Petrographic descriptions of samples from the Kuna Crest lobe and adjacent equigranular Half Dome.

Kuna Crest lobe

Sample KCL-434-2 is a medium-grained augite-bearing hornblende biotite tonalite from zone I of the KCL (Fig. 1). The naming terminology expresses the fact that the majority of olive–green hornblende in the sample surrounds uralitized augite, which occurs as individual grains and in glomerocrysts. A few prismatic hornblende crystals lack evidence of an original augite core. Brown biotite is interstitial and occurs as anhedral books. Euhedral to anhedral plagioclase is oscillatory-normal zoned (~An46-20) and some crystals have perthite jackets. Quartz and alkali feldspar are interstitial. Accessory magnetite and ilmenite reach 0.5 mm length, titanite is interstitial or an alteration product after biotite, and acicular apatite occurs as inclusions in hornblende, biotite, and plagioclase. Secondary epidote is rare.

Sample KCL-390 is a medium- to coarse-grained, hypidiomorphic granular, biotite hornblende granodiorite from unit III of the KCL. Relict augite, now mainly pale amphibole plus fine quartz beads, forms cores in hornblende. The hornblende is pleochroic olive–green and occurs in a variety of habits: prismatic, interstitial, and as small glomerocrysts with biotite, opaque minerals, and titanite. The hornblende contains inclusions of plagioclase, opaque minerals, and apatite, some of which is acicular. Some hornblende shows patchy zoning/alteration to blue-green amphibole. Brown biotite forms ragged interstitial to poikilitic crystals that typically have bent cleavage. Plagioclase (~An33) has seriate distribution, with large, interlocking crystals that display weak oscillatory zoning. Some plagioclase crystals are bent. Quartz, alkali feldspar, and

titanite are interstitial and subgrain development in quartz is common. Zircon occurs as inclusions in biotite, hornblende, and plagioclase; epidote is a secondary mineral.

Sample VLM-2 is a fine- to medium-grained, equigranular, hypidiomorphic granular augite-bearing biotite hornblende granodiorite. Scant augite occurs as cores in olive hornblende. Most hornblende is prismatic or interstitial and contains plagioclase inclusions. Brown biotite is interstitial. Plagioclase (An42-35) is mainly subhedral and locally is embayed against alkali feldspar. Quartz is interstitial or enclosed in alkali feldspar, where some grains have euhedral form and others are rounded. Microcline poikilitically encloses hornblende, biotite, plagioclase, and quartz. Magnetite, zircon, and interstitial titanite are accessory minerals.

Sample KCL-536A is a coarse-grained pyroxene-bearing hornblende = biotite granodiorite from the interior of the KCL. Augite and relict augite form cores in olive hornblende; most such cored hornblendes occur in glomerocrysts that also contain biotite ± magnetite ± ilmenite ± titanite. Prismatic hornblende is olive to dark green and some crystals are partly replaced by blue-green amphibole ± biotite. Plagioclase is subhedral to anhedral, with a range of habits, and is typically oscillatory-normal zoned (An49-33). It contains inclusions of hornblende and Fe-Ti oxides. Quartz, alkali feldspar, and titanite are interstitial, and titanite also occurs as anhedral to subhedral prisms as much as 1.5 mm long.

Sample KCL-16B is a mafic magmatic enclave from the interior unit of the KCL, the same unit as KCL-536 is derived from (Fig. 2). The fine-grained groundmass encloses phenocrysts of hornblende, biotite, and plagioclase which reach 5 mm in length. Hornblende phenocrysts are olive to green, euhedral to subhedral, and contain inclusions of acicular and prismatic apatite. It is locally altered to pale green amphibole. Hornblende ± biotite ± titanite ± plagioclase forms sparse glomerocrysts and some glomerocrystic hornblende is cored by relict augite. Biotite phenocrysts are subhedral to anhedral, brown to brownish-yellow, and include apatite, hornblende, and an opaque mineral (altered magnetite?). Plagioclase phenocrysts (An35) show diffuse oscillatory zoning with scant inclusions of hornblende, acicular and prismatic apatite, and opaque minerals. The groundmass consists of euhedral to anhedral, stubby to elongate, olive–green hornblende, subpoikilitic brown biotite, blocky, untwinned plagioclase with distinct core/rim boundaries (An33 and An20, respectively), interstitial and poikilitic alkali feldspar, and sparse Fe-Ti oxides.

Equigranular Half Dome

Sample KCL-214A is a coarse-grained, hypidiomorphic granular biotite hornblende granodiorite from the equigranular Half Dome unit in contact with the interior unit of the KCL (Fig. 2). Hornblende is medium olive to green and occurs as subhedral to anhedral prisms and interstitially. Some grains show patchy zoning and a few show replacement by blue-green amphibole. Hornblende encloses apatite, magnetite, and plagioclase and shows minor alteration to chlorite and epidote. Brown biotite forms large, anhedral to subpoikilitic books with inclusions of apatite, zircon, magnetite, and plagioclase; alteration to chlorite is common.

Plagioclase varies from euhedral to anhedral and synneusis twinning is common. Some plagioclase crystals show broad oscillatory zones (~An30) and others but some grains have ~An40 cores and An20 rims. Quartz and microcline are interstitial and contain plagioclase, hornblende, and biotite inclusions. Euhedral titanite straddles grain boundaries, is included in alkali feldspar, and is intergrown with hornblende rims.