The Phokungri-Awangkhoo and Luthur Granites, Naga Hills Opiolite Belt, India: Pre-and Post-Metamorphic Intrusive Activity

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The NE-SW - ENE-WSW trending Naga Hills Ophiolite Belt (NHOB) hosts serpentinised peridotite, serpentinised basalt, nodular serpentinite, dunite, lherzolite, pyroxenite and gabbro in the lower horizon followed stratigraphically upwards by pillow basalt, radiolarian chert, shale and limestone. The tectonised and dismembered NHOB is thrust over the younger Disang Formation on the west, while on the eastern boundary the Nimmi Formation and the Naga Metamorphic Belt lie overthrust on the ophiolite suite. This study characterizes the mineralogical and textural features of (a) the sheared gneissic granite occurring in the Phokungri-Awangkhoo area (SE NHOB) emplaced in marble, quartzite and phyllite and (b) the plagiogranite of Luthur area (NW NHOB) emplaced in serpentinised basalt. The gneissic granite is seen as an elliptical stock of 15m to 150m dimension, while the plagiogranite occurs as an oval intrusion with a maximum exposed length of ~ 200m and a width of 120m across. The sheared Phokhungri-Awangkhoo Gneissic Granite (PAGG) shows recrystallisation of medium grained microcline, patchy perthite and intergranular quartz. Plagioclase constitutes less than 1% of modal abundance while the ferromagnesian and opaque minerals are nearly absent. The medium to coarse grained Luthur Plagiogranite (LP) showing varied modal abundance of the felsic and mafic minerals is essentially made up of plagioclase, Cpx, Opx, amphibole, apatite, minor quartz, chlorite, muscovite, calcite, zircon and opaques. The dominantly occurring medium grained plagioclase laths with albite and carlsbad twinning shows secondary calcite rims around the grain boundaries and saussuritised cores, while the pyroxenes alter commonly to serpentine, fibrous amphibole and chlorite in LP. The characteristic granophyric intergrowths are fine to medium grained, while the medium grained opaque minerals are represented by pyrite, magnetite, chalcopyrite, pyrrhotite and molydenite in the decreasing order of abundance in the LP. These opaque ore minerals which occur as both replacement and exsolution products increase in abundance when associated with segregations of primary and secondary ferromagnesian silicate minerals. In LP, the basic type of intergrowths between ferromagnesian silicates and the opaque ore minerals range from mantled, locking, mottled to stringer types. Based on (a) the observed mineralogy and textures within these two types of granites occurring at the opposite ends of the NHOB and (b) the nature of their associated lithologies, it is suggested that the PAGG could be a syntectonic intrusive,

metamorphosed subsequent to its emplacement, while the LP is an unmetamorphosed intrusive still preserving the primary igneous mineralogy and textures.

Keywords: Naga Ophiolites, Gneissic Granite, Plagiogranite, Syntectonic , Post-metamorphic.