

144-875C-15M-1 (Piece 3, 24–26 cm)

OBSERVER: DMC

WHERE SAMPLED: Thin massive flow. Unit 1.

ROCK NAME: Olivine basalt

GRAIN SIZE: Fine-grained.

TEXTURE: Microporphyritic, intergranular.

| PRIMARY MINERALOGY | PERCENT PRESENT | PERCENT ORIGINAL | SIZE (mm) | COMPOSITION | MORPHOLOGY | COMMENTS |
|-----------------------------|-----------------|-----------------------|-----------|---------------------|--------------------|---|
| PHENOCRYSTS | | | | | | |
| Olivine | 0 | 15 | 0.5–2 | | Subhedral. | Completely altered to brown clay. |
| Clinopyroxene | <1 | 1–2 | 1–2 | | Prisms. | Partially altered. |
| GROUNDMASS | | | | | | |
| Plagioclase | 15 | 50 | 0.05–1 | An _{50–55} | Laths. | Altered to colorless clay. |
| Clinopyroxene | 30 | 30 | 0.02–0.1 | | Prisms. | |
| Olivine | 0 | 5 | 0.05 | | Anhedral granular. | Altered to green clay. |
| Magnetite | 15 | 15 | 0.05 | | Irregular grains. | |
| Apatite | <1 | <<1 | <0.02 | | Needles. | |
| SECONDARY MINERALOGY | | | | | | |
| | PERCENT | REPLACING/ FILLING | | | | COMMENTS |
| Clay | 30–40 | Vesicles | | | | Dark green then brown. |
| Clay | 15 | Olivine | | | | Green/brown. |
| Clay | 20 | Plagioclase | | | | Colorless, cloudy, mottled extinction. Patchy. |
| VESICLES/CAVITIES | | | | | | |
| | PERCENT | LOCATION | SIZE (mm) | FILLING | SHAPE | COMMENTS |
| Vesicles | 40 | - | 0.5–1 | Fe oxides | Irregular | Iron oxy-hydroxide rims, then dark green clay, then brown clay. |

COMMENTS: Patchy alteration, almost complete in parts. Maybe enough fresh plagioclase for whole rock date?.

SITES 875/876

144-876A-16R-1 (Piece 1, 6-8 cm)
 ROCK NAME: Alkali Basalt
 GRAIN SIZE: Very fine-grained.
 TEXTURE: Microphyric, intersertal.

OBSERVER: DMC

WHERE SAMPLED: Near base, thin flow. Unit 1.

| PRIMARY MINERALOGY | PERCENT PRESENT | PERCENT ORIGINAL | SIZE (mm) | COMPOSITION | MORPHOLOGY | COMMENTS |
|-----------------------------|-----------------|-----------------------------------|-----------|-------------|-----------------------------------|--|
| PHENOCRYSTS | | | | | | |
| Olivine | 0 | 5 | 0.2-1 | | Subhedral. | Completely altered to green clay and clear zeolite. |
| Clinopyroxene | 3 | 5 | 0.5-1 | | Euhedral prisms. | |
| Clinopyroxene | 3 | 3 | 0.1-0.2 | | Glomerocrysts of anhedral grains. | Up to 1 mm. With lesser olivine. |
| GROUNDMASS | | | | | | |
| Plagioclase | 0 | 60 | 0.05-0.2 | | Laths and interstitial. | Completely altered to clear or brown clay, mottled extinction. |
| Clinopyroxene | 25 | 25 | 0.01-0.05 | | Prisms. | |
| Magnetite | 10 | 10 | 0.01-0.02 | | Cubes. | |
| Matrix | 5 | - | <0.05 | | Interstitial. | Green clay. |
| SECONDARY MINERALOGY | | | | | | |
| | PERCENT | REPLACING/ FILLING | | | | COMMENTS |
| Hematite | 1-2 | Olivine rims, vesicles, magnetite | | | | Staining across 25% of section at one edge. |
| Colorless/brown clay | 60 | Plagioclase | | | | Mottled extinction |
| Green clay | 5 | Olivine, matrix | | | | |
| Chabazite | 15 | Vesicles, some olivines | | | | Clear, interlocking, equidimensional grains, ~0.1 mm. |

| VESICLES/ CAVITIES | PERCENT | LOCATION | SIZE (mm) | FILLING | SHAPE |
|-----------------------|---------|----------------|-----------|---|-----------|
| Vesicles | 15 | | 0.5-1 | Chabazite and brown clay, hematite rims | Irregular |
| Vein | | Across section | 1.5 mm | Calcite | |

COMMENTS: Thoroughly altered.

144-876A-17R-1 (Piece 2, 26-28 cm)
 ROCK NAME: Hyaloclastite breccia
 GRAIN SIZE: Pebbles to fine sand.
 TEXTURE: Clastic, poorly sorted.

OBSERVER: DMC

WHERE SAMPLED: Unit 2. Flow top of Unit 3?

| PRIMARY MINERALOGY | PERCENT PRESENT | PERCENT ORIGINAL | SIZE (mm) | COMPOSITION | MORPHOLOGY | COMMENTS |
|-----------------------------|-----------------|-----------------------|-----------|-------------|-------------|--|
| PHENOCRYSTS | | | | | | |
| Clasts | 70 | 70 | 0.2-10 | | Subrounded. | Variably vesicular to non-vesicular, near-opaque, originally pilotaxitic basalt. |
| GROUNDMASS | | | | | | |
| Matrix | 15 | 15 | - | - | Angular. | Brown clay after fine basalt fragments. |
| SECONDARY MINERALOGY | | | | | | |
| | PERCENT | REPLACING/ FILLING | | | | COMMENTS |
| Chabazite | 5-10 | Voids | | | | Filling original voids. Equigranular, interlocking. ~ 0.1 mm. |
| Calcite | 5-10 | Voids | | | | As above, Intermingled with chabazite. |

COMMENTS: Based primarily on original high void space and on textural similarity of clasts, interpreted as flow-top breccia, of Unit 3.

144-876A-17R-1 (Piece 3, 91–98 cm)

OBSERVER: DMC

WHERE SAMPLED: Lowest piece, thin flow. Unit 3.

ROCK NAME: Alkali basalt

GRAIN SIZE: Aphanitic.

TEXTURE: Intersertal to pilotaxitic.

| PRIMARY MINERALOGY | PERCENT PRESENT | PERCENT ORIGINAL | SIZE (mm) | COMPOSITION | MORPHOLOGY | COMMENTS |
|-----------------------------|-----------------|-----------------------|-----------|-------------|--------------------------------|--|
| PHENOCRYSTS | | | | | | |
| Clinopyroxene | 2–3 | 2–3 | 0.2–0.5 | | Anhedral. | Grouped in ~1 mm glomerocrysts. |
| Olivine | 0 | <1 | 0.1–0.5 | | Subhedral. | Altered. Mostly in glomerocrysts with clinopyroxene. |
| GROUNDMASS | | | | | | |
| Clinopyroxene | 30 | 30 | 0.01–0.05 | | Prisms. | |
| Plagioclase | 40 | 45 | 0.04–2 | | Laths. | Only slightly altered to colorless clay. |
| Olivine | 0 | 5 | 0.02–0.05 | | Subhedral prisms. | Altered to green clay. |
| Magnetite | 15 | 15 | 0.02–0.05 | | Subhedral cubes and octahedra. | |
| Matrix | 5 | - | <0.05 | | Interstitial. | Green clay. |
| SECONDARY MINERALOGY | | | | | | |
| | PERCENT | REPLACING/ FILLING | | | | COMMENTS |
| Iddingsite | <1 | Olivine rims | | | | |
| Dark green clay | 5–10 | Olivine and matrix | | | | |
| Hematite | <1 | Groundmass, vesicles | | | | Widespread minor iron staining. |

| VESICLES/ CAVITIES | PERCENT | LOCATION | SIZE (mm) | FILLING | SHAPE |
|-----------------------|---------|----------|-----------|------------|---------------------|
| Vesicles | <1 | | <2 | Brown clay | Round and irregular |

COMMENTS: Groundmass surprisingly unaltered. Possibly OK for age determination.

144-876A-17R-1 (Piece 4, 98–104 cm)

OBSERVER: DMC

WHERE SAMPLED: Single piece, Unit 4.

ROCK NAME: Alkali basalt

GRAIN SIZE: Medium grained.

TEXTURE: Intergranular.

| PRIMARY MINERALOGY | PERCENT PRESENT | PERCENT ORIGINAL | SIZE (mm) | COMPOSITION | MORPHOLOGY | COMMENTS |
|-----------------------------|-----------------|--------------------------------|-----------|------------------|-------------------------|--|
| PHENOCRYSTS | | | | | | |
| Titanaugite | 8 | 10 | 0.2–0.5 | | Anhedral grains. | In 1–2 mm glomerocrysts. |
| Plagioclase | 1 | 1 | 1–2 | | Subhedral prisms. | Unusual undulose extinction, corroded cores. |
| Plagioclase | 10 | 20 | 1 | An ₆₀ | Laths. | Forming 1–2 mm glomerocrysts, often with clinopyroxene, rarely with olivine. |
| Olivine | 0 | 5 | 0.2–0.5 | | Subhedral prisms. | Completely altered to dark green clay and hematite. |
| GROUNDMASS | | | | | | |
| Titanaugite | 30 | 30 | 0.02–0.1 | | Prisms. | |
| Plagioclase | 30 | 40 | 0.05–0.1 | | Laths and interstitial. | |
| Magnetite | 15 | 15 | 0.02–0.05 | | Cubes. | |
| Matrix | 15 | - | <0.05 | | Interstitial. | Green clay. |
| SECONDARY MINERALOGY | | | | | | |
| | PERCENT | REPLACING/ FILLING | | | | COMMENTS |
| Hematite | 1–2 | Magnetite, olivine, groundmass | | | | Intense replacement at one edge. Minor staining elsewhere. |
| Green clay | 5 | Olivine, matrix | | | | |

COMMENTS: Fresh plagioclase, good for age determination?