

144-872A-18X-1 (Piece 4, 26–28 cm)

OBSERVER: JJD

WHERE SAMPLED: Unit 1.

ROCK NAME: Alkali Olivine Basalt

GRAIN SIZE: Fine-grained.

TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	8	<0.25		Euhedral.	Pseudomorphed with iddingsite rims and green clay centers.
Plagioclase	10	56	<0.2		Laths.	Most pseudomorphed by clay.
Ilmenite	Tr	Tr	<0.1		Needles.	Most altered to hematite.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Calcite	<1					To 5 mm patches covering groundmass.
Green Clay	10					<0.3 mm patches covering groundmass.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	10	Random	0.5–4	Brown clay, zeolites, calcite	Irregular	Often rimmed with brown clay.

COMMENTS: Extensively altered unit.

144-872B-4R-1 (Piece 7, 30–32 cm)

OBSERVER: JJD

WHERE SAMPLED: Unit 5.

ROCK NAME: Alkali Olivine Basalt

GRAIN SIZE: Fine-grained.

TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	10	0.025–0.5		Euhedral to subhedral.	Iddingsitized with some clay centers.
Plagioclase	10	60	<0.1		Laths.	Most are pseudomorphed by brown speckled clays; some are completely obscured.
Titanomagnetite	0	15	0.025–0.5		Euhedral.	Altered to hematite.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Brown clay	30					<0.5 mm patches replacing groundmass. Larger patches have equant calcite crystals in the center. Some of these may have been vesicles.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	
None						

COMMENTS: Extensively altered unit. Very similar to Hole 872A, Unit 1.

SITE 872

144-872B-5R-1 (Piece 6, 45-47 cm)

OBSERVER: JJD

WHERE SAMPLED: Unit 6.

ROCK NAME: Hawaiite

GRAIN SIZE: Fine-grained.

TEXTURE: Pilotaxitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	7	7	0.5-2	An ₃₅₋₄₅	Laths.	Twinned; Only slightly altered along the edges.
Clinopyroxene	<1	<1	0.1-1	Ti-Augite	Anhedral.	Fresh.
GROUNDMASS						
Plagioclase	32	40	<0.5		Laths.	Some replaced by patches of brown clays.
Titanomagnetite	20	20	0.01-0.001		Euhedral.	Fresh. A few are chadacrystic in plagioclase.
Glass	0	20				Altered to brown clays.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Brown Clay	38					0.2-1 mm patches covering mesostasis and groundmass minerals.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
None					

COMMENTS: Not too altered. Plagioclase may be promising for dating.

144-872B-5R-3 (Piece 10, 104-108 cm)

OBSERVER: JJD

WHERE SAMPLED: Unit 9B.

ROCK NAME: Hawaiite

GRAIN SIZE: Fine-grained.

TEXTURE: Intergranular.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Clinopyroxene	7	7	0.5-0.2	Ti-augite	Subhedral.	Prisms impinged on by plagioclase laths.
Plagioclase	45	80	<0.5	An ₃₀₋₄₀	Laths.	Many have been obscured by clays.
Ilmenite	3	3	<0.3		Needles.	
Titanomagnetite	Tr	Tr	<0.3		Anhedral.	Intersertal between plagioclase.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Green and Brown Clay	35					<2 mm patches in the groundmass, replacing plagioclase laths and mesostasis.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	2	Random	0.25-1	Green and brown clays	Subround

COMMENTS: None.

144-872B-6R-1 (Piece 5, 40–45 cm)
 ROCK NAME: Alkali Olivine Basalt
 GRAIN SIZE: Fine-grained.
 TEXTURE: Intergranular.

OBSERVER: JJD

WHERE SAMPLED: Unit 10B.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	3	0.2–1		Subhedral.	Pseudomorphed with iddingsite rims and green clay centers.
Plagioclase	0	2	0.5–2		Laths.	Pseudomorphed by clay.
GROUNDMASS						
Mafic	0	2	0.01–0.04	Unknown	Anhedral.	Pseudomorphed by red clay.
Plagioclase	0	29	<0.3		Laths.	Pseudomorphed to clay.
Titanomagnetite	8	8	<0.05		Euhedral.	Fresh.
Ilmenite	1	1	<0.1		Needles.	Fresh.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Brown clay	10					Replacing mesostasis.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	45	Random	0.5–7	Well-developed chabazite by x-ray diffraction	Irregular	Some are filled or rimmed with clays.

COMMENTS: None.

144-872B-6R-1 (Piece 8, 75–80 cm)
 ROCK NAME: Mugearite
 GRAIN SIZE: Fine-grained.
 TEXTURE: Pilotaxitic.

OBSERVER: JJD

WHERE SAMPLED: Unit 11.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	Tr	Tr	>0.5	An ₂₅₋₃₅	Laths.	Fresh.
GROUNDMASS						
Olivine	0	3	0.1–0.4		Euhedral.	Pseudomorphed by green clays.
Clinopyroxene	4	4	<0.05	Ti-augite	Subhedral.	Fresh.
Ilmenite	4	4	0.1–0.25		Needles.	
Titanomagnetite	6	6	<0.2		Subhedral.	
Plagioclase	65	55	<0.2		Laths.	Most are fresh.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Green Phyllosilicates	10					Small patches replacing groundmass. May be chlorite.
Brown Clay	15					Small patches replacing groundmass.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
None						

COMMENTS: Sample contains trace biotite, hornblende, and potassium feldspar. Very evolved lava.

SITE 872

144-872B-7R-1 (Piece 2, 34-35 cm)
 ROCK NAME: Alkali Olivine Basalt
 GRAIN SIZE: Fine-grained.
 TEXTURE: Pilotaxitic.

OBSERVER: JJD

WHERE SAMPLED: Unit 13.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	1	0.2-1		Euhedral.	Iddingsitized rims and green, fibrous clay centers.
Clinopyroxene	2	2	0.3-1.5	Ti-augite	Round.	Fresh. Skeletal rims.
Plagioclase	Tr	1	0.5-4		Laths.	Most are pseudomorphed to clays.
GROUNDMASS						
Olivine	0	15	<0.2		Euhedral-subhedral.	Iddingsite pseudomorphs.
Plagioclase	Tr	47	<0.5		Laths.	Pseudomorphed by brown, speckled clays.
Ilmenite	0	2	<0.15		Needles.	Altered to hematite.
Titanomagnetite	0	7	<0.1		Subhedral.	Altered to hematite.
VESICLES/CAVITIES						
Vesicles	25	Random	1-7		Irregular	Larger ones are filled with chabazite. Smaller ones are filled with brown clay.

COMMENTS: None of the texture has been lost during the clay development. Thin section has a 6 mm, medium-grained, gabbro xenolith.

144-872B-7R-4 (Piece 1, 69-70 cm)
 ROCK NAME: Alkali Olivine Basalt
 GRAIN SIZE: Fine-grained.
 TEXTURE: Pilotaxitic.

OBSERVER: JJD

WHERE SAMPLED: Unit 14B.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	1	0.2-1.5		Subhedral.	Iddingsite rims with green clay centers. Possibly xenocrysts.
Plagioclase	1.5	3	>0.5	An ₅₅₋₆₀	Laths.	Partially replaced by clay.
Clinopyroxene	1	1	<1	Diopside	Round.	Fresh. Xenocrysts.
GROUNDMASS						
Olivine	0	15	<0.1		Anhedral.	Iddingsitized; Some clay development.
Plagioclase	30	57	<0.2		Laths.	Partially replaced and obscured by calcite and clay.
Titanomagnetite	10	10	<0.1		Euhedral-subhedral.	Areas with 5%, 0.1 mm, subhedral and areas with 15%, 0.025 mm, euhedral.
Ilmenite	Tr	Tr	<0.1		Needles.	
Biotite	Tr	Tr	0.2		Euhedral.	Fresh.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Brown clay	8					Replaces groundmass in small patches.
Calcite	5					0.1-1.0 mm patches of fine-grained calcite.
VESICLES/CAVITIES						
None						

COMMENTS: Good for dating and microprobe work.

144-872B-7R-7 (Piece 9, 74–76 cm)
 ROCK NAME: Alkali Olivine Basalt
 GRAIN SIZE: Fine-grained.
 TEXTURE: Unknown.

OBSERVER: JJD

WHERE SAMPLED: Unit 15B.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	Tr	2	0.5–2		Laths.	Replaced by brown clay and clear zeolite.
Clinopyroxene	Tr	Tr	0.25–1	Diopside	Round.	Fresh. Probably xenocrysts.
GROUNDMASS						
Olivine	0	4	<0.5		Subhedral.	Pseudomorphed by iddingsite and green clay.
Plagioclase	Tr	55	<0.2		Laths.	Almost entirely replaced by brown, speckled clay.
Titanomagnetite	7	14	<0.05		Euhedral.	Half are replaced with hematite.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Brown clay	40					Obscuring groundmass.
VESICLES/ CAVITIES						
	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	25	Random	0.5–4	Chabazite	Irregular	Chabazite is very well-developed, large crystals.

COMMENTS: Sample is extensively altered; original texture is no longer discernable.

144-872B-8R-2 (Piece 3, 89–91 cm)
 ROCK NAME: Alkali Olivine Basalt
 GRAIN SIZE: Fine-grained.
 TEXTURE: Pilotaxitic.

OBSERVER: JJD

WHERE SAMPLED: Unit 16B

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Clinopyroxene	Tr	Tr	0.25–1	Unknown	Round.	Fresh. Probably xenocrysts.
Plagioclase	1	1	1		Euhedral.	Little clay replacement.
GROUNDMASS						
Mafic	0	15	<0.5		Amorphous.	Previous groundmass mafic mineral gone to orange clays.
Plagioclase	10	55	<0.2		Laths.	Largely altered to clay.
Titanomagnetite	20	25	<0.05		Euhedral.	Some have been destroyed by the development of clay patches.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Brown and Green Clay	35					<1 mm patches replacing groundmass.
VESICLES/ CAVITIES						
	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	
None						

COMMENTS: None.

SITE 872

144-872B-9R-2 (Piece 4, 92-94 cm)
 ROCK NAME: Hawaiite
 GRAIN SIZE: Fine-grained.
 TEXTURE: Trachytic.

OBSERVER: JJD

WHERE SAMPLED: Unit 17B.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	Tr	Tr	1-4		Laths.	Clay replacement on edges and along fractures.
GROUNDMASS						
Mafic	0	8	<0.05	Unknown	Amorphous.	Reddish-brown clay blotches, probably replacing a mafic phase.
Plagioclase	45	74	<1	An ₂₈₋₅₀	Laths.	Partially replaced by speckled brown clay.
Clinopyroxene	Tr	Tr	<0.1		Anhedral.	Fresh.
Ilmenite	Tr	3	<0.1		Needles.	Mostly altered to hematite.
Titanomagnetite	Tr	10	<0.1		Subhedral.	Mostly altered to hematite.
SECONDARY MINERALOGY						
Brown clay	5	REPLACING/ FILLING				COMMENTS Replacing groundmass in small (<0.5 mm) patches.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
None					

COMMENTS: May be more evolved than a hawaiite. Only sample for Site 872 with trachytic texture.

144-872B-9R-5 (Piece 1, 131-133 cm)
 ROCK NAME: Olivine-Phyric Hawaiite
 GRAIN SIZE: Fine-grained.
 TEXTURE: Intergranular.

OBSERVER: JJD

WHERE SAMPLED: Unit 18B.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	17	0.5-5		Subhedral.	Pseudomorphed to a fibrous mineral with high 1st order birefringence. Xenocrysts?
Clinopyroxene	3	3	0.5-5		Anhedral.	Fresh. Xenocrysts?
GROUNDMASS						
Clinopyroxene	4	4	0.1-0.5		Round.	Fresh. Often cracked.
Plagioclase	Tr	40	<0.5	An ₃₀₋₃₅	Laths.	Pseudomorphed almost entirely to clay.
Ilmenite	4	4	0.01-0.1		Needles.	Mostly fresh.
Titanomagnetite	Tr	1	0.05-0.1		Anhedral.	Mostly altered to hematite.
SECONDARY MINERALOGY						
Brown clay	11	REPLACING/ FILLING				COMMENTS Small patches in the matrix and pseudomorphing mafic minerals.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	20	Random	0.5-6	Clay minerals	Subround

COMMENTS: Given the groundmass assemblage, it is probable that the large olivines and clinopyroxenes are xenocrysts.

144-872C-18X-2 (Piece 2, 26–28 cm)

OBSERVER: JJD

WHERE SAMPLED: Unit 1.

ROCK NAME: Alkali Olivine Basalt

GRAIN SIZE: Fine-grained.

TEXTURE: Subophitic.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	15	<1		Euhedral.	Iddingsitized, often with green clay centers. Quasi-poikilitic around plagioclases.
GROUNDMASS						
Clinopyroxene	5	5	0.05–0.1	Ti-augite	Subhedral.	Fresh. Prisms impinged on by plagioclase.
Plagioclase	50	70	<0.5	Unknown	Laths.	Some altered to clay minerals. Difficult to get an An # on.
Ilmenite	3	4	<0.15		Needles.	Some altered to hematite.
Titanomagnetite	Tr	1	<0.1		Anhedral.	Altered to hematite.
VESICLES/CAVITIES						
Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	5	Random	<1			Irregular. Empty or plucked.

COMMENTS: One 2 mm plagioclase replaced by a clear zeolite. One 2 mm disaggregated mafic (clinopyroxene?) grain.