

**Details of Petrographic Study Results of Jamtola-Khandapar Block, District: Balaghat, Madhya Pradesh**

Sl. No.	Sample Number & Location	Texture	Mineral Composition			Description
			Major >5%	Minor <5% – >1%	Accessory <1%	
1	MJK/P/01 E-2431017, N- 459579	It is a greenish grey coloured medium grained rock showing granular texture.	Hornblende Plagioclase	Sericite Epidote Opaques Sphene	Ferruginous matter Zircon	Hornblende occurs as medium subhedral prismatic and rhombic grains. Plagioclase is present as medium subhedral prismatic grains and turbid patches showing saussuritization. Sericite and epidote are seen developing after plagioclase alterations. Opaques occur as fine anhedral to subhedral disseminated grains being replaced by sphene along its periphery. Reddish ferruginous fillings have been seen intruded in areas. Zircon is noted as very fine inclusions within hornblende, around which pleochroic haloes are observed. The specimen is an <u>amphibolite</u> .
2	MJK/P/02 E-2432274, N- 451714	It is a greenish grey coloured medium grained rock showing granular texture.	Plagioclase Hornblende Actinolite Quartz	Sericite Epidote Opaques Sphene	Chlorite Ferruginous matter	Plagioclase occurs as medium subhedral prismatic grains and turbid patches showing crude parallel alignment and saussuritization. Hornblende and actinolite are present as medium subhedral prismatic grains showing crude parallel alignment. Quartz occurs as medium to fine anhedral grains and patches, often seen clustering in pockets. Sericite and epidote are seen developing after plagioclase alterations and



ANNEXURE-X/2

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						also noted as intermixed patchy fillings. Opaques occur as fine anhedral to subhedral grains in dissemination and showing thin corona of sphene around it. Chlorite is seen present pseudomorphic patches replacing amphiboles. Reddish ferruginous fillings have seen intruded in areas. The specimen is a <u>meta-quartz diorite.</u>
3	MJK/P/03 E-2430236, N-460050	It is a greenish grey coloured fine grained massive rock.	Actinolite Chlorite Plagioclase Opaques	Sericite Epidote Sphene	Ferruginous matter	Actinolite occurs as fine to medium subhedral prismatic grains and acicular aggregates. Chlorite is present as pseudomorphic patches replacing amphiboles. Plagioclase is present as fine anhedral to subhedral grains altering to sericite and epidote. Sericite and epidote together also occur as intermixed criss-cross veinlets/ fillings. Opaques occur as fine anhedral to subhedral disseminated grains showing thin corona of sphene around it. Opaques are also present as medium patches to moderately coarse and patchy fillings from which reddish ferruginous stains are seen oozing out. Reddish ferruginous fillings have also seen intruded in areas. The specimen is an <u>amphibolite.</u>



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4	MJK/P/04 E-2430922, N-451252	It is a fine to medium grained rock showing hypidiomorphic granular texture and structural deformations.	Quartz Plagioclase Microcline Epidote	Chlorite Biotite	Apatite Sericite Ferruginous matter	Quartz occurs as fine to medium anhedral grains, often clustering in pockets. Plagioclase and microcline are present as medium to fine subhedral prismatic grains. Epidote occurs as intrusive veins/ fillings and as segregated patches. Chlorite is present as patches and fillings, often showing association with epidote and showing relicts of biotite in areas. Apatite is noted as fine subrounded grains in accessories. Sericite is seen developing after plagioclase alterations. Reddish ferruginous fillings have seen intruded in areas. The specimen is showing multiple set of joint/ fractures, along which granulation is noted. The specimen is a <u>deformed granodiorite</u> .
5	JHBHP-01 MJGL-01, 57.00m to 57.10m	It is a massive rock with greenish grey coloured very fine grained lensoidal/ patchy relicts. It is showing fast reaction with cold and dilute HCl.	Calcite Sericite Chlorite	Opakes Quartz	Ferruginous matter	Calcite occurs as very fine micro-crystalline aggregates, segregating into massive patches throughout the specimen. Sericite and chlorite are present as lensoidal/ patchy relicts comprising very fine flaky aggregates with crude parallel alignment. Opakes occur as fine subhedral to anhedral grains, patches and as very fine segregations in pockets. Quartz occurs as very fine to fine anhedral grains within calcitic matrix. Reddish ferruginous patches



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						and fillings are observed in areas. The specimen is a <u>calcite vein with sericite-chlorite phyllite relicts.</u>
6	JHBHP-02 MJGL-03, 65.00m to 65.10m	It is a light grey coloured very fine-grained massive rock showing instant reaction with cold and dilute HCl.	Calcite Quartz	Sericite	Opakes Clay minerals	The specimen is mostly made up of very fine micro-crystalline micritic aggregates. Sub-parallel stylolitic cracks are noted and are often showing very fine clayey fillings along it. Criss-cross secondary calcite veins and fillings have seen intruded in the specimen. Quartz occurs as very fine subangular disseminated clasts floating over calcitic matrix. Sericite is seen present as very fine flakes, often seen segregated in lensoidal pockets. Opakes are noted as very fine specks in traces. The specimen is an <u>impure micritic limestone/ calcite vein.</u>
7	JHBHP-03 MJGL-04, 51.00m to 51.10m	It is a greenish grey coloured very fine-grained rock showing schistosity and vein intrusions.	Chlorite Sericite Carbonates	Opakes		Chlorite and sericite are present as very fine flaky aggregates, most segregating into separate thin bands and showing parallel alignment and complex micro-foldings. Calcite occurs as intrusive patches, veins and veinlets. Quartz occurs as very fine grains/ granular



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			Quartz			aggregates and as fine to medium lensoidal porphyroclasts showing parallel alignment and rotational movements. Opaques are seen present as very fine fillings along the foliation and also noted as very fine to fine grains. The specimen is a <u>chlorite-sericite-quartz schist/ phyllite intruded by carbonate veins.</u>
8	JHBHP-04 MJGR-01, 31.00m to 31.10m	It is a fine grained structurally disturbed rock showing medium to coarse xenoliths and secondary fillings.	Calcite Phlogopite/ Biotite Quartz Opaques/ Ferruginous matter Feldspar	Sericite/ Muscovite Chlorite		Calcite occurs as fine to medium subhedral to anhedral grains showing compact contacts. Irregular fractures, dislocation, secondary fillings etc. are observed in the specimen. Phlogopite/ biotite are mostly present as patchy fillings comprising fine to very fine flaky aggregates. Quartz occurs as fine to very fine anhedral grains and as clustered pockets. Medium to moderately coarse sub-angular xenoliths are also noted, mostly comprising fine to medium quartz-feldspathic grains. Opaques/ ferruginous matter are present as very fine disseminated grains, segregated patches and fillings. Sericite/ muscovite are present as very fine disseminated flakes. Chlorite is noted as fine secondary fillings in areas.



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						The specimen is a <u>calcite vein with quartz-feldspathic xenoliths.</u>
9	JHBHP-05 MJGR-02, 49.60m to 49.70m	It is a fine-grained compact rock showing vein intrusions. It reacts instantly with cold and dilute HCl	Calcite Quartz	Sericite/ Muscovite	Biotite Opaques	Calcite occurs as fine to very fine subhedral to anhedral grains showing compacts contacts. Quartz is mainly present as moderately thick sub-parallel and micro-folded veins comprising medium to moderately coarse grains. It also occurs as very fine grains floating over calcitic matrix. Sericite/ muscovite are present as very fine disseminated flakes. Biotite is noted as very thin secondary fillings. Opaques occur as very fine specks in accessories. The specimen is <u>an calcite vein intruded by quartz veins.</u>
10	JHBHP-06 MJGR-03, 28.15m to 28.25m	It is a greenish grey coloured very fine-grained rock showing schistosity and vein intrusions.	Chlorite Sericite Quartz Carbonates	Opaques	Sphene	Chlorite and sericite are present as very fine flaky aggregates and segregated patches showing parallel alignment and micro-folds. Quartz occurs as very fine disseminated grains. Carbonates are seen present as thin to moderately thick intrusive patches and patchy fillings, mostly along the foliations. Tremolite occurs as very fine acicular grains, showing parallel alignment. Opaques are noted as very fine specks and



ANNEXURE-X/7

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			Major >5%	Minor <5% – >1%	Accessory <1%	
			Tremolite			fillings along the foliation. Sphene occurs as very fine wedges and anhedral patches in accessories. The specimen is a <u>chlorite-sericite-quartz schist/ phyllite intruded by carbonate veins.</u>