80	27.65	48.59	880.48	14.31	6.58	0.19	762.69	96.72	160.08	19.32	72.70	15.66	2.87	15.52	2.63	13.67	2.11	4.95	0.71	4.19	0.60	5.40	30.15	9.71	411.74	488.29
12	MTB-07	MTBCOM2/12	NB3	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	47.50	68.50	21.00	0.37	28.16	1.91	27.76	147.77	132.88	208.85	0.46	65.35	3.72	219.89	51.26	131.21	408.11	7.61	42.18	0.32	402.40	453.65	736.35	97.04	323.03	50.94	5.77	41.42	6.34	32.14	5.16	13.03	1.85	10.15	1.35	4.33	8.36	56.03	1778.20	1937.17
13	MTB-07	MTBCOM2/13	NB2	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	73.50	80.00	6.50	0.23	33.24	1.50	35.90	134.65	108.35	193.25	0.23	56.30	1.17	274.14	112.27	63.81	333.81	5.21	8.35	0.23	495.80	166.50	261.17	30.35	102.12	19.37	2.83	16.24	2.57	13.79	2.42	6.69	0.97	6.03	0.84	5.42	5.83	7.06	631.90	731.61
14	MTB-07	MTBCOM2/14	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	94.50	109.00	14.50	0.36	17.92	0.94	22.94	121.93	102.79	165.36	0.35	74.47	1.02	87.11	27.12	54.60	332.81	5.53	7.64	0.40	188.55	67.51	106.79	12.41	43.88	9.17	2.24	9.28	1.65	10.24	2.11	6.27	1.01	6.05	0.85	4.02	5.85	7.19	279.47	357.01
15	MTB-08	MTBCOM2/15	SB3	Quartz feldspathic amphibole - biotite - chlorite schist (Altered basic schist)± Garnet	47.50	51.00	3.50	0.92	23.77	1.95	7.27	63.04	0.12	309.86	1.06	81.59	1.88	120.41	37.69	53.80	854.83	11.75	4.93	0.72	547.81	231.07	368.61	44.01	148.92	26.73	2.86	21.03	3.14	14.63	2.19	5.27	0.75	4.89	0.70	6.15	24.60	24.71	874.80	935.87
16	MTB-08	MTBCOM2/16	SB1A	Quartz - k-feldspar chlorite - biotite schist±Amphibole (silicified & granitized)	199.00	207.00	8.00	1.21	23.90	3.62	24.61	116.75	129.39	554.70	1.39	70.28	7.76	184.16	51.87	301.06	284.66	13.82	147.60	0.48	289.87	882.88	0.14	191.26	688.38	115.04	8.67	103.36	16.30	82.04	12.39	27.97	3.59	19.67	2.21	16.86	53.35	101.99	2153.92	2479.59
17	MTB-09	MTBCOM2/17	Local	Garnetiferous Qtz-Chl-Mica schist+Qtz vein + Bands of Metabasic schist	68.50	70.50	2.00	0.23	38.17	1.55	33.32	445.63	109.38	268.03	0.30	46.72	2.70	419.06	31.48	129.27	453.28	11.11	73.12	0.28	515.52	426.81	692.90	89.98	292.44	44.82	3.31	35.72	5.71	30.64	5.20	13.18	1.81	9.96	1.26	4.43	15.63	22.82	1653.75	1816.34
18	MTB-09	MTBCOM2/18	NB4	Garnetiferous Qtz-Chl-Mica schist+Qtz vein + Bands of Metabasic schist	75.00	78.50	3.50	0.24	17.92	1.34	20.88	577.91	74.56	195.05	0.29	32.94	1.42	172.80	75.06	81.25	417.18	6.36	68.15	0.20	393.91	241.35	393.78	47.49	153.64	26.16	2.12	20.88	3.41	18.08	3.10	8.13	1.15	6.62	0.86	4.34	11.67	49.73	926.74	1028.87
19	MTB-09	MTBCOM2/19	NB3	Garnetiferous Qtz-Chl-Mica schist+Qtz vein + Bands of Metabasic schist	88.00	91.00	3.00	0.20	33.94	1.30	25.61	238.72	91.59	156.36	0.24	50.58	0.94	281.58	29.21	64.71	368.99	10.57	2.15	0.29	520.85	98.33	157.55	18.53	64.96	13.45	2.36	11.56	1.85	11.21	2.37	7.32	1.15	7.00	0.97	3.44	7.32	4.13	398.60	488.92
20	MTB-10	MTBCOM2/20	NB1	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	131.00	145.00	14.00	0.30	27.78	1.22	29.70	130.29	175.94	331.23	0.34	71.92	1.65	210.04	21.01	52.41	226.61	4.12	14.18	0.28	348.95	262.99	422.48	55.40	162.82	29.58	3.93	20.91	2.79	12.84	2.13	5.57	0.83	5.09	0.70	4.36	4.39	6.21	988.07	1070.18
21	MTB-11	MTBCOM2/21	NB3	Garnet + kya banded quartzite	141.50	148.00	6.50	0.31	2.26	0.33	7.03	105.91	53.32	64.81	0.37	85.60	1.42	4.62	11.71	32.83	120.12	2.39	5.58	0.37	20.69	196.99	312.39	37.52	134.56	23.76	3.77	17.88	2.31	9.93	1.42	3.51	0.47	2.62	0.36	3.92	4.07	20.27	747.50	787.37
22	MTB-12	MTBCOM2/22	Local	Garnetiferous Qtz-Chl-Mica schist+Qtz vein	79.50	81.50	2.00	0.23	20.18	1.91	31.99	163.10	73.44	117.37	0.29	117.21	0.42	138.96	94.55	43.52	94.36	3.96	0.90	0.40	407.35	39.69	69.65	8.30	30.17	6.44	1.96	6.68	1.24	7.72	1.62	4.60	0.69	3.98	0.56	4.54	5.53	1.16	183.29	258.81
23	MTB-13	MTBCOM2/23	NB6	Metabasic schist/Altered metabasic schist (?)	29.50	38.50	9.00	0.46	11.96	0.98	25.18	0.11	74.09	355.45	0.56	36.02	0.92	142.49	34.95	66.79	297.10	4.52	21.22	0.46	248.91	87.54	148.25	17.65	64.34	13.31	2.15	13.58	2.43	14.00	2.58	7.05	1.09	6.37	0.83	4.10	8.57	44.45	381.17	473.14
24	MTB-13	MTBCOM2/24	NB4	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	83.50	86.50	3.00	0.32	18.45	1.75	22.38	129.49	108.61	165.80	0.40	51.98	1.00	102.12	18.09	73.78	438.23	6.53	1.40	0.51	209.29	56.79	102.06	12.33	47.43	10.86	2.97	11.77	2.20	13.26	2.77	8.40	1.29	7.67	1.12	4.49	7.59	3.49	280.91	377.08
25	MTB-14	MTBCOM2/25	NB6	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	108.00	116.50	8.50	0.28	26.38	1.50	22.99	88.86	131.78	188.88	0.34	55.91	1.84	203.73	35.91	81.70	603.14	8.32	4.71	0.36	483.08	104.28	169.65	20.29	73.26	15.59	3.23	16.09	2.78	15.97	3.05	8.60	1.27	7.83	1.07	3.88	8.86	5.96	442.97	547.67
26	MTB-14	MTBCOM2/26	NB5	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	121.00	127.75	6.75	0.31	25.09	1.10	27.80	119.40	127.82	181.42	0.42	55.81	1.84	220.69	25.24	116.70	506.97	7.73	8.58	0.53	404.83	217.97	339.82	39.58	136.63	26.17	6.09	23.15	3.78	22.14	4.39	12.87	1.98	12.07	1.63	3.91	8.57	6.11	848.27	992.76
27	MTB-14	MTBCOM2/27	NB5A	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	134.25	138.75	4.50	0.37	24.65	1.02	25.26	132.49	159.38	232.68	0.48	61.09	1.86	206.84	19.61	91.36	555.82	8.29	19.35	0.65	409.37	159.80	254.60	29.75	101.33	19.87	4.90	18.51	3.05	17.74	3.44	10.17	1.61	9.57	1.32	4.36	6.58	13.67	635.68	752.29
28	MTB-14	MTBCOM2/28	NB4	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	143.75	146.75	3.00	0.21	22.90	0.98	25.92	77.38	119.83	132.03	0.26	41.49	1.30	193.17	22.81	87.11	590.54	8.44	3.92	0.47	298.96	133.21	213.30	25.21	89.98	18.97	5.06	18.69	3.16	18.10	3.39	9.69	1.54	9.64	1.40	4.45	10.14	12.12	551.34	664.37
29	MTB-14	MTBCOM2/29	NB3	Garnetiferous Qtz-Chl-Mica schist+Qtz vein (Occasinally altered & Chloritised)	178.00	184.00	6.00	0.24	12.14	0.85	29.16	81.30	111.13	133.31	0.26	48.82	1.28	32.85	20.90	99.09	659.84	8.49	1.83	0.36	65.20	105.72	169.21	20.26	74.97	16.60	5.26	17.64	3.13	18.33	3.64	10.22	1.60	9.60	1.34	4.32	9.79	12.62	457.51	585.76
30	MTB-15	MTBCOM2/30	SB2	Quartz - feldspathic - biotite - chlorite schist±Amphibole (Altered/silicified metabasic schist)	52.50	57.30	4.80	0.32	23.49	1.59	17.58	47.88	78.29	110.84	0.34	84.49	1.36	198.95	124.12	86.91	419.72	7.93	19.25	0.28	640.30	167.75	265.13	30.11	102.19	18.62	2.38	17.22	3.04	18.08	3.36	9.08	1.34	7.40	0.97	8.27	13.54	16.65	646.66	751.16
31	MTB-15	MTBCOM2/31	SB1	Metabasic schist+Qtz vein	77.50	97.50	20.00	0.53	32.10	2.44	21.39	90.03	97.03	303.99	0.67	63.20	2.24	205.09	99.26	114.19	422.43	9.58	26.15	0.34	500.27	221.77	367.92	43.85	153.70	30.70	3.06	27.59	4.84	27.16	4.70	12.09	1.73	9.69	1.23	8.29	13.49	61.95	910.03	1045.60
32	MTB-17	MTBCOM2/32	SB1	Quartz feldspathic amphibole - biotite - chlorite schist (Altered and silicified basic schist)±Qtz vein	92.77	106.00	13.23	0.38	38.17	3.54	28.46	213.04	127.13	180.95	0.42	57.32	0.94	249.70	69.04	51.08	329.61	8.14	138.83	0.17	339.80	89.58	142.68	16.95	59.60	11.99	1.51	11.21	2.04	12.17	2.25	6.02	0.91	5.40	0.70	7.35	16.32	42.75	363.03	442.57

LOD = Limit of Detection

Details of Analytical Results of Composite Samples for Bi, Te, Sn, As & Cd by AAS method of the boreholes drilled by MECL in Thakurdih Area-1 Block, District-East Singbhum, Jharkhand

For >0.5% Cu Zones												
S.No	BH No	Sample No	Ref. No.	From (m)	To(m)	Thickness (m)	PPM (DL = 1 PPM)					
							Bi	Ge	Te	Sn	As	Cd
1	MTB-03	MTB/6E/01	MTBCOM5/01	51.00	53.50	2.50	BDL	23.13	BDL	25.88	38.20	2.27
2	MTB-05	MTB/6E/02	MTBCOM5/02	86.90	90.20	3.30	BDL	24.98	BDL	4.76	35.34	2.09
3	MTB-05	MTB/6E/03	MTBCOM5/03	96.50	99.50	3.00	BDL	12.67	BDL	1.91	41.42	1.66
4	MTB-05	MTB/6E/04	MTBCOM5/04	105.50	108.00	2.50	BDL	12.48	BDL	2.39	45.17	1.85
5	MTB-06	MTB/6E/05	MTBCOM5/05	88.00	90.50	2.50	BDL	21.75	BDL	BDL	39.90	2.18
6	MTB-06	MTB/6E/06	MTBCOM5/06	116.50	122.00	5.50	BDL	20.71	BDL	BDL	40.78	2.11
7	MTB-07	MTB/6E/07	MTBCOM5/07	64.00	68.50	4.50	BDL	24.27	BDL	BDL	40.16	1.95
8	MTB-07	MTB/6E/08	MTBCOM5/08	101.50	109.00	7.50	BDL	25.75	BDL	BDL	26.31	1.96
9	MTB-08	MTB/6E/09	MTBCOM5/09	48.00	51.00	3.00	BDL	19.90	BDL	2.81	1751.71	1.56
10	MTB-08	MTB/6E/10	MTBCOM5/10	199.00	206.50	7.50	BDL	23.92	BDL	BDL	26.81	1.95
11	MTB-10	MTB/6E/11	MTBCOM5/11	139.50	142.00	2.50	BDL	27.71	BDL	3.88	38.36	2.37
12	MTB-13	MTB/6E/12	MTBCOM5/12	31.00	34.00	3.00	BDL	18.53	BDL	3.95	30.54	1.99
13	MTB-14	MTB/6E/13	MTBCOM5/13	109.00	112.00	3.00	BDL	25.12	BDL	BDL	26.08	1.84
14	MTB-15	MTB/6E/14	MTBCOM5/14	78.00	84.50	6.50	BDL	21.30	BDL	1.18	39.73	2.04
15	MTB-15	MTB/6E/15	MTBCOM5/15	88.00	91.00	3.00	BDL	20.72	BDL	2.65	33.87	1.47
16	MTB-17	MTB/6E/16	MTBCOM5/16	92.77	97.00	4.23	BDL	23.71	BDL	2.68	28.44	2.06
17	MTB-17	MTB/6E/17	MTBCOM5/17	100.00	103.50	3.50	BDL	15.27	BDL	3.01	41.52	1.84
BDL= Below Detection Limit												

Details of Analytical Results of Composite Samples for Au & Ag by Fire assay method of the boreholes drilled by MECL in Thakurdih Area-1 Block, East Singhbhum, Jharkhand

For >0.5% Cu Zones								
Sl. No.	Sample No	Sample Ref.No.	Borehole No.	Depth (m)		Thickness (m)	Au (PPB)	Ag (PPB)
				From	To		DL = 10 PPB	DL = 100 PPB
1	MTBCOM5/01	MTB/FA/01	MTB-03	51.00	53.50	2.50	47.90	104.96
2	MTBCOM5/02	MTB/FA/02	MTB-05	86.90	90.20	3.30	321.68	<100.0
3	MTBCOM5/03	MTB/FA/03	MTB-05	96.50	99.50	3.00	37.64	<100.0
4	MTBCOM5/04	MTB/FA/04	MTB-05	105.50	108.00	2.50	65.82	149.00
5	MTBCOM5/05	MTB/FA/05	MTB-06	88.00	90.50	2.50	480.05	<100.0
6	MTBCOM5/06	MTB/FA/06	MTB-06	116.50	122.00	5.50	71.98	414.80
7	MTBCOM5/07	MTB/FA/07	MTB-07	64.00	68.50	4.50	51.55	153.32
8	MTBCOM5/08	MTB/FA/08	MTB-07	101.50	109.00	7.50	32.81	262.04
9	MTBCOM5/09	MTB/FA/09	MTB-08	48.00	51.00	3.00	89.47	<100.0
10	MTBCOM5/10	MTB/FA/10	MTB-08	199.00	206.50	7.50	458.22	<100.0
11	MTBCOM5/11	MTB/FA/11	MTB-10	139.50	142.00	2.50	79.39	174.75
12	MTBCOM5/12	MTB/FA/12	MTB-13	31.00	34.00	3.00	139.54	216.07
13	MTBCOM5/13	MTB/FA/13	MTB-14	109.00	112.00	3.00	47.92	<100.0
14	MTBCOM5/14	MTB/FA/14	MTB-15	78.00	84.50	6.50	84.82	124.42
15	MTBCOM5/15	MTB/FA/15	MTB-15	88.00	91.00	3.00	131.86	<100.0
16	MTBCOM5/16	MTB/FA/16	MTB-17	92.77	97.00	4.23	41.79	<100.0
17	MTBCOM5/17	MTB/FA/17	MTB-17	100.00	103.50	3.50	40.99	<100.0
DL=Detection Limit								

Details of Analytical Results of Composite Samples for Fe, SiO_2, TiO_2, V_2O_5, Cr_2O_3, Cr_2O_3, MnO, MgO, CaO, S, P & LoI by XRF method of the boreholes drilled by MECL in Thakurdih Area-1 Block, District-East Singhbhum, Jharkhand.

S. No.	Bh. No.	Sample No	From (m)	To (m)	Fe(T)%	SiO_2%	Al_2O_3%	TiO_2%	V_2O_5%	Cr_2O_3%	MnO%	MgO%	CaO%	S%	P%	LOI%
1	MTB-05	MTB05FeT/1	78	81	7.14	63.68	13.54	0.73	0.01	<0.01	0.06	1.24	2.67	0.23	0.07	0.58
2	MTB-05	MTB05FeT/2	81	84	10.83	55.92	12.92	1.21	0.02	0.01	0.10	3.01	3.77	0.18	0.13	0.73
3	MTB-05	MTB05FeT/3	84	86.9	14.17	47.71	12.81	1.35	0.04	0.02	0.13	5.44	5.05	0.16	0.11	0.92
4	MTB-05	MTB05FeT/4	86.9	89.7	16.46	39.85	11.32	0.79	0.03	0.01	0.08	5.37	5.93	1.62	1.00	2.63
5	MTB-05	MTB05FeT/5	89.7	92.7	6.32	67.44	11.81	0.42	<0.01	<0.01	0.03	1.18	1.89	0.22	0.15	1.26
6	MTB-06	MTB06FeT/1	82.40	85.50	10.49	56.67	13.86	0.44	0.02	0.02	0.05	3.90	2.12	0.23	0.11	1.93
7	MTB-06	MTB06FeT/2	85.5	88.5	9.78	57.10	14.45	0.55	0.03	<0.01	0.05	3.49	3.25	0.16	0.09	2.13
8	MTB-06	MTB06FeT/3	88.5	91.50	15.71	41.96	13.34	0.67	0.04	0.05	0.09	7.52	6.17	0.64	0.24	3.02
9	MTB-06	MTB06FeT/4	115	118.00	14.19	45.70	13.72	1.17	0.04	0.02	0.05	6.30	3.60	0.50	0.21	1.86
10	MTB-06	MTB06FeT/5	118	121.00	13.94	47.37	13.70	1.17	0.04	0.02	0.06	5.23	5.04	0.16	0.12	1.63
11	MTB-06	MTB06FeT/6	121	124.30	11.02	57.11	15.20	0.81	0.01	0.01	0.02	1.65	0.94	0.39	0.23	1.92
12	MTB-08	MTB08FeT/1	199	202.00	17.22	38.04	10.54	1.01	0.03	0.01	0.07	4.99	7.17	1.27	1.80	2.14
13	MTB-08	MTB08FeT/2	202.00	205.00	36.55	18.56	4.56	0.88	0.08	0.03	0.04	4.41	6.54	0.97	2.71	0.60*
14	MTB-08	MTB08FeT/3	205.00	208.00	9.98	59.77	11.49	0.45	0.01	<0.01	0.03	2.16	2.58	0.59	0.53	1.60
15	MTB-15	MTB15FeT/1	75.50	78.50	14.65	46.63	13.46	0.90	0.03	0.02	0.06	5.98	3.29	0.46	0.21	1.69
16	MTB-15	MTB15FeT/2	78.5	81.50	15.17	45.96	12.46	0.78	0.02	0.01	0.07	5.19	4.21	0.80	0.45	1.13
17	MTB-15	MTB15FeT/3	81.50	84.50	12.78	48.70	13.21	1.03	0.03	0.01	0.08	5.10	5.82	0.38	0.15	1.26
18	MTB-15	MTB15FeT/4	84.5	87.50	12.88	47.76	13.87	1.25	0.03	0.01	0.11	4.77	6.29	0.13	0.13	1.33
19	MTB-15	MTB15FeT/5	87.5	90.50	12.18	53.01	11.49	0.71	0.01	<0.01	0.03	2.30	3.51	1.38	0.79	2.46
20	MTB-15	MTB15FeT/6	90.50	93.50	6.17	69.35	11.18	0.37	<0.01	<0.01	0.02	0.92	1.63	0.12	0.07	0.79
21	MTB-15	MTB15FeT/7	93.5	96.5	8.77	64.06	10.22	0.41	<0.01	<0.01	0.04	2.38	1.71	0.49	0.08	1.28
22	MTB-17	MTB17FeT/1	89.77	92.77	12.85	54.00	13.29	0.83	0.05	0.01	0.04	4.58	1.22	0.10	0.02	1.34
23	MTB-17	MTB17FeT/2	92.77	96.00	15.58	42.60	14.10	0.77	0.04	0.06	0.06	8.90	2.03	0.37	0.05	1.92
24	MTB-17	MTB17FeT/3	96	99.25	14.55	45.32	13.99	0.64	0.04	0.05	0.05	8.46	2.04	0.20	0.07	2.12

S. No.	Bh. No.	Sample No	From (m)	To (m)	Fe(T)%	SiO_2%	Al_2O_3%	TiO_2%	V_2O_5%	Cr_2O_3%	MnO%	MgO%	CaO%	S%	P%	LOI%
25	MTB-17	MTB17FeT/4	99.25	102.00	11.13	54.39	12.84	0.45	0.03	0.02	0.04	5.14	2.03	0.58	0.03	1.34
26	MTB-17	MTB17FeT/5	102	105.00	6.07	65.31	13.37	0.32	0.01	<0.01	0.02	1.67	2.91	0.32	0.04	0.81
27	MTB-17	MTB17FeT/6	105	108.00	14.54	48.76	13.13	0.89	0.04	0.02	0.04	6.19	1.81	0.40	0.10	1.57
28	MTB-17	MTB17FeT/7	108	111.00	12.51	47.56	14.77	1.32	0.04	0.03	0.04	6.24	2.97	0.09	0.02	0.62
29	MTB-17	MTB17FeT/8	111.00	114.00	16.64	46.73	10.68	1.56	0.05	0.02	0.06	6.33	2.69	0.72	0.32	0.77

Details of Petrographic studies of borehole core samples of Thakurdih Area-1 Block, District: East Singhbhum, Jharkhand

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
1	MTB-01/P1 (MTB-01: 37.0m-37.18m)	It is a fine to medium grained rock showing schistosity.	Biotite Actinolite Quartz Albite	Chlorite Hornblende	Opaques Zircon	Biotite occurs as fine to medium flakes and patches, often segregating in zones and showing parallel alignment. Actinolite occurs as fine to medium subhedral prismatic grains showing parallel alignment. Quartz occurs as fine anhedral grains, often clustering in pockets. Albite is present as fine subhedral to anhedral grains. Chlorite is seen present as pseudomorphic patches developing after amphibole alterations. Hornblende is present as fine to medium subhedral and anhedral patchy relicts within biotite and chlorite patches. Opaques occur as fine anhedral grains and as very fine specks in accessories. Zircon is noted as very fine inclusions within biotite around which pleochroic haloes are observed. The specimen is a **biotite-actinolite-quartz-albite schist.**
2	MTB-03/P1 (MTB-03: 112.50m-112.70m)	It is a greenish grey coloured medium to fine grained rock showing schistosity and porphyroblasts.	Quartz Chlorite Garnet	Opaques Biotite	Apatite	Quartz occurs as medium to fine anhedral grains showing tight quartzitic contacts and undulose extinction. Chlorite is present as flaky aggregates and patches showing parallel alignment. Garnet occurs as fine to coarse subhedral to anhedral porphyroblasts, often seen segregating in zones. Opaques occur as very

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
						fine to fine subhedral to anhedral grains, blades and moderately coarse patches in areas. Biotite is seen present as fine to very fine flakes and flaky relicts within chlorite. Apatite is noted as fine subhedral grains in accessories. The specimen is a **porphyroblastic garnetiferous quartz-chlorite schist.**
3	MTB-04/P1 (MTB-04: 82.60m-82.70m)	It is a medium to fine grained rock showing schistosity and porphyroblasts.	Biotite Actinolite Quartz Garnet	Plagioclase Chlorite	Opaques Zircon	Biotite occurs as medium subhedral prismatic grains/ flakes, segregating in zones and showing parallel alignment. Actinolite is present as medium to fine subhedral prismatic grains showing parallel alignment. Quartz occurs as fine anhedral grains, often clustering in pockets and showing crude alignment. Garnet is present as fine to coarse subhedral to euhedral porphyroblasts showing very fine inclusions of quartz in areas. Plagioclase is seen present as fine to medium subhedral prismatic and turbid patchy grains. Chlorite occurs as pseudomorphic patches developing after amphibole replacement. Opaques occur as fine to very fine anhedral grains in accessories. Zircon is noted as very fine inclusions within biotite around which pleochroic haloes are observed. The specimen is a **porphyroblastic garnetiferous biotite-actinolite-quartz schist.**

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
4	MTB-05/P1 (MTB-05: 110m-110.15m)	It is a fine grained rock showing granular texture.	Albite Quartz	Opaques Microcline Muscovite/ Sericite Chlorite	Calcite Epidote	Albite is present as fine to very fine groundmass and as well as medium subhedral prismatic phenocrysts. Quartz occurs as fine to very fine anhedral grains and as patchy lenses. Silicification is also noted in areas. Opaques are present as fine to very fine disseminated grains and as well as segregated patches in pockets. Microcline is noted as subhedral traces, mostly albitised. Muscovite/ sericite occur as fine to very fine flakes and flaky aggregates. Chlorite is noted as fine to very fine flakes, patches and fillings. Calcite is seen present as intrusive patches and fillings in areas. Epidote is noted as very fine granular aggregates in pockets. The specimen is an**aplitic granite.**
5	MTB-06/P1 (MTB-06:99.45m-99.61m)	It is a fine to medium grained rock showing schistosity.	Biotite Quartz Actinolite Albite	Chlorite	Opaques Tourmaline Zircon	Biotite and actinolite occur as fine to medium subhedral prismatic grains and anhedral patches showing parallel alignment. Quartz and albite are present as fine to medium anhedral to subhedral grains showing crude alignment. Chlorite is seen present as pseudomorphic patches replacing amphiboles. Opaques occur as fine to very fine subhedral to anhedral grains. Tourmaline is seen present as fine subhedral prismatic grains in accessories Zircon is noted as very fine inclusions around which pleochroic haloes are observed. The specimen is a **biotite-quartz-actinolite-albite schist.**

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
6	MTB-07/P1 (MTB-07:36.75m-37.0m)	It is a greenish grey coloured medium grained rock showing granular texture.	Actinolite-Tremolite Chlorite	Opaques Hornblende	Plagioclase	Actinolite-tremolite occurs as medium subhedral prismatic grains showing crude alignment. Chlorite occurs as pseudomorphic patches developing after amphibole replacement. Opaques are present as fine subhedral to anhedral grains in dissemination. Hornblende occurs as medium to fine subhedral prismatic and rhombic relicts within chlorite patches. Plagioclase is noted as fine anhedral turbid patches in accessories. The specimen is an **amphibolite.**
7	MTB-08/P1 (MTB-08: 153.90M-154.0M)	It is a dark greenish grey coloured massive rock.	Chlorite Antigorite Opaques (Magnetite) Tremolite	Olivine Carbonates	….	Chlorite occurs as anhedral patches comprising very fine micro-crystalline aggregates and also occurs as very fine to fine flaky aggregates. Antigorite occurs as fine fibrous aggregates and fillings in association with chlorite.Opaques (magnetite) are present as fine to very fine anhedral to subhedral disseminations and as well as segregated patches in pockets.Tremolite occurs as fine acicular grains in dissemination. Olivine is noted as fine anhedral relicts within chlorite-antigorite patches. Carbonates are seen present as intrusive patches and fillings. The specimen is showing magnetism. The specimen is an **altered mafic rock.**
8	MTB-11/P1 (MTB-	It is a fine to medium grained rock showing	Quartz	Garnet	Muscovite	Quartz is the main constituting mineral of the specimen, occurring as fine to medium anhedral grains showing

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
	11:169.70m-169.90m)	granular texture.	Biotite Chlorite	Staurolite Opaques		tight quartzitic texture. Biotite and chlorite are present as fine disseminated flakes showing parallel alignment. Garnet occurs as fine to medium subrounded grains and anhedral patches. Staurolite occurs as fine subhedral prismatic grains in association with garnet. Opaques are seen present as fine to very fine anhedral subhedral grains. Muscovite is noted as fine flakes and flaky aggregates in pockets. The specimen is a **garnet and staurolite bearing biotite-chlorite rich quartzite.**
9	MTB-14/P1 (MTB-14: 140.95m-141.20m)	It is a fine grained rock showing schistosity and porphyroblasts.	Chlorite Garnet Quartz Opaques	….	Biotite Apatite	Chlorite occurs as fine flaky aggregates showing parallel alignment. Garnet occurs as coarse to fine subhedral to anhedral patchy porphyroblasts showing very fine inclusions of quartz in areas. Quartz is present as fine anhedral grains. Biotite is seen present as fine flakes and flaky relicts within chloritic aggregates. Apatite is noted as fine slender prismatic grains in accessories. The specimen is a **garnetiferous chlorite-quartz schist.**
10	MTB-17/P1 (MTB-17:108.20m-108.50m)	It is a fine grained rock showing schistosity. The specimen is showing strong magnetism.	Biotite Quartz Opaques	Feldspar Tourmaline Apatite	Chlorite Allanite Zircon	Biotite is present as fine flaky aggregates showing parallel alignment and mostly segregating in thin sub-parallel bands/ zones. Quartz and feldspar are present as fine anhedral grains segregating in thin sub-parallel bands/ zones Opaques (magnetite) occur as fine to medium subhedral aggregates and patches aligned along

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5%->1%	Accessory <1%	
			(Magnetite)		Xenotime? Monazite?	the schistosity. Tourmaline occurs as fine to very fine subhedral prismatic grains in dissemination. Apatite occurs as fine subrounded and elongated grains. Chlorite is seen present as patchy fillings in areas, replacing biotite. Allanite and zircon are noted as very fine grains and as inclusions within biotite, around which pleochroic haloes are observed. Doubtful very fine xenotime and monazite specks are also observed often included within biotite. The specimen is a **biotite-quartz-magnetite schist.**

ANNEXURE-X/1

Details of Mineragraphic studies of borehole core samples of ThakurdihArea-1Block, District: East Singhbhum, Jharkhand

Sl. No.	Sample No.& Location	% of ore minerals in polished section	ORE MINERAL COMPOSITION				Description
			Major >5%	Minor <5% - >1%	Accessory <1% - >0.1%	Traces <0.1%	
1.	MTB-01/M1 (MTB-01:58.0-58.50m)	8	Pyrite (46) Chalcopyrite (28) Magnetite (26)	….	Pentlandite	….	Pyrite occurs as medium to moderately coarse patches and as fine anhedral to subhedral grains. Chalcopyrite is present as fine to very fine grains, patches, veinlets and streaks in association with pyrite. Magnetite is noted as fine to moderately coarse patches, often being cut across by chalcopyrite and pyrite patches and filings.Pentlandite occurs as very fine to fine patchy inclusions within chalcopyrite. The specimen is showing very feeble magnetism.
2.	MTB-03/M1 (MTB-03:78.0-78.50m)	5	Magnetite/ Ilmenite (55) Chalcopyrite (30) Pyrite (13)	Pyrrhotite (2)	Pentlandite	….	Magnetite/ Ilmeniteoccur as fine to very fine subhedral prismatic/ bladed grains, mostly seen included within garnet porphyroblasts. Chalcopyrite occurs as patches, streaks and veinlets associating pyrite and pyrrhotite patches with it. Pyrite patches are often seen being cut across by chalcopyrite veinlets. Pentlandite is noted as very fine inclusions within pyrrhotite.
3.	MTB-04/M1 (MTB-04:62.0m-62.50m)	12	Chalcopyrite (48) Pyrrhotite (30) Magnetite (15)	Pentlandite (4) Ilmenite (2) Pyrite (1)	….	….	Chalcopyrite and pyrrhotite are present as mutually associated and often intermixed patches and veinlets. Magnetite occurs as fine to moderately coarse subhedral to anhedral grains and patches, being cut across by chalcopyrite-pyrrhotite veinlets in areas. Pentlandite is noted as very fine lamellar and flame shamed exsolutions within pyrrhotite. Ilmenite is seen present as fine to very fine blades. Pyrite occurs as fine to very fine grains in association with chalcopyrite-pyrrhotite patches.
4.	MTB-05/M1 (MTB-05:87.30m-	23	Magnetite (52) Chalcopyrite (40) Pyrite (6)	Pyrrhotite (2)	Molybdenite	….	Magnetite is present as medium to fine subhedral to anhedral grains and patches in dissemination. Chalcopyrite occurs as patches, veinlets and fillings cutting across magnetite in

Sl. No.	Sample No.& Location	% of ore minerals in polished section	ORE MINERAL COMPOSITION				Description
			Major >5%	Minor <5% - >1%	Accessory <1% - >0.1%	Traces <0.1%	
	87.80m)						areas. Pyrite is present as fine to medium anhedral patches in association with and often being entrapped within chalcopyrite. Pyrrhotite is seen present as fine anhedral grains in association with chalcopyrite. Molybdenite is noted as very fine flaky inclusions within chalcopyrite, at places. The specimen is showing very strong magnetism.
5.	MTB-06/M1 (MTB-06:89.0m-89.50m)	18	Chalcopyrite (47) Magnetite (45) Pyrite (7)	Pentlandite/ Violarite (1)	Covellite Pyrrhotite	Hematite	Chalcopyrite occurs as coarse patches, veinlets and as fine to very fine fillings. Magnetite is present as fine to moderately coarse subhedral to anhedral grains, segregated pockets and patches often being cut across by chalcopyrite fillings. Pyrite occurs as fine to medium anhedral grains and patches in association with chalcopyrite. Pentlandite/ violarite occur as fine anhedral patches within chalcopyrite. Covellite is noted as fine patchy fillings replacing chalcopyrite in areas. Pyrrhotite is seen present as very fine inclusions within chalcopyrite. Hematite occurs as very fine specks along fracture fillings in traces. The specimen is showing very strong magnetism.
6.	MTB-07/M1 (MTB-07:65.0m-65.50m)	7	Magnetite/ Ilmenite (44) Pyrite (36) Chalcopyrite (20)	….	….	….	Magnetite/ ilmenite occurs as fine to moderately coarse subhedral to anhedral grains, patches, fillings and as fine disseminated blades. Pyrite occurs as fine to moderately coarse anhedral grains and patches. Chalcopyrite is seen present as patches, veinlets and fillings cutting across pyrite and magnetite in areas.
7.	MTB-08/M1 (MTB-08:203m-203.50m)	82	Magnetite (94) Chalcopyrite (5)	Pyrite (1)	Hematite Pyrrhotite	….	Magnetite occurs as coarse to massive patches throughout the specimen leaving gangues in-between. Chalcopyrite occurs as fine to medium anhedral grains and very fine specks, often included within magnetite. Pyrite is present as anhedral patches in areas. Hematite is seen developing in areas after martitisation of magnetite. Pyrrhotite is noted as

Sl. No.	Sample No.& Location	% of ore minerals in polished section	ORE MINERAL COMPOSITION				Description
			Major >5%	Minor <5% - >1%	Accessory <1% - >0.1%	Traces <0.1%	
							very fine inclusions within magnetite in association with chalcopyrite. The specimen is showing strong magnetism.
8.	MTB-12/M1 (MTB-12:81m-81.50m)	8	Chalcopyrite (45) Magnetite (42) Pyrite (13)	….	….	….	Chalcopyrite occurs as patches and dendritic fillings along inter-granular spaces. Magnetite occurs as fine subhedral to anhedral grains, patches and blades in dissemination. Pyrite is seen present as patches and fine fillings, often showing association with chalcopyrite.
9.	MTB-10/M1 (MTB-10:94.0m-94.50m)	2	Pyrrhotite (46) Magnetite (40) Chalcopyrite (12)	Pyrite (2)	….	….	Pyrrhotite occurs as medium patches and fine fillings associating chalcopyrite with it. Magnetite is present as fine fillings, subhedral to anhedral grains and as clustered pockets. Chalcopyrite is noted as fine to very fine fillings and grains in association with and often being included within pyrrhotite. Pyrite occurs as fine anhedral grains in association with chalcopyrite and pyrrhotite.
10.	MTB-17/M1 (MTB-17: 105.50m-106.0m)	74	Magnetite (80) Chalcopyrite (16)	Pyrite (3) Pyrrhotite (1)	Hematite	Sphalerite	Magnetite occurs as coarse elongated patches and fine anhedral grains showing crude parallel alignment. Chalcopyrite occurs as fine to medium anhedral grains, patches and as inclusions within magnetite. Pyrite is present as fine anhedral patches and vermicular grains in association with magnetite. Pyrrhotite is seen present as fine to very fine anhedral grains. Hematite is noted as fine to very fine grains, especially in contacts with magnetite and pyrite. Sphalerite occurs as very fine inclusions/ intergrowths within chalcopyrite patches. The specimen is showing very strong magnetism.

Details of specific gravity determination of mineralized core samples,
Thakurdih Area-1 Block,
District - East Singhbhum, Jharkhand

SPECIFIC GRAVITY DETERMINATION RESULTS		
Sl.No.	Sample No.	Specific Gravity
1	MTB-01/SG1	3.00
2	MTB-03/SG1	2.94
3	MTB-04/SG1	3.40
4	MTB-05/SG1	3.50
5	MTB-06/SG1	2.94
Average Specific Gravity		**3.16**

Copper (Cu) Ore resources Estimated by Geological Cross Section Method at 0.2% Cu Cut-Off
(With 2m minimum stoping width and 3m Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity=3

Section No.	Borehole No.	Lode No	Depth of Intersection (m)		Apparent Thickness (m)	True Thickness (m)	RL of Intersection (m)		Strike Influence (m)	Area (333)	Resources (333) Tonnes	Grade (%) Cu	Remarks
			From	To			From	To					
S2-S2'	MTB-13	NB6	29.50	38.50	9.00	7.28	56.90	50.25	138.000	199.05	82406	0.46	Northern Band
S2-S2'	MTB-13	NB4	83.50	86.50	3.00	2.29	16.20	14.00	138.000	157.59	65243	0.32	
S3-S3'	MTB-03	NB6	50.50	53.50	3.00	2.19	45.59	43.44	134.500	149.46	60306	0.46	
S3-S3'	MTB-03	NB4	76.00	81.60	5.60	4.16	26.99	22.80	181.000	312.25	169549	0.25	
S3-S3'	MTB-14	NB6	108.00	116.50	8.50	6.31	1.29	-4.89	134.500	298.11	120285	0.28	
S3-S3'	MTB-14	NB5	121.00	127.75	6.75	4.93	-8.10	-12.99	137.000	259.02	106455	0.31	
S3-S3'	MTB-14	NB5A	134.25	138.75	4.50	3.12	-17.60	-20.80	90.500	152.60	41431	0.37	
S3-S3'	MTB-14	NB4	143.75	146.75	3.00	2.08	-24.39	-26.59	181.000	133.00	72222	0.21	
S3-S3'	MTB-14	NB3	178.00	184.00	6.00	4.16	-48.79	-52.99	137.000	215.38	88522	0.24	
S4-S4'	MTB-09	NB4	75.00	78.50	3.50	2.60	31.29	28.70	140.500	186.91	78784	0.24	
S4-S4'	MTB-09	NB3	88.00	91.00	3.00	2.22	21.75	19.60	188.000	183.81	103666	0.20	
S5-S5'	MTB-11	NB3	141.50	148.00	6.50	4.83	-20.00	-25.26	193.000	622.68	360534	0.31	
S6-S6'	MTB-07	NB3	47.50	68.50	21.00	15.35	52.79	35.91	143.500	966.87	416239	0.37	
S6-S6'	MTB-07	NB2	73.50	80.00	6.50	4.75	26.70	15.01	94.500	375.60	106481	0.22	
S6-S6'	MTB-07	NB1	94.50	109.00	14.50	10.60	14.99	3.39	140.000	1057.74	444251	0.36	
S7-S7'	MTB-02	NB1	80.50	87.00	6.50	5.57	32.99	28.29	141.000	444.51	188030	0.36	
S9-S9'	MTB-04	NB1	50.00	81.00	31.00	27.62	51.00	26.70	100.000	1419.55	425866	0.27	
S9-S9'	MTB-10	NB1	131.00	145.00	14.00	12.36	-13.40	-24.09	100.000	685.72	205716	0.30	
S14-S14'	MTCB-10	NB1	75.00	80.20	5.20	3.98	27.20	22.59	150.000	328.23	147703	0.63	
S15-S15'	MTB-06	SB5	43.00	46.00	3.00	2.76	47.00	44.59	100.000	120.58	36174	0.23	Southern Band
S15-S15'	MTB-06	SB4	84.00	91.00	7.00	6.44	16.00	11.00	100.000	517.20	155160	0.57	
S15-S15'	MTB-06	SB3	115.50	124.30	8.80	8.10	-7.30	-17.10	100.000	858.63	257589	0.46	

Section No.	Borehole No.	Lode No	Depth of Intersection (m)		Apparent Thickness (m)	True Thickness (m)	RL of Intersection (m)		Strike Influence (m)	Area (333)	Resources (333) Tonnes	Grade (%) Cu	Remarks
			From	To			From	To					
S15-S15'	MTB-06	SB2	128.80	133.30	4.50	4.14	-22.89	-19.61	100.000	471.06	141319	0.20	Southern Band
S16-S16'	MTB-17	SB1	92.77	106.00	13.23	11.21	1.00	-10.35	75.000	504.98	113620	0.38	
S17-S17'	MTCB-09	SB2	75.78	79.00	3.22	2.19	13.20	10.59	125.000	128.47	48176	0.26	
S18-S18'	MTB-05	SB2	78.00	81.50	3.50	2.10	17.79	14.80	150.000	175.15	78816	0.39	
S18-S18'	MTB-05	SB1	85.00	101.00	16.00	11.70	11.85	-1.64	100.000	924.35	277305	0.59	
S18-S18'	MTB-08	SB3	47.50	51.00	3.50	2.10	44.49	41.45	75.000	68.46	15403	0.92	
S18-S18'	MTB-08	SB1A	199.00	207.00	8.00	4.47	-90.01	-97.01	75.000	282.00	63449	1.21	
S19-S19'	MTB-15	SB2	52.50	57.30	4.80	4.11	42.19	38.50	100.000	204.88	61463	0.32	
S19-S19'	MTB-15	SB1	77.50	97.50	20.00	17.14	22.99	7.49	100.000	1307.52	392256	0.53	
GROSS GEOLOGICAL IN-SITU RESOURCE (In Tonnes)													4924418
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													4.92
NET GEOLOGICAL IN-SITU RECOURCE													4431977
NET GEOLOGICAL IN-SITU RESOURCES (MT)													4.43
COPPER GRADE (%)													0.38
AVERAGE THICKNESS (M)													6.14

Copper (Cu) Ore resources Estimated by Geological Cross Section Method at 0.5% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity=3

Section No.	Borehole No.	Lode No	Depth of Intersection (m)		Apparent Thickness (m)	True Thickness (m)	RL of Intersection (m)		Strike Influence (m)	Area (333)	Resources (333) Tonnes	Grade (%) Cu	Remark
			From	To			From	To					
S2-S2'	MTB-13	NB6	31	34	3.00	2.45	55.90	53.49	138.000	70.12	29031	1.01	Northern Band
S3-S3'	MTB-14	NB6	109	112	3.00	2.45	0.60	-1.48	181.000	128.04	69526	0.59	
S6-S6'	MTB-07	NB3	64	68.5	4.50	3.29	39.30	35.60	94.500	234.48	66476	0.83	
S6-S6'	MTB-07	NB1	101.5	109	7.50	5.48	9.19	3.19	140.000	575.15	241564	0.52	
S9-S9'	MTB-10	NB1	139.5	142	2.50	2.24	-20.00	-18.01	100.000	133.41	40024	0.55	
S14-S14'	MTCB-10	NB1	75	80.2	5.20	3.98	27.20	22.59	150.000	328.23	147703	0.63	
S15-S15'	MTB-06	SB4	88	90.5	2.50	2.30	13.49	11.39	100.000	186.31	55892	0.89	Southern Band
S15-S15'	MTB-06	SB3	116.5	122	5.50	5.06	-7.99	-12.00	100.000	526.20	157859	0.63	
S16-S16'	MTB-17	SB1	92.77	97	4.23	3.58	1.09	-2.19	75.000	152.12	34226	0.50	
S16-S16'	MTB-17	SB1	100	103.5	3.50	2.96	-4.70	-7.38	75.000	141.49	31836	0.56	
S18-S18'	MTB-08	SB3	47.5	51	3.50	2.10	44.49	41.45	75.000	68.46	15403	0.92	
S18-S18'	MTB-08	SB1A	199	206.5	7.50	4.19	-90.00	-96.59	75.000	261.96	58940	1.28	
S19-S19'	MTB-15	SB1	78	84.5	6.50	5.57	22.59	17.55	100.000	403.46	121038	0.63	
S19-S19'	MTB-15	SB1	88	91	3.00	2.57	14.79	12.59	100.000	202.42	60726	1.18	
GROSS GEOLOGICAL IN-SITU RESOURCE (In Tonnes)													**1130244**
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													**1.13**
NET GEOLOGICAL IN-SITU RECOURCE													**1017220**
NET GEOLOGICAL IN-SITU RESOURCES (MT)													**1.02**
COPPER GRADE (%)													**0.70**
AVERAGE THICKNESS (M)													**3.45**

ANNEXURE-XII-C/1

Copper (Cu) Ore resources Estimated by Geological Cross Section Method at 1% Cu Cut-Off (With 2m minimum stoping width and 3m maximum Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity =3

Section No.	Borehole No.	Lode No	Depth of Intersection (m)		Apparent Thickness (m)	True Thickness (m)	RL of Intersection (m)		Strike Influence (m)	Area (333)	Resources (333) Tonnes	Grade (%) Cu	Remark
			From	To			From	To					
S2-S2'	MTB-13	NB6	31.00	34.00	3.00	2.45	55.90	53.49	138.00	68.85	28504	1.01	**Northern Band**
S18-S18'	MTB-08	SB1A	200.00	206.50	6.50	3.63	90.99	96.39	75.00	225.63	50767	1.41	**Southern Band**
S19-S19'	MTB-15	SB1	88.00	91.00	3.00	2.57	14.79	12.59	100.00	202.42	60726	1.18	
GROSS GEOLOGICAL IN-SITU RESOURCE (In Tonnes)													**139996**
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													**0.14**
NET GEOLOGICAL IN-SITU RECOURCE													**125997**
NET GEOLOGICAL IN-SITU RESOURCES (MT)													**0.13**
COPPER GRADE (%)													**1.23**
AVERAGE THICKNESS (M)													**2.77**

ANNEXURE-XIII-A/1

Copper (Cu) Ore resources Estimated by Level Method at 0.2% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity=3

Section No.	Borehole No.	Lode No	Level Influence (m) (1st Level)	Level Influence (m) (2nd Level)	Level Influence (m) (3rd Level & below)	Grade (%) Cu	LEVEL-1 Area (333)	LEVEL-2 Area (333)	LEVEL-3 & Below Area (333)	LEVEL-1 Resources (333) Tonnes	LEVEL-2 Resources (333) Tonnes	LEVEL-3 & Below Resources (333) Tonnes	Remark
S2-S2'	MTB-13	NB6	30.00			0.46	893.57	0.00	0.00	80421.30	0.00	0.00	Northern Band
S2-S2'	MTB-13	NB4	35.00	40.00		0.32	319.30	319.30	0.00	33526.50	38316.00	0.00	
S3-S3'	MTB-03	NB6	43.01			0.46	603.47	0.00	0.00	77865.73	0.00	0.00	
S3-S3'	MTB-03	NB4	46.00			0.25	715.76	0.00	0.00	98774.88	0.00	0.00	
S3-S3'	MTB-14	NB6	0.00	57.00		0.28	0.00	1224.56		0.00	209399.20		
S3-S3'	MTB-14	NB5		45.00	10.00	0.31	0.00	684.33	684.33	0.00	92384.55	20529.90	
S3-S3'	MTB-14	NB5A		36.00	20.00	0.37	0.00	450.98	450.98	0.00	48705.84	27058.80	
S3-S3'	MTB-14	NB4		60.00	25.00	0.21	0.00	314.96	314.96	0.00	56692.80	23622.00	
S3-S3'	MTB-14	NB3		4.87	50.00	0.24	0.00	546.71	546.71	0.00	7987.43	82006.50	
S4-S4'	MTB-09	NB4	43.00	24.54		0.24	426.03	426.03	0.00	54957.87	31364.33	0.00	
S4-S4'	MTB-09	NB3	45.00	34.27		0.20	408.02	408.02	0.00	55082.70	41948.54	0.00	
S5-S5'	MTB-11	NB3	50.00	60.00	20.00	0.31	1295.36	939.92	939.92	194304.00	169185.60	56395.20	
S6-S6'	MTB-07	NB3	51.39	10.20		0.37	2210.89	2210.89	0.00	340852.91	67653.23	0.00	
S6-S6'	MTB-07	NB2	52.48	25.35		0.23	461.73	461.73	0.00	72694.77	35114.57	0.00	
S6-S6'	MTB-07	NB1	52.83	45.35		0.36	1428.60	1428.60	0.00	226418.81	194361.03	0.00	
S7-S7'	MTB-02	NB1	51.32	23.33		0.36	939.10	939.10	0.00	144583.84	65727.61	0.00	
S9-S9'	MTB-04	NB1	35.58			0.27	2408.75	0.00	0.00	257109.98	0.00	0.00	
S9-S9'	MTB-10	NB1		60.00	15.00	0.30	0.00	1162.76	1162.76	0.00	209296.80	52324.20	
S14-S14'	MTCB-10	NB1	50.00	30.00		0.63	610.29	610.29	0.00	91543.50	54926.10	0.00	

Section No.	Borehole No.	Lode No	Level Influence (m) (1st Level)	Level Influence (m) (2nd Level)	Level Influence (m) (3rd Level & below)	Grade (%) Cu	LEVEL-1 Area (333)	LEVEL-2 Area (333)	LEVEL-3 & Below Area (333)	LEVEL-1 Resources (333) Tonnes	LEVEL-2 Resources (333) Tonnes	LEVEL-3 & Below Resources (333) Tonnes	Remark
S15-S15'	MTB-06	SB5	32.00	6.34		0.23	316.28	316.28	0.00	30362.88	6015.65	0.00	Southern Band
S15-S15'	MTB-06	SB4	32.00	40.00		0.57	739.01	739.01	0.00	70944.96	88681.20	0.00	
S15-S15'	MTB-06	SB3	30.48	60.00		0.46	929.39	936.24	0.00	84983.42	168523.20	0.00	
S15-S15'	MTB-06	SB2	29.88	60.00	15.00	0.20	470.51	467.83	467.83	42176.52	84209.40	21052.35	
S16-S16'	MTB-17	SB1		45.00		0.38		570.25		0.00	76983.75	0.00	
S17-S17'	MTCB-09	SB2	12.00	45.00		0.26	350.28	350.28	0.00	12610.08	47287.80	0.00	
S18-S18'	MTB-05	SB2	28.00	55.00		0.39	332.66	332.66	0.00	27943.44	54888.90	0.00	Southern Band
S18-S18'	MTB-05	SB1	27.00	60.00		0.59	783.52	1020.06	0.00	63465.12	183610.80	0.00	
S18-S18'	MTB-08	SB3	28.00	15.00		0.92	149.19	149.19	0.00	12531.96	6713.55	0.00	
S18-S18'	MTB-08	SB1A			65.08	1.21	0.00	0.00	328.62	0.00	0.00	64159.77	
S19-S19'	MTB-15	SB2	36.00			0.32	404.06	0.00	0.00	43638.48	0.00	0.00	
S19-S19'	MTB-15	SB1	36.00	40.00	15.00	0.53	1542.40	1542.40	1542.40	166579.20	185088.00	69408.00	
SUM TOTAL RESOURCE										**2283372.85**	**2225065.87**	**416556.72**	
GROSS GEOLOGICAL IN-SITU RESOURCE													**4924995**
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													**4.92**
NET GEOLOGICAL IN-SITU RECOURCE													**4432496**
NET GEOLOGICAL IN-SITU RESOURCES (MT)													**4.43**
COPPER GRADE (%)													**0.38**

Copper (Cu) Ore resources Estimated by Level Method at 0.5% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) of in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity=3

Section No.	Borehole No.	Lode	Level Influence (m) (1st Level)	Level Influence (m) (2nd Level)	Level Influence (m)(3rd & Below Level)	Grade (%) Cu	LEVEL-1 Area (333)	LEVEL-2 Area (333)	LEVEL-3 Area & below (333)	LEVEL-1 Resources (333) Tonnes	LEVEL-2 Resources (333) Tonnes	LEVEL-3 & Below Resources (333)	Remark
S2-S2'	MTB-13	NB6	25			1.01	386.55	0.00		28991.25	0.00	0.00	Northern Band
S3-S3'	MTB-14	NB6	40	45		0.59	441.46	520.00		52975.20	70200.00	0.00	
S6-S6'	MTB-07	NB3	45	15		0.83	335.68	335.68		45316.80	15105.60	0.00	
S6-S6'	MTB-07	NB1	50	45		0.52	821.90	821.90		123285.00	110956.50	0.00	
S9-S9'	MTB-10	NB1		30	13.00	0.55		620.69	259.19	55862.10		10108.41	
S14-S14'	MTCB-10	NB1	45	25		0.63	572.44	572.44		77279.40	42933.00	0.00	
S15-S15'	MTB-06	SB4	30	40		0.89	255.95	255.95		23035.50	30714.00	0.00	Southern Band
S15-S15'	MTB-06	SB3	30	60		0.63	564.31	564.31		50787.90	101575.80	0.00	
S16-S16'	MTB-17	SB1		40		0.50	0.00	269.03		0.00	32283.60	0.00	
S16-S16'	MTB-17	SB1	45			0.56	0.00	222.77		0.00	30073.95	0.00	
S18-S18'	MTB-08	SB3	25	10		0.92	133.88	133.88		10041.00	4016.40	0.00	
S18-S18'	MTB-08	SB1A		35	28.00	1.28		300.78	123.00		31581.90	10332.00	
S19-S19'	MTB-15	SB1	30	30		0.63	272.89	190.00		24560.10	17100.00	0.00	
S19-S19'	MTB-15	SB1	35.22	35		1.18	552.11	106.00		58335.94	11130.00	0.00	
SUM TOTAL RESOURCE										**550470.19**	**497670.75**	**20440.41**	
GROSS GEOLOGICAL IN-SITU RESOURCE													**1068581**
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													**1.07**
NET GEOLOGICAL IN-SITU RECOURCE													**961723**
NET GEOLOGICAL IN-SITU RESOURCES (MT)													**0.96**
COPPER GRADE (%)													**0.69**

Copper (Cu) Ore resources Estimated by level Method at 1% Cu Cut-Off (With 2m minimum stoping width and 3m Non-Ore parting) of in Thakurdih Area-I Block, District-East Singhbhum, Jharkhand

Specific Gravity=3

Section No.	Borehole No.	Lode No	Level Influence (m) (1st Level)	Level Influence (m) (2nd Level)	Level Influence (m)(3rd Level & below)	Grade (%) Cu	LEVEL-1 Area (333)	LEVEL-2 Area (333)	LEVEL-3 Area & Below (333)	LEVEL-1 Resources (333) Tonnes	LEVEL-2 Resources (333) Tonnes	LEVEL-3 & Below Resources (333) Tonnes	Remark
S2-S2'	MTB-13	NB6	28.86			1.01	294.20	0.00	0.00	25471.84	0.00	0.00	**Northern Band**
S18-S18'	MTB-08	SB1A		50.18	28.50	1.41	0.00	240.86	240.86	0.00	36259.06	20593.53	**Southern Band**
S19-S19'	MTB-15	SB1	35.21	39.97		1.18	263.77	263.77	0.00	27862.03	31628.66	0.00	**Southern Band**
SUM TOTAL RESOURCE										**53333.86**	**67887.73**	**20593.53**	
GROSS GEOLOGICAL IN-SITU RESOURCE													**141815.12**
GROSS GEOLOGICAL IN-SITU RESOURCE (MT)													**0.14**
NET GEOLOGICAL IN-SITU RECOURCE													**127633.60**
NET GEOLOGICAL IN-SITU RESOURCES (MT)													**0.13**
COPPER GRADE (%)													**1.24**

MECL

PEER REVIEW COMMENTS/SUGGESTIONS AND CORRECTIONS FOR GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G3) FOR COPPER AND ASSOCIATED MINERALS IN THAKURDIH AREA-1 BLOCK (4.10 sq.km.), SINGBHUM COPPER BELT, EAST SINGBHUM DISTRICT, STATE JHARKHAND

Geological report peer reviewed by Dr. Rajgopal Mohanty, Former Additional Director, AMD/Department of Atomic Energy
Observations/suggestions received from peer reviewer through letter dated 09.07.2025.
Peer review comments/suggestions have been attended and incorporated in the Geological Report.

S.No.	Comments/Suggestions	Compliance
	Understanding the Ore Geometry	
1	Structurally controlled Cu-mineralisation and three phases of deformation are reported in the area, with hinge zones of D1/D2 folds influencing ore localisation. Hence, detailed large-scale mapping and stereonet analysis are recommended to demarcate axial zones, which may help trace additional mineralised bands and define ore geometry more precisely.	Attended. Copper mineralization in the area is structurally controlled and mainly conforms to S1 foliation, which is refolded during D2 deformation, enhancing ore localization around D2 hinge zones—similar to patterns seen in other Baharagora blocks. Stereonet analysis confirms multiphase deformation, with the D2 fold axis plunging 64° ENE and an axial plane of 058/84S. The northern ore band is hosted in porphyroblastic garnetiferous schist, while the axial zone shows no surface oxidation or consistent geophysical anomalies. Therefore, presence of additional mineralised band along axial planar region are unlikely. However, Some more bedrock and pit soil sampling recommended in further exploration to confirm the same.
2	As per Plate IV-A, Para 19.6.3, and Table 19.1, two ore bands—Northern (NB) and Southern (SB)—are identified. While the arenaceous quartzite/quartz schist shows an easterly fold closure with an EW to ESE-WNW axial trend, it is unclear if NB and SB follow the same folding. Notably, strong to moderate IP anomalies along profiles NW-	Noted NB and SB are co folded in similar manner as evident from the stereographic analysis of the NB and SB data, the spread of pole of the planar data,

S.No.	Comments/Suggestions	Compliance
	60, NW-90, and NW-120 coincide with the projected axial zone. copper mineralisation cannot be ruled out along this axial trace. Therefore, in my view, some more boreholes are required to be drilled (at 200m spacing) at least along two Transverse section lines, say the line joining MTB-08 & MTB-07, and MTB-17 & MTB-09 to explore presence of new ore bands along the axial trace. Out of this, one or two boreholes may be drilled deeper to examine depth continuity and to confirm any improvement in grade, before considering completion of G3 level of exploration in this block.	concentration of the linear data and the attitude of the calculated Beta(β) axis is almost comparable in both the plot. Therefore, it could be concluded that the both the area deformed in single deformational event, which in turn probably indicate the co-folding of NB and SB together. G3 Exploration concluded. Hence, additional drilling recommended in phase of exploration (G2).
3.	An attempt should be made to prepare an integrated interpretative map including all the three blocks projecting the ore bands on a single plan. The structural analysis including the stereonet projections should be prepared both for the entire area as well as domain wise depending on the randomness of structural elements. It will help to understand to unravel the structural complexity both for the lithic horizons and ore bands	Attended A composite interpretative map prepared including all three blocks (Mundadevta-Darkhuli & South Jharia, Thakurdih Charakmara & Thakurdih Area-1 Block) projecting the ore bands and available geological, geochemical and geophysical survey data on a single plan and given as an integrated geological map for sub-blocks as Plate No. IV.D
4.	It is reported under para 7.8.8 that 'ore bodies are conformable with S1/S2 surfaces and are co-folded along with enclosing rock'. Observations supporting this conclusion such as any micro-folding of sulphide layers under the microscope, if any, may be mentioned.	Noted. Micro-folding of sulphide minerals not observed within a limited scope of mineragraphy studies. However, it can be evidenced in certain samples in petrography studies & bore hole cores as well. Core photo graph Photo-22, 23 & 24 incorporated in the report.
5.	Since the area is complexly folded and the sub blocks are contiguous to each other, it is suggested that a structural map (large scale : may be 1:5000) containing all the structural elements may be prepared along with stereonet projection for the entire area for better appreciation and understanding.	Attended. A separate map (Plate No. IV.D) composite map has been prepared for all sub-blocks of Baharagora, including Mundadevta-Darkhuli & South Jharia

S.No.	Comments/Suggestions	Compliance
		Block, Thakurdih Charakmara Block, and Thakurdih Area-1 Block, depicting the interpreted anomalous zones by integrating geological, geochemical, and geophysical data from both previous and present investigations carried out by GSI and MECL.
	Ore Band (Lode) Nomenclature	
6.	As reported under para 7.8.9, there are mainly 8 mineralised zones commonly found in both Southern Band and the Northern Band (Table 19.1). More clarification/justification is required how the Lode-1 of Southern Band is same and also interpreted as Lode-1 in the Northern Band. If the nomenclature starts from the Footwall lode, no lode should be named Lode-1 in the Northern band, unless structurally they are modelled in 3-D correlation or detail structural interpretation to be the same. To understand better, surface projection of all the ore zones indicating the lode nomenclature may be prepared.	Attended. Northern band lodes renamed prefixing NB & Southern band lodes renamed prefixing SB (eg. Lode-1 renamed as Lode-NB1) to avoid confusion. A separate Geological map prepared and shown surface projection of ore zones and litho units and shown in Plate No. IV.B.
7.	Following inconsistencies in nomenclature were also observed even while considering them at different cut-off grade – refer Annexure-XII-A and Annexure-XII-B. a. Lode-6 along Bh MTB/13 from 29.50m to 38.50m at 0.2% cut-off is shown as Lode-4 from 31.00m to 34.00m at 0.5% cut-off. b. Lode-6 along MTB/14 at 0.2% cut-off is shown as Lode-4 at 0.5% cut-off. c. Lode-3 along MTB/7 at 0.2% cut-off is shown as Lode-2 at 0.5% cut-off. d. Lode-4 along MTB/6 at 0.2% cut-off is shown as Lode-5 at 0.5% cut-off. e. Lode-3 along MTB/6 at 0.2% cut-off is shown as Lode-4 at 0.5% cut-off. Such inconsistencies will certainly impact the correlation and also the resource estimation. A paragraph may be added on how are the Lodes numbered.	Attended. Corrections attended and the same has been incorporated in the respective Text and Annexures.
8.	It is reported under para 10.2.8 read with Annexure-1A that one of the Bedrock sample from Garnetiferous Mica schist analysed highest Cu values. Reason for not deciding any borehole against it may be mentioned under the	The Garnetiferous mica schist exposure showing malachite staining is small (50×70 cm) and isolated within forest area with no similar surface signs or

S.No.	Comments/Suggestions	Compliance
	same para. Even along the adjoining section S-13, the borehole MTB-12 is positioned further up-dip of this occurrence.	encouraging Cu values nearby. A trench made beside it revealed no further exposure due to thick soil cover, so no borehole was planned solely on this basis. However, borehole MTB-12 was proposed in Section S-13 to confirm strike continuity from mineralization intersected in MTCB-10. One borehole in Section S-12, near the said bedrock point, may be considered in the next phase of exploration.
	Map preparation	
9.	The Geological map at Plate-IVA appears extremely clumsy. The hatch lines and symbols suppress other information. It is therefore suggested that (a) Instead of hatch symbols, light colour code may be used. (b) Since adequate information is available through boreholes on sub-surface geology, lithic boundaries may be interpolated and such inferred contact may be drawn by dashed lines. It will help to a great extent correlation of lithology along the boreholes with those of surface. (c) In view of structural complexity and the area being dominantly soil covered, it is better if another map (at the same scale) is prepared integrating Geology and interpretated IP (Text Figure- 6B) and ground EM (previous GSI work as mentioned in para 3.2.3) geophysical signatures. (d) Several old workings are plotted along section lines passing through Boreholes MTB-03, MTB-07, MTB-12, MTB-13, MTB-16. But they are not shown on the Geology map (Plate IV-A) although an index is made for it. (e) The Index on Lithology should be same both in Plan and Sections. In case local variation is observed in the boreholes, it should be grouped into the broad lithology. (f) Symbols for a particular lithology should not be different in Plan and section. For example, it is observed that Metabasic schist is represented by Light Green NE-SW hatched lines on the Plan (Plate IV-A) whereas it is Light orange horizontal hatched lines in the section.	Attended. Necessary suggestions and corrections attended in relevant Plates. A separate map (Plate No. IV.D) composite map has been prepared for all sub-blocks of Baharagora, including Mundadevta-Darkhuli & South Jharia Block, Thakurdih Charakmara Block, and Thakurdih Area-1 Block, depicting the interpreted anomalous zones for expected mineralisation by integrating geological, geochemical, and geophysical data from both previous and present investigations carried out by GSI and MECL.

S.No.	Comments/Suggestions	Compliance
10.	Geological information may be overlayed on the Level plan (Plate-VI).	Attended. Litho projections based on borehole data overlayed on Level plans.
11	From the Level Plan (Plate- 6A), it is observed that (a) The MTCB -11 appears under-drilled. The Lode intercepted in MTB-2, if joined with the one along MTB-4, passes at a deeper level along MTCB-11. (b) The lodes intercepted along MTB-6 are likely to be present and continue further NE and downdip of MTB-17. Few boreholes as proposed at para 2 above will confirm it.	Noted. MTCB-11 was a scout borehole drilled (91.50m) to test the geophysical anomaly during previous exploration. Close spaced drilling shall be taken in next phase of exploration.
12	It is suggested that the geophysical logging results (multi-para logger) may be plotted on the Transverse sections. This will help in integrated reading and understand better the geophysical properties and the mineralisation.	Attended. Interpreted Borehole geophysical logging results pertaining to integrated anomalous zones plotted on sections (Plate No.)
13	In Plate-V.A and Plate V.B and Text Figure-9, effort should be made to corelate surface geology with the lithology intercepted in the boreholes.	Attended.
	Miscellaneous	
14	It is reported in para 3.2.3 that 'ground evaluation of electromagnetic (EM) coupled with magnetic signatures (work done by GSI in the past) indicated presence of potential mineralisation in Baharagora area'. Since EM data is very useful for sulphide mineralisation, it is suggested that the interpreted EM map should form a part of this report. Further it is also mentioned in the same para that GSI had carried out exploratory drilling during 1975-78. However, it is not clear from the report whether any borehole previously drilled by GSI lie in the present Thakurdih area-1 block. If not, the same may be mentioned.	Noted. GSI's Interpreted EM map of the area is not available. GSI (1975-78) not carried out any drilling in present Thakurdih Area-1 Block.

S.No.	Comments/Suggestions	Compliance
15	In the Table-7.1, the 'Newer Dolerite' is shown as a Supergroup having Kolhan, Dhanjori and Singhbhum groups as its subdivision – which is not true. As per the most of the works, the 'Newer Dolerite' is considered as the last geological formation, post all the deformational episodes. The most accepted stratigraphy of Singbhum-Odisha craton is that of Saha et.al 1988.	Attended. As suggested stratigraphy of Singbhum-Odisha craton after Sahat et.al 1988 incorporated in the report.
16	In Text Figure- 4, a basic exposure is denoted as 'Newer Dolerite'. It may be re-confirmed whether it is not part of Dhanjori metabasics.	Noted.
17	In para 7.2.4 the stratification plane (Bedding) is denoted as S1, whereas in para 7.7.0, the same is denoted as S0. It is suggested that an uniform denotation may be adopted.	Attended. Corrected.
18	In Photo-13, the Hook shaped fold is described as Type-2 interference pattern - which is not true. The Hook shaped Fold is actually a Type-3 Interference pattern as coined by J.G.Ramsay – usually resulted from nearly co-axial nature of two deformations.	Attended.
19	In para 7.7.2.2, an important observation is made that Intersection lineation due to intersection of Bedding and Cleavage is seen at many places. Since they represent hinge zones either in small scale or large scale, it is suggested that they may be plotted and highlighted on the map. It will help to delineate axial trace on the map which may indirectly define the target locales.	Attended.
20	As reported under para 19.5.2 to 19.5.5 and Table-19.3 (received separately by email dated 30.6.2025), an encouraging REE content (average 2462 ppm at 0.5% cut-off of Cu) was reported by ICP-MS analysis. In my view, these values are corroborated to the presence of Allanite (para 7.5.3 and Pmg-5) which is the most difficult mineral to extract REE from. Concerned Petrologist may be requested to confirm, in case Bastnaesite or any other easily leachable REE minerals was ever observed.	Noted. Apatite is present in the mineral assemblage and may potentially host significant REE enrichment. Additionally, a few doubtful specks of xenotime and monazite have been observed. However, their confirmation remains uncertain due to their occurrence as accessory phases in only one specimen and their extremely fine grain size.
21	Since the present block is in continuity with Mundadevta block where G2 level of exploration has been completed with substantial resources, it is suggested to include a paragraph on possible mineralisation or absence of it	Attended.

S.No.	Comments/Suggestions	Compliance
	in the gap area of these two blocks.	
	Minor corrections	
22	The spelling of 'Planar' structure in para 7.7.2 may be corrected.	Attended. Corrected the same.
23	Para 7.7.2.3 – The borehole MTB-17 lies along section no. S-16 and not S-17. Secondly, the inference that presence of fractured zone along MTB-17 is due to the interpreted fault near MTB-07 may not be correct, as they lie very far from each other.	Attended.
24	Under para 10.2.9.1, the trench name (MTB/TS) may be corrected.	Attended.
25	Refer para 19.6.5 : As per Table 19.1, 15 boreholes and not 16 boreholes intercepted mineralisation at 0.2% cut-off. Similarly, 8 boreholes and not 9 boreholes intercepted mineralisation at 0.5% cut-off.	Attended.
26	In Plate-V-A, the TD of the Bh MTB-09 should be 130.00m – not 30m.	Attended.
	Recommendation	
27	The Recommendation as at para 21.2.1. is agreed. However, the undersigned is of the view that some more drilling is required at G3 level as suggested in aforesaid para. There may not be any requirement of additional petrological or other lab studies except analysing Cu-content of the visually segregated borehole samples.	Noted. Work carried out as per approved quantum. Additional drilling recommended in next phase exploration.
28	Considering the technological advancement in Geophysics, unless there is any budgetary constraints, Ground EM survey (e.g. LOUPE survey portable Time Domain EM survey) can be considered for the area which will fast delineate conducting bodies. This can be contemplated as a separate project by NMET.	Noted. TDEM survey recommended next phase exploration.

S.No.	Comments/Suggestions	Compliance
29	Petrographic and Ore- Microscopic report are of good quality. However, radiometric dating of different sulphide phases will throw more light on the timing of the mineralisation and the deformation events. The photo micrograph at Pmg-8 clearly establishes later remobilisation of chalcopyrite around intergranular spaces.	Noted. Radiometric dating studies are not scope of present exploration.
30	All the corrections and suggestions as above, if accepted, may be incorporated in the final GR proposed to be submitted in August, 2025 (para 3.2.14)	Attended. All necessary corrections and suggestions attended and incorporated in the Geological Report.

Public Financial Management System-PFMS
O/o Controller General of Accounts, Ministry of Finance (formerly CPSMS)

Welcome: **Vivek Kumar Sharma**
User Type: **PD**
Financial Year: **2024-2025**

Login H
English

Bill No - 66 at Expenditure Register on Page No - 28

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Sanction Details

Controller:	026-MINES	**Sanction Status:**	**Approved**
Sanction Number:	80	**Sanction Date:**	20/05/2024
Sanction Type:	Transfer (DDO Bill)	**Sanction Amount:**	17441046
IFD Number:	23/454/2024	**IFD Date:**	16/05/2024
Scheme:	3583-EXPLORATION ACTIVITIES UNDER NATIONAL MINERAL EXPLORATION TRUST	**PAO:**	036617-PAO(Mines), New Delhi
DDO:	236618-UNDER SECRETARY,DEPTT.OF MINES,ROOM NO.312,SHASTRI BHAVAN,NEW DELHI.TEL.386467.	**Remarks:**	approved

North East Expenditure

Created By:	nmet	**Created On:**	24/05/2024 01:56:1 PM
Modified By:	nmet	**Modified On:**	24/05/2024 02:29:5 PM

File Uploaded: SO 80.pdf

Account Details:

Grant	Department (For UT Grants Only)	Function Head	Object Head	Category	Amount	External PAO	Available Budget
069 - Ministry of Mines		2853021020500 - NATIONAL MINERTAL EXPLORATION TRUST FUND ACTIVITIES	31 - GRANTS-IN-AID GENERAL	5 - VOTED	17441046		1890357143

Agency Details:

Sr.No	Agency Name	City	District	State	Country	Gross Amount	Deduction Amount	Net Amount	Payee Remarks
1	Mineral Exploration Corporation Limited	Nagpur	NAGPUR	MAHARASHTRA	INDIA	17,441,046	0	17,441,046	Payment of 1st Advance
					Total	**17441046**	**0**	**17441046**	

Sanction Approved Successfully.

Payee Details | Print Sanction Order | Back

Government of India
Ministry of Mines
National Mineral Exploration Trust
Sanction Order
*****

F.No.23/454/2024-NMET/80 New Delhi, 20th May, 2024

Subject: Approval of mineral exploration project and release of 1st Advance of Grant-in-Aid (General) for "Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singhbhum Copper Belt, East Singhbhum district, Jharkhand."

On the recommendation of Technical-cum-Cost Committee (TCC) of NMET, the Secretary, Mines and Chairman, Executive Committee (EC) approved mineral exploration project to be executed by MECL. The details of the block are given below:

S. No.	Project/Block Name	Commodity	Stage	Duration (Months)	Approved Cost (Including GST).
1	**Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singhbhum Copper Belt, East Singhbhum district, Jharkhand.**	**Copper & associated minerals**	**G3**	**12 (up to 19.05.2025)**	**₹ 4,36,02,614/-**

2. The mineral exploration project will be funded by NMET as per the cost recommended by the TCC and approved by the EC. The Implementing Agency shall complete the same as per the approved cost estimates and time schedule, enclosed in **Annexure,** as summarized below:-

- **Field Mobilization** : 1st month (up to 19.06.2024).
- **Exploration** (Mapping, Sampling, Survey, Pitting/Trenching & Drilling) : 2nd to 11th month (up to 19.04.2025).
- **Laboratory Studies** : 3rd month to 11th month (up to 19.04.2025)
- **Report Writing with Peer Review and submission to NMET** : 11th month to 12th month (up to 19.05.2025)

3. The Implementing Agency shall submit progress on monthly basis to NMET Secretariat. The TCC, NMET shall review the progress of project and provide update to the Executive Committee.

4. Sanction is also hereby conveyed for release of the 1st instalment of 40% of the estimated project cost i.e. **₹1,74,41,046/- (₹One crore seventy four lakh forty one thousand and forty six only)** *as an advance in terms of conditions stipulated in this office letter no. 42/1/2017-NMET/176 dated 16th December 2021 and letter no. 42/1/2017-NMET/217 dated 19th January 2022 regarding "Release of funds to State Government / NEAs for mineral exploration".*

5. The expenditure will be debited to '2853' Non-Ferrous Mining and Metallurgical Industries (Major Head) 02-Regulation and Development of Mines (Sub-Major head) 102-Mineral Exploration (Minor Head) 05-National Mineral Exploration Trust Fund Activities (Sub-Head) 00- National Mineral Exploration Trust Fund Activities (Detailed-Head) 05.00. 31-Grant-in-aid (General) under Demand No. 69, Ministry of Mines during the financial year 2024-25.

6. Certified that the pattern of assistance, under which the Grants-in-Aid (General) has been sanctioned, has the prior approval of Ministry of Finance.

7. MECL is a registered agency on EAT module of PFMS. In terms of **Rule 230, 235, 236 and 238 of GFR**, MECL Nagpur, should maintain subsidiary accounts of the Government Grants and furnish the same to the Principal Accounts Office of the Ministry. The account shall be open to inspection by the Sanctioning Authority and Audit, both by the Comptroller and Auditor General of India and Internal Audit by the Principal Accounts Office of the Ministry of Mines, whenever the organization is called upon to do so.

8. The exploration agency has to furnish the utilization certificate in respect of amount disbursed as Grant-in-aid for the project on utilization of disbursed amount or after completion of one year from the date of disbursement of advance, whichever is earlier. The next instalment of advance will be released after submission of utilization certificate and progress report in respect of the 1st instalment.

9. Shri Arun Kumar Chail, Section Officer in the Ministry will be the Drawing and Disbursing Officer for this purpose. It is requested that the payment of hereby conveyed for release of the 1st instalment of 40% of the estimated project cost i.e. **₹1,74,41,046/- (₹One crore seventy four lakh forty one thousand and forty six only)** may kindly be made to the Mineral Exploration and Consultancy Ltd, Dr. Babasaheb Ambedkar Bhawan, Seminary Hills, Nagpur – 440006 through RTGS in State Bank of India, Industrial Finance Branch, Nagpur (IFSC Code – SBIN0000432, Current Account No. 10374783387)

10. This has concurrence of JS &FA, Mines vide Note# 14 dated 16.05.2024 (E file No. 3075316).

Yours faithfully,

(Maneesh Kumar)
Deputy Secretary & HoD, NMET

Copy for information and further necessary action:

1. The Chairman & Managing Director, Mineral Exploration and Consultancy Ltd. (MECL), Dr. Babasaheb Ambedkar Bhawan, Seminary Hills, Nagpur – 440006.
2. Dr. S Ravi, Dy. Director General and Chairman, TCC-NMET, GSI SU: Karnataka & Goa, Bengaluru-560078.
3. I.F. Division, Ministry of Mines, Shastri Bhawan, New Delhi.
4. Executive Committee (EC) Meeting file (F.No.6/2/2015-NMET)
5. Grant-in aid Sanction Order file.

Annexure 5A

Cost Estimate for Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq. km), Singhbhum Copper Belt, East Singhbhum district, Jharkhand
[Block area- 4.10 sq. km; Schedule timeline- 12 months, Review- 6 months; BH- 17(PH 1- 7 BHs, PH 2- 10 Bhs-Total -20, 3 existing); Drilling- 1760m]

S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Amount (Rs)	
A	GEOLOGICAL & SURVEY WORK						
i	Detailed geological mapping (1:2000 scale)	sq.km.			4.10		
i	Charges for one Geologist- Field	day	1.2	11,000	1030	14,30,000	
ii	Charges for one Geologist per- HQ	day	1.2	9,000	30	2,70,000	
iii	2 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	260	1,31,040	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Sampling Party Days -1 Sampler Labour charge not included	day	1.5.2	5,100	73	3,72,300	
v	4 labours/ party (Rs 504/day/labour)	day	5.7	504	292	1,47,168	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
vi	Survey Party Days for topographical contour survey, block boundary and borehole points fixation	day	1.6. 1a	8,300	30	2,49,000	
vii	4 labours for surveyor	day	5.7	504	120	60,480	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	26,59,988	
B	Trenching/Pitting						
	a) Excavation of Trenches	per cu.m	2.1.1	3,330	200	6,66,000	

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					Sub Total- B	6,66,000	
C	DRILLING						
i	Drilling upto 300m (Hard Rock)	m	2.2.1.4a	11,500	2,200	2,53,00,000	
ii	Borehole deviation Survey	m	2.2.6	330	2,200	7,26,000	
iii	Borehole Geophysical logging	5 Bhs of 350m each	3.12	622.25	2,200	13,68,950	Base rate Rs. 10, 88, 941/1750=622.25m
iv	Land / Crop Compansation	per BH	5.6	20,000	17	3,40,000	
v	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	17	34,000	
vi	Transportation of Drill Rig & Truck associated per drill (2 rigs)-Two way	Km	2.2.8	36	4,000	1,44,000	
vii	Monthly Accomodation Charges for drilling Camp	month	2.2.9	50,000	4	2,00,000	
viii	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	2	5,00,000	
ix	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	2	5,00,000	
x	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	6	1,32,120	
xi	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and block boundary by DGPS	Nos	1.6.2	19,200	17	3,26,400	(5 Boundary points+15 Bh points)
xii	Borehole core preservation-One complete borehole plus mineralised cores of all the remaining BHs	m	5.3	1,590	300	4,77,000	
	Sub Total- C					3,00,48,470	
D	LABORATORY STUDIES						
1	Chemical analysis						
A	Geochemical surface samples (Primary) (Bedrock/channel)- AAS						
	a) Primary samples for Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	30	95,280	AAS method
	Surface Check samples (10% External check)						

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	c) For Cu, Pb, Zn, Ni, Co, Mo & W		4.1.7a & b	3,176	3	9,528	AAS method
B	**Trenching Samples**						
	a) Primary Trench samples for Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	150	4,76,400	AAS method
	Trench Check samples (10% External check)						
	c) For Cu, Pb, Zn, Ni, Co, Mo & W		4.1.7a & b	3,176	15	47,640	AAS method
B	**BH core samples**						
	a) Primary samples for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	4.1.7a & b	3,176	350	11,11,600	AAS method
	BH Core Check samples (10% External check)						
	a) External Check sample (10% of Primary samples) for Cu, Pb, Zn, Ni, Co, Te, Mo and Se	Nos	4.1.7a & b	3,176	35	1,11,160	AAS method
	Petrological & Mineragraphic studies						
iv	Preparation of thin section	Nos	4.3.1	2,353	10	23,530	
v	Complete petrographic study report	Nos	4.3.4	4,232	10	42,320	
vi	Preparation of polished section	Nos	4.3.2	1,549	10	15,490	
vii	Complete mineragraphic study report	Nos	4.3.4	4,232	10	42,320	
viii	Digital Photographs	Nos	4.3.7	280	10	2,800	
x	Specific Gravity Determination	Nos	4.8.1	1,605	5	8,025	
	Sub Total- D					**19,86,093**	
E	**Total A to D**					**3,53,60,551**	

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F	Geological Report Preparation		5.2	For Projects having cost less than Rs. 300 lakhs-A minimum of Rs.7,50,000 or 3% of the value of work whichever is more For the projects having cost exceeding Rs. 150 lakhs and less than Rs. 300 lakhs - A minimum of Rs. 7.5 lakhs or 3% of the value of work whichever is more		10,60,817	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
G	Peer review Charges		As per EC decision			30,000	
H	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 lower		5,00,000	EA has to submit 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.
I	Total Estimated Cost without GST					3,69,51,368	
J	Provision for GST (18%)					66,51,246	GST will be reimburse as per actual and as per notified prescribed rate
K	Total Estimated Cost with GST					4,36,02,613.69	
	or Say Rs. In Lakhs					436.03	
Note:							
1	Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.						

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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 execusion of the project by NEA on its own, a Certifiate 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.

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Annexure 5B

Time Schedule /Action Plan For Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq. km), Singhbhum Copper Belt, East Singhbhum district, Jharkhand

S. No.		Qty.	1	2	3	4	5	6		7	8	9	10	11	12
1	Camp Setting	months													
2	Geological Mapping (1:2000 scale) & Collection of surface samples	4.10 sq.km.													
3	Topographical Survey work	4.10 sq.km.													
4	Trenching & sampling work	200 cu.m.													
5	Phase-I Drilling & associated works (2 rig)	700m (7 Bhs)													
6	Phase-II Drilling & associated works (2 rig)	1060m (8 Bhs)							Review						
7	Geologist party days (Field)	months													
8	Sampling party days,	months													
9	Camp winding	months													
10	Laboratory Studies	months													
11	Geologist party days at HQ	months													
12	Report Writing with Peer Review	months													

8/4/2024.

08/04/2024

ANNEXURE XV/10

Government of India
Ministry of Mines
National Mineral Exploration Trust

F.No.23/454/2024-NMET/254 **New Delhi, 18th July, 2025**

REVISED OFFICE MEMORANDUM

Subject: Additional cost w.r.t. the project "Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singhbhum Copper Belt, East Singhbhum district, Jharkhand".

Agency: MECL.

On the recommendation of Technical-cum-Cost Committee (TCC) of NMET, the Executive Committee (EC) in its 35th meeting held on 16th May, 2024 had ratified/approved the mineral exploration project **"Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singhbhum Copper Belt, East Singhbhum district, Jharkhand"** with timeline of 12 months at an approved cost (including GST) of **₹4,36,02,614/-.**

2. There was revision in cost as approved by 38th EC for ₹ 4,66,78,487/-. An OM dt. 30.12.2024 has also been issued in this regard.

3. Now, on the request of MECL, the Executive Committee (EC) of NMET in its 42nd meeting held on 02nd June, 2025 accorded approval of additional cost of **₹7,96,513/- (₹Seven lakh ninety six thousand five hundred thirteen only).**

4. The total approved cost of the project is revised as under:-

S. No.	Project/Block Name	Commodity	Stage	Duration (Months)	Revised Cost (including GST).
1	Preliminary Exploration (G-3) for Copper and associated minerals in Thakurdih Area-1 Block (4.10 sq.km.), Singhbhum Copper Belt, East Singhbhum district, Jharkhand	Copper	G3	12 months (up to 19.08.2025)	₹4,74,75,000/-

(₹ Four crore seventy four lakh and seventy five thousand only)

4. The uploading of Geological Report (GR) on NGDR portal is sole responsibility of the exploration agency. The final payment will be made only after receiving the confirmation of the same. The screenshot/ acknowledgement of successful uploading of GR is to be submitted to NMET with the final bill.

5. The other conditions of the earlier issued Sanction no. 23/454/2024-NMET/80 dt. 20.05.2024 remain same.

Yours faithfully,

(Geetika Sharma)
Deputy Secretary & HoD, NMET

Copy for information and further necessary action:-

1. The Chairman & Managing Director, Mineral Exploration and consultancy Ltd. (MECL), Dr. Babsaheb Ambedkar Bhawan, Seminary Hills, Nagpur- 440006.
2. I.F. Division, Ministry of Mines, Shastri Bhawan, New Delhi.
3. Executive Committee (EC) Meeting file (F.No.6/2/2015-NMET)
4. The Chairman, TCCs, NMET.
5. Grant-in aid Sanction order file.

Annexure 11

Revised Estimated cost for Preliminary Exploration (G-3 stage), for Copper and associated minerals in Thakurdih-Area-1, District:East Singbhum, State: Jharkhand.
[Block area- 4.10 sq. km; Schedule timeline- 12 months, Review - 6 months, BH-17 (Phase-I: 1-7 Bhs, Phase-II=10 Bhs, Total 20 Bhs, 3 existing), Drilling 2200m

S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Previous Estimated Cost of the Proposal		Revised Estimated Cost of the Proposal		2nd Revised Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Amount (Rs)	Qty.	Amount (Rs)	Qty.	Amount (Rs)	
A	**GEOLOGICAL & SURVEY WORK**										
i	Detailed geological mapping (1:4000 scale)	sq.km.			4.10 sq.km						
i	Charges for one Geologist- Field	day	1.2	11,000	130	1,430,000					
ii	Charges for one Geologist per- HQ	day	1.2	9,000	30	270,000					
iii	2 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	260	131,040					Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Sampling Party Days - 1 Sampler	day	1.5.2	5,100	73	372,300					

	Labour charge not included										
v	4 labours/ party (Rs 504/day/labour)	day	5.7	504	292	147,168					Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
vi	Survey Party Days for topographical contour survey, block boundary and borehole points fixation	day	1.6. 1a	8,300	30	249,000					
vii	4 labours for surveyor	day	5.7	504	120	60,480					Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
	Sub Total- A					**2,659,988**					
B	**TRENCHING/PITTING**										
i	Excavation of Trenches	per.cu.m.	2.1.1	3,330	200	666,000					
	Sub Total- B					**666,000**					
C	**DRILLING**										
i	Drilling upto 300m (Hard Rock) (1 rigs)	m	2.2.1.4a	11,500	2,200	25,300,000					

ii	Borehole deviation Survey	m	2.2.6	330	2,200	726,000					
iii	Borehole Geophysical logging	5 Bhs of 350m each	3.12	622.25	2,200	1,368,950					Base reate Rs. 10, 88, 941/1750=622.25m
iv	Land / Crop Compansation	per BH	5.6	20,000	17	340,000					
v	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	17	34,000					
vi	Transportation of Drill Rig & Truck associated per drill (2 rigs)-Two way	Km	2.2.8	36	4,000	144,000					
vii	Monthly Accomodation Charges for drilling Camp	month	2.2.9	50,000	4	200,000					
viii	Drilling Camp Setting Cost	Nos	2.2.9a	250,000	2	500,000					
ix	Drilling Camp Winding up Cost	Nos	2.2.9b	250,000	2	500,000					
x	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	6	132,120					
xi	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and block boundary by DGPS	Nos	1.6.2	19,200	17	326,400					
xii	Borehole core preservation-One complete borehole	m	5.3	1,590	300	477,000					

	plus mineralised cores of all the remaining BHs										
	Sub Total- C					**30,048,470**					
D	**LABORATORY STUDIES**										
1	**Chemical analysis**										
A	**Geochemical surface samples (Primary) (Bedrock/channel)**										
	a) Primary samples for Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	30	95,280					AAS method
	Surface Check samples (10% External check)										
	c) For Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	3	9,528					AAS method
B	**Trenching Samples**										
	a) Primary samples for Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	150	476,400					AAS method
	Trench Check samples (10% External check)										
	c) For Cu, Pb, Zn, Ni, Co, Mo, & W		4.1.7a & b	3,176	15	47,640					AAS method
C	**BH core samples**										
	a) Primary samples for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	4.1.7a & b	3,176	350	1,111,600					AAS method

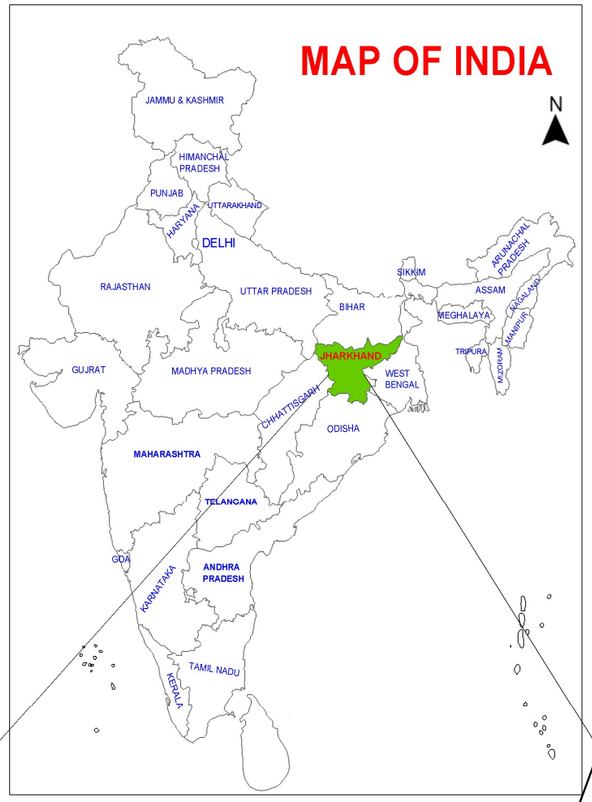
	BH Core Check samples (10% External check)										
	a) External Check sample (10% of Primary samples) for Cu, Pb, Zn, Ni, Co, Mo, & W	Nos	4.1.7a & b	3,176	35	111,160					AAS method
	Sub Total- D					**1,851,608**					
D-a	**Additional Samples (Phase-I & II Drilling)**										
	Primary Analysis for Cu, Pb, Zn, Ni, Co, Mo & W	Nos	4.1.7a & b	3,176			700	2,223,200			
	External Check analysis for Cu, Pb, Zn, Ni, Co, Mo & W	Nos	4.1.7a & b	3,176			70	222,320			
	Composite analysis for Bi, Ge, Te, Sn, Au, Ag (Au, Ag shall be replaced by As, Cd)	Nos	4.1.7a & b	2,841			30	85,230			For >0.50% cu zones
	Sub Total- D-a							**2,530,750**			
D-b	**Additional Samples (Phase-I & II Drilling)**										
	Composite samples for 34 Element Analysis by ICP-MS (La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Se, Y, U, Th, Li, In, Be, Mo,	Nos.	4.1.14	7,731					50	386,550	

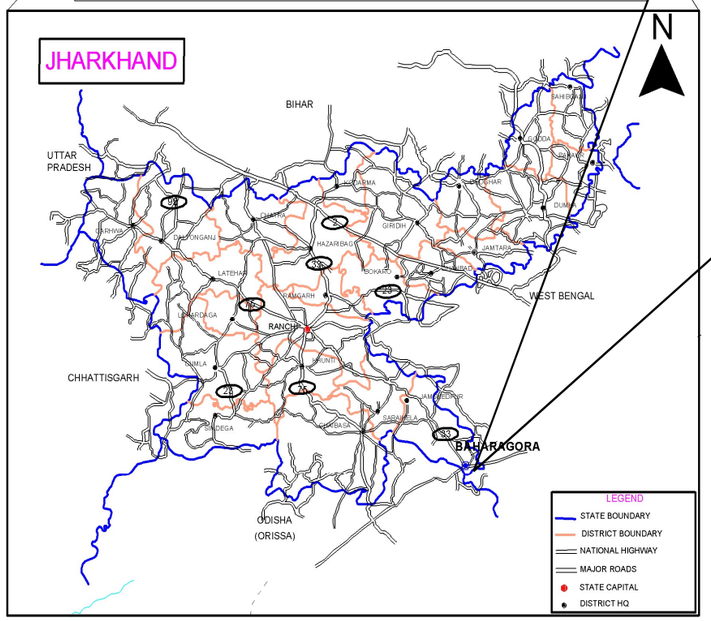
	Ni, Cr, Ta, Cu, Pb, Zn, Ba, Co, Rb, Sr, Zr, Nb)										
	For Fe (T), SiO2, Al2O3, TiO2, V2O5, Cr2O3, MnO, MgO, CaO, S P, & LoI	Nos	4.1.15a	4,200					30	126,000	
	For Au & Ag by Fire assay	Nos.	4.1.5a	4,760					30	142,800	For >0.50% cu zones
	Sub Total- D-b									**655,350**	
E	**Petrological & Mineragraphic studies**										
iv	Preparation of thin section	Nos	4.3.1	2,353	10	23,530					
v	Complete petrographic study report	Nos	4.3.4	4,232	10	42,320					
vi	Preparation of polished section	Nos	4.3.2	1,549	10	15,490					
vii	Complete mineragraphic study report	Nos	4.3.4	4,232	10	42,320					
viii	Digital Photographs	Nos	4.3.7	280	10	2,800					
x	Specific Gravity Determination	Nos	4.8.1	1,605	5	8,025					
	Sub Total- E					**134,485**					
D	**Total A to E**					**35,360,551**		**37,891,301**		**38,546,651**	

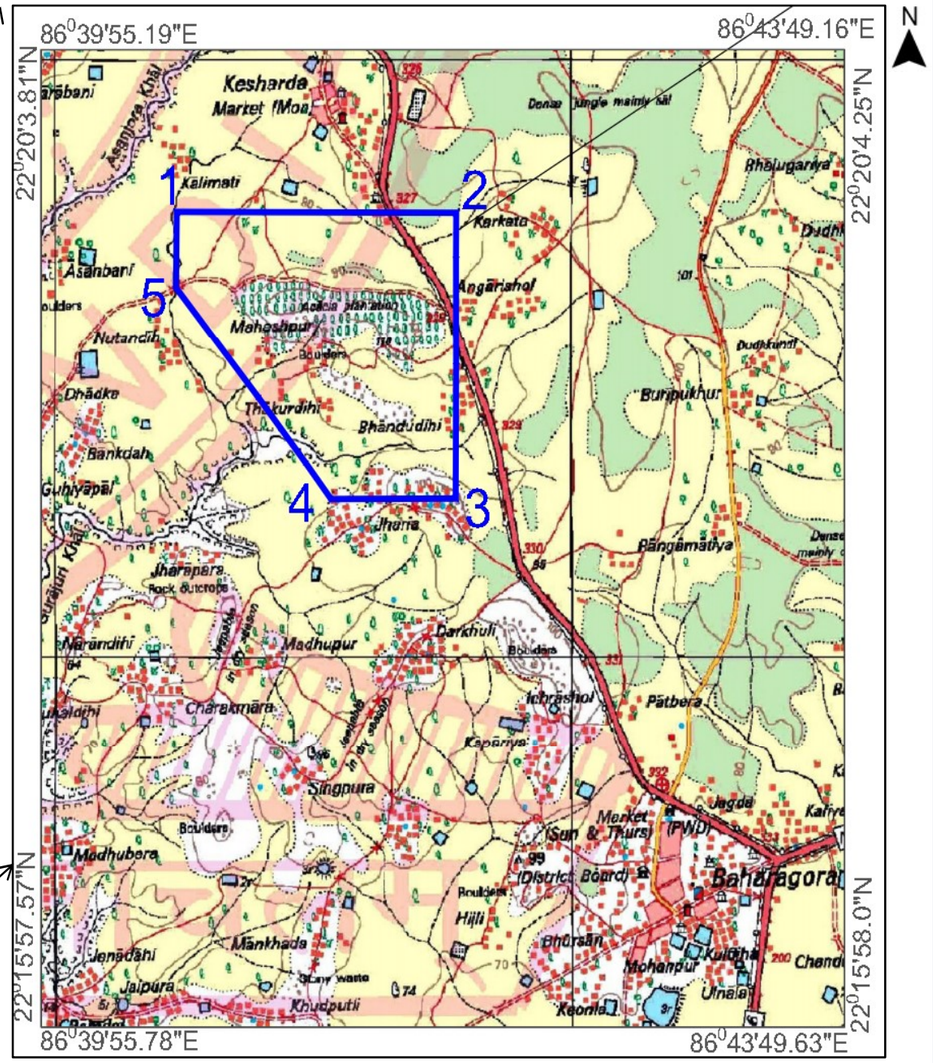
E	**Geological Report Preparation**		**5.2**	For Projects having cost less than Rs. 300 lakhs-A minimum of Rs.7,50,000 or 3% of the value of work whichever is more For the projects having cost exceeding Rs. 150 lakhs and less than Rs. 300 lakhs - A minimum of Rs. 7.5 lakhs or 3% of the value of work whichever is more		**1,060,817**		**1,136,739**		**1,156,400**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
F	**Peer review Charges**		**As per EC decision**			**30,000**		**30,000**		**30,000**	

G	**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 lower		**500,000**		**500,000**		**500,000**	EA has to submit 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.
H	**Total Estimated Cost without GST**					**36,951,368**		**39,558,040**		**40,233,051**	675,011
I	**Provision for GST (18%)**					**6,651,246**		**7,120,447**		**7,241,949**	GST will be reimburse as per actual and as per notified prescribed rate
J	**Total Estimated Cost with GST**					**43,602,613.69**		**46,678,487**		**47,475,000**	
				or Say Rs. In Lakhs		**436.03**		**466.78**		**474.75**	***1.70% additional on approved cost***
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.**										
6	**All the Geological Reports and data are to be uploaded on NGDR as per MERT template by the agency.**										

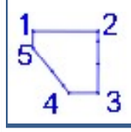
LOCATION MAP OF THAKURDIH AREA-1 BLOCK DISTRICT EAST SINGHBHUM, JHARKHAND







Coordinates of Block Boundary of Thakurdih Area-I Block, District: East Singhbhum, Jharkhand				
Corner Points	WGS-84(DMS)		UTM(Zone 45N)	
	Latitude	Longitude	Easting	Northing
1	22°19'23.1904"N	86°40'34.8022"E	466667	2468627
2	22°19'23.4125"N	86°41'56.3542"E	469000	2468629
3	22°18'10.7567"N	86°41'56.5099"E	469000	2466395
4	22°18'10.6238"N	86°41'20.5106"E	467970	2466393
5	22°19'04.1304"N	86°40'34.6370"E	466661	2468041



LEGEND

Thakurdih Area-1
Block boundary (Area 4.10 Sq.km)

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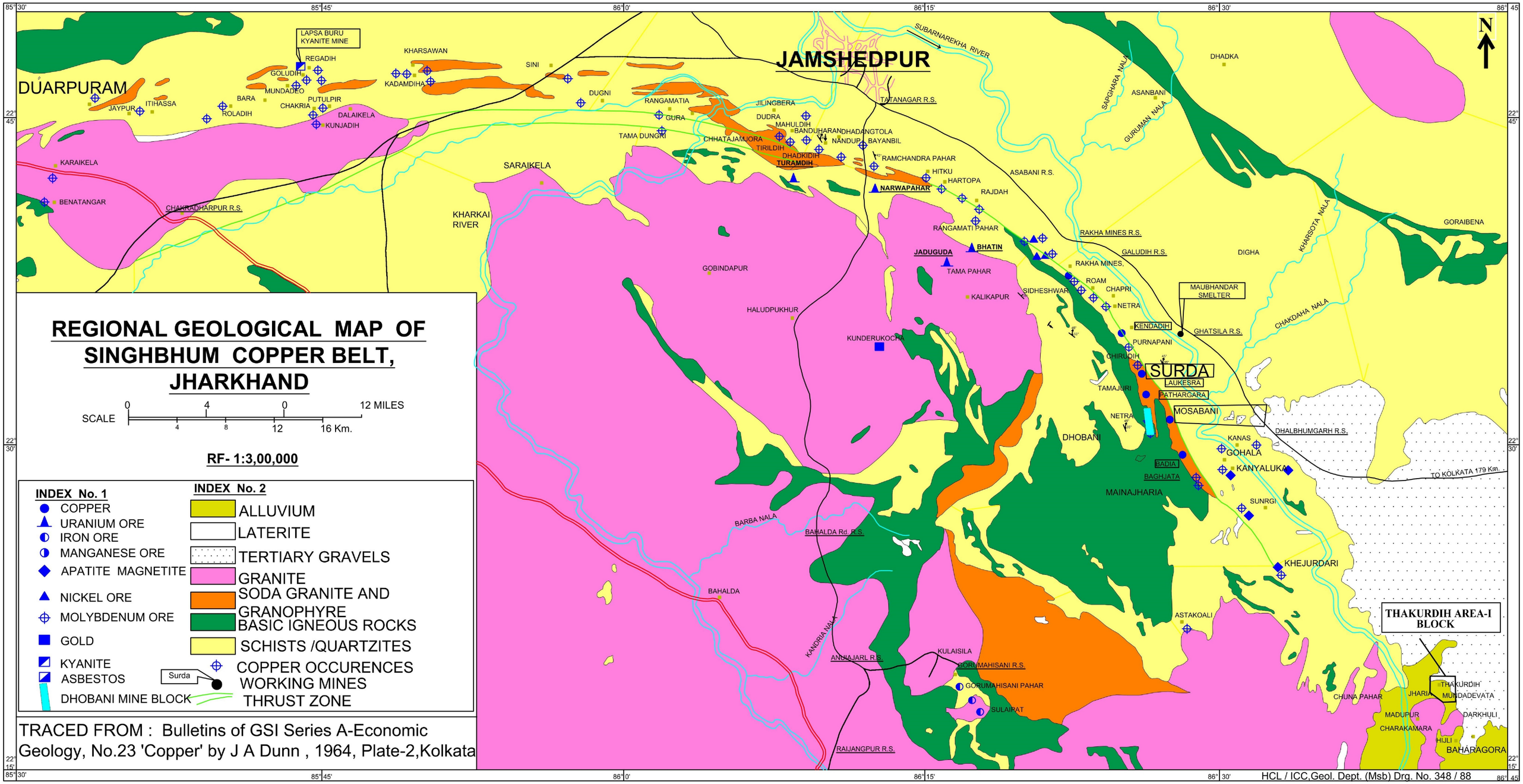
(Formerly Mineral Exploration Corporation Limited)

LOCATION MAP
THAKURDIH AREA -1 (4.10 Sq.km)

DISTRICT : EAST SINGHBHUM — STATE : JHARKHAND

RF. Not to Scale	Prepared at : NEM GR CELL , MECL, NAGPUR	
MECL/EXPL./ JULY 2025	PLATE NO.- I	01



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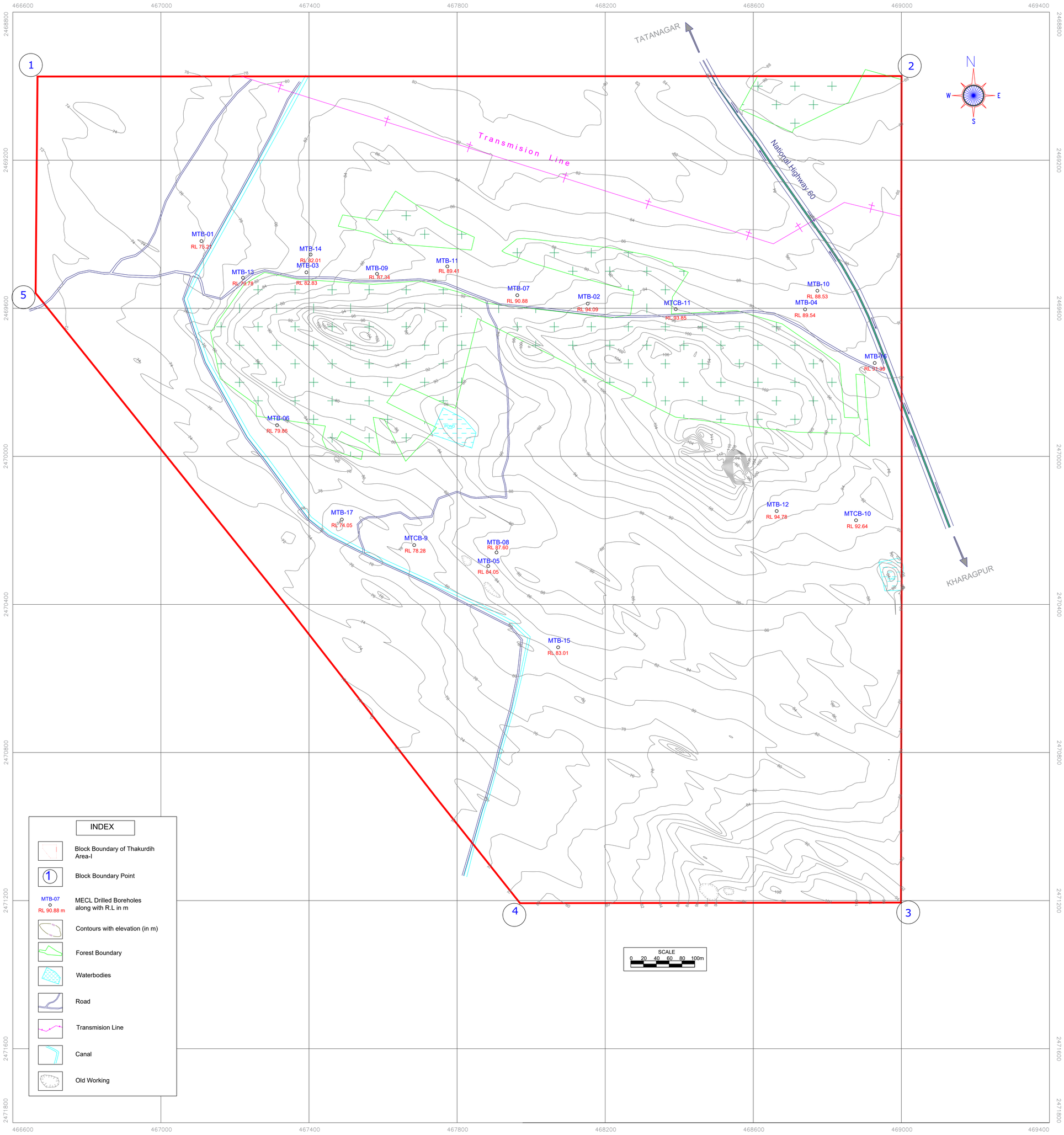
REGIONAL GEOLOGICAL MAP OF SINGHBHUM COPPER BELT, JHARKHAND

Thakurdih Area-I Block

DISTRICT : EAST SINGHBHUM | STATE :JHARKHAND

MECL/EXPL/JULY-2025 | PLATE-II | 2



Coordinates of Block Boundary of Thakurdih Area-I Block, District: East Singhbhum, Jharkhand

Corner Points	WGS-84(DMS)		UTM(Zone 45N)	
	Latitude	Longitude	Easting	Northing
1	22°19'23.1904"N	86°40'34.8022"E	466667	2468627
2	22°19'23.4125"N	86°41'56.3542"E	469000	2468629
3	22°18'10.7567"N	86°41'56.5099"E	469000	2466395
4	22°18'10.6238"N	86°41'20.5106"E	467970	2466393
5	22°19'04.1304"N	86°40'34.6370"E	466661	2468041

MINERAL EXPLORATION AND CONSULTANCY LIMITED
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TOPOGRAPHICAL MAP

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

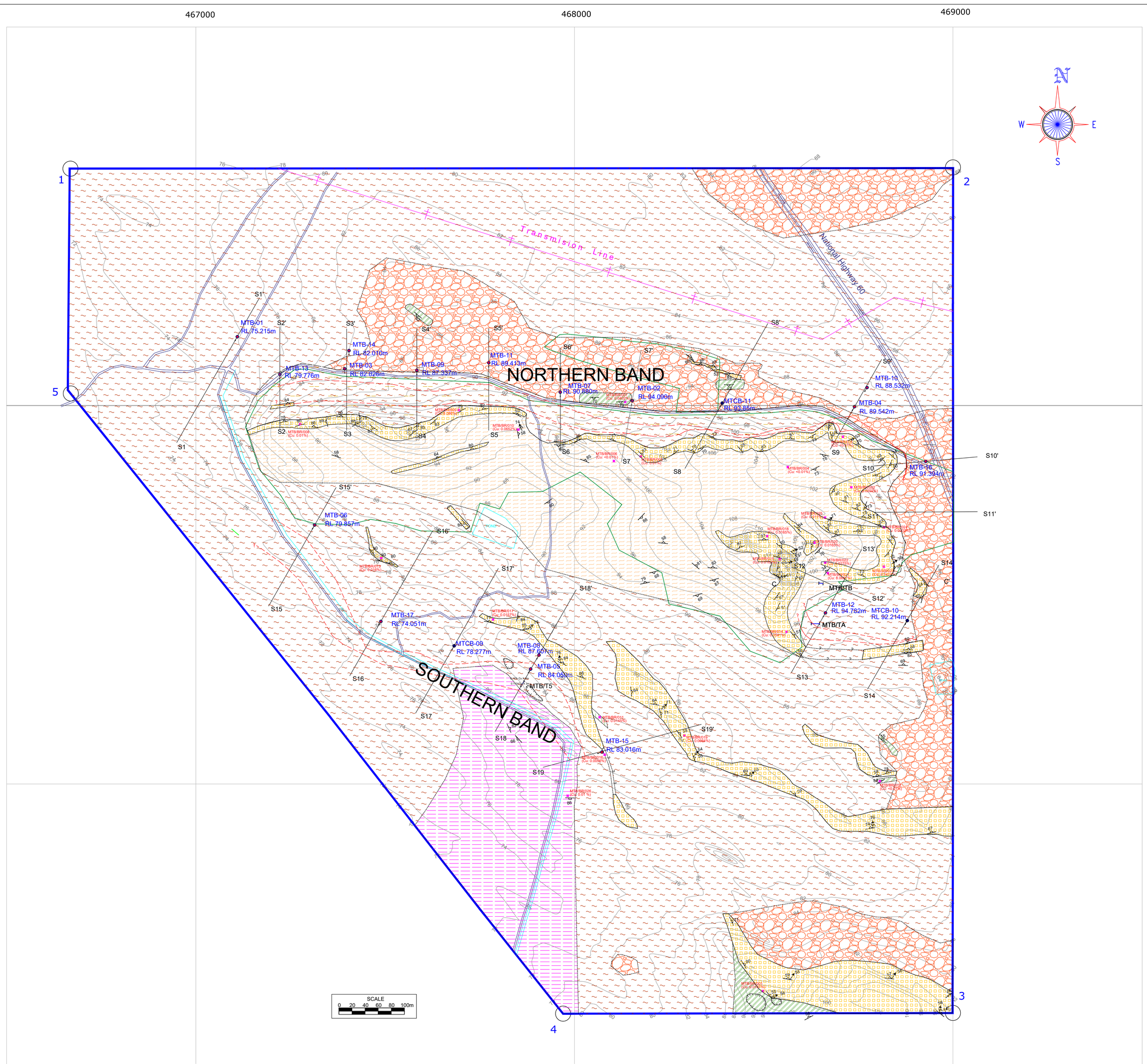
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Surveyed & Prepared By : S.K Nazimuddin (STA, S&D)

Checked by : Pratap Singh Negi (ASMO)
Durgesh Devashri (ASMO)
Jagdish Thakral, Retd. (ASMO)

Approved by : Shrikant Sharma, HOD (Exploration)
P.Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 | PLATE NO. III | 3



INDEX

Block Boundary of Thakurdih Area-I

Block Boundary Point

MTB-07 RL 90.88 — MECL Drilled Boreholes (Present G3 Exploration along with R.L value in m

Contours with elevation in m

Waterbodies

Road

Transmision Line

Canal

Forest Boundary

MTB/TA — Location of trench with Cu% values

Location of BRS Sample with Cu%

MTCB-11 — Previous Boreholes Drilled by MECL (2022-23)

82° 75 — Strike and Dip of Foliation S0/S1, S2

Old Workings

82° 62° — Lineations: Pucker, Mineral Lineation

58 — Fold axial Plunge: Synform, Antiform

Surface projection of mineralized Zone based on boreholes

LEGEND(GEOLOGICAL PLAN)

Soil Cover(Alluvial/Slope Wash)

Tertiary Gravel

Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive

Garnetiferous/Kyanite Quartzite

Feldspathic Quartz/Mica Schist

Granite / Granite Gneiss (Archaean)

LEGEND (CROSS-SECTION)

Soil Cover(Alluvial/Slope Wash)

Metabasic Schist

Quartz-K-Feldspar Chlorite Biotite Schist (Silicified & granitized basic schist)

Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist

Biotite Quartz Schist

Quartz Biotite Chlorite Schist/Quartz Biotite Schist Quartz Feldspathic Biotite Chlorite Schist

Oxidised/Weathered Schistose Rock

Quartz Feldspathic Amphibole Biotite Chlorite Schist

Amphibole Basic Intrusive

Garnetiferous-Qtz-Chlorite mica schist

Quartzite/Micaceous Quartz Schist /Micaceous Quartz Feldspathic Schist

Granite Gneiss

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

DETAILED GEOLOGICAL MAP

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

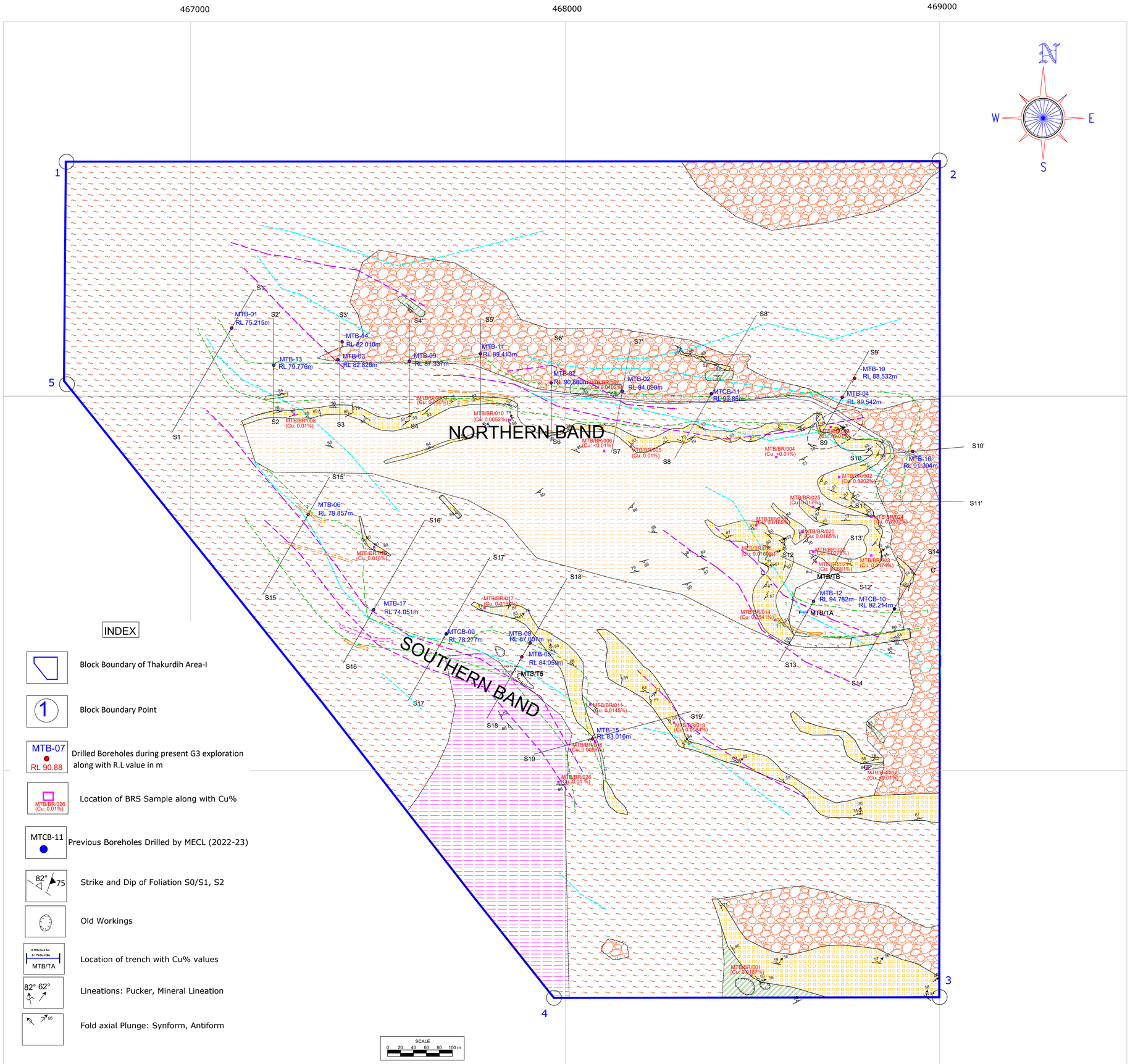
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Mapped &Prepared By: Milan Mondal Manager (Geology)

Checked by : Md.Dasthageer, Senior Manager (Geology)

Approved by : Shrikant Sharma, HOD (Exploration)
P.Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 | PLATE NO. IV | 4 A



LITHOLOGY INDEX

(GEOLOGICAL PLAN)

- Soil Cover(Alluvial/Slope Wash)
- Tertiary Gravel
- Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive
- Garnetiferous/Kyanite Quartzite
- Feldspathic Quartz/Mica Schist
- Granite / Granite Gneiss (Archaean)

(CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist
- Quartz-K-Feldspar Chlorite Biotite Schist (Silicified & granitized basic schist)
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/Quartz Biotite Schist
- Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Garnetiferous-Qtz-Chlorite mica schist
- Quartzite/Micaceous Quartz Schist /Micaceous Quartz Feldspathic Schist
- Granite Gneiss

GEOPHYSICAL ZONE INDEX

- Geophysical Interpreted Conductive Zone
- Geophysical Interpreted Inferred IP Anomaly

BOREHOLE LITHO BOUNDARY INDEX

- Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive
- Garnetiferous/Kyanite Quartzite /Feldspathic Quartz/Mica Schist
- Granite Gneiss
- Tentative Axial zone

NOTE: Litho projections based on borehole data superimposed over surface geological map along with integrated geophysical anomaly

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL MAP

THAKURDIH AREA-1 BLOCK

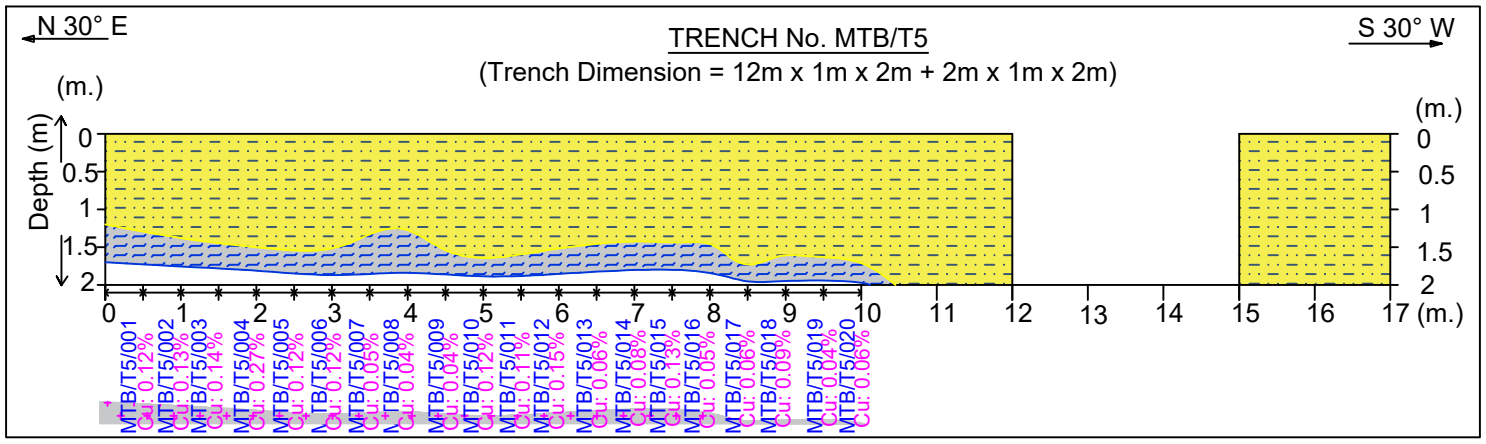
DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

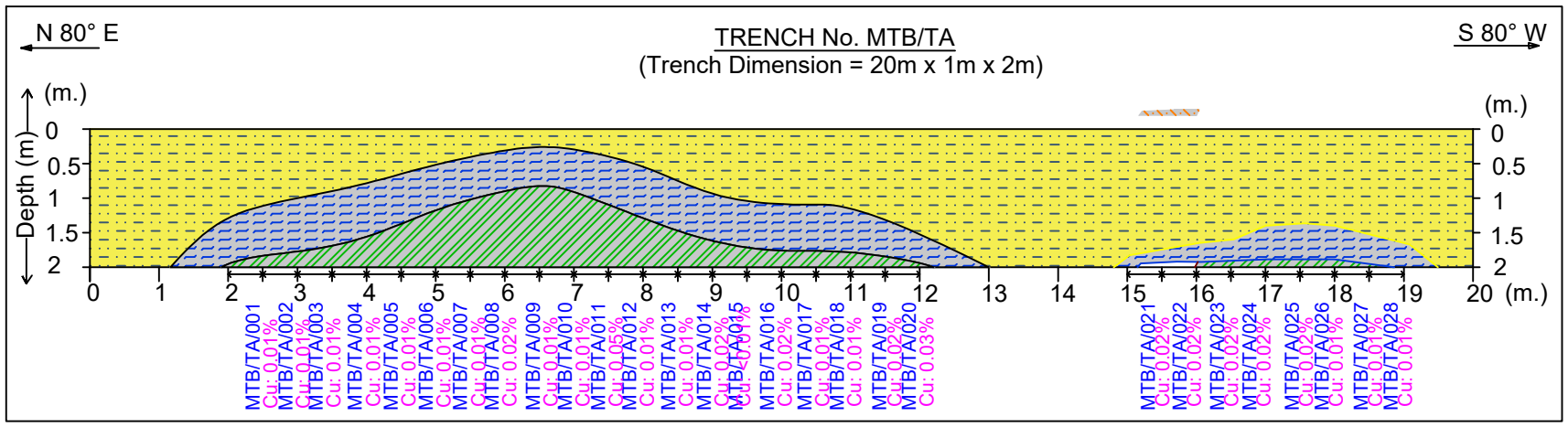
R.F. 1:4,000

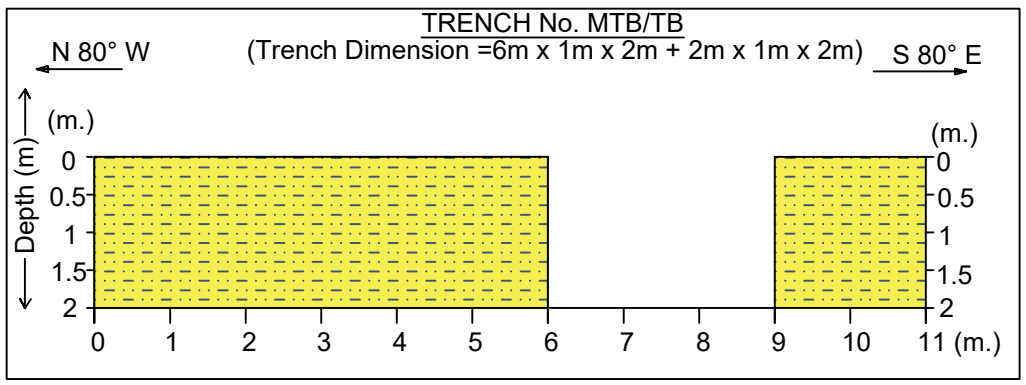
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Mapped &Prepared By: Milan Mondal Manager (Geology)
Checked by : Md.Dasthageer, Senior Manager (Geology)
Approved by : Shrikant Sharma, HOD (Exploration)
P.Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 | PLATE NO. IV | 4 B







INDEX

- Top Soil Cover
- Weathered mantle/Oxidised schistosed rock
- Quartz Mica schist / Mica schist
- Metabasic Schist/ Amphibole schist/ Amphibole mica schist
- Granite Gneiss
- MTB/TA/020 Cu: 0.03% — Trench Sample no. along with Cu %

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TRENCH PROFILES

THAKURDIH AREA-1 BLOCK

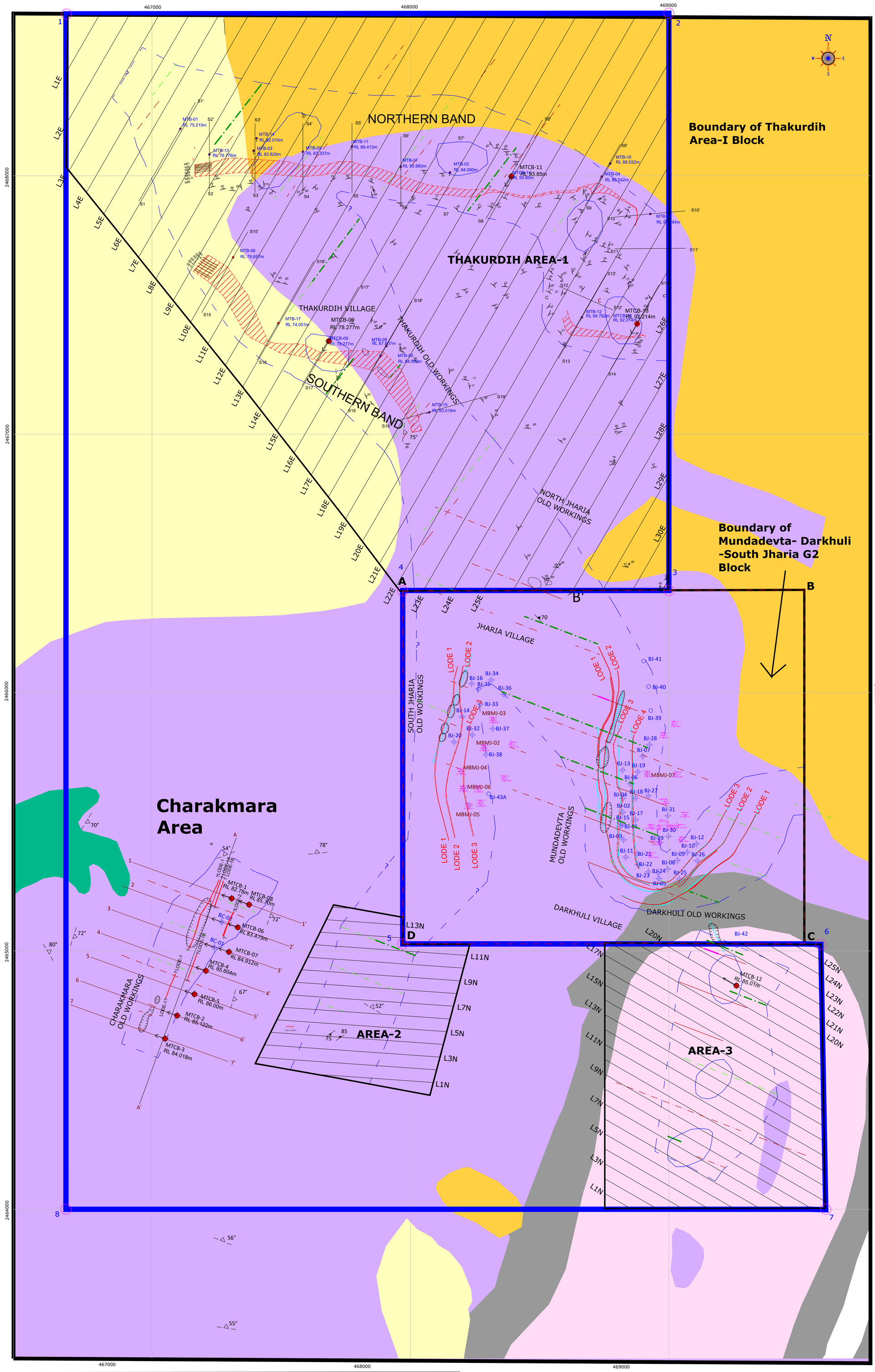
DISTRICT : EAST SINGHBHUM | STATE : JHARKHAND

R.F. - 1:100

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Prepared By : Milon Mondal, Manager(Geology)
Checked by : Md.Dasthageer, Senior Manager (Geology)
Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 | PLATE NO. IV | 4 C



INDEX

- BJ-28/BC-01 — Old Boreholes Drilled by GSI, (1984)
- MTCB-1 — PreviousBoreholes Drilled by MECL in Thakurdih & Charakmara Area (2022-23)
- Previous Boreholes Drilled by MECL in adjoining Mundadevta-Darkhuli Block (G-2)
- MTB-07 — MECL Drilled Boreholes (Present G3 Exploration) 2024-25 along with R.L value in m
- 1 — 1' Section Lines in Charakmara area
- S1 — S1' Section Lines in Thakurdih Area-I Block
- L21E — Section Lines in Thakurdih Area-1
- L10N — Section Lines in Area-2 & 3
- A — A' LV Section Line
- Geochemical weak anomaly (GSI 1984)
- Geochemical moderate anomaly (GSI 1984)
- Geochemical strong anomaly (GSI 1984)
- Geophysical IP weak anomaly
- Geophysical IP strong anomaly
- 82° 75 Strike and Dip of Foliation ,Bedding
- Old Workings
- Lodes (In Chrakmara & Mundadevta)
- Lodes (In Thakurdih area-I block)
- Block Boundary of Thakurdih - Charakamara block Area 10 sq.km
- A B D C Boundary of Mundadevta- Darkhuli -South Jharia G2 Block
- Potential Mineralized Zone in Thakurdih Area-I
- Block Boundary of Thakurdih Area-I
- Integrated Geophysical Anomaly
- Interpreted anomalous zone based on integrated geology, geochemical & geophysical data

LEGEND

- Sand, Silt, Clay, Calcareous concretions (Pleistocene - Holocene)
- Gravel Beds (Tertiary)
- Mica Schist with Hornblende schist (Palaeoproterozoic)
- Quartzite (Palaeoproterozoic)
- Newer Dolerite (Archaean - proterozoic)
- Granite / Granite Gneiss (Archaean)

Scale: 0 100 200 300 400 500 metres

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INTEGRATED GEOLOGICAL MAP OF SUB BLOCKS

MUNDADEVTA,THAKURDIH CHARAKMARA & THAKURDIH AREA-I BLOCK

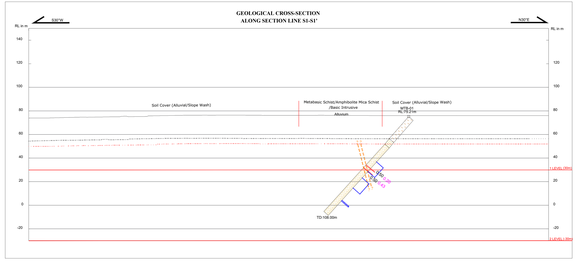
DISTRICT : EAST SINGHBHUM STATE : JHARKHAND

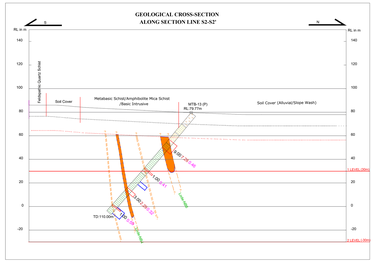
R.F. 1:5000

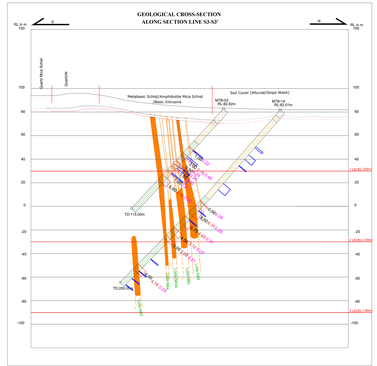
PREPARED AT : NON-COAL GR CELL, EXPLORATION DIVISION MECL, NAGPUR

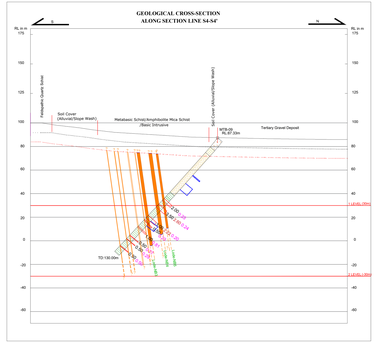
Prepared By :Dipankar Manna, Asst. Manager (Geology)
:Ripun Kumar Gogoi, A.M. (Geology)
:Milan Mondal, Manager (Geology)
Checked By :Md.Dasthageer,Senior Manager(Geology)
Approved By :Shrikant Sharma , HOD (Exploration)
P.Ravindran Nair, Retd. GM (Exploration)

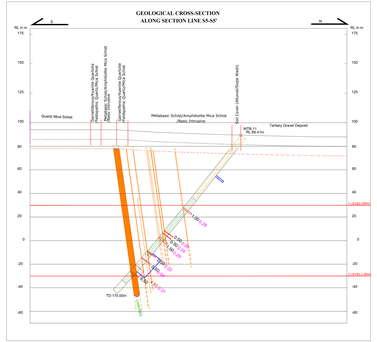
MECL/EXPL./JULY-2025 PLATE NO.-IV 4 D

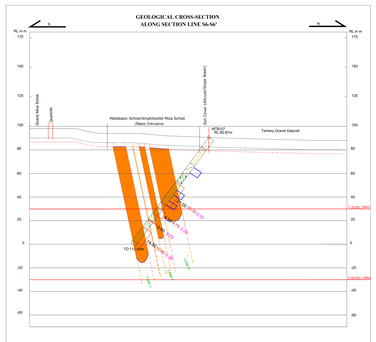


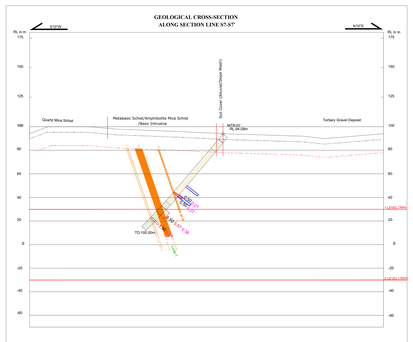


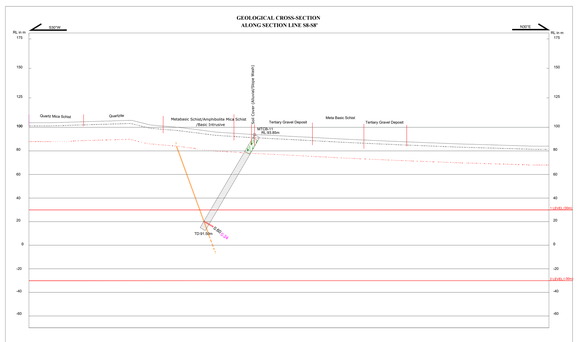


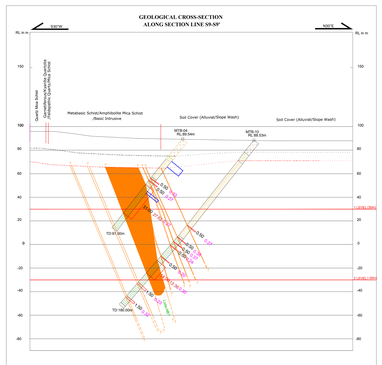


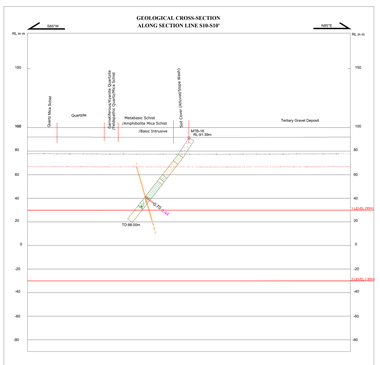












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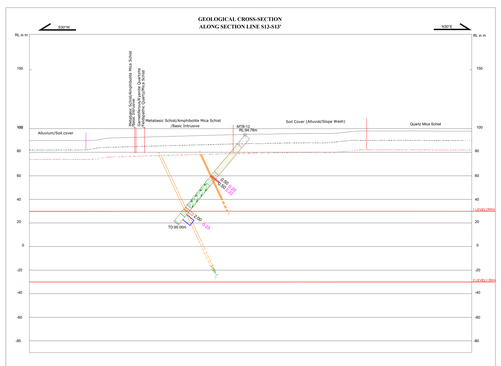
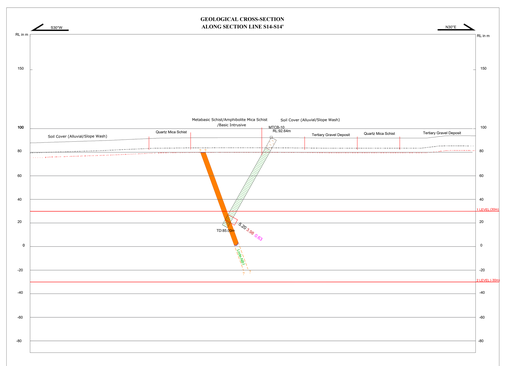




INDEX

LEGEND(GEOLOGICAL PLAN)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist/ Amphibolite Mica Schist/ Basic Intrusive
- Garnetiferous/Kyanite Quartzite/Feldspathic Quartz/Mica Schist
- Granite / Granite Gneiss (Archean)

LEGEND (CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist
- Quartz-K-Feldspar Chlorite Biotite Schist/Silicified & granitoid basic schist)
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite -Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidized/Weathered Schistose Rock
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Garnetiferous-Qtz-Chlorite mica schist
- Quartzite/Micaceous Quartz Schist/Micaceous Quartz Feldspathic Schist
- Granite Gneiss

- MTCB-11 RL 82.97m — Previous Boreholes Drilled by MECL with Reduced Level in meter (2022 -2023)
- MTB-15 RL 20.10m — Boreholes drilled by MECL in present G3 exploration with Reduced Level in meter
- TD- 85.00m — Total Depth in m
- Lode with Apparent Thickness & True Thickness in m and Copper Grade (Cu%) of Mineralized zone (zone at 0.2%Cut-off).
- Soil Profile
- Weathered Zone
- Lithe Boundaries
- Inferred boreholes graphicaccd anomaly

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL CROSS SECTION (Cu Cut-off 0.2%)
ALONG SECTION LINE S1-S1' TO S14-S14' (NORTHERN BAND).

THAKURDIH AREA-1 BLOCK

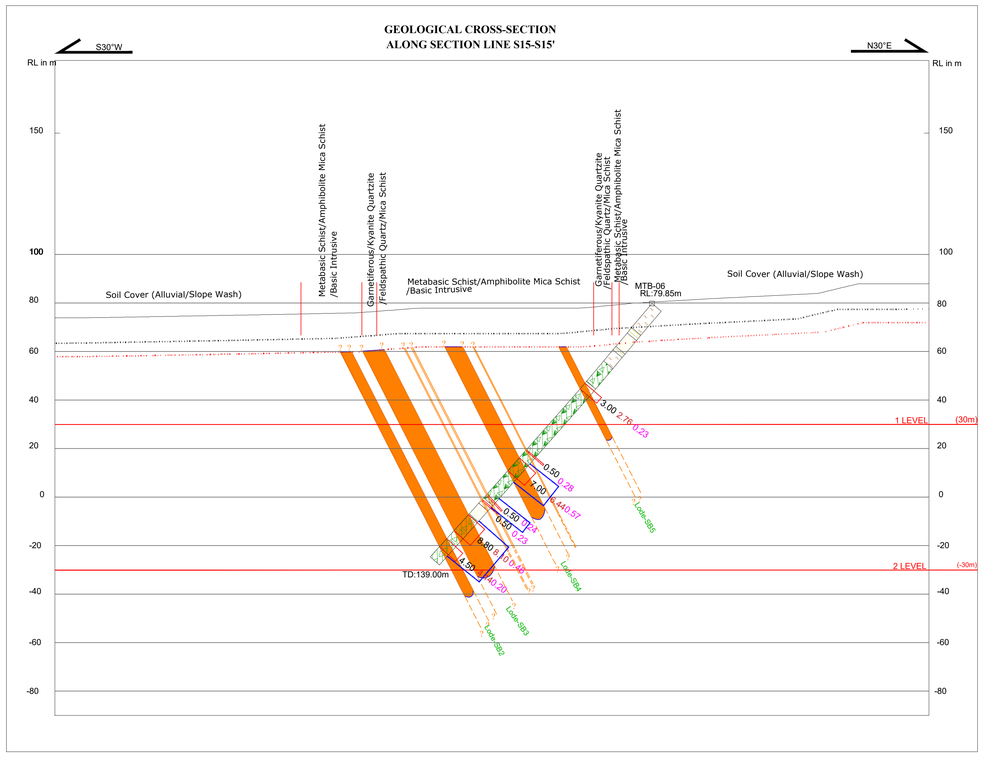
DISTRICT: EAST SINGHBHUM — STATE: JHARKHAND

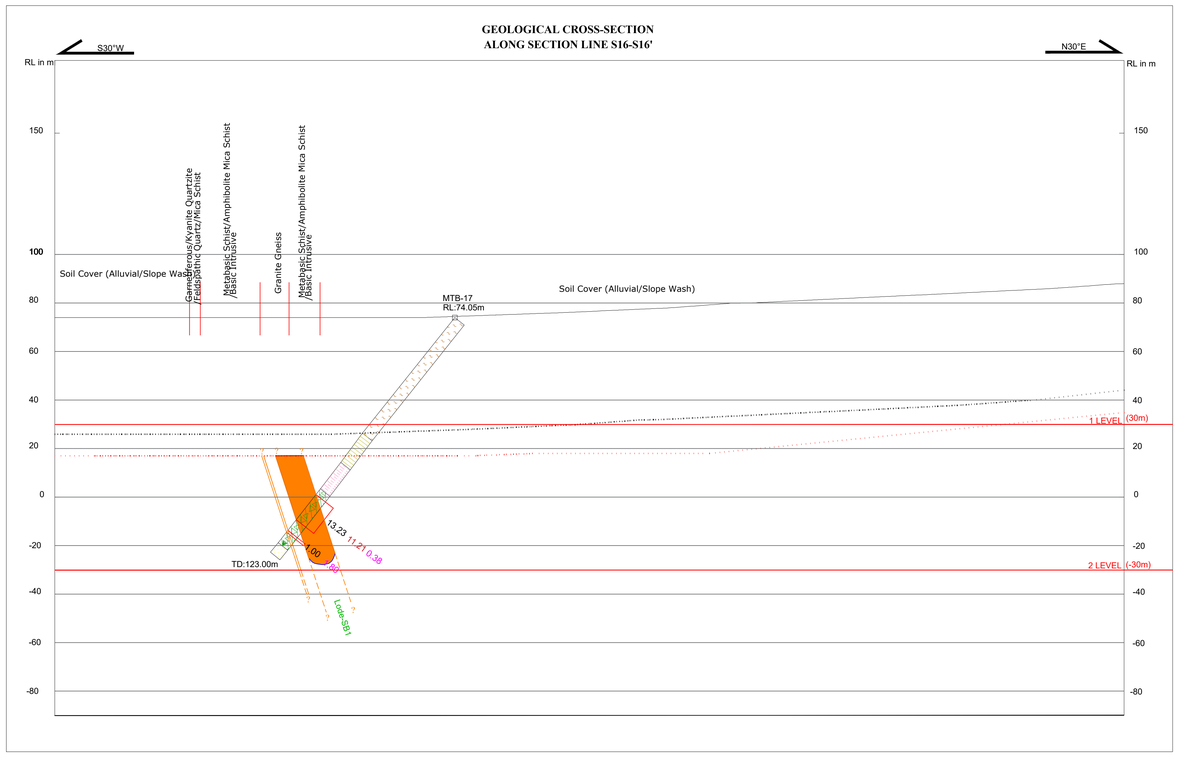
R.F. : 1/,000

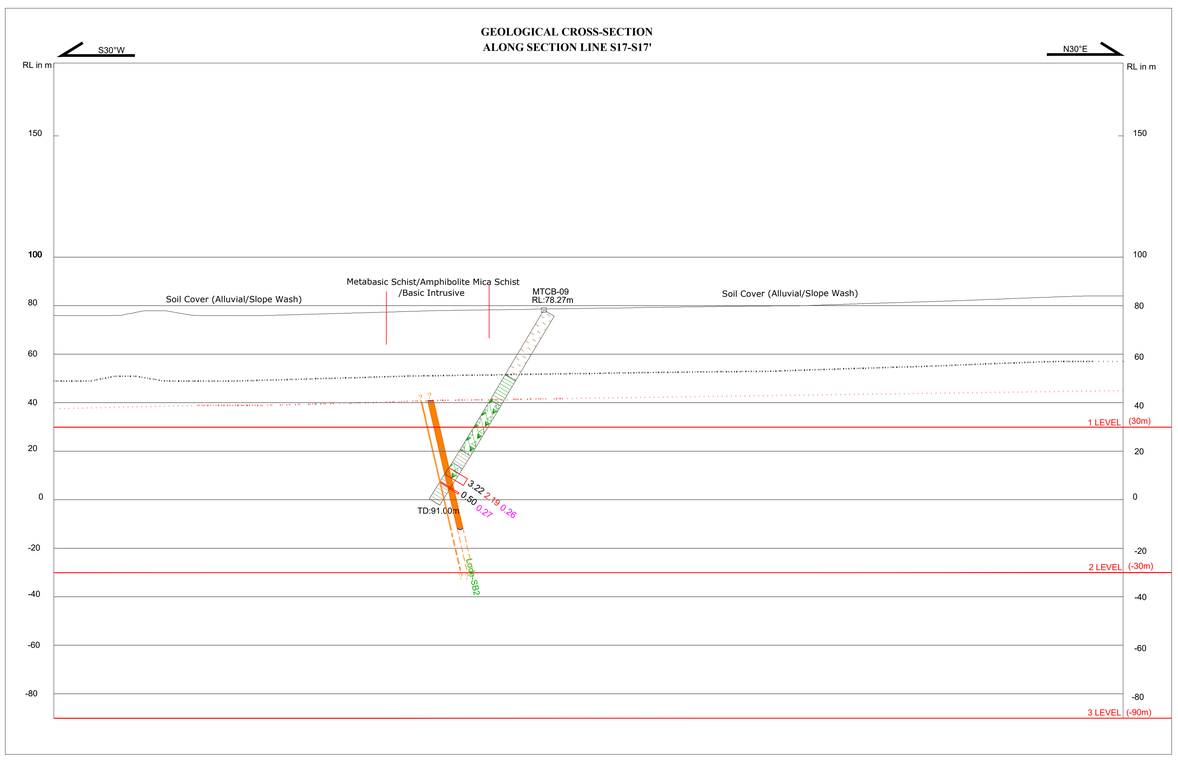
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

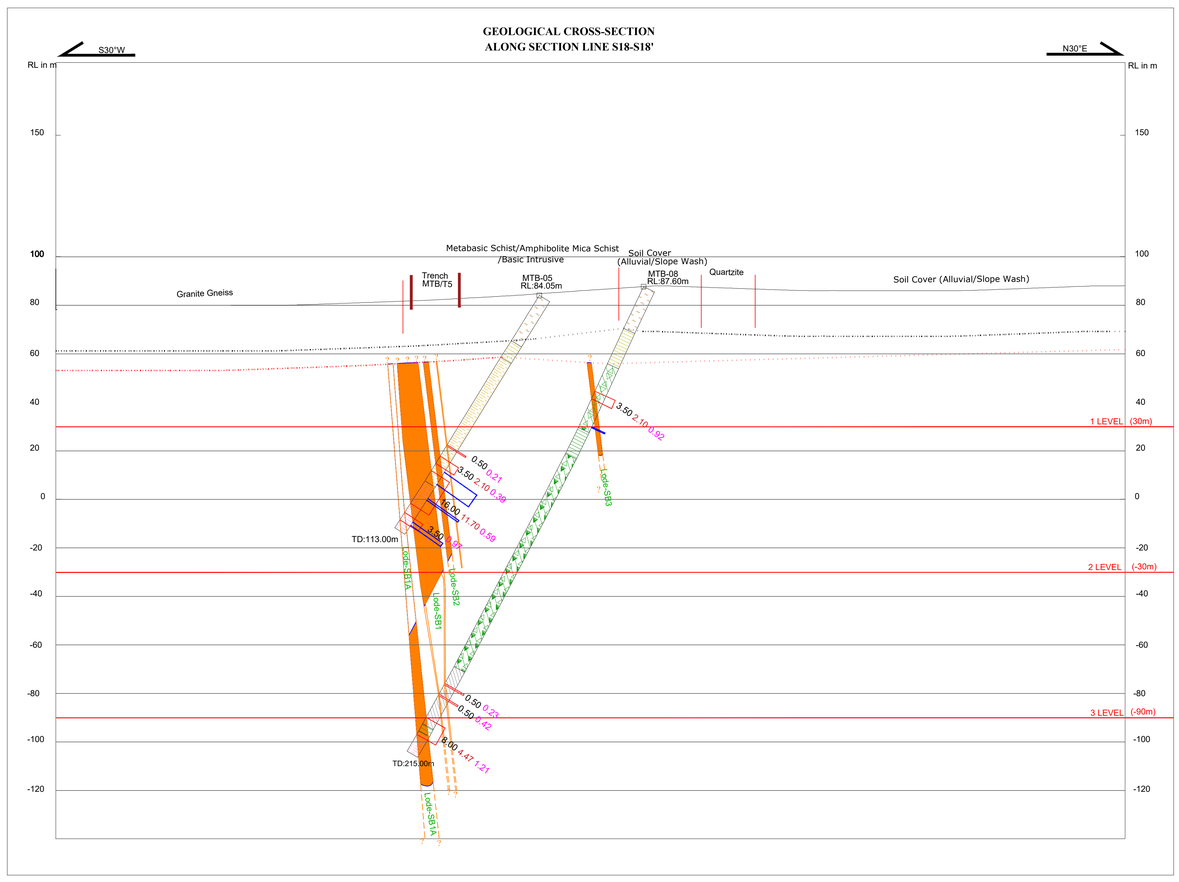
Prepared By : Soumya Anand, Asst. Manager (Geology)
Kashang Chinwelung, Asst. Manager (Geology)
Checked by : Md.Dastlageer, Senior Manager (Geology)
Approved by : Shrikant Sharma HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)

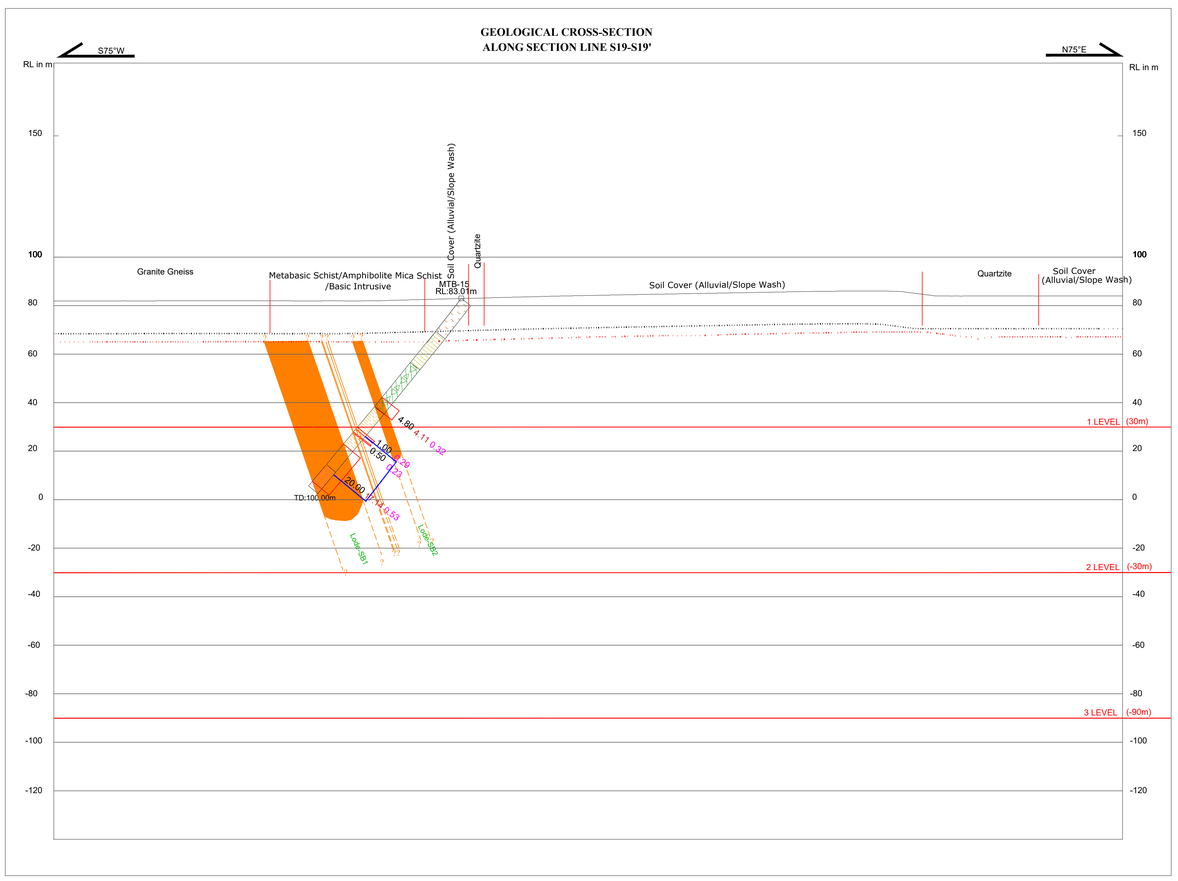
MECL : EXPLOR. / JULY-2023 — PLATE NO. V — S A21

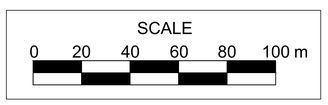












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LEGEND(GEOLOGICAL PLAN)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist/ Amphibolite Mica Schist/ Basic Intrusive
- Garnetiferous/Kyanite Quartzite/Feldspathic Quartz/Mica Schist
- Granite / Granite Gneiss (Archaean)

LEGEND (CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist
- Quartz-K-Feldspar Chlorite Biotite Schist(Silicified & granitized basic schist)
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
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- Litho Boundaries
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MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL CROSS SECTION (Cu Cut-off 0.2%)
ALONG SECTION LINE S15-S15' TO S19-S19'(SOUTHERN BAND)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM — STATE: JHARKHAND

R.F. 1: 1,000

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Prepared By : Saumya Anand, Asst. Manager (Geology)
Kashung Chinaoshang, Asst. Manager (Geology)

Checked by : Md.Dasthageer, Senior Manager (Geology)

Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)

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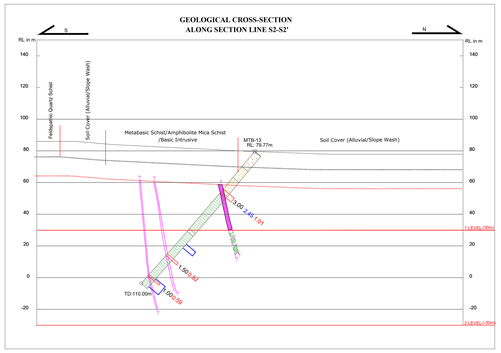

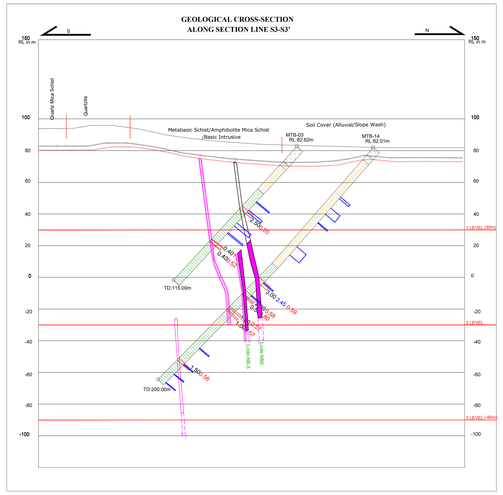

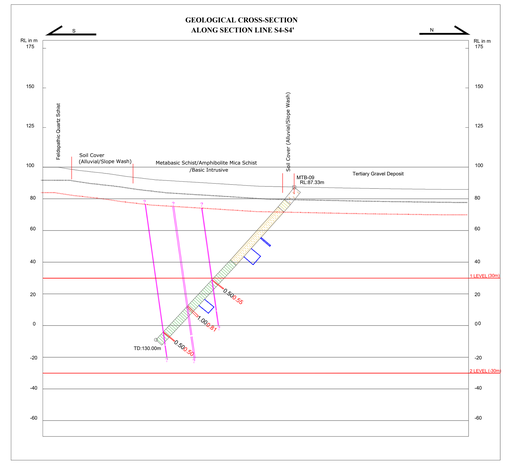

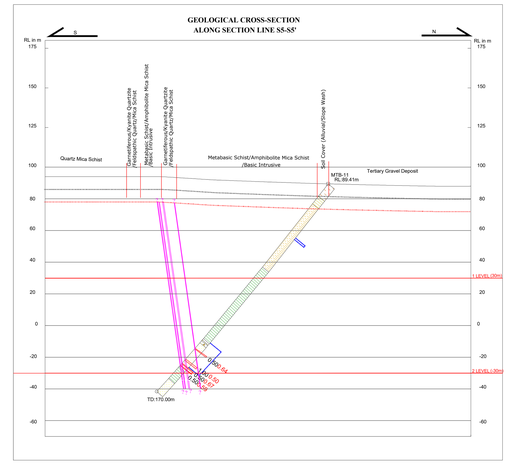

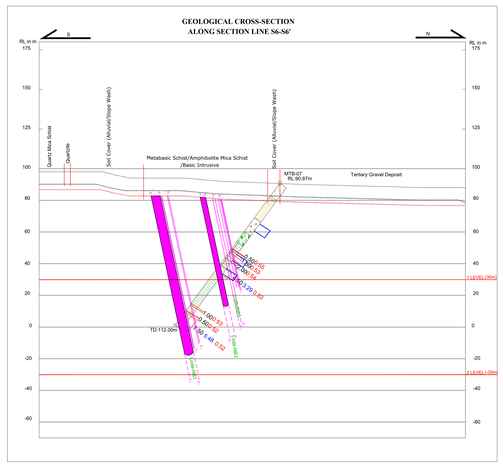

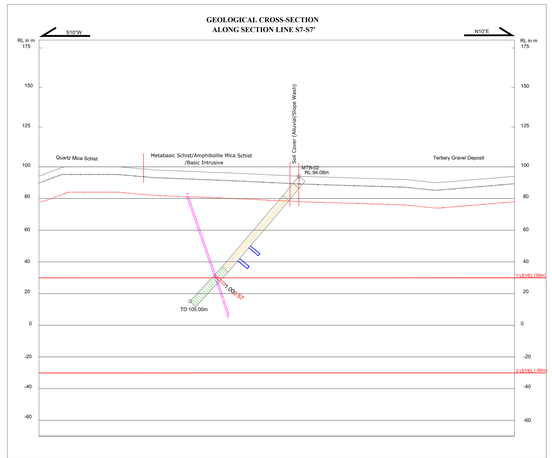

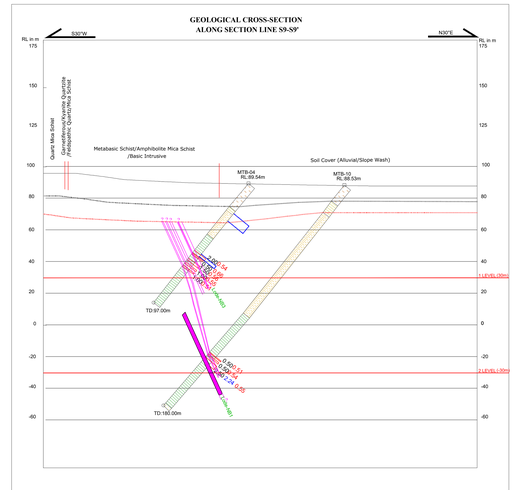

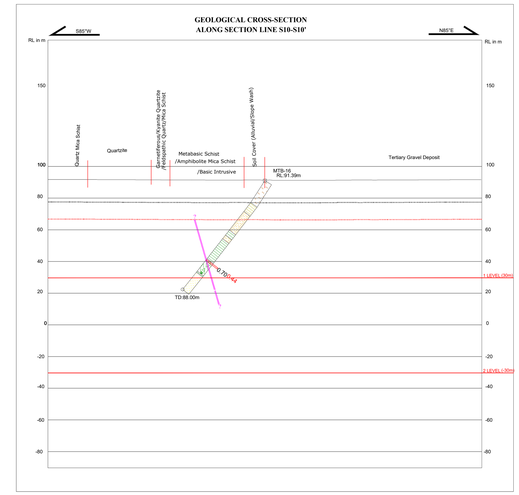

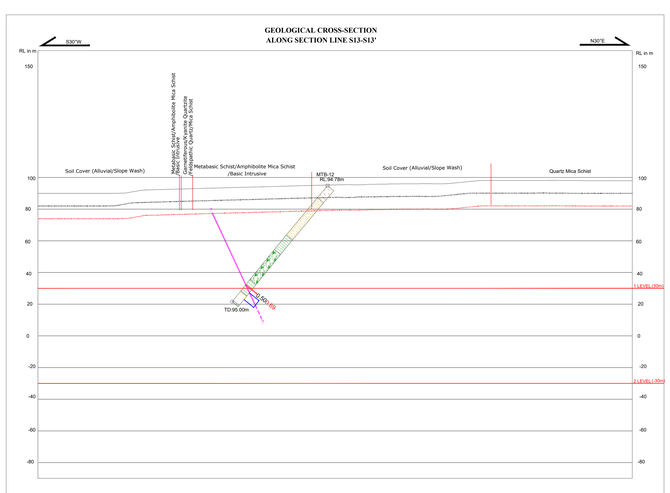

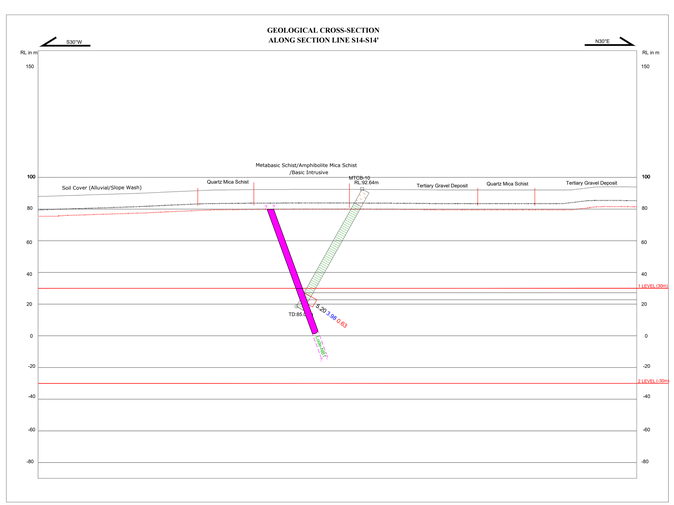

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LEGEND (CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
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- Quartz-K-Feldspar Chlorite Biotite Schist(Silicified & granitized basic schist)
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- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Garnetiferous-Qtz-Chlorite mica schist
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MTCB-11 RL:93.93m — Previous Boreholes Drilled by MECL with Reduced Level in meter (2022 -2023)

MTB-15 RL:83.01m — Boreholes drilled by MECL in present G3 exploration with Reduced Level in meter

TD: 85.00m — Total Depth in m

Lode with Apparent Thickness & True Thickness in m and Copper Grade (Cu%) of Mineralized zone (zone at 0.2%Cut-off)

Soil Profile

Weathered Zone

Litho Boundaries

Integrated borehole geophysical anomaly

SCALE

0 20 40 60 80

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL CROSS SECTION (Cu Cut-off 0.5%)
ALONG SECTION LINE S1-S1' TO S14-S14' (NORTHERN BAND)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM — STATE: JHARKHAND

R.F. 1: 1,000

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Prepared By : Saumya Anand, Asst. Manager (Geology)
Kushung Chinaochang, Asst. Manager (Geology)

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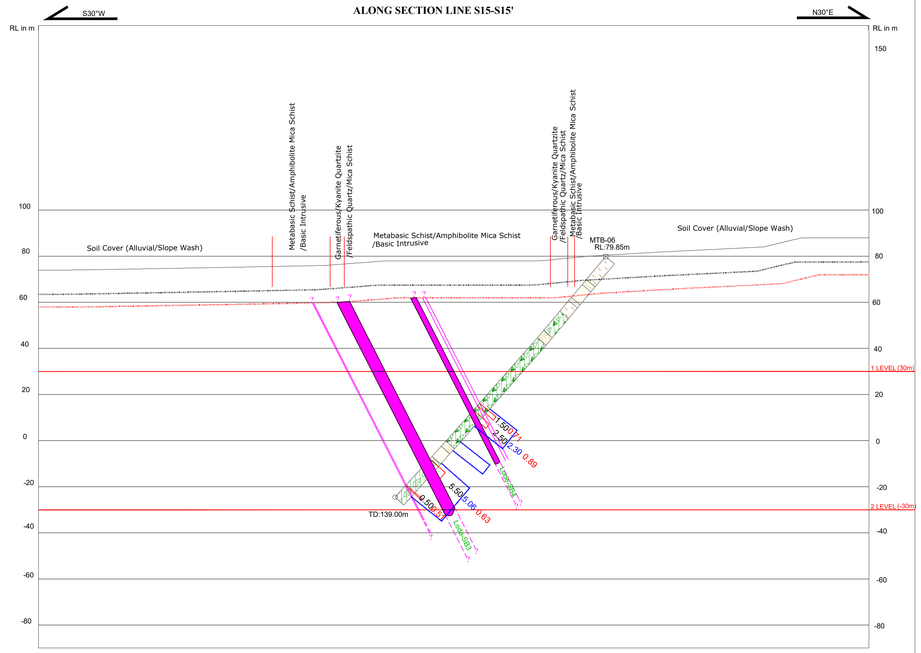
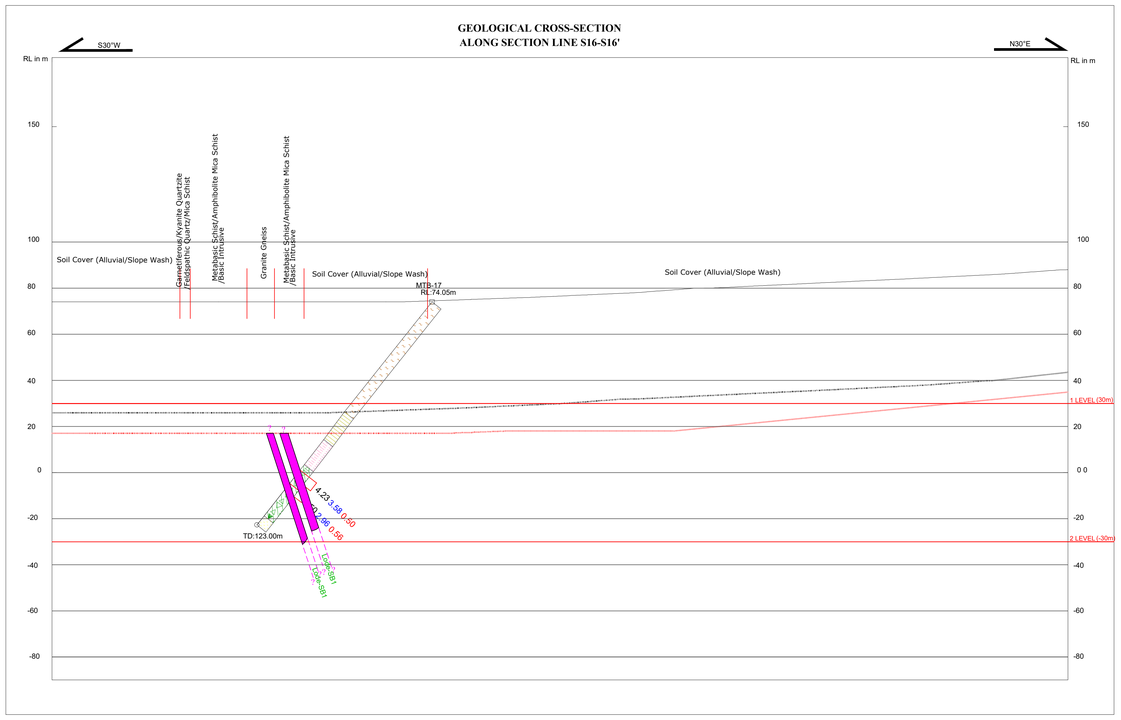
Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Rend. GM (Exploration)

MECL / EXPLOR. / JULY-2025 — PLATE NO. V — S-8 [1]

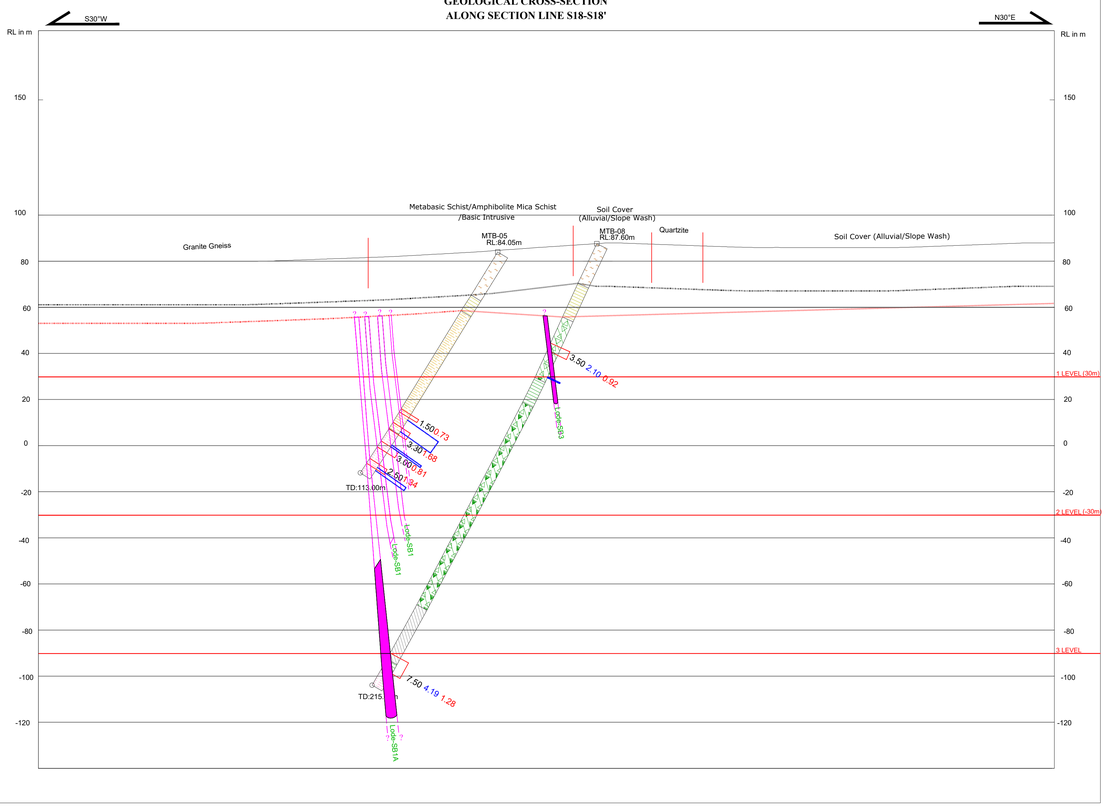
GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S15-S15'



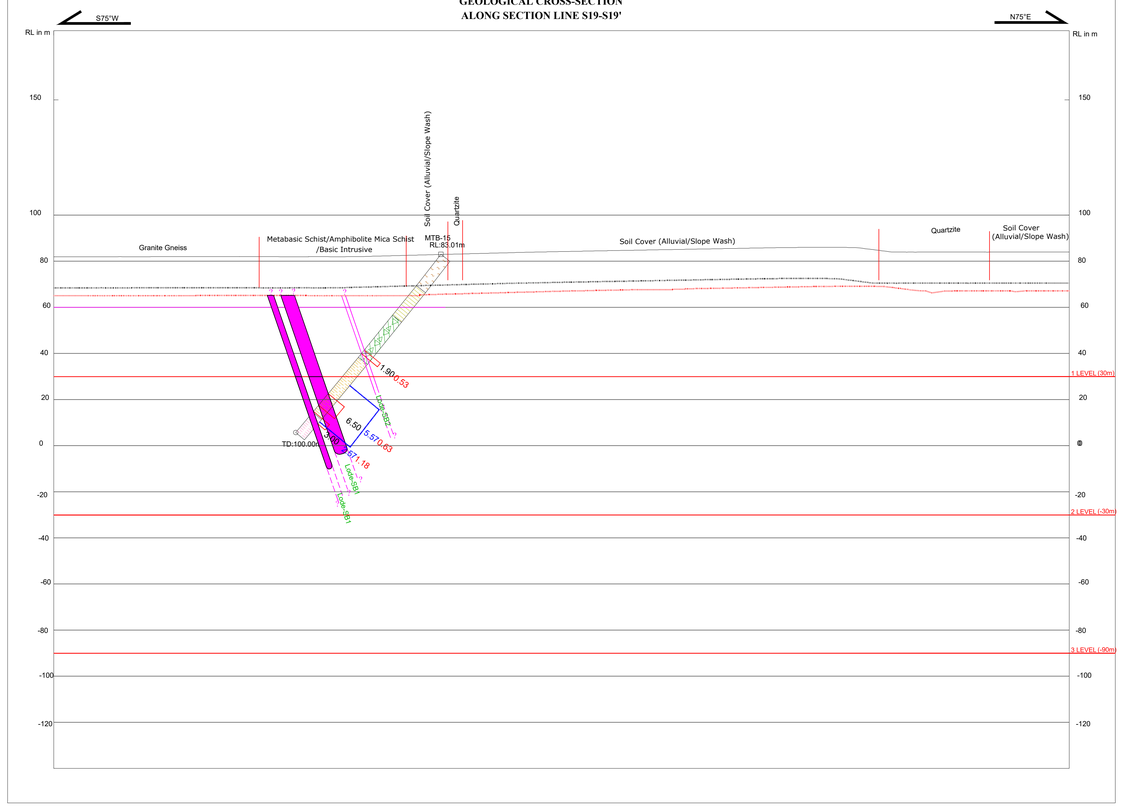
GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S16-S16'



GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S18-S18'



GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S19-S19'



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LEGEND (CROSS-SECTION)

- Soil Cover(Alluvial/Slope Wash)
- Metabasic Schist
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TD: 85.00m	Total Depth in m
4.40 1.76	Lode with Apparent Thickness & True Thickness in m and Copper Grade (Cu%) of Mineralized zone (zone at 0.2%Cut-off)
	Soil Profile
	Weathered Zone
	Litho Boundaries
	Integrated borehole geophysical anomaly

SCALE

0 20 40 60 80

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL CROSS SECTION (Cu Cut-off 0.5%)
ALONG SECTION LINE S15-S15' TO S19-S19' (SOUTHERN BAND)

THAKURDIH AREA-I BLOCK

DISTRICT: EAST SINGHBHUM — STATE: JHARKHAND

R.F. 1: 1,000

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

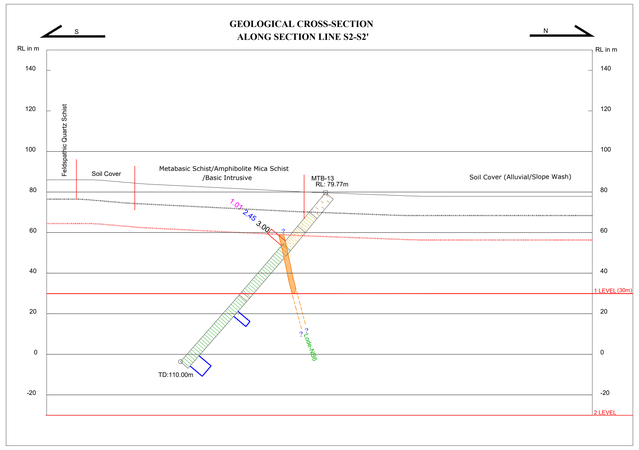
Prepared By : Saumya Anand, Asst. Manager (Geology)
Kashung Chinaoshang, Asst. Manager (Geology)

Checked by : Md.Dasthageer, Senior Manager (Geology)

Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 — PLATE NO. V — 5 B (2)

GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S2-S2'



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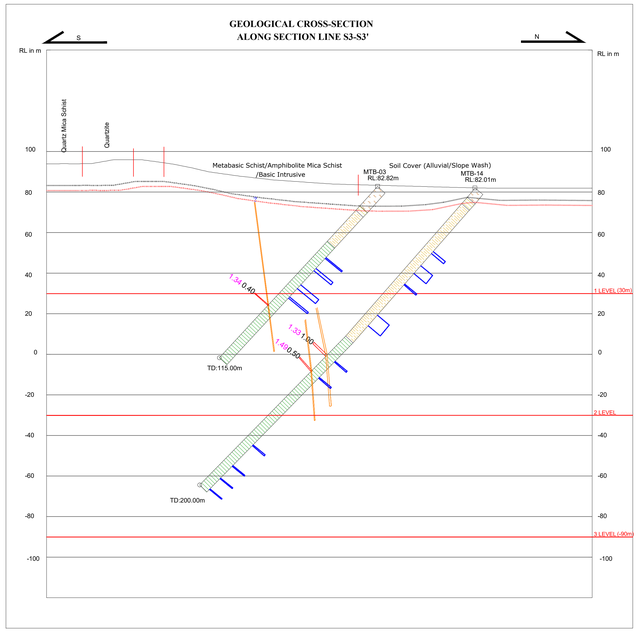
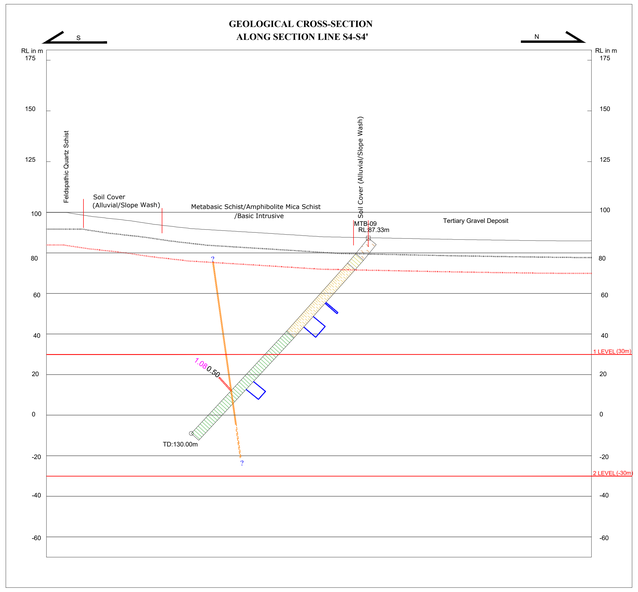


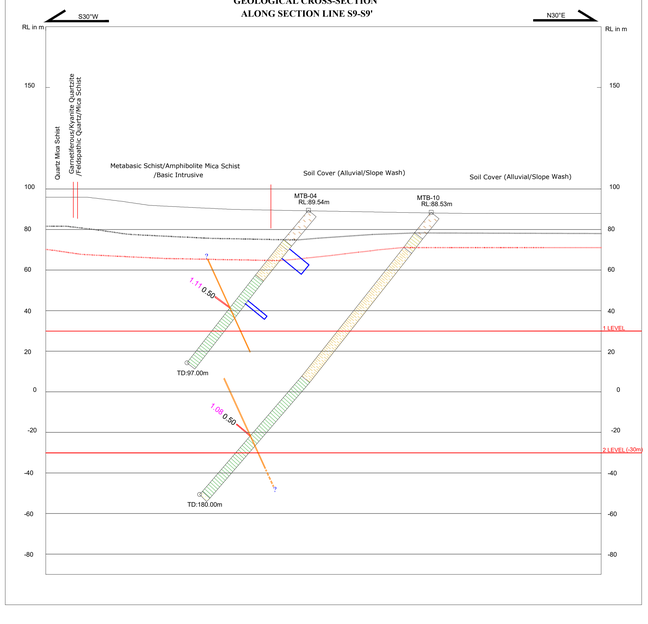
GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S4-S4'



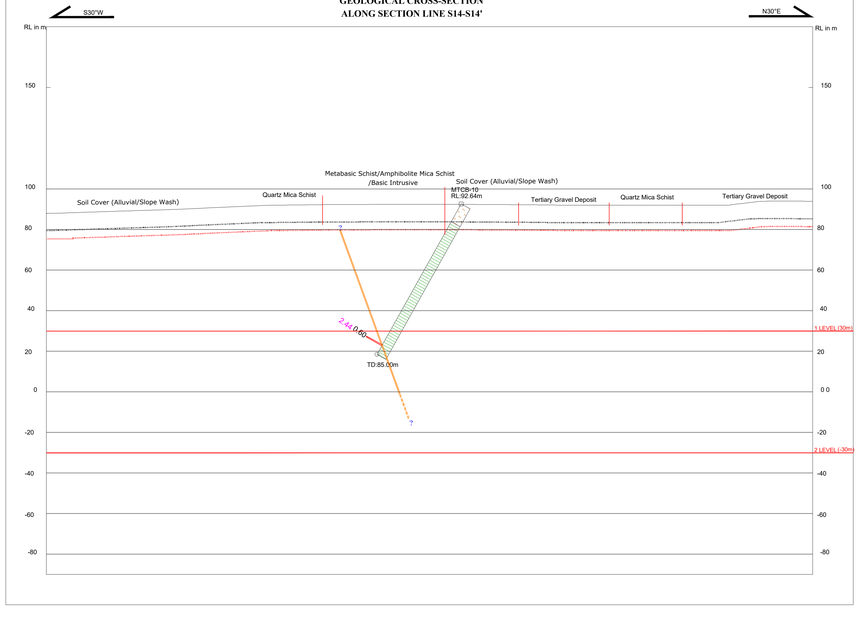
SCALE

0 20 40 60 80 100 m

GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S9-S9'



GEOLOGICAL CROSS-SECTION ALONG SECTION LINE S14-S14'



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Lode with Copper Grade (Cu%) of Mineralized zone (zone at 1.0%Cut-off), True Thickness & Apparent Thickness in m

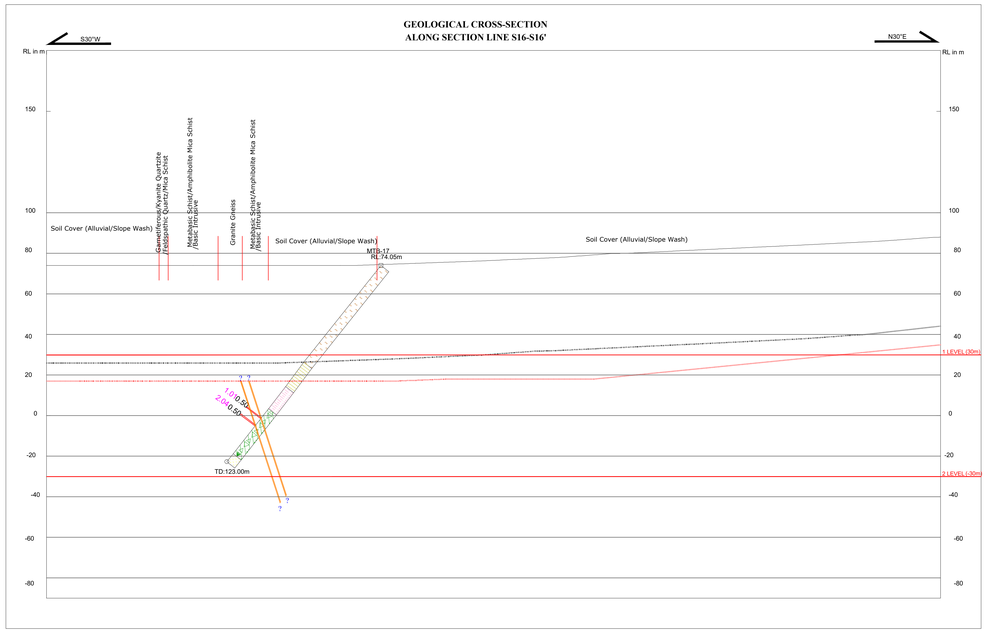
Soil Profile

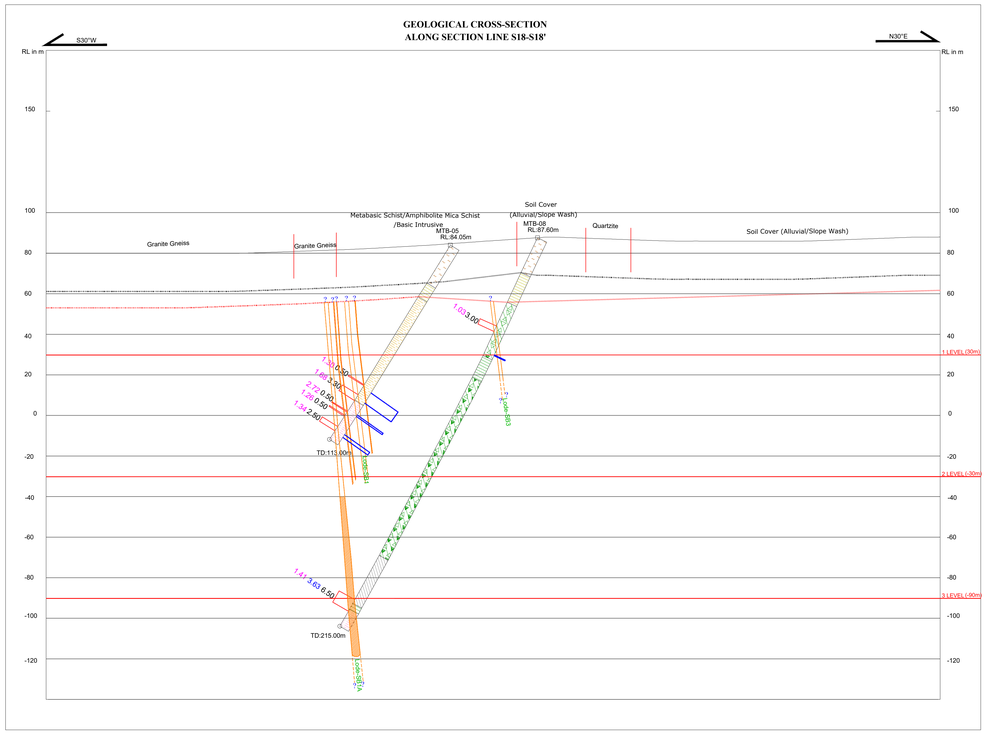
Weathered Zone

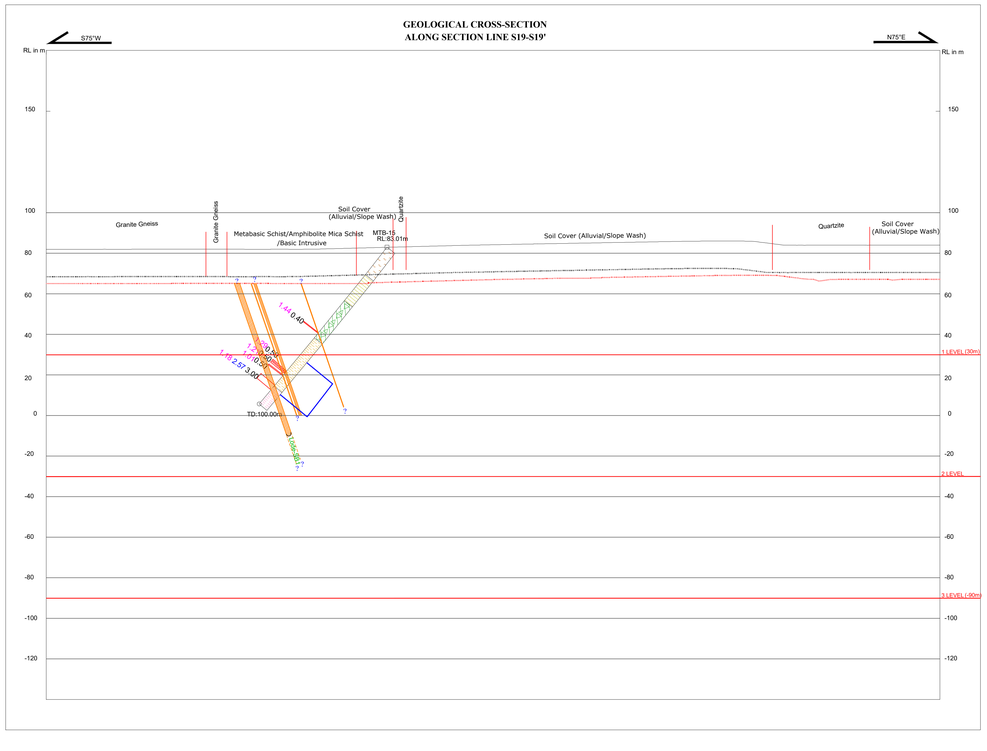
Litho Boundaries

Integrated borehole geophysical anomaly

MINERAL EXPLORATION AND CONSULTANCY LIMITED (Formerly Mineral Exploration Corporation Limited)	
GEOLOGICAL CROSS SECTION (Cu Cut-off 1%) ALONG SECTION LINE S2-S2' TO S14-S14' (NORTHERN BAND)	
THAKURDIH AREA-I BLOCK	
DISTRICT: EAST SINGHBHUM	STATE: JHARKHAND
R.F. 1: 1,000	
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.	Prepared By : Saumya Anand, Asst. Manager (Geology) Kashung Chinaoshang, Asst. Manager (Geology) Checked by : Md.Dasthageer, Senior Manager (Geology) Approved by : Shrikant Sharma, HOD (Exploration) P. Ravindran Nair, Retd. GM (Exploration)
MECL / EXPLOR. / JULY-2025	PLATE NO. V — 5C(1)







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	Integrated borehole geophysical anomaly

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

GEOLOGICAL CROSS SECTION (Cu Cut-off 1%)
ALONG SECTION LINE S15-S15' TO S19-S19' (SOUTHERN BAND)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1: 1,000

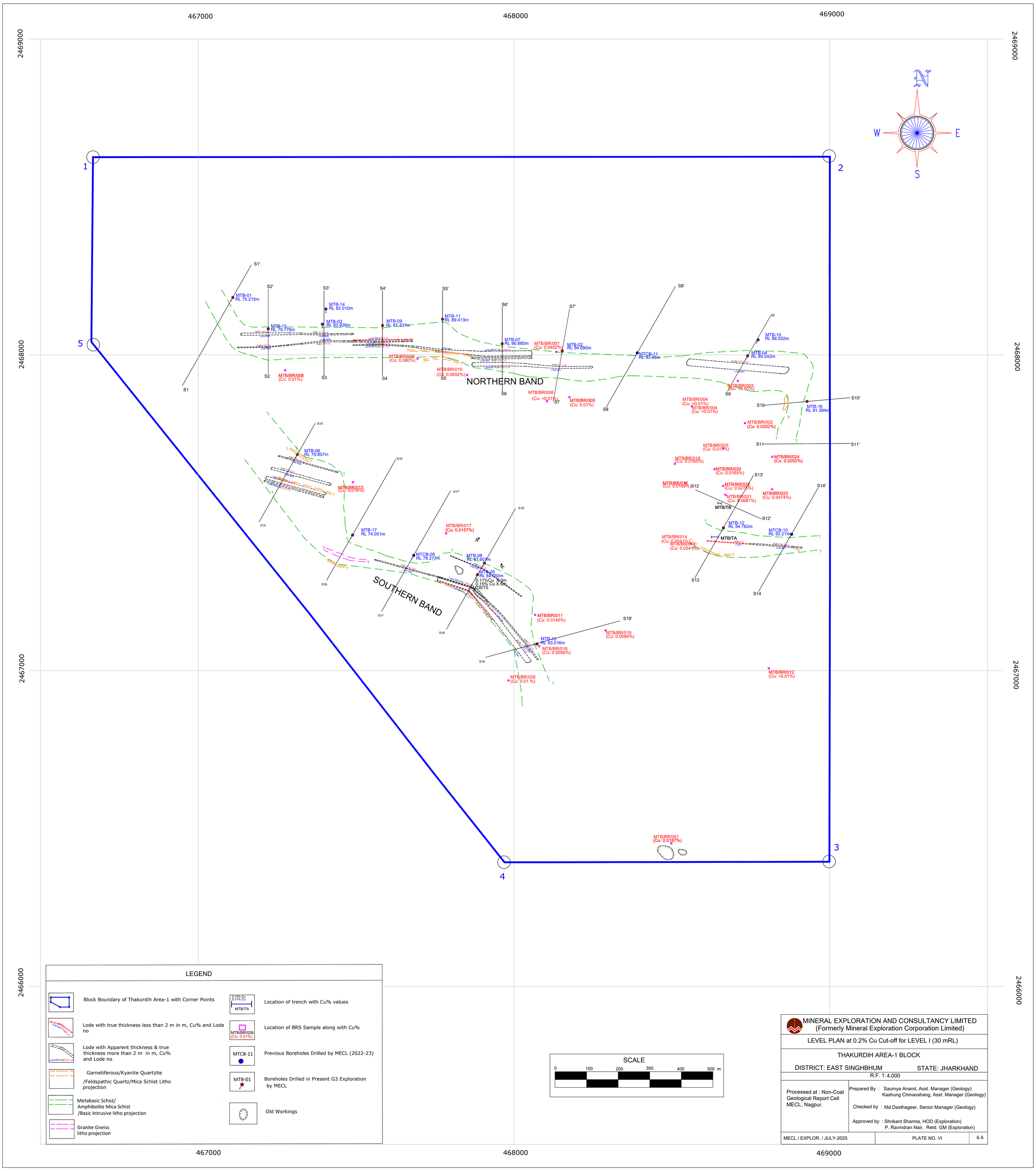
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Prepared By : Saumya Anand, Asst.Manager (Geology)
Kashung Chinaoshang, Asst. Manager (Geology)

Checked by : Md.Dasthageer, Senior Manager (Geology)

Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)

MECL / EXPLOR. / JULY-2025 | PLATE NO. V | 5C (2)



LEGEND

- Block Boundary of Thakurdih Area-1 with Corner Points
- Lode with true thickness less than 2 m in m, Cu% and Lode no
- Lode with Apparent thickness & true thickness more than 2 m in m, Cu% and Lode no
- Garnetiferous/Kyanite Quartzite /Feldspathic Quartz/Mica Schist Litho projection
- Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive litho projection
- Granite Gneiss litho projection
- 0.15% Cu, 0.11% Cu, MTB/TA — Location of trench with Cu% values
- MTB/BR/026 (Cu: 0.01%) — Location of BRS Sample along with Cu%
- MTCB-11 — Previous Boreholes Drilled by MECL (2022-23)
- MTB-01 — Boreholes Drilled in Present G3 Exploration by MECL
- Old Workings

SCALE

0 100 200 300 400 500 m

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LEVEL PLAN at 0.2% Cu Cut-off for LEVEL I (30 mRL)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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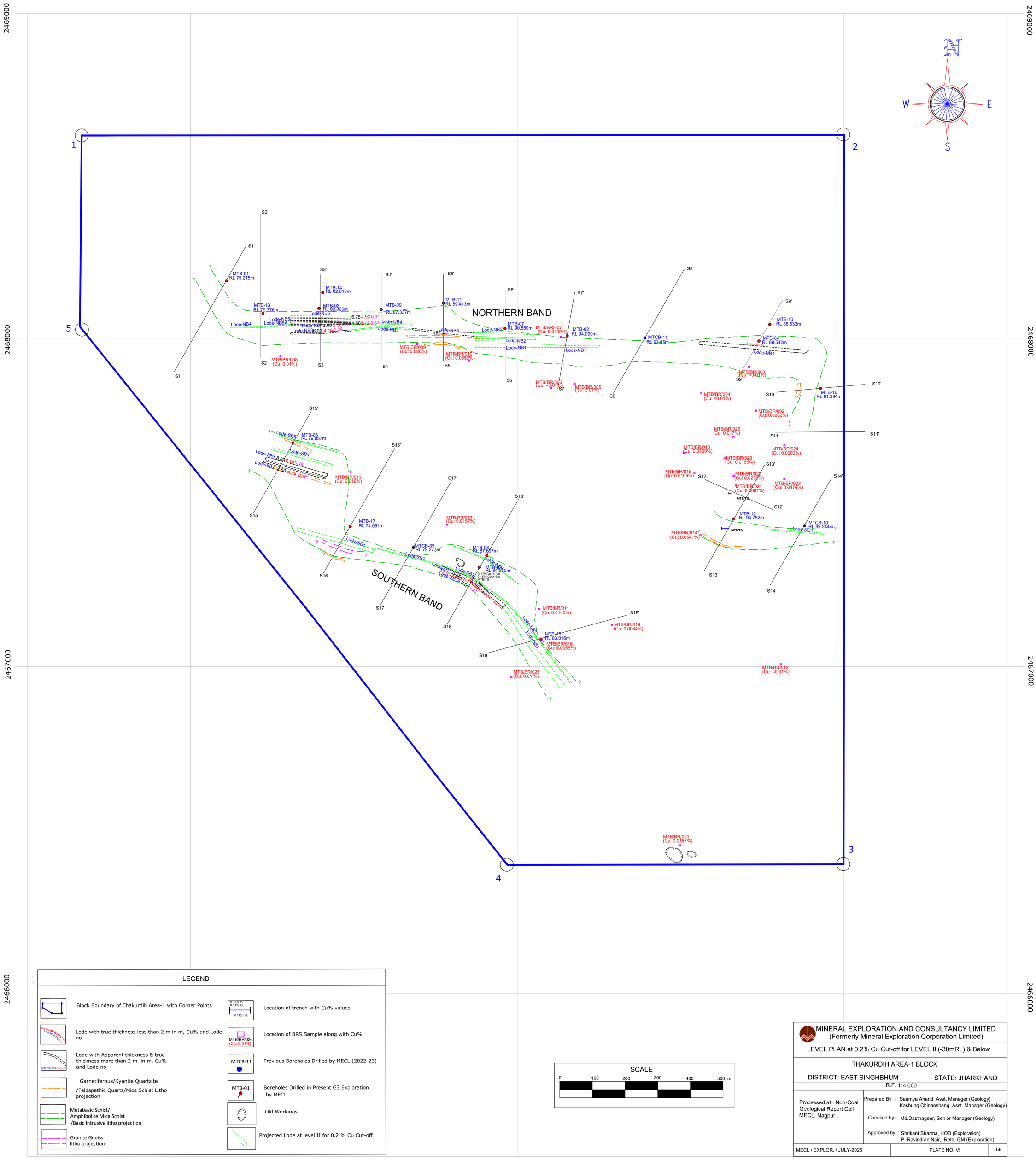
MECL / EXPLOR. / JULY-2025 | PLATE NO. VI | 6 A



MINERAL EXPLORATION AND CONSULTANCY LIMITED
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LEVEL PLAN at 0.2% Cu Cut-off for LEVEL II (-30mRL) & Below

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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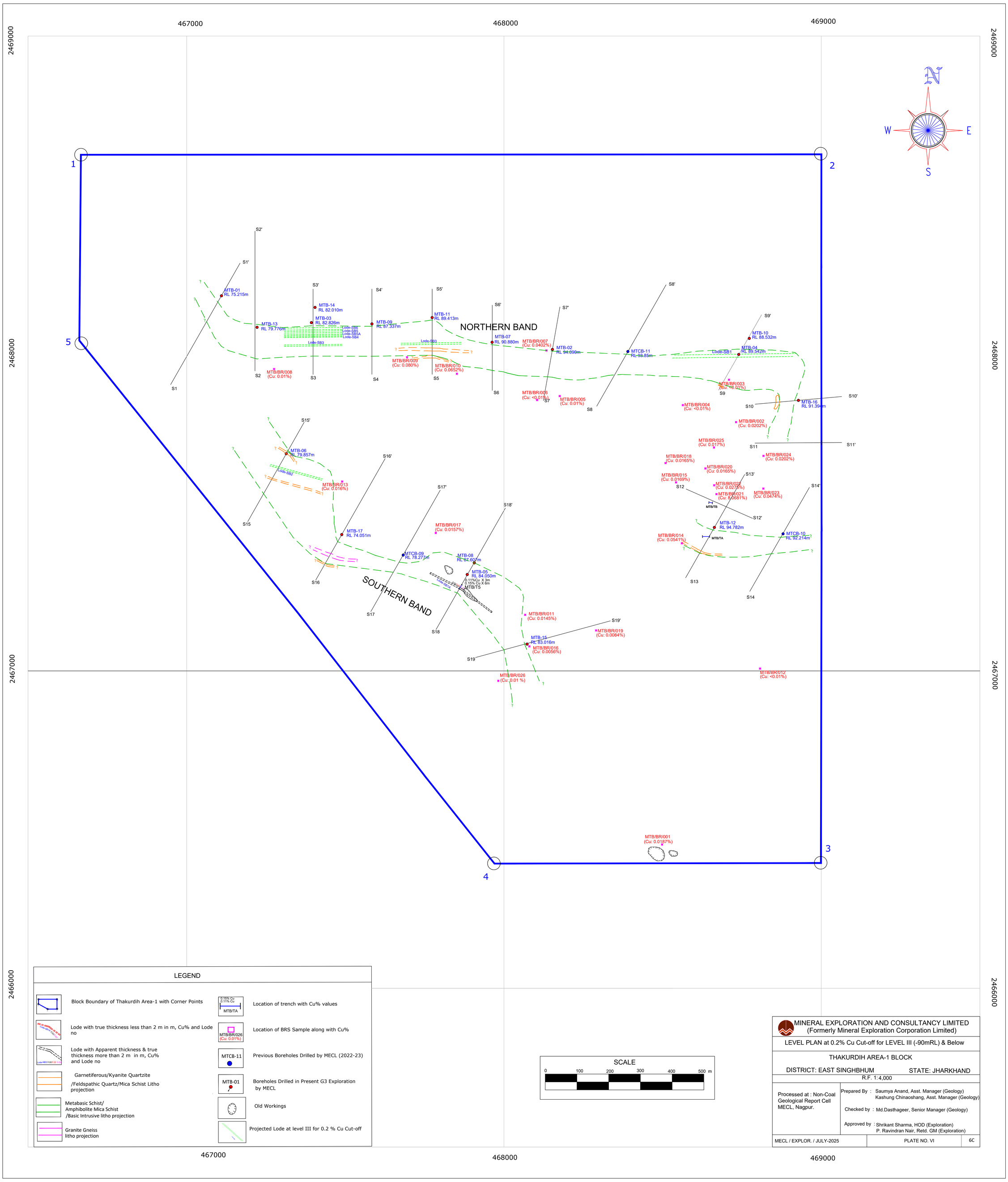
MECL / EXPLOR. / JULY-2025 | PLATE NO. VI | 6B



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LEVEL PLAN at 0.2% Cu Cut-off for LEVEL III (-90mRL) & Below

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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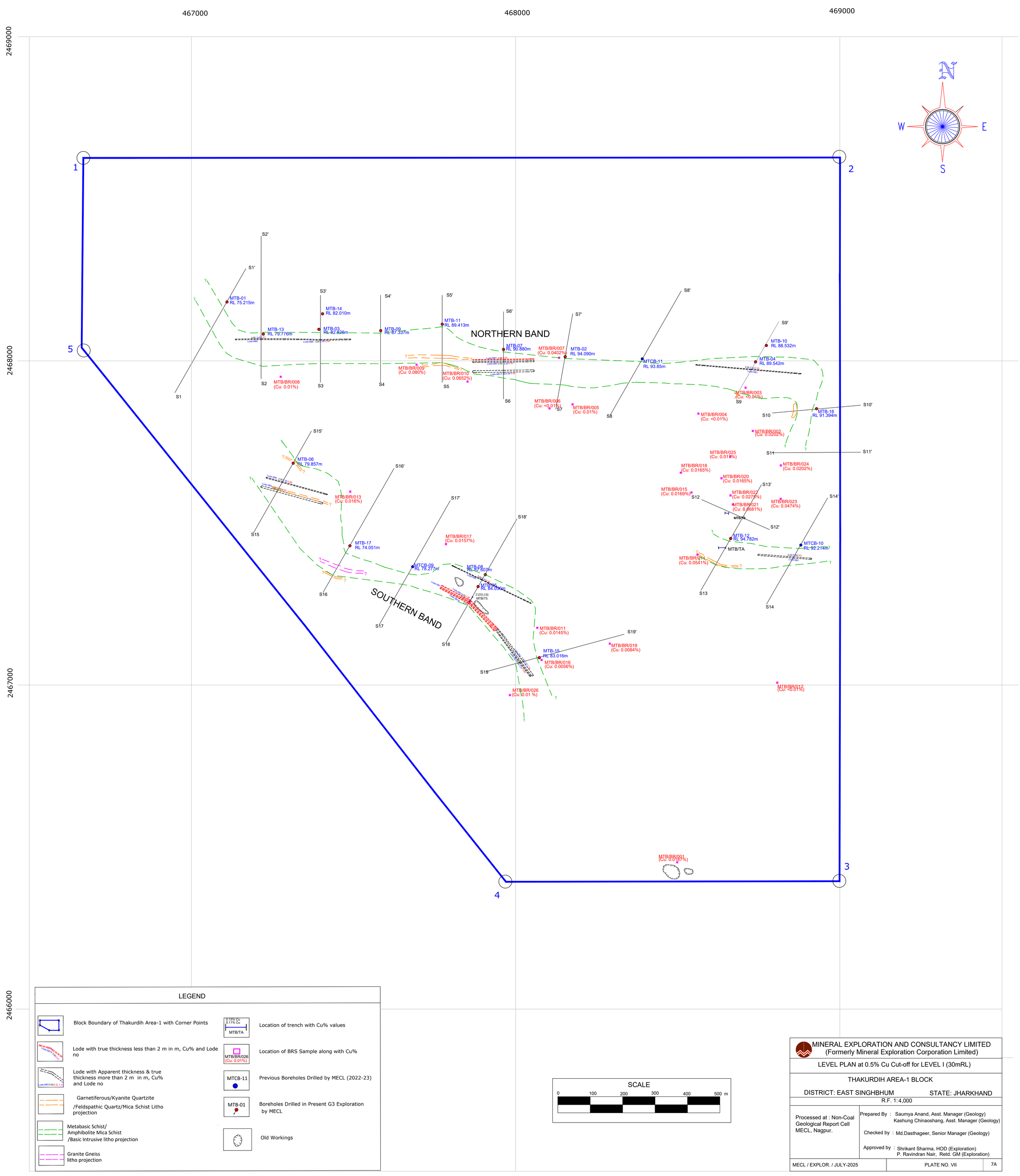
MECL / EXPLOR. / JULY-2025 | PLATE NO. VI | 6C



LEGEND

- Block Boundary of Thakurdih Area-1 with Corner Points
- Lode with true thickness less than 2 m in m, Cu% and Lode no
- Lode with Apparent thickness & true thickness more than 2 m in m, Cu% and Lode no
- Garnetiferous/Kyanite Quartzite /Feldspathic Quartz/Mica Schist Litho projection
- Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive litho projection
- Granite Gneiss litho projection
- 0.15% Cu 0.11% Cu MTB/TA — Location of trench with Cu% values
- MTB/BR/026 (Cu: 0.01%) — Location of BRS Sample along with Cu%
- MTCB-11 — Previous Boreholes Drilled by MECL (2022-23)
- MTB-01 — Boreholes Drilled in Present G3 Exploration by MECL
- Old Workings

SCALE

0 100 200 300 400 500 m

MINERAL EXPLORATION AND CONSULTANCY LIMITED
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LEVEL PLAN at 0.5% Cu Cut-off for LEVEL I (30mRL)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

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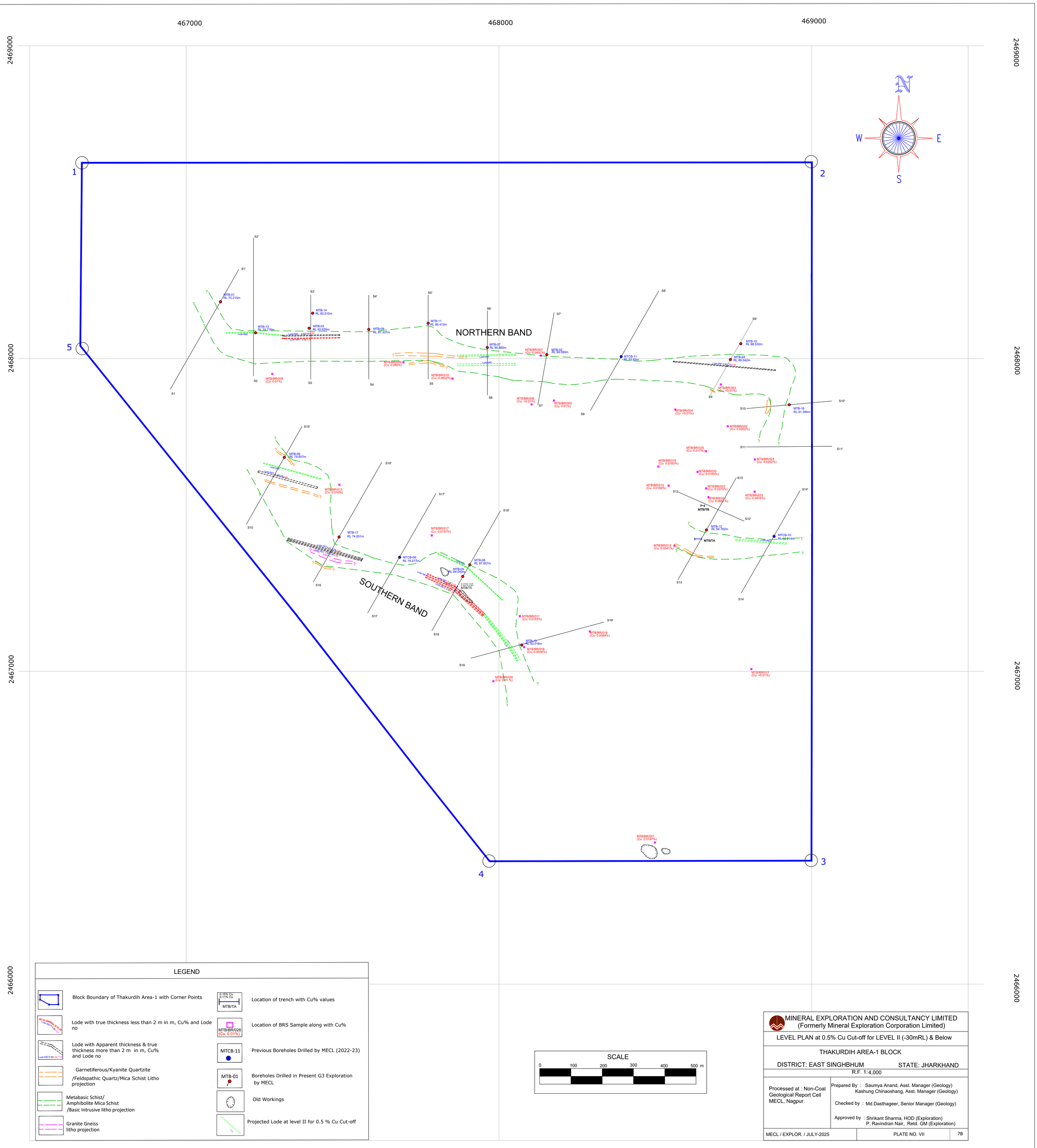
MECL / EXPLOR. / JULY-2025 | PLATE NO. VII | 7A



LEGEND

- Block Boundary of Thakurdih Area-1 with Corner Points
- Lode with true thickness less than 2 m in m, Cu% and Lode no
- Lode with Apparent thickness & true thickness more than 2 m in m, Cu% and Lode no
- Garnetiferous/Kyanite Quartzite /Feldspathic Quartz/Mica Schist Litho projection
- Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive litho projection
- Granite Gneiss litho projection
- 0.19% Cu 0.11% Cu MTB/TA — Location of trench with Cu% values
- MTB/BR/026 (Cu: 0.01%) — Location of BRS Sample along with Cu%
- MTCB-11 — Previous Boreholes Drilled by MECL (2022-23)
- MTB-01 — Boreholes Drilled in Present G3 Exploration by MECL
- Old Workings
- Projected Lode at level II for 0.5 % Cu Cut-off

SCALE

0 100 200 300 400 500 m

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LEVEL PLAN at 0.5% Cu Cut-off for LEVEL II (-30mRL) & Below

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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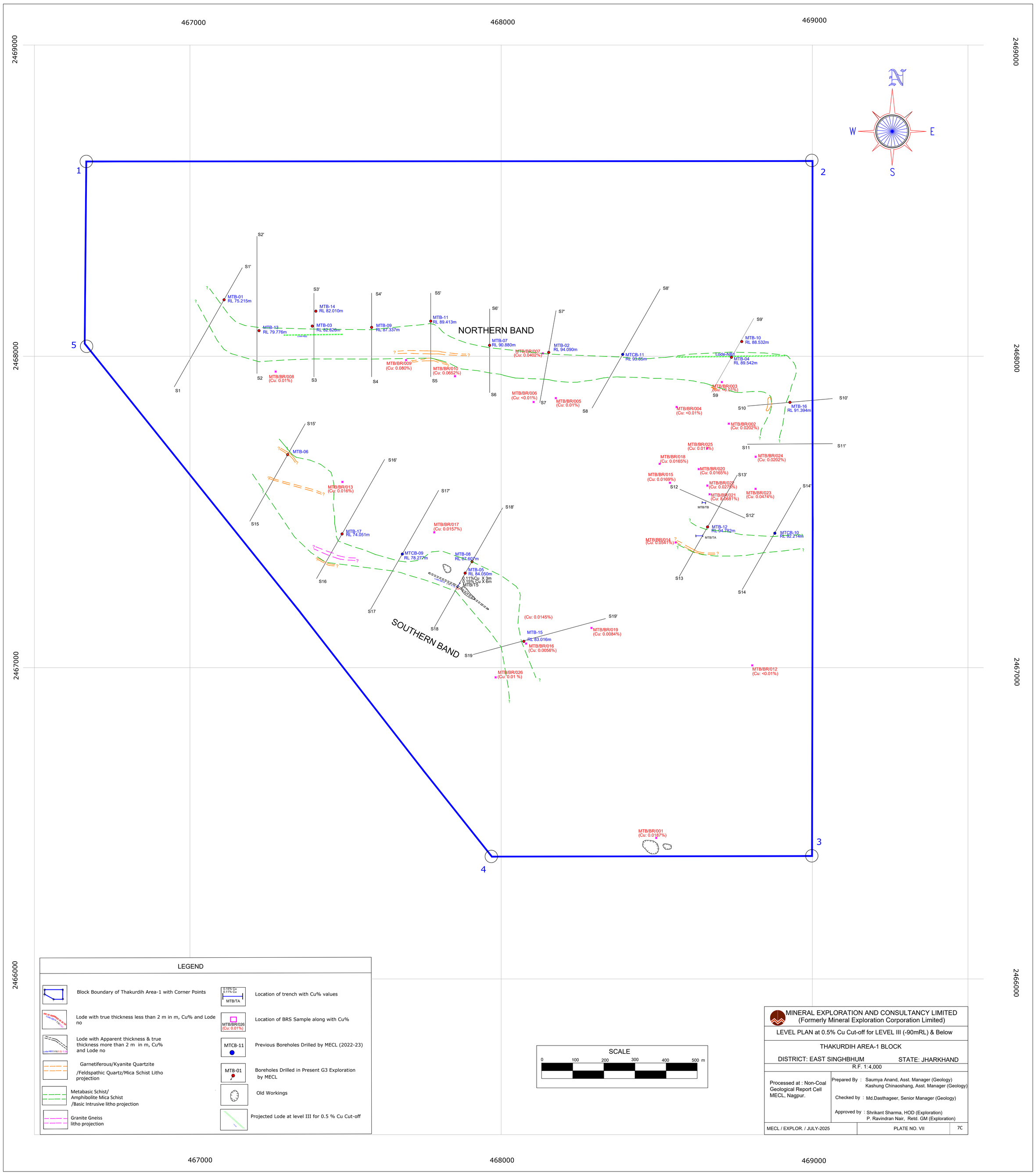
MECL / EXPLOR. / JULY-2025	PLATE NO. VII	7B


467000
468000
469000
2469000
2468000
2467000
2466000
N
S
W
E
1
2
3
4
5
NORTHERN BAND
SOUTHERN BAND
MTB-01 RL 75.215m
MTB-13 RL 79.776m
MTB-14 RL 82.010m
MTB-03 RL 82.826m
MTB-09 RL 87.337m
MTB-11 RL 89.413m
MTB-07 RL 90.880m
MTB-02 RL 94.090m
MTCB-11 RL 99.85m
MTB-10 RL 88.532m
MTB-04 RL 89.542m
MTB-16 RL 91.394m
MTB-06
MTB-17 RL 74.051m
MTCB-09 RL 78.277m
MTB-08 RL 87.607m
MTB-05 RL 84.050m
0.11%Cu X 3m
0.15% Cu X 6m
MTB/T5
MTB-12 RL 94.782m
MTB/TA
MTCB-10 RL 92.274m
MTB/TB
MTB-15 RL 83.016m
Lode-NB1
S1 S1' S2 S2' S3 S3' S4 S4' S5 S5' S6 S6' S7 S7' S8 S8' S9 S9' S10 S10' S11 S11' S12 S12' S13 S13' S14 S14' S15 S15' S16 S16' S17 S17' S18 S18' S19 S19'
MTB/BR/008 (Cu: 0.01%)
MTB/BR/009 (Cu: 0.080%)
MTB/BR/010 (Cu: 0.0652%)
MTB/BR/007 (Cu: 0.0402%)
MTB/BR/006 (Cu: <0.01%)
MTB/BR/005 (Cu: 0.01%)
MTB/BR/003 (Cu: 0.01%)
MTB/BR/004 (Cu: <0.01%)
MTB/BR/002 (Cu: 0.0202%)
MTB/BR/025 (Cu: 0.017%)
MTB/BR/018 (Cu: 0.0165%)
MTB/BR/024 (Cu: 0.0202%)
MTB/BR/020 (Cu: 0.0165%)
MTB/BR/015 (Cu: 0.0169%)
MTB/BR/022 (Cu: 0.0278%)
MTB/BR/021 (Cu: 0.0681%)
MTB/BR/023 (Cu: 0.0474%)
MTB/BR/014 (Cu: 0.0541%)
MTB/BR/013 (Cu: 0.016%)
MTB/BR/017 (Cu: 0.0157%)
(Cu: 0.0145%)
MTB/BR/019 (Cu: 0.0084%)
MTB/BR/016 (Cu: 0.0056%)
MTB/BR/026 (Cu: 0.01 %)
MTB/BR/012 (Cu: <0.01%)
MTB/BR/001 (Cu: 0.0187%)
LEGEND
Block Boundary of Thakurdih Area-1 with Corner Points
Lode with true thickness less than 2 m in m, Cu% and Lode no
Lode with Apparent thickness & true thickness more than 2 m in m, Cu% and Lode no
Garnetiferous/Kyanite Quartzite /Feldspathic Quartz/Mica Schist Litho projection
Metabasic Schist/ Amphibolite Mica Schist /Basic Intrusive litho projection
Granite Gneiss litho projection
0.15% Cu 0.11% Cu MTB/TA
Location of trench with Cu% values
MTB/BR/026 (Cu: 0.01%)
Location of BRS Sample along with Cu%
MTCB-11
Previous Boreholes Drilled by MECL (2022-23)
MTB-01
Boreholes Drilled in Present G3 Exploration by MECL
Old Workings
Projected Lode at level III for 0.5 % Cu Cut-off
SCALE
0 100 200 300 400 500 m
MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)
LEVEL PLAN at 0.5% Cu Cut-off for LEVEL III (-90mRL) & Below
THAKURDIH AREA-1 BLOCK
DISTRICT: EAST SINGHBHUM
STATE: JHARKHAND
R.F. 1:4,000
Processed at : Non-Coal Geological Report Cell MECL, Nagpur.
Prepared By : Saumya Anand, Asst. Manager (Geology)
Kashung Chinaoshang, Asst. Manager (Geology)
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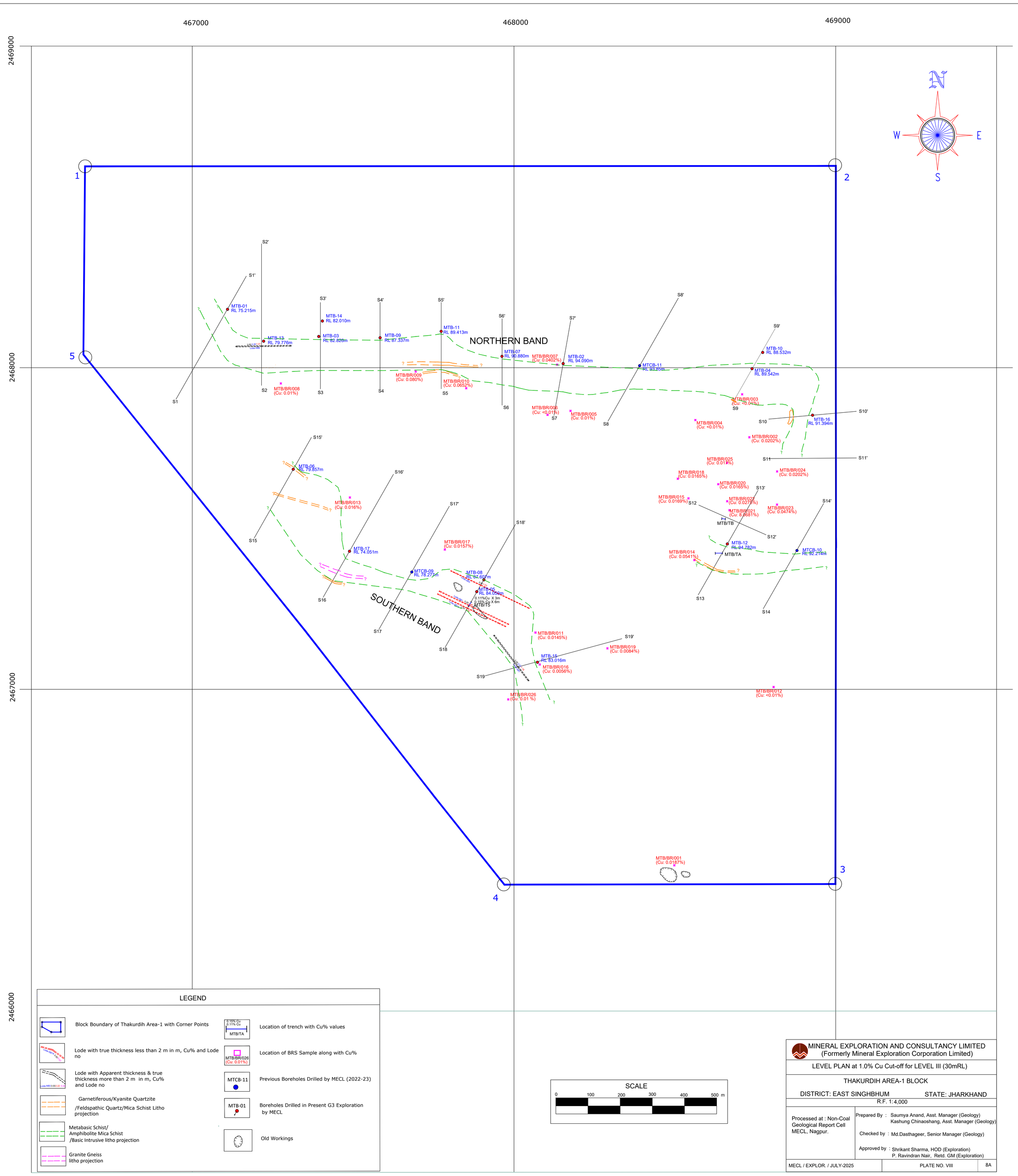
Approved by : Shrikant Sharma, HOD (Exploration)
P. Ravindran Nair, Retd. GM (Exploration)
MECL / EXPLOR. / JULY-2025
PLATE NO. VII
7C



LEGEND

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- MTB-01 — Boreholes Drilled in Present G3 Exploration by MECL
- Old Workings

SCALE

0 100 200 300 400 500 m

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LEVEL PLAN at 1.0% Cu Cut-off for LEVEL III (30mRL)

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

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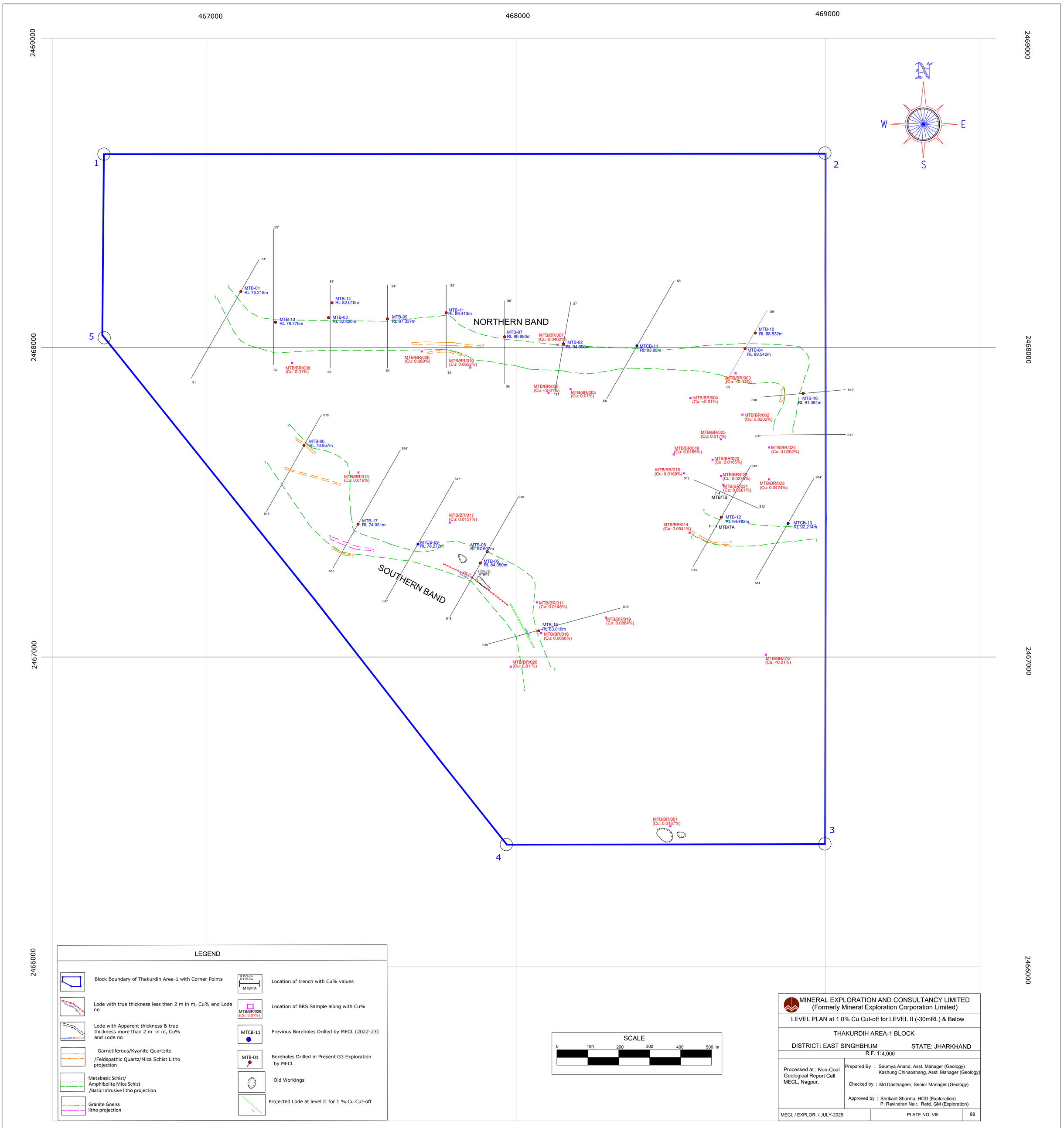
MECL / EXPLOR. / JULY-2025 | PLATE NO. VIII | 8A



MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LEVEL PLAN at 1.0% Cu Cut-off for LEVEL II (-30mRL) & Below

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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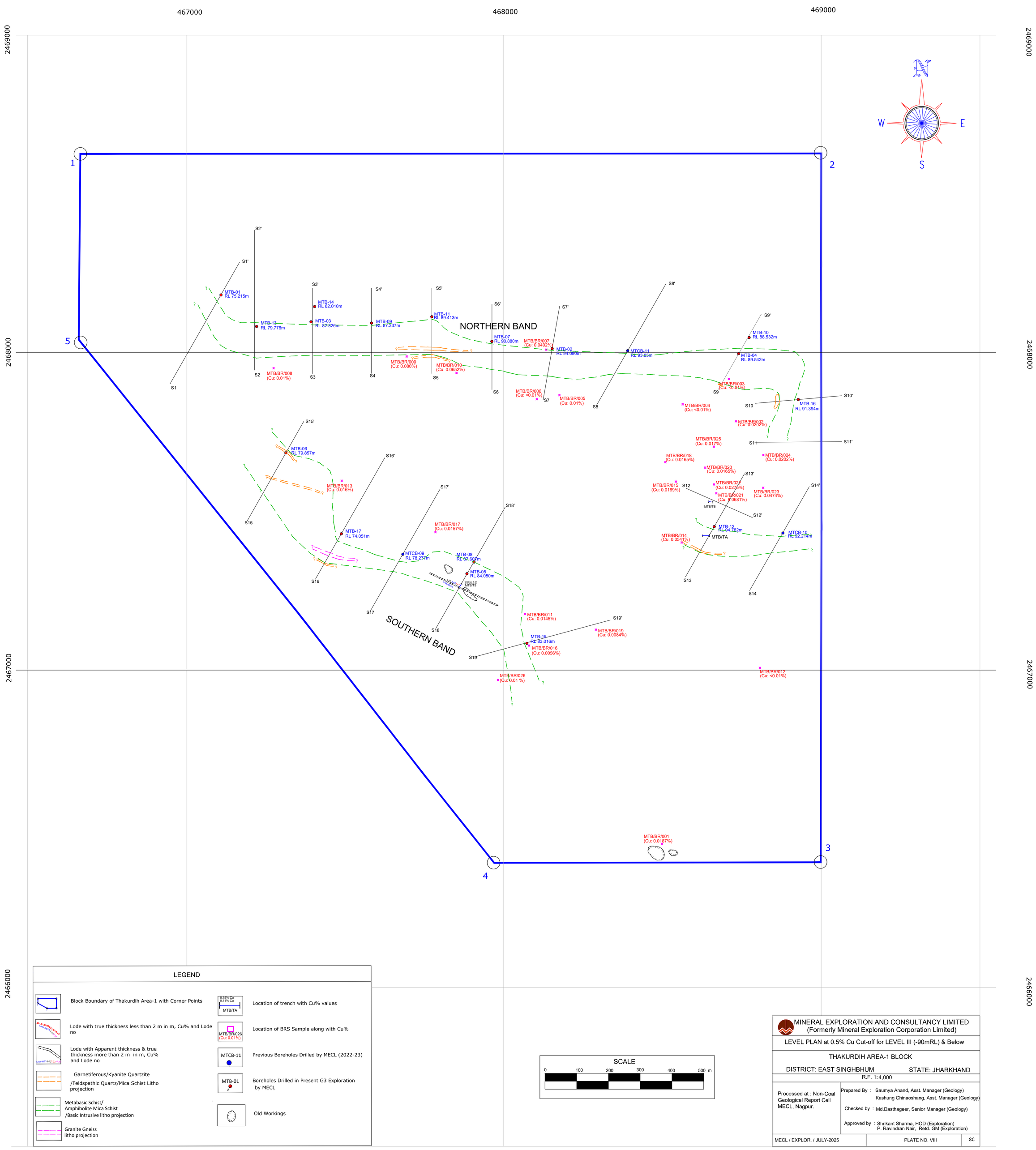
MECL / EXPLOR. / JULY-2025 | PLATE NO. VIII | 8B



LEGEND

- Block Boundary of Thakurdih Area-1 with Corner Points
- Lode with true thickness less than 2 m in m, Cu% and Lode no
- Lode with Apparent thickness & true thickness more than 2 m in m, Cu% and Lode no
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- MTB-01 — Boreholes Drilled in Present G3 Exploration by MECL
- Old Workings

SCALE

0 100 200 300 400 500 m

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

LEVEL PLAN at 0.5% Cu Cut-off for LEVEL III (-90mRL) & Below

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:4,000

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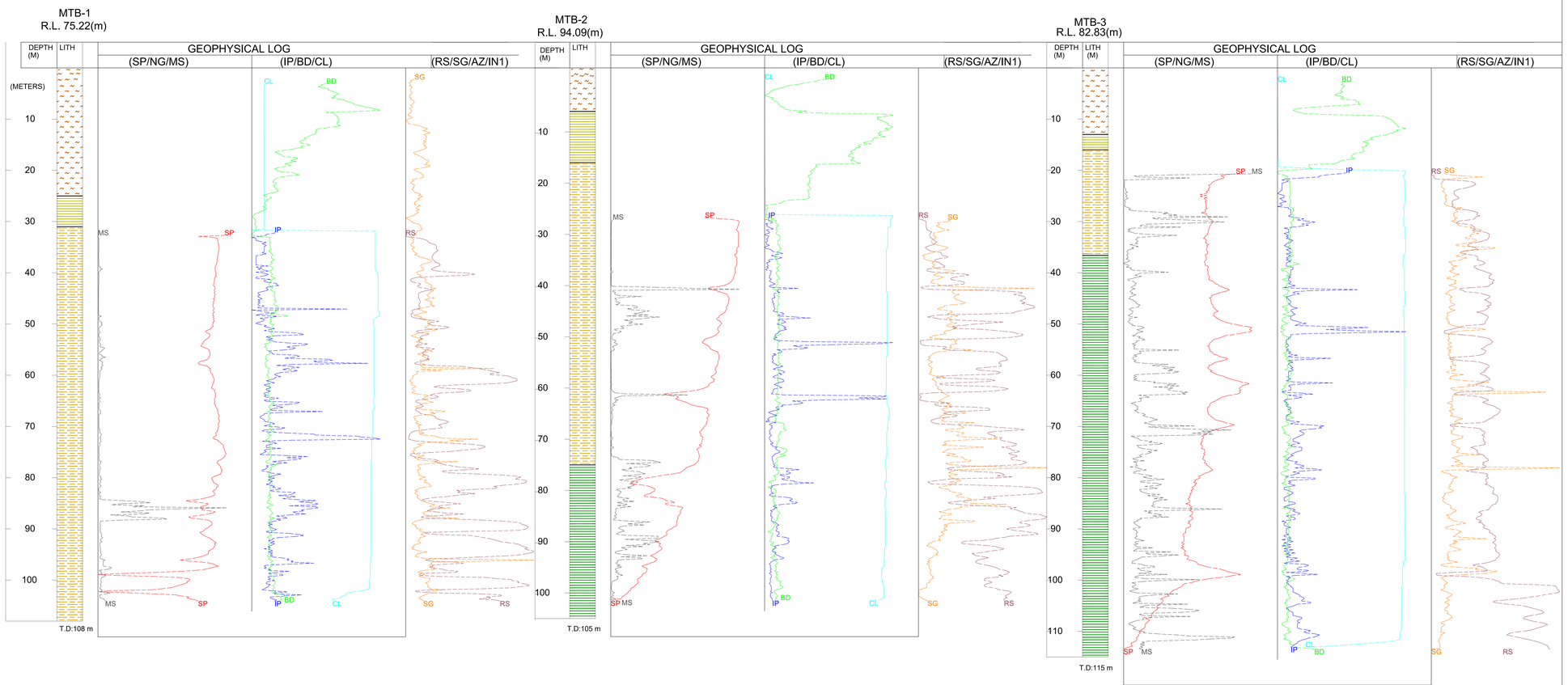
MECL / EXPLOR. / JULY-2025 | PLATE NO. VIII | 8C



INDEX

Geophysical parameters

Self Potential	SP
Magnetic Susceptibility	MS
Induced Polarization	IP
Dual Density	BD
Caliper	CL
Short Normal Resistivity	RS
Spectral Gamma	SG

- Soil
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Metabasic Schist
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Quartz-K-Feldspar Chlorite Biotite Schist(Silicified & granitized basic schist)
- Garnetiferous-Qtz-Chlorite mica schist
- Quartzite/Micaceous Quartz Schist/Micaceous Quartz Feldspathic Schist
- Granite Gneiss

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(Formerly Mineral Exploration Corporation Limited)

BOREHOLE GEOPHYSICAL LOG

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:500

Processed at : Non-Coal Geological Report Cell MECL, Nagpur.

Prepared By : Babli Day, Asst. Manager(Geophysics)

Checked & Approved by: GS Dharni, Dy GM (Geophysics)/HOD

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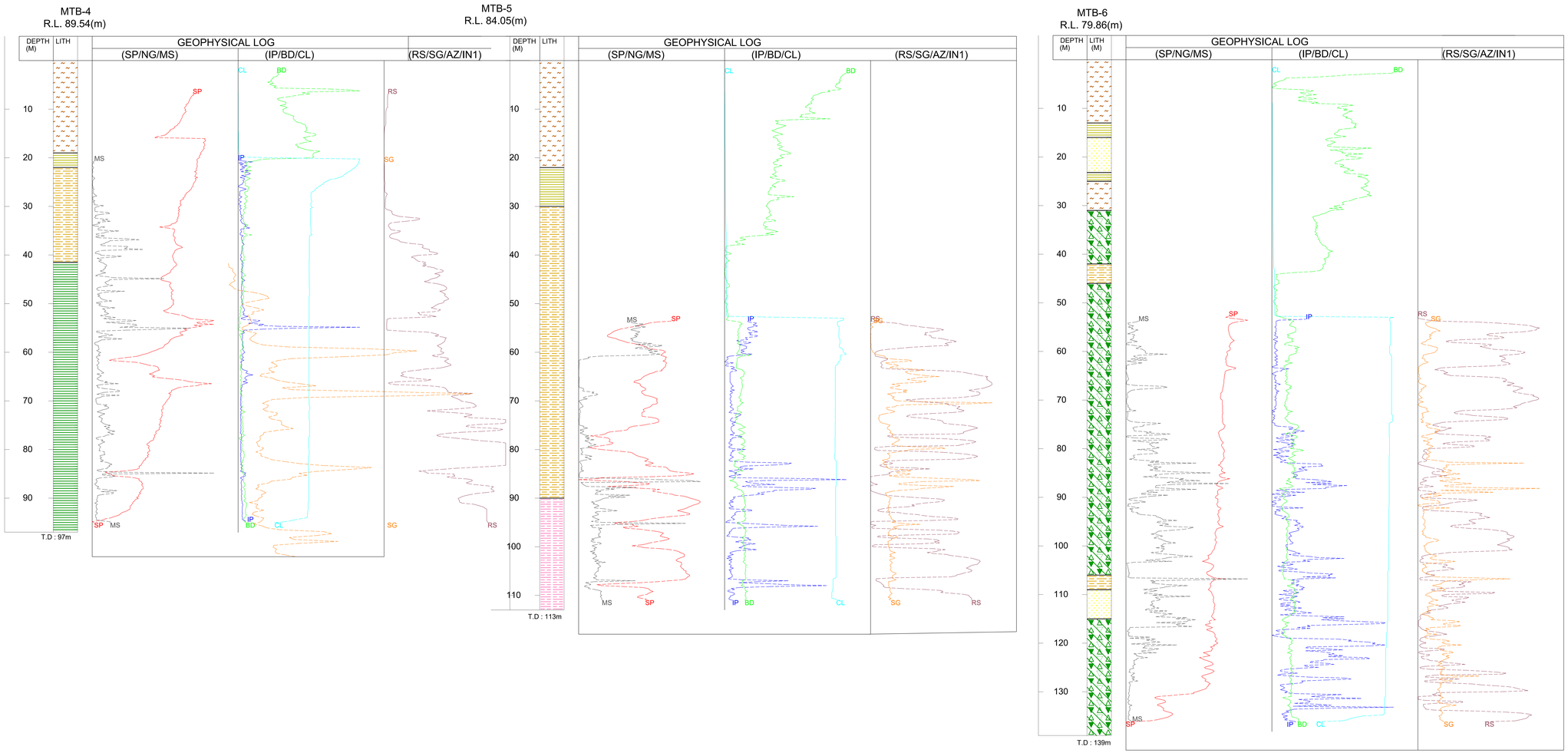

INDEX

Geophysical parameters

Self Potential	SP
Magnetic Susceptibility	MS
Induced Polarization	IP
Dual Density	BD
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- Soil
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- Amphibole Basic Intrusive
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- Quartzite/Micaceous Quartz Schist/Micaceous Quartz Feldspathic Schist
- Granite Gneiss

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

BOREHOLE GEOPHYSICAL LOG

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:500

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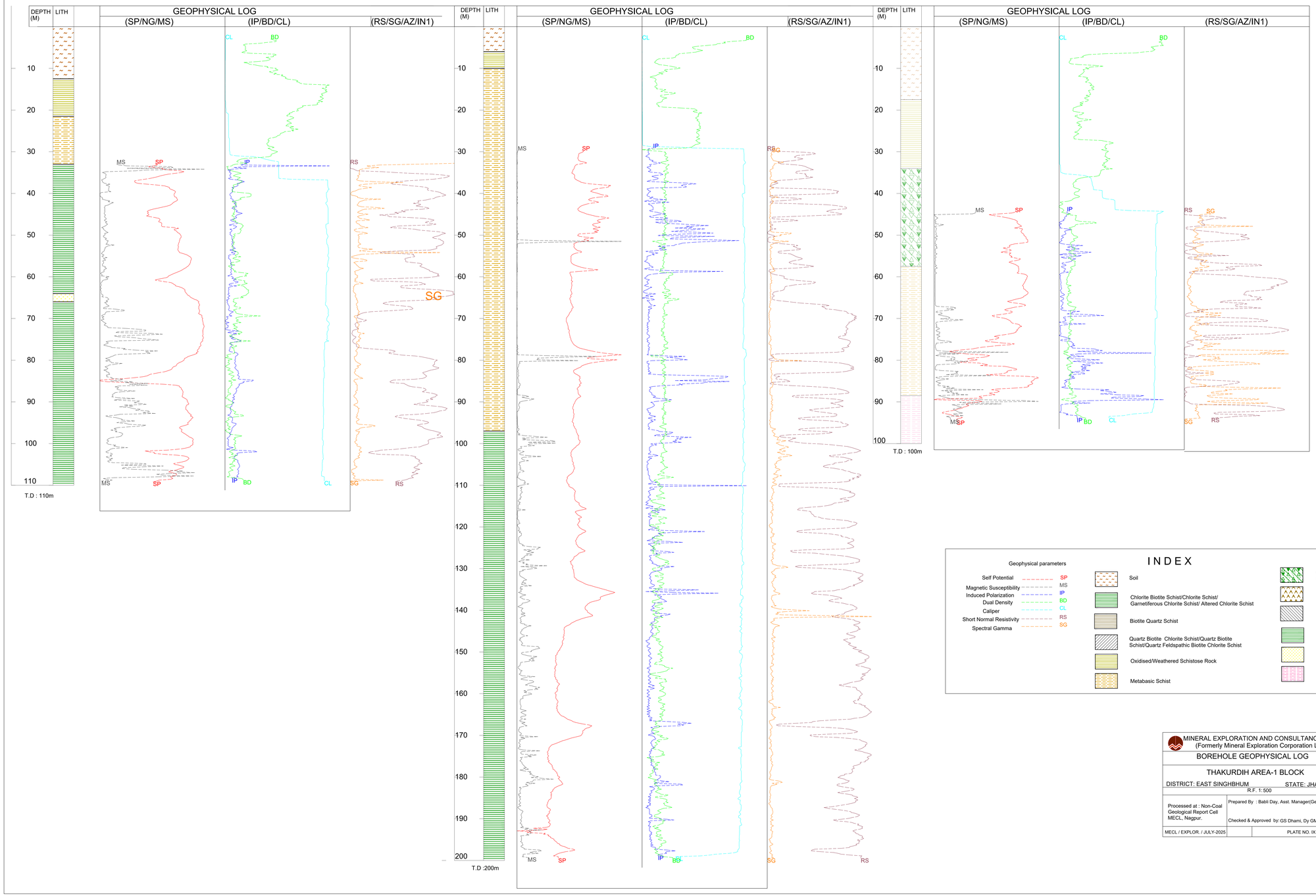
MECL / EXPLOR. / JULY-2025	PLATE NO. IX	98



INDEX

Geophysical parameters

Self Potential	SP
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- Soil
- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
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- Quartz Biotite Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
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- Granite Gneiss

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

BOREHOLE GEOPHYSICAL LOG

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:500

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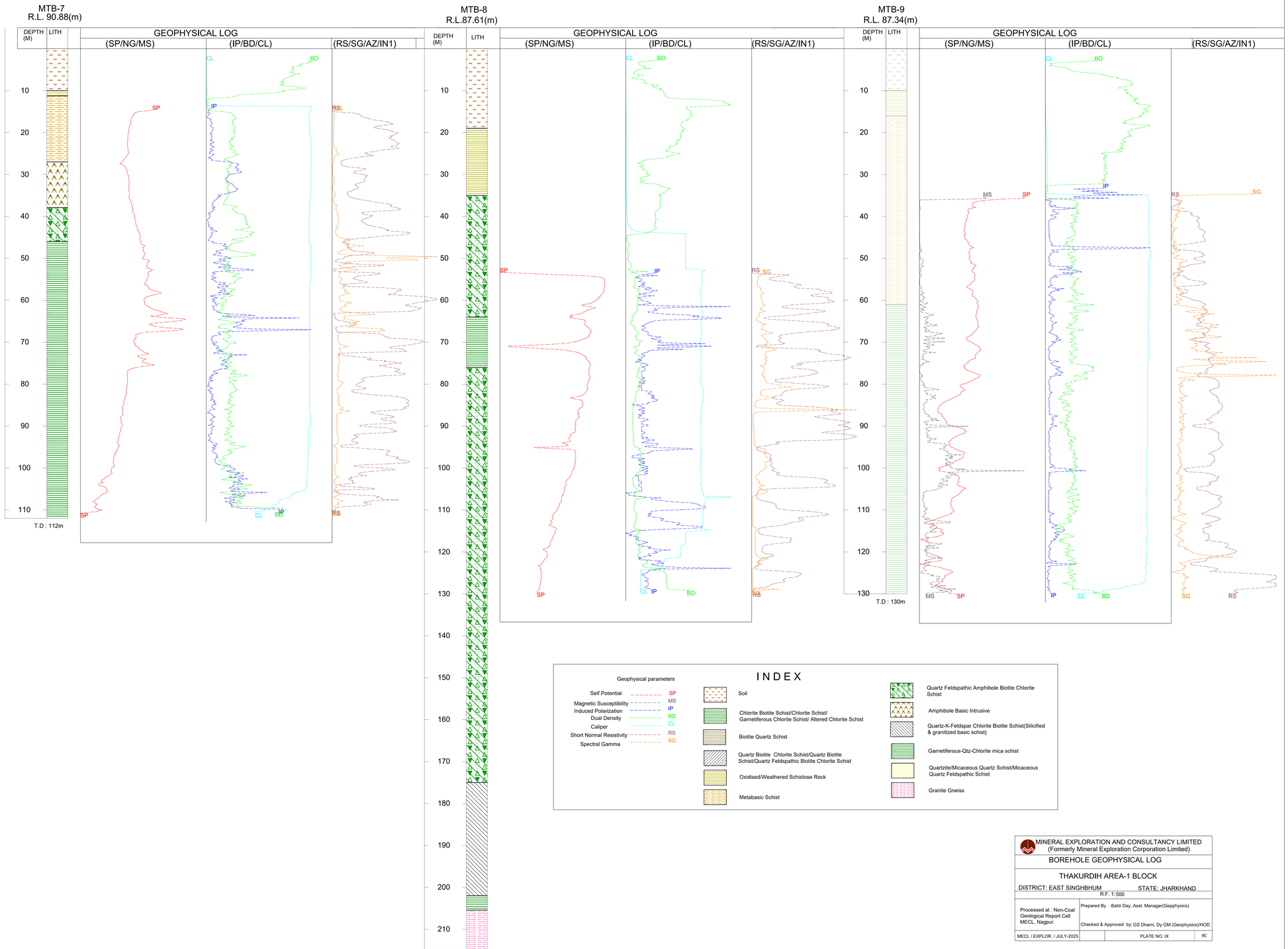
Checked & Approved by: GS Dhami, Dy GM (Geophysics)/HOD

MECL / EXPLOR. / JULY-2025 | PLATE NO. IX | 9E



MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

BOREHOLE GEOPHYSICAL LOG

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:500

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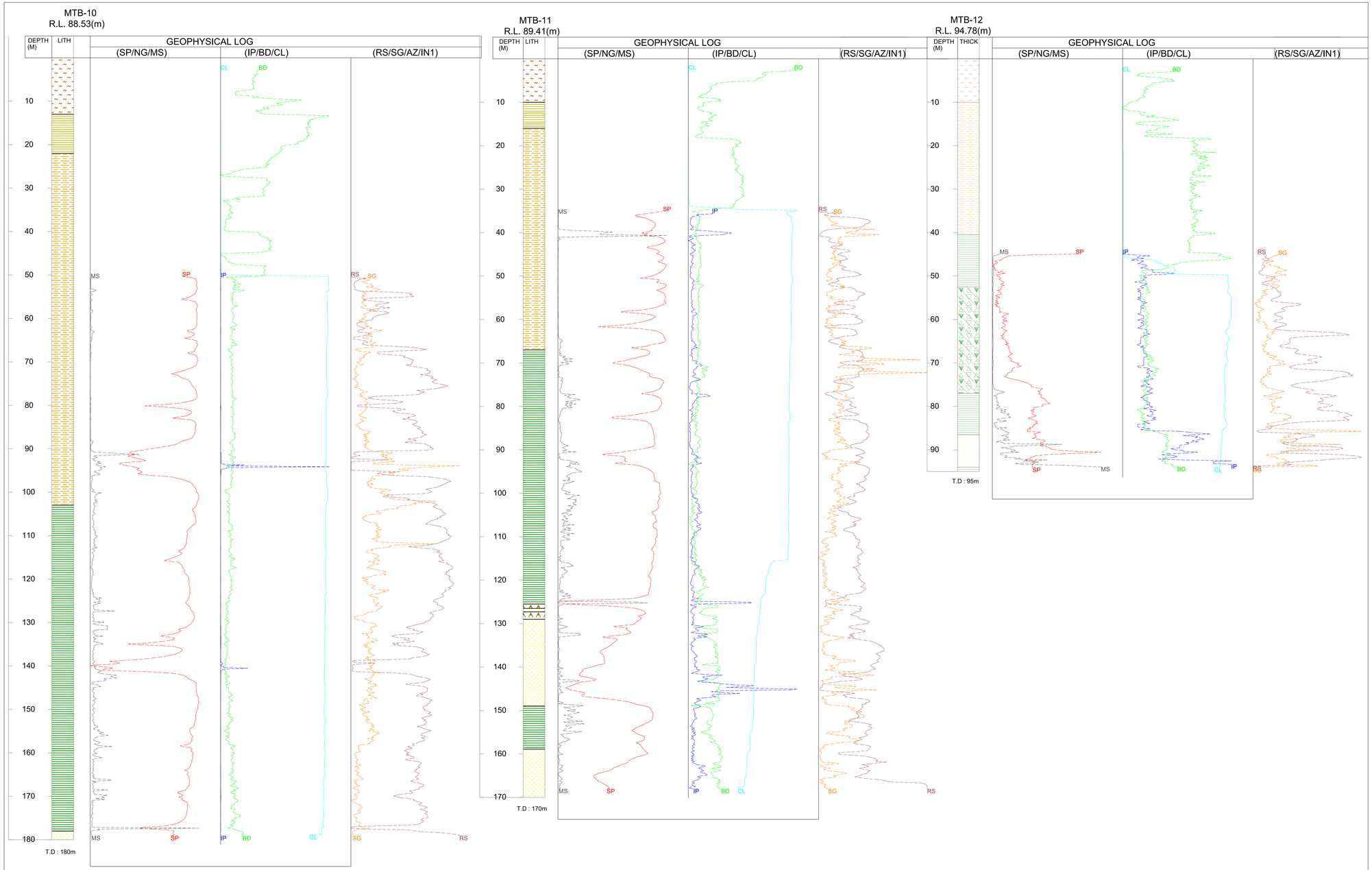
MECL / EXPLOR. / JULY-2025		PLATE NO. IX	9C



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Geophysical parameters

Self Potential	SP
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Short Normal Resistivity	RS
Spectral Gamma	SG

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- Chlorite Biotite Schist/Chlorite Schist/ Garnetiferous Chlorite Schist/ Altered Chlorite Schist
- Biotite Quartz Schist
- Quartz Biotite Chlorite Schist/Quartz Biotite Schist/Quartz Feldspathic Biotite Chlorite Schist
- Oxidised/Weathered Schistose Rock
- Metabasic Schist
- Quartz Feldspathic Amphibole Biotite Chlorite Schist
- Amphibole Basic Intrusive
- Quartz-K-Feldspar Chlorite Biotite Schist(Silicified & granitized basic schist)
- Garnetiferous-Qtz-Chlorite mica schist
- Quartzite/Micaceous Quartz Schist/Micaceous Quartz Feldspathic Schist
- Granite Gneiss

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

BOREHOLE GEOPHYSICAL LOG

THAKURDIH AREA-1 BLOCK

DISTRICT: EAST SINGHBHUM STATE: JHARKHAND

R.F. 1:500

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