

APPENDIX 1: THIN SECTION DESCRIPTIONS OF DIKES

General Comments: Locations use UTM NAD 27 (1982) unless otherwise noted; LS = Lobo Springs quad, MT = Mount Taylor quad. Texture and petrography generally follow the examples in Williams et al. (1954). Rock names use classification scheme of Le Bas et al. (1986) for volcanic rocks.

Abbreviations: Kspar = generic potassium feldspar (variety noted if possible); plag = plagioclase, qtz = quartz, bio = biotite, hbd = hornblende, opx = orthopyroxene, cpx = clinopyroxene, ol = olivine; op = generic iron ore, mt = magnetite, ilm = ilmenite, ap = apatite, HT-idds = high-temperature iddingsite (mainly reddish orange hematite and maghemite); ser = sericite, chl = chlorite, cc = calcite, Fe-oxide = generic low-temperature secondary iron oxide(s).

Canyons South and West of Mount Taylor

F07-40: Picrite dike (Table 1)

Location: 0259223/3891323, 7250 ft on west edge of San Fidel Dome, LS quad

Relations: Cuts relatively flat-lying Mancos Shale just west of deformed Cretaceous rocks

Color & Texture: Splotchy black, very porphyritic, intersertal

Primary: Contains 35% large phenocrysts of ol and minor plag (sieved) in fine-grained groundmass of plag, ol, cpx, op and black glass

Secondary: Phenocrysts and groundmass are highly altered to opal, clay, chl, cc, and Fe-oxides

Comments: Dike is too altered to date; geochemistry indicates composition is nephelinite

Petrographic Name: Porphyritic picrite (Olivine nephelinite)

F07-43: Augite-porphyritic trachybasalt dike (Table 1)

Location: 024993/392089, 7000 ft on west side of north-trending monocline, LS quad

Relations: Cuts deformed Mancos Shale and Dakota Sandstone

Color & Texture: Dark gray, slightly porphyritic, intersertal

Primary: Contains sparse large megacrysts of cpx and plag, and a few phenocrysts of ol and cpx-plag clots in fine-grained groundmass of plag, cpx, op and dark brown glass; groundmass contains relatively abundant sub millimeter size spherules of very fine op and glass

Secondary: None

Comments: Although alteration is not obvious, dike looks too weathered to date

Petrographic Name: Augite megacrystal trachybasalt

F07-55: Aphyric trachybasalt dike (Table 1)

Location: 025699/389628 8280 ft near bottom of eroded cone, Horace Mesa, LS quad

Relations: Cuts Cretaceous rocks, Grants Ridge Tuff, and Pliocene volcanoclastic rocks

Color & Texture: Dark gray, very aphyric, intersertal

Primary: Contains rare very tiny phenocrysts of ol and plag in fine-grained groundmass of plag, ol, cpx, op, and glass; some HT-idds

Secondary: A little cc and Fe-oxides

Comments: Underlies gravels and a flow dated at 2.0 Ma

Petrographic Name: Aphyric trachybasalt

Mount Taylor Amphitheater

F94-MT5: Porphyritic biotite trachydacite dike (= sample 09KF14, Table 1)

Location: 0263444/3903096 10, 280 ft on ridge SE of saddle, MT quad

Relations: Cuts various trachydacite lava flows

Color & Texture: Pale brown, fine-grained, porphyritic, hyalopilitic

Primary: Contains 15% of complexly zoned plag and plag clots, Kspar, fresh bio, cpx, and op in fine, felty groundmass that contains two sizes of plag microlites, Kspar, op, and devitrified glass

Secondary: None

Comments: Dike is very broad and shows internal cooling structure

Petrographic Name: Porphyritic biotite trachydacite

F07-31: Porphyritic trachyandesite dike (= sample 09KF19, Table 1)

Location: 0262845/3902780, 10,900 ft, on trail to summit of Mount Taylor, MT quad

Relations: Cuts porphyritic trachydacite lava dated at 2.68 Ma

Color & Texture: Gray to black, fine- to medium-grained, slightly porphyritic, pilotaxitic

Primary: Contains about 5% of small phenocrysts of complexly zoned plag and plag clots, cpx and cpx clots, op, ap, and very sparse ol in groundmass of felty, randomly-aligned plag, cpx, op and brownish-black gl; some of the plag phenocrysts are sieve textured

Secondary: Very minor Fe-oxide

Comments: This unit is difficult to trace downhill

Petrographic Name: Medium-grained porphyritic trachyandesite

F08-13: Porphyritic hornblende trachydacite dike (Table 1)

Location: 026760/390161, 8800 ft, ridge in amphitheater floor, MT quad

Relations: Cuts Cretaceous sandstone to north and various flows of trachyandesite to south

Color & Texture: Gray to pinkish gray, porphyritic, pilotaxitic

Primary: Contains 20% phenocrysts of complexly zoned plag and plag clots, cpx, bio, hbd, op, minor opx and Kspar, and very rare qtz in felty groundmass of plag, Kspar, op, and devitrified glass. Most of the bio and hbd phenocrysts have resorbed, oxidized margins, otherwise very fresh

Secondary: None

Comments: Southwest end of dike forms knob that may be eroded plug; dike dated at 2.64 Ma

Petrographic Name: Porphyritic hornblende-biotite trachydacite

F08-26: Porphyritic biotite trachydacite dike (Table 1)

Location: 0266296/3900191, 9800 ft along south rim of amphitheater, MT quad

Relations: Cuts several trachyandesite and trachydacite flows on either side of amphitheater wall

Color & Texture: Pale yellow-brown to gray, fine-grained, porphyritic, pilotaxitic

Primary: Contains 15% phenocrysts of complexly zoned plag and plag clots, cpx, fresh bio, op, minor Kspar, and possibly hbd (very oxidized) in fine, felty groundmass of plag, Kspar, cpx, op and devitrified glass

Secondary: Groundmass slightly altered to Fe-oxides

Comments: Dike is broad and long; shows internal cooling structures; dated at 2.69 Ma

Petrographic Name: Porphyritic biotite trachydacite