144-878A-44M-1 (73–76 cm) OBSERVER: DMC WHERE SAMPLED: Interbedded in upper breccia of Lithologic Unit V.
ROCK NAME: Altered Vitric Tuff
GRAIN SIZE: 2–5 mm.
TEXTURE: Clastic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Clasts	2–5				Angular, irregular.	50% vesicles, devitrified glassy basalt scoria.
GROUNDMASS						
Matrix	<1					Finely divided angular basaltic glass.
Pyrite	5	-	<1		Granular.	Along cracks and lining voids in matrix.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Brown clay	95	Everything	Relict fabric beautifully preserved.

COMMENTS: Some clasts are elongate and have elliptical vesicles aligned with the elongation. They appear to have been flattened on compaction.

144-878A-46M-1 (112–114 cm) OBSERVER: DMC WHERE SAMPLED: Large clast in upper breccia Unit 5
ROCK NAME: Hawaiite
GRAIN SIZE: Aphanitic.
TEXTURE: Trachytic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	15	0.2–2		Anhedral equant.	Altered to iddingsite and green/brown clay.
GROUNDMASS						
Plagioclase	40	40		An_{55}	Laths.	
Clinopyroxene	30	30			Prisms.	Greenish.
Magnetite	15	15			Cubes.	
Green clay	15	-			Interstitial.	Replacing original feldspar or nepheline.
Apatite	0	0				

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Calcite	<1	Vein, vesicles	
Brown clay	10	Olivine, some vesicles	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	<1		0.5	Matrix	Round	Filled by calcite or brown clay.
Vein	<1		0.2	Calcite		

COMMENTS: Texture and abundance of plagioclase suggest that this is a hawaiite, although plagioclase is a little too calcic.

144-878A-46M-2 (52–57 cm) OBSERVER: DMC WHERE SAMPLED: Clast in breccia of Lithologic Unit V.
ROCK NAME: Hawaiite
GRAIN SIZE: Aphanitic.
TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	10	0.2–1		Subhedral equant.	Altered to green/brown clay.
Plagioclase	<1	<1	0.5–2		Broken prisms.	Partly corroded.
Plagioclase	5	5	1	An_{50}	Laths.	
GROUNDMASS						
Olivine	0	5	0.05		Anhedral.	Replaced by green clay.
Clinopyroxene	10	10	0.01–0.05		Prisms.	
Plagioclase	20	20	0.0–0.3	An_{50}	Laths.	Composition tenuous, minimum value.
Plagioclase	20	40	0.1–0.3		Interstitial.	Could include alkali feldspar or nepheline.
Magnetite	10	10	0.05–0.1		Cubes.	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green clay	15	Original feldspar or nepheline	
Colorless clay	20	Interstitial feldspar	
GROUNDMASS			
Apatite	2	Primary, in matrix as 0.2 mm needles	Unusually abundant.
Biotite	<1	Platy, <0.1 mm	Associated with magnetite.

COMMENTS: Resembles Sample 78R-1, 127–129 cm, from igneous Unit 1.

144-878A-78R-1 (Piece 25, 127–129 cm) OBSERVER: DMC WHERE SAMPLED: Massive flow, Unit 1
ROCK NAME: Hawaiite
GRAIN SIZE: Microcrystalline.
TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	15	0.1–0.3		Subophitic diamonds.	Altered to green/brown clay.
Plagioclase	<1	<1	1–2		Broken prisms.	Alkali feldspar overgrowths.
Plagioclase	5	5	1–2		Laths.	Oriented.
GROUNDMASS						
Olivine	0	5	0.05		Anhedral granular.	Altered to green/brown clay.
Plagioclase	30	40	0.1–0.2	An_{50}	Laths and interstitial.	Probably some interstitial alkali feldspar.
Clinopyroxene	10	10	0.02–0.03		Subhedral prisms.	Green.
Magnetite	15	15	0.02		Cubes.	
Mesostasis	0	30	0.1–0.3		Interstitial.	Replaced by green/brown clay.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Apatite	1	Primary	0.1–0.3 mm needles in groundmass.
Green/brown clay	40	Olivine, matrix, vesicles	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	1–2	1–2		Calcite, clay	Round

COMMENTS: Plagioclase composition not robust, high for hawaiite. Texture and mineralogy suggest hawaiite.

144-878A-78R-2 (Piece 3, 71–73 cm) OBSERVER: DMC WHERE SAMPLED: Lower part of flow, Unit 1
ROCK NAME: Alkali basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Trachytic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	3	0.2–2		Euhedral diamond.	Completely altered to orange iddingsite.
Plagioclase	<1	<1	0.5–1		Subhedral and broken prisms.	Corroded cores.
Plagioclase	5	5	0.5–1		Laths.	Preferred orientation.
GROUNDMASS						
Apatite	1	1	0.1–0.2		Needles.	
GROUNDMASS						
Olivine	0	10	0.02–0.03		Anhedral granular.	Altered to green clay.
Clinopyroxene	10	10	0.02–0.03		Prisms.	Green.
Plagioclase	50	50	0.02–0.05	An_{60}	Laths.	Minor interstitial patches, could be alkali feldspar in part.
Ilmenite	10	10	0.02		Irregular, bladed.	
Green clay	20	-	<0.05		Interstitial.	Replacing interstitial feldspar or nepheline.

COMMENTS: Mildly iron-stained throughout.

144-878A-79R-3 (Piece 4, 117–119 cm) OBSERVER: DMC WHERE SAMPLED: Lower part of massive flow, Unit 2
ROCK NAME: Hawaiite
GRAIN SIZE: Microcrystalline.
TEXTURE: Trachytic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	3	0.2–2		Euhedral diamonds.	Altered to green/brown clay.
Plagioclase	5	5	0.5–1		Laths.	Oriented. Alkali feldspar overgrowths.
PHASES						
Apatite	1	1	0.1–0.2		Needles.	
GROUNDMASS						
Olivine	0	15	0.02–0.03		Anhedral.	Altered to green/brown clay.
Clinopyroxene	5–10	5–10	0.02–0.03		Prisms.	Green.
Plagioclase	50	50	0.02–0.5	An_{50}	Laths.	Minor interstitial patches could be alkali feldspar.
Magnetite	10	10	0.02		Irregular, equant.	
Green clay	20	-	<0.05		Interstitial.	Replacing interstitial feldspar or nepheline.

144-878A-80R-6 (Piece 4, 98–101 cm) OBSERVER: DMC WHERE SAMPLED: Lower part of massive flow, Unit 8.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	5	10	0.1–2		Euhedral and broken.	Altered to iddingsite rims, green/brown clay centers.
GROUNDMASS:						
Titanaugite	40	40	0.1–0.5		Anhedral; glomerocrysts.	
GROUNDMASS						
Plagioclase	25	30	0.02	An_{55}	Laths and interstitial.	Possibly some nepheline.
Magnetite	10	10	0.02–0.05		Cubes.	
Apatite	1	1	0.02		Needles.	
Green clay	10	-	<0.05		Interstitial.	Mottled extinction. Replacing interstitial feldspar or nepheline.
Nepheline?	5	10	<0.05		Interstitial.	Low birefringence. Identification uncertain. Mottled extinction where altered.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Colorless clay	5	Nepheline?	Colorless, mottled extinction, low birefringence.

144-878A-81R-2 (Piece 2, 114–118 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 10.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	5	0.1–3		Euhedral or broken.	Iddingsite rims, yellow high birefringent clay centers.
Titanaugite	<<1	<<1	0.2–0.5		Clusters euhedral prisms.	
GROUNDMASS						
Titanaugite	40	40	0.01–0.2		Anhedral clusters.	
Magnetite	10	10	0.01–0.02		Cubes.	
Plagioclase	40	40	0.1–0.2	An_{65}	Laths and interstitial.	About equal amounts each form.
Nepheline?	5	20	<0.05		Interstitial.	Identification uncertain. Mostly altered, colorless with mottled extinction.
Apatite	<1	<1	0.01–0.02		Needles.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	<1	1–5		Calcite	Round	
Vein	<1	0.01		Colorless clay or zeolite		Mottled extinction.

144-878A-81R-5 (Piece 1, 22–25 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 11.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	5	0.5–2		Anhedral.	Altered to iddingsite and dark amorphous clay.
Titanaugite	<1	<1	1		Subhedral prism.	
GROUNDMASS						
Titanaugite	40	40	0.01–0.02		Anhedral clusters.	
Magnetite	15	15	0.02		Subhedral cubes.	
Plagioclase	10	20	0.05–0.1		Laths and interstitial.	Some nepheline?
Apatite	1	1	0.01–0.02		Needles.	
Light brown clay	10	-	0.05–0.1		Interstitial.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	<1	3–4		Calcite	Round

144-878A-82R-2 (Piece 6, 79–89 cm) OBSERVER: DMC WHERE SAMPLED: Large clast near base of breccia, Unit 12.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	10	0.1–2		Euhedral or broken diamonds.	Altered to iddingsite rims, brown clay, isotropic zeolite and calcite.
ACCESSORY PHASES:						
Biotite	<1	<1	<0.02			
Apatite	<1	<1	<0.02		Needles.	
GROUNDMASS						
Clinopyroxene	15	15	<0.01		Prisms and anhedral grains	Green.
Plagioclase	20	20	0.1–0.2		Laths.	
Plagioclase	5	15	<0.2		Interstitial.	Possibly includes alkali feldspar or nepheline. Altered to colorless clay (?) with mottled extinction.
Magnetite	15	15	<0.01–0.02		Subhedral cubes.	
Mesostasis	40	40	<0.05		Interstitial.	Fine clinopyroxene, oxide minerals and brown clay, trace biotite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	5	1–5		See comment	Elongate	Lined by low to round birefringent radiating zeolite. Filled by crystalline tetragonal zeolite (chabazite?) and calcite in larger sizes only.

COMMENTS: Moderately altered, iron-stained with abundant clay in groundmass. More altered equivalent of Sample 84R-4, 104–105 cm.

144-878A-84R-4 (Piece 4, 104–105 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 15.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	5	20	0.1–2		Euhedral and broken diamonds	Altered to iddingsite rims and green/brown clay centers.
Plagioclase	<1	<1	0.1–0.2		Subhedral prisms.	
GROUNDMASS						
Titanaugite	40	40	0.01–0.05		Anhedral clusters.	
Plagioclase	30	40	0.1–0.2	An_{65}	Laths and interstitial.	Possibly includes interstitial nepheline.
Magnetite	5	5	0.02–0.1		Irregular.	Partially to completely encloses titanaugite.
Light green clay	15	-	<0.1		Interstitial.	Percentage varies widely. Much higher in places. Replacing original feldspar or nepheline.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Zeolite	<5	Matrix	Radiating, low birefringence.
Green clay	15	Matrix	Mottled extincton. Percentage varies within sample.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	1–2	0.5–2	See comment		Round	Filled by calcite or colorless, radiating low birefringent zeolite.

144-878A-84R-5 (Piece 8, 87–105 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 15.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	5	10	0.1–2		Subhedral diamonds.	Larger grains about 50% fresh material, remainder altered to iddingsite rims and light brown clay.
GROUNDMASS						
Titanaugite	30	30	0.05–0.3		Euhedral prisms to anhedral.	
Plagioclase	15	30	0.1–0.2		Laths and interstitial.	Altered to colorless clay with mottled extinction.
Magnetite	5	5	0.05–0.3		Irregular.	Partially to completely surrounding titanaugite.
Green clay	35	-	<0.1		Interstitial.	
Apatite	<1	<1	0.01–0.02		Needles.	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Colorless clay	15	Plagioclase	Colorless, mottled extinction.
Green clay	35	Original matrix	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	1	0.1		Green clay	Round

144-878A-85R-2 (Piece 8, 90–92 cm) OBSERVER: DMC WHERE SAMPLED: Middle thin flow, Unit 16
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	5	0.1–1		Euhedral diamonds.	Altered to iddingsite rims and light green/brown clay centers.
ACCESSORY PHASES:						
Apatite	<1	<1	<0.02		Needles.	
GROUNDMASS						
Titanaugite	40	40	0.01–0.1		Anhedral grains to euhedral prisms.	
Plagioclase	15	20	0.1–0.2		Laths.	Partially altered to colorless clay, mottled extinction.
Plagioclase	5	15	<0.2		Interstitial.	Possibly partly nepheline or alkali feldspar. Largely replaced by colorless clay with mottled extinction.
Magnetite	10	10	0.01–0.02		Subhedral cubes.	Also very fine grains and blades within titanaugite.
Green clay	10–15	-	<0.1		Interstitial.	Irregularly distributed within sample.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
See comments above			

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	1–2	0.2–1		See comments	Round	Rimmed by pale green isotropic zeolite. Filled by radiating, colorless, low birefringent zeolite, rarely with calcite.

144-878A-86R-3 (Piece 1, 42–45 cm) OBSERVER: DMC WHERE SAMPLED: Bottom of flow, Unit 18.
ROCK NAME: Basanitoid
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	1	2	1–2		Euhedral diamonds.	Partly iddingsitized.
Olivine	0	5	0.1–0.5		Anhedral.	Completely iddingsitized.
Titanaugite	2	2	0.2–2		Anhedral prisms.	Zoned. High dispersion.
Plagioclase	<1	<1	1		Subhedral prisms.	Corroded cores.
GROUNDMASS						
Plagioclase	50	60	0.1–0.2		Laths and interstitial.	Possibly includes some nepheline or alkali feldspar. Part altered to colorless clay, mottled extinction.
Clinopyroxene	15	15	0.01–0.02		Prisms.	
Magnetite	15	15	0.01–0.05		Irregular, anhedral.	
Olivine	0	5	0.01–0.05		Anhedral.	Replaced by iddingsite.
Apatite	<<1	<<1	0.01		Needles.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	2	>5		See comment	Irregular, elongate	Light brown isotropic zeolite rims, calcite centers.

144-878A-88R-3 (Piece 1, 4–6 cm) OBSERVER: DMC WHERE SAMPLED: Lower section of flow, Unit 20.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	1	1–2		Euhedral diamonds.	Altered to iddingsite.
Olivine	0	5	0.1–0.2		Subhedral diamonds.	Altered to iddingsite.
Clinopyroxene	<1	<1	0.1–1		Anhedral.	
ACCESSORY PHASES:						
Apatite	2	2	<0.02		Needles.	
GROUNDMASS						
Plagioclase	20	40	0.1–0.2		Laths.	
Plagioclase	20	25	<0.05		Interstitial.	Part altered to colorless clay with mottled birefringence. Possibly includes nepheline or alkali feldspar.
Clinopyroxene	20	20	0.01–0.02		Prisms.	
Magnetite	15	15	0.01		Anhedral to subhedral cubic.	
Mesostasis	5	5	<0.1		Interstitial.	Mixture of fine clinopyroxene, apatite, green/brown clay.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
See comments above.			

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	5		0.5–2		See comment	Irregular. Clay or zeolite, colorless with mottled extinction, rare calcite.
Vein	<1	Across section	0.5	Calcite, brown isotropic clay	Irregular trend	

144-878A-89R-4 (Piece 3, 45–47 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 21.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Pilotaxitic, intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	5	0.1–0.5		Anhedral diamonds.	Iddingsitized.
Olivine	<1	1	0.5–2		Subhedral diamonds.	Partly iddingsitized.
Clinopyroxene	1	1	0.5–2		Anhedral, rounded.	Contains rare pyrite(?) blebs, strong dispersion.
Plagioclase	1	1	0.5–2		Euhedral, broken.	Resorbed margins.
Biotite	<1	<1	0.05–0.1		Platy.	Unusually abundant. Pleochroic red-brown, yellow, colorless.
GROUNDMASS						
Clinopyroxene	10	10	0.01–0.05		Euhedral prisms.	
Plagioclase	50	60	0.05–0.2		Laths and interstitial.	Moderate flow orientation.
Ilmenite	10	10	0.01–0.05		Subhedral prisms.	
Olivine	0	5	0.05		Anhedral.	Replaced by green clay.
Apatite	1	1	0.02		Needles.	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green clay	5–10	Mesostasis or other interstitial phase	Amount present varies within sample.

COMMENTS: There are two sharply bounded regions in this thin section. The second region differs from the one described as follows: Ilmenite is about twice as abundant and much finer (<0.005 mm). Remaining mineral proportions are about the same but grain sizes are less than half.

144-878A-90R-1 (Piece 6, 105–107 cm) OBSERVER: DMC WHERE SAMPLED: Lower flow, Unit 21.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Pilotaxitic, intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	5	10	0.1–1		Euhedral and broken.	Altered to iddingsite.
Basalt	<1	<1	10		Angular.	Finer grained, but otherwise similar, pilotaxitic basalt inclusion.
MINOR PHASES						
Biotite	1	1	<0.05		Platy.	Pleochroic light brown to clear.
Melilite?	2	2	<0.05		Subhedral prisms.	Uniaxial negative, strong basal parting. Colorless but often stained orange, thus resembling altered olivine.
GROUNDMASS						
Plagioclase	50	60	0.05–0.1		Laths and interstitial.	Possibly part alkali feldspar. Partially altered to colorless clay with mottled extinction.
Clinopyroxene	20	20	0.01–0.02		Prisms.	Green.
Magnetite	15	20	0.005–0.02		Subhedral cubes, octahedra.	1/3 of grains are altered to hematite.
Ilmenite	<5	<5	<0.01		Blades.	

COMMENTS: Identification of melilite is tentative.

144-878A-91R-3 (Piece 6B, 94–97 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 23
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	1	3	1–2		Anhedral.	
Clinopyroxene	1	1	0.2–0.5		Anhedral.	
Plagioclase	2	2	1–2		Subhedral prisms.	Zoned, broken.
Olivine	0	15	0.2–0.5		Anhedral.	Replaced by green/brown clay. Grades into groundmass.
Biotite	<1	<1	0.1–0.2		Platy.	
GROUNDMASS						
Titanaugite	20	20	0.01–0.1		Anhedral clusters.	
Olivine	0	10	<0.1		Anhedral.	Altered to green/brown clay.
Plagioclase	50	60	0.05–0.5	An_{50}	Laths and interstitial.	Possibly includes nepheline or alkali feldspar.
Apatite	<1	<1	<0.02		Needles.	

144-878A-92R-1 (Piece 16A, 101–103 cm) OBSERVER: DMC WHERE SAMPLED: Base of flow, Unit 24.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	2–3	1–2		Euhedral, broken.	Iddingsitized.
Olivine	0	25	0.05–0.2		Anhedral.	Grades into groundmass. Altered to iddingsite and bright blue/green clay.
Titanaugite	<1	<1	<0.5		Clusters of prisms.	
Biotite	<1	<1	0.1–0.2		Platy.	
GROUNDMASS						
Plagioclase	20	40	0.1–0.3		Laths and interstitial.	Possibly includes some alkali feldspar.
Titanaugite	15	15	0.02–0.05		Anhedral clusters.	
Ilmenite	10	10	0.05–0.2		Subhedral, bladed.	
Olivine	0	5	<0.05		Anhedral.	Replaced by iddingsite and green/brown clay.
Brown clay	30	-	<0.1		Interstitial.	Replacing original mesostasis.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	3	1–2	See comment		Round	Lined by fine-grained isotropic zeolite. High birefringent brown clay centers.

144-878A-92R-4 (Piece 1D, 78–81 cm) OBSERVER: DMC WHERE SAMPLED: Near base of flow. Unit 26
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	2–3	1–2		Euhedral, broken.	Iddingsitized.
Olivine	0	25	0.05–0.2		Anhedral.	Grades into groundmass. Altered to iddingsite and blue/green clay.
Titanaugite	<1	<1	<0.5		Clusters of prisms.	
Biotite	<1	<1	0.1–0.2		Platy.	
GROUNDMASS						
Plagioclase	20	40	0.1–0.3		Laths and interstitial.	Possibly includes alkali feldspar.
Titanaugite	15	15	0.02–0.05		Anhedral clusters.	
Ilmenite	10	10	0.05–0.2		Subhedral, bladed.	
Olivine	0	5	<0.05		Anhedral.	Replaced by iddingsite and green/brown clay.
Brown clay	30	-	<0.1		Interstitial.	Replacing original mesostasis.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	3	1–2	See comment		Round	Fine-grained isotropic zeolite lining, brown high birefringent clay centers.

144-878A-92R-5 (Piece 3C, 41–43 cm) OBSERVER: DMC WHERE SAMPLED: Middle of thin flow, Unit 27.
ROCK NAME: Alkali basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	10	0.3–0.5		Anhedral.	Grades into groundmasss. Altered to iddingsite and green/brown clay.
Olivine	0	2	0.5–2		Anhedral to euhedral, diamonds.	Altered to iddingsite, brown, low birefringent zeolite (?), and colorless, high birefringent clay.
Clinopyroxene	<1	<1	0.5–1		Anhedral.	
Plagioclase	<<1	<<1	<0.5		Anhedral.	Appear broken from larger prisms.
Biotite	<1	<1	<0.1–0.2		Platy.	
GROUNDMASS						
Plagioclase	40	50	0.2–0.5		Laths and interstitial.	Possibly includes some alkali feldspar.
Titanaugite	20	20	0.01–0.05		Anhedral clusters and prisms.	
Ilmenite	10	10	0.01–0.05		Subhedral blades and prisms.	Additional tiny grains included in titanaugite.
Olivine	0	5	<0.05		Anhedral.	Altered to green/brown clay.
Biotite	<1	<1	<0.1		Platy.	Pleochroic light brown to colorless.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	1	0.5–2		Calcite and brown clay	Round

144-878A-93R-2 (Piece 22, 123–125 cm) OBSERVER: DMC WHERE SAMPLED: Below flow top breccia, Unit 30.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Clinopyroxene	5	5	0.2–3		Anhedral to euhedral prisms.	Zoned, high dispersion.
Plagioclase	<1	<1	1–2		Broken prisms.	Corroded rims and cores - xenocrysts?
Plagioclase	2	2	0.5–2	An_{80}	Euhedral elongate prisms.	
Olivine	0	5	0.2–2		Euhedral (large grains) to anhedral.	Altered to iddingsite and minor calcite.
GROUNDMASS						
Plagioclase	40	60	0.2–0.5	An_{60}	Laths and interstitial.	Probably includes some alkali feldspar.
Clinopyroxene	10	10	0.01–0.05		Anhedral granular.	
Ilmenite	8	10	0.02–0.05		Subhedral bladed.	
Magnetite	5	5	0.02–0.03		Subhedral cubes.	
Mesostasis	15	-	<0.1		Interstitial.	Fine mixture of clinopyroxene, opaque minerals, brown clay.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	2–3	0.5–2		See comment	Round	Light brown isotropic zeolite rims, calcite centers.

144-878A-97R-1 (Piece 7, 28–31 cm) OBSERVER: DMC WHERE SAMPLED: Upper Unit 34, flow-top breccia not recovered.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Very fine-grained.
TEXTURE: Pilotaxitic, intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	1	5	0.1–1		Subhedral diamonds.	Part fresh, altered to green/brown clay.
Olivine	1	1	0.1		Hollow diamonds.	Fresh microphenocrysts, abundance varies across section.
Biotite	1	1	0.01–0.1		Platy.	Pleochroic red-brown to colorless.
Plagioclase	<1	<1	0.5		Broken prisms.	Xenocrysts?
Plagioclase	10–15	10–15	0.2–1	An_{60}	Large laths	Flow oriented, abundance varies across section.
GROUNDMASS						
Plagioclase	60	60	0.05–0.3	An_{60}	Laths and interstitial.	Flow orientation weak to strong in different parts of section. May include some alkali feldspar.
Clinopyroxene	15	15	<0.05		Anhedral granular.	
Ilmenite	15	15	0.01–0.02		Subhedal prisms.	
Brown clay	10	-	<0.05		Interstitial.	Replaces original mesostasis.

COMMENTS: Strong color banding parallel to flow banding in matrix reflecting changes in grain size and opaque mineral content. Above figures are for a fine, dark band. Some are a little finer. Lighter bands are coarser with less magnetite (10%; 0.02–0.05 mm), more clinopyroxene (20%; 0.05 mm) and comparable plagioclase content (60%; 0.3–0.5 mm).

144-878A-97R-2 (Piece 12, 123–125 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 34.
ROCK NAME: Alkali Basalt
GRAIN SIZE: Very fine-grained.
TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	<1	1	0.5		Anhedral, rounded.	Xenocrysts.
Plagioclase	1	1	0.5		Anhedral, rounded.	Xenocrysts.
Clinopyroxene	1	1	0.5		Anhedral, rounded.	Xenocrysts.
Olivine	1	1	0.1–1		Hollow diamonds.	Fresh microphenocrysts.
Plagioclase	10–15	10–15	0.2–1		Large laths.	Randomly oriented. Abundance varies within section.
GROUNDMASS						
Plagioclase	60	60	0.05–0.3		Laths and interstitial.	
Clinopyroxene	15	15	<0.05		Anhedral granular.	
Ilmenite	15	15	0.01–0.02		Subhedral prisms.	
Brown clay	10	-	<0.05		Interstitial.	Replaces original mesostasis.

COMMENTS: Very similar to Sample 144-878A-97R-1, 28-31 cm, but lacks flow orientation. Similar color variations occur, but in this case they affect irregular domains of about 1 cm size.

144-878A-98R-3 (Piece 2, 46–48 cm) OBSERVER: DMC WHERE SAMPLED: Mid-flow, Unit 35.
ROCK NAME: Alkali Olivine Basalt
GRAIN SIZE: Microcrystalline.
TEXTURE: Intergranular, microporphyritic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	3	3	0.1–1		Anhedral, rounded.	Fresh with green/brown clay on fractures.
Clinopyroxene	<1	<1	<0.5		Anhedral.	
Plagioclase	10	10	0.5		Laths.	
GROUNDMASS						
Plagioclase	50	50	0.05–0.1		Clusters of subhedral prisms.	
Ilmenite	10	10	<0.01–0.03		Anhedral grains to subhedral prisms.	
Olivine	5	20	0.05–0.3		Anhedral.	Some fresh, altered to green/brown clay.
Green clay	5		<0.1		Interstitial.	Replacing original mesostasis?