

V. THIN-SECTION DESCRIPTIONS

Thin-section descriptions written during Leg 49 were encoded for computer processing. An output format was devised to improve the readability of the listing.

Phenocryst, groundmass, alteration and vesicle data are listed in tabular form, with the exception of comments, which are written free-field. It was not practical to print headings for the different categories of information belonging to each sample. As a guide, headings are supplied for a sample taken from the listing.

410-39- 3, 108-110 ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 7
 TEXTURE: VARIOLITIC, SUBOPHITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN

	%	SIZE RANGE	MORPHOLOGY
		(IN MM)	
PHENOCRYSTS:	OLIVINE		QUENCHED
	COMMENT:	ALTERED	
	PLAG		ELONGATE
	COMMENT:	APPROX COMP AN55-70, GLOMEROPORPHYRITIC	
GROUNDMASS:	OLIVINE	<5 0.01-0.5	QUENCHED
	PLAG	45 0.01-0.5	MICROLITES, QUENCHED
	CLINO	35 0.01-0.5	QUENCHED, ELONGATE
	OP.MINS	2	
	COMMENT:	INCLUDES ILMENITE+MAGNETITE, RESTRICTED TO GLASS	
	GLASS	5	
	COMMENT:	CLOUDY, BROWN, ALTERED	

	%	LOCATION	REPLACING
ALTERATION:	SMECTITE		GLASS
	CARB	5	PHENOS
	IDDINGS		OLIVINE

	SIZE RANGE	%	LOCATION	FILLING	SHAPE
VESICLES:	<.5	10-15		CARB	

The Leg 49 thin section file can be searched for specific key words or mineral abundances. Eventually, all DSDP shipboard thin section data will be encoded and processed for computer retrieval. Inquiries should be addressed to Donna Hawkins.

407-31- 6, ROCK TYPE: PLAG-CLINOPYX PHYRIC BASALT
 TEXTURE: PORPHYRITIC
 PHENOCRYSTS: OLIVINE 0.3
 COMMENT: IDENTITY UNCERTAIN
 PLAG 1 0.1-0.4
 COMMENT: APPROX COMP AN30, GLOMEROPORPHYRITIC
 CLINOPYX 3 0.1-0.5
 COMMENT: GLOMEROPORPHYRITIC

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GROUNDMASS: GLASS 89.7
COMMENT: GROUNDMASS BLACK AND GLASSY, NO MINERAL CAN BE RECOGNIZED

407-31-CC, ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
TEXTURE: PORPHYRITIC

PHENOCRYSTS: OLIVINE 1
COMMENT: ALTERED
PLAG 5 0.2-0.4 VERY ELONGATED
COMMENT: APPROX COMP AN74-50, ZONED AND SOMEWHAT ALTERED TO SMECTITE
CLINOPYX 4
COMMENT: ZONED AND FREQUENTLY CORRODED, COLORLESS TO SLIGHTLY YELLOW

GROUNDMASS: COMBINE 90
COMMENT: INCLUDES PLAG+CLINOPYX+MAGNETITE+ILMENITE+GLASS, GLASS FRESH IN MANY PLACES AND BROWN

407-32-CC, ROCK TYPE: PLAG-CLINOPYX MICROPHYRIC BASALT
TEXTURE: MICROPHYRIC, APHANITIC GROUNDMASS

PHENOCRYSTS: OLIVINE TR 0.2 SUBHEDRAL
COMMENT: ALTERED
PLAG 5 0.1-0.3 EUHEDRAL
COMMENT: APPROX COMP AN50-42, ZONED-SOME GLOMEROPORPHYRITIC ACCUMULATIONS
CLINOPYX 2-3 0.1-0.2 EUHEDRAL TO SUBHEDRAL
COMMENT: SOME GLOMEROPORPHYRITIC ACCUMULATIONS

GROUNDMASS: GLASS 90
COMMENT: DEVITRIFIED
OP.MINS 1
COMMENT: MAGNETITE ?

407-33-CC, ROCK TYPE: PLAG-OLIVINE MICROPHYRIC BASALT
PIECE NO: 1
TEXTURE: HYPOCRYSTALLINE, MICROPHYRIC

PHENOCRYSTS: OLIVINE 4.4 0.1
COMMENT: COMPLETELY ALTERED AND IDdingsitized
PLAG 6.8 0.3
COMMENT: APPROX COMP AN68-55, ZONED
CLINOPYX 0.4

GROUNDMASS: COMBINE 88.4
COMMENT: INCLUDES OLIVINE+PLAG+CLINOPYX+MAGNETITE+ILMENITE+GLASS, GROUNDMASS IS VERY THIN, BLACK AND PARTLY CRYSTALLINE AND PARTLY GLASSY, RARE OPAQUES

ALTERATION: SMECTITE OLIVINE

407-34-CC, ROCK TYPE: PLAG MODERATELY MICROPHYRIC BASALT
PIECE NO: 1
TEXTURE: HOLOCRYSTALLINE, MICROPHYRIC

PHENOCRYSTS: PLAG 7
COMMENT: FRESH

GROUNDMASS: PLAG >90
COMMENT: ALTERED

ALTERATION: SMECTITE GLASS
COMMENT: PIECE 1

407-34-CC, ROCK TYPE: APHYRIC BASALT
PIECE NO: 3
TEXTURE: SUBOPHITIC TO INTERSERTAL, APHYRIC

GROUNDMASS: OLIVINE 1.1
COMMENT: COMPLETELY ALTERED
PLAG 32.0 0.2
CLINOPYX 21.1 0.1

COMMENT: ALMOST COMPLETELY ALTERED
 MAGN 6.2 0.05
 ILMENITE 1.2 0.05
 GLASS 38.0
 PYRITE 0.4
 ALTERATION: SMECTITE OLIVINE, CLINOPYX
 COMMENT: OLIVINES REPLACED BY SMECTITE, PCE 3
 VESICLES: <0.3 PYRITE
 COMMENT: AMYGDULES PRESENT, PIECE 3

407-35- 1, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4B
 TEXTURE: SUBOPHITIC-HYALO-OPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1 SUBHEDRAL
 COMMENT: 1 OR 2 MICROPHENOS PRESENT
 GROUNDMASS: OLIVINE 3.0 0.02
 COMMENT: ALTERED TO SMECTITES
 PLAG 33.0 0.02-0.2 ELONGATED
 COMMENT: APPROX COMP AN70, NORMAL ZONING, ALBITE TWINNING
 CLINOPYX 26.0
 MAGN 4.0
 ILMENITE 0.8
 GLASS 32.6
 COMMENT: ALTERED TO SMECTITE
 PYRITE 0.6 0.05
 ALTERATION: SMECTITE OLIVINE, GLASS

407-36- 1, ROCK TYPE: PLAG MODERATELY MICROPHYRIC BASALT
 COMMENT: HIGHLY ALTERED
 PIECE NO: 1
 TEXTURE: MODERATELY MICROPHYRIC
 PHENOCRYSTS: PLAG 5 0.1-0.3 PRISMATIC
 GROUNDMASS: OP.MINS 1 <0.1
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GROUNDMASS
 VESICLES: SMECTITE
 COMMENT: LINES VESICLE WALLS

407-36- 1, ROCK TYPE: PLAG-OLIVINE MODERATELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 1
 TEXTURE: MODERATELY MICROPHYRIC
 PHENOCRYSTS: OLIVINE
 COMMENT: ALTERED TO SMECTITE
 PLAG
 COMMENT: APPROX COMP AN70-58, NORMALLY ZONED
 GROUNDMASS: PLAG NEEDLE-LIKE
 GLASS <50
 COMMENT: ALTERED
 OP.MINS RARE
 PYRITE
 COMMENT: ALTERATION FORMED FROM IRON IN GLASS
 ALTERATION: SMECTITE OLIVINE, GLASS
 PYRITE GLASS
 VESICLES: CALCITE

407-36- 2, ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 2A
 TEXTURE: OPHITIC, GLOMEROPORPHYRITIC, SPARSELY
 MICROPHYRIC
 PHENOCRYSTS: PLAG TR 1.0-2.0 PRISMATIC
 COMMENT: GLOMEROPORPHYRITIC

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GROUNDMASS: PLAG 45 0.1-0.5 PRISMATIC
 CLINOPYX 40.0 0.1-0.7
 COMMENT: SHOWS ZONING
 OP.MINS 1 0.05 EQUANT
 ALTERATION: SMECTITE 10

407-36- 2, ROCK TYPE: PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 2A
 TEXTURE: SUBOPHITIC, SPARSELY PORPHYRITIC
 PHENOCRYSTS: PLAG RARE
 COMMENT: APPROX COMP AN73
 GROUNDMASS: OLIVINE
 COMMENT: COMPLETELY ALTERED
 PLAG
 COMMENT: ALTERED ALONG FRACTURES
 CLINOPYX
 COMMENT: ALTERED ALONG FRACTURES, SHOWS ZONING
 MAGN
 ILMENITE
 GLASS
 COMMENT: COMPLETELY ALTERED
 CALCITE
 COMMENT: FILLS FRACTURES
 ALTERATION: SMECTITE OLIVINE, GLASS

407-36- 3, ROCK TYPE: PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 1C
 TEXTURE: SUBOPHITIC, SPARSELY PORPHYRITIC
 PHENOCRYSTS: PLAG RARE 1-2
 COMMENT: APPROX COMP AN72, ZONED
 GROUNDMASS: OLIVINE
 COMMENT: ALTERED
 PLAG
 COMMENT: APPROX COMP AN50-40
 CLINOPYX
 GLASS
 COMMENT: PARTLY RECRYSTALLIZED IN PYX AND OPAQUES-ALTERED
 OP.MINS
 ALTERATION: SMECTITE OLIVINE, GLASS
 VESICLES: SMECTITE

407-37- 1, ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 10B
 TEXTURE: SUBOPHITIC, SPARSELY PORPHYRITIC
 PHENOCRYSTS: OLIVINE 1 0.2-0.5 EUHEDRAL
 COMMENT: COMPLETELY ALTERED
 PLAG <1 0.5-1.0 EUHEDRAL PRISMS
 COMMENT: APPROX COMP AN76-66, ALBITE TWINNING
 GROUNDMASS: OLIVINE 10
 COMMENT: RICH IN OLIVINE BEFORE ALTERATION
 PLAG 35
 CLINOPYX 25 0.05-0.2 ANHEDRAL, PLUMOSE
 OP.MINS 1-2
 ALTERATION: SMECTITE 30 OLIVINE, GLASS

407-37- 1, ROCK TYPE: PLAG-OLIVINE SPARSELY PHYRIC BASALT
 TEXTURE: SUBOPHITIC, SPARSELY PORPHYRITIC
 PIECE NO: 9
 PHENOCRYSTS: OLIVINE 0.5 0.5-1.0
 COMMENT: ALTERED
 PLAG 0.7 0.5-1.0
 COMMENT: APPROX COMP AN64-25

GROUNDMASS: OLIVINE 2.0
 COMMENT: ALTERED
 PLAG 39.1
 CLINOPYX 24.0
 MAGN 2.1
 ILMENITE 0.5
 GLASS
 COMMENT: COMPLETELY ALTERED
 PYRITE 0.5
 ALTERATION: SMECTITE OLIVINE, GLASS
 VESICLES: CALCITE

407-37- 2, ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 8A
 TEXTURE: SUBOPHITIC, RATHER COARSE-GRAINED, SPARSELY PORPHYRITIC
 PHENOCRYSTS: OLIVINE TR 0.3
 PLAG TR 1.0
 COMMENT: APPROX COMP AN72-60, NORMALLY ZONED
 GROUNDMASS: OLIVINE TR
 COMMENT: ALTERED
 PLAG 50
 CLINOPYX 40
 OP.MINS 3-5
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 GLASS 5
 COMMENT: PARTLY RECRYSTALLIZED INTO CPX AND OPAQUES

407-38- 1, ROCK TYPE: PLAG-OLIVINE MODERATELY PHYRIC BASALT
 PIECE NO: 7
 TEXTURE: SUBOPHITIC, MODERATELY PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 1 <1.0 EQUANT
 COMMENT: COMPLETELY ALTERED
 PLAG 2-3 2.0 SUBHEDRAL
 COMMENT: APPROX COMP AN80-70, NORMALLY ZONED AND ALBITE TWINNING
 GROUNDMASS: OLIVINE <5 SUBHEDRAL-INTERSERTAL TO PLAG GRAINS
 COMMENT: ALTERED
 PLAG 45 EQUANT LATHS, PARTIALLY RESORBED MARGINS
 COMMENT: APPROX COMP AN60-50
 CLINOPYX 35 SUBOPHITIC
 COMMENT: 1% ALTERED CLINOPYX MICROPHENOS
 OP.MINS 7-10 SKELETAL AND BARBED
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 GLASS 10
 COMMENT: DEVITRIFIED AND RECRYSTALLIZED WITH SMALL FIBROUS CRYSTALS
 HEMATITE 5-10
 COMMENT: SECONDARY, VEIN FILLINGS, HYDROTHERMAL ?
 ALTERATION: CHLORITE >10 CENTER VEIN OLIVINE, GLASS
 VESICLES: <5 FIBROUS. CHLOR
 COMMENT: AMYGDULES

407-38- 2, ROCK TYPE: PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 17 (OR 7?)
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, SPARSELY PORPHYRITIC
 PHENOCRYSTS: PLAG 1 EQUANT, RESORBED
 COMMENT: APPROX COMP AN70, GRAINS IN SMALL CLUSTERS AND ZONED

THIN-SECTION DESCRIPTIONS

GROUNDMASS: OLIVINE 5 EQUANT
 PLAG 40 LATHS
 COMMENT: APPROX COMP AN50
 CLINOPYX 35 SUBOPHITIC
 MAGN 7-10 ANHEDRAL, INTERSERTAL, SOME
 BARBED AND INTERGROWN
 GLASS 5
 COMMENT: RECRYSTALLIZED AND CLOUDY DUE TO HYDROTHERMAL
 ALTERATION, SOME GREEN CHLORITE PATCHES
 ALTERATION: CHLORITE >10 GLASS
 COMMENT: ALTERATION PATCHES OF CHLORITE
 VESICLES: GRANULAR CHLOR
 COMMENT: THIN LINING OF VESICLE WALL
 407-38- 3, 88- 90 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 8
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5 EQUANT
 PLAG 40 LATHS
 CLINOPYX 35 ANHEDRAL, SUBOPHITIC
 OP.MINS 7-10 ANHEDRAL - SOME ELONGATE AND
 BARBED
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 GLASS <10
 COMMENT: RECRYSTALLIZED AND CLOUDY
 ALTERATION: CHLORITE 5 GLASS
 COMMENT: ALTERATION TO CHLORITE-MOSTLY IN VESICLES
 VESICLES: <5 CHLORITIC
 MATERIAL
 407-38- 3, 88- 90 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 8
 TEXTURE: SUBOPHITIC, APHYRIC
 PHENOCRYSTS: PLAG TR 0.8 SUBHEDRAL
 GROUNDMASS: PLAG 30 SUBHEDRAL
 CLINOPYX
 OP.MINS 10
 OTHER 25
 COMMENT: GROUNDMASS ?(GLASS?)
 VESICLES: 0.4-0.6 PLAG, CLINOPYX
 COMMENT: VESICLES FILLED WITH MATERIAL LIKE GROUNDMASS
 407-39- 1, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4
 TEXTURE: SUBOPHITIC, SUBVARIOLITIC, FINE-GRAINED, APHYRIC
 PHENOCRYSTS: OLIVINE <1
 COMMENT: 1-5% MICROPHENOS EXISTED BEFORE ALTERATION
 GROUNDMASS: PLAG 30 PRISMATIC
 COMMENT: APPROX COMP AN55
 CLINOPYX 40 0.05-0.1 ANHEDRAL
 COMMENT: LATE PYX'S ARE FE-TI RICH IN THE GLASS
 GLASS 20-25
 OP.MINS 1-2
 ALTERATION: CHLORITE 5 GROUNDMASS
 COMMENT: ALTERATION TO CHLORITE AND LATE FIBROUS ? HIGHLY
 BIREFRINGENT MINERAL
 VESICLES: CHLOR
 COMMENT: LINES VESICLE WALLS
 407-39- 2, 64- 68 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 6
 TEXTURE: SUBOPHITIC, APHYRIC

GROUNDMASS: PLAG 40 SUBHEDRAL
 COMMENT: APPROX COMP AN60-54
 CLINOPYX 35 ANHEDRAL
 OTHER 20
 COMMENT: GROUNDMASS ?(GLASS ?)
 OP.MINS 10
 COMMENT: INCLUDES MAGNETITE+SULFIDE (?)
 VESICLES: 3-5 SMEC,CLAY.MINS
 COMMENT: LINE VESICLE WALLS

407-39- 3, 47- 51 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4
 TEXTURE: SUBOPHITIC,RARE PLAG PHENOS,RELATIVELY
 COARSE GRAINED,APHYRIC
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: MICROPHENOS
 PLAG TR 1.0-2.0 SUBHEDRAL
 COMMENT: APPROX COMP AN72-68
 GROUNDMASS: PLAG 45 SUBHEDRAL
 CLINOPYX 30 ANHEDRAL
 OP.MINS 5
 COMMENT: INCLUDES MAGNETITE+ILMENITE AS GRAINS AND DUST
 OTHER 25
 COMMENT: GROUNDMASS (ALTERED GLASS ?)
 ALTERATION: SMECTITE GLASS
 CHLORITE GLASS
 COMMENT: LATER
 VESICLES: 0.3-0.5 TITANAUGITE
 + ILMENITE
 "GROUNDMASS"
 MATERIAL

407-40- 1, 20- 26 ROCK TYPE: OLIVINE-PLAG MODERATELY MICROPHYRIC BASALT
 PIECE NO: 3
 TEXTURE: MODERATELY MICROPHYRIC,HYALOPILITIC GROUNDMASS
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 5 0.1-0.2 SUBHEDRAL
 COMMENT: VERY ALTERED
 PLAG TR 0.2-0.6 SUBHEDRAL
 COMMENT: APPROX COMP AN52
 CLINOPYX 3 SLIGHTLY RESORBED
 GROUNDMASS: PLAG 25 0.1-0.2 SUBHEDRAL
 CLINOPYX 15 0.1-0.2 SUBHEDRAL
 ILMENITE
 COMMENT: DUST
 OTHER 55
 COMMENT: GROUNDMASS (GLASS ?)
 ALTERATION: SMECTITE OLIVINE

407-40- 1, 28- 34 ROCK TYPE: BASALT BRECCIA
 PIECE NO: 4
 TEXTURE: GLASSY,MODERATELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 3 0.1-0.2
 PLAG 2 0.01-0.1 ELONGATE
 COMMENT: APPROX COMP AN54
 CLINOPYX 2 0.1-0.2
 GROUNDMASS: GLASS 93
 COMMENT: CLEAR,BROWN
 ALTERATION: SMECTITE RIM BASALT FRAGS

407-40- 1, 59- 62 ROCK TYPE: APHYRIC BASALT
 TEXTURE: SUBVARIOLITIC,SUBOPHITIC,APHYRIC

THIN-SECTION DESCRIPTIONS

PIECE NO: 7
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX <1 RESORBED
 COMMENT: 1 GRAIN ONLY (INDICATES 2 GENERATIONS OF CLINO)
 GROUNDMASS: OLIVINE 5 0.1
 PLAG 20 0.1
 COMMENT: APPROX COMP AN54
 CLINOPYX 15 0.1
 GLASS 60
 OP.MINS
 ALTERATION: SMECTITE OLIVINE, GLASS
 COMMENT: SMECTITE SLIGHTLY ALTERED
 CHLOR OLIVINE, GLASS
 COMMENT: CHLORITE SLIGHTLY ALTERED

407-40- 1, 68- 74 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 9
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG TR 0.5 EUHEDRAL
 GROUNDMASS: PLAG 40 SUBHEDRAL
 CLINOPYX 30
 OTHER
 COMMENT: GROUNDMASS
 OP.MINS 5
 VESICLES: SMEC, CLAY.MINS,
 CHLOR

407-41- 1, 0- 5 ROCK TYPE: PLAG-CLINOPYX-OLIVINE MICROPHYRIC BASALT
 PIECE NO: 1
 TEXTURE: VITROPHYRIC, MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 2
 COMMENT: ALTERED EXCEPT IN GLASSY MARGIN
 PLAG 5 0.1-0.5
 CLINOPYX 3 0.1
 GROUNDMASS: GLASS
 COMMENT: MARGIN CLEAR BUT GLASS AWAY FROM MARGIN IS BLACK
 ALTERATION: CLAY.MIN GLASS

407-41- 1, 15- 20 ROCK TYPE: APHYRIC BASALT
 TEXTURE: SUBOPHITIC, INTERGRANULAR, APHYRIC
 PIECE NO: 3
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5
 COMMENT: COMPLETELY ALTERED
 PLAG 40
 COMMENT: APPROX COMP AN64-42, ALBITE TWINNING
 CLINOPYX 25
 COMMENT: TWO GENERATIONS OF CLINOPYX-LATER CLINOPYX BROWN
 AND FE-TI RICH
 MAGN 5 DENDRITIC
 GLASS 24
 COMMENT: COMPLETELY ALTERED
 ALTERATION: CHLORITE GLASS, OLIVINE

407-41- 1, 60- 66 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 8
 TEXTURE: SUBOPHITIC, INTERGRANULAR, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5
 COMMENT: COMPLETELY ALTERED

PLAG 40
 COMMENT: APPROX COMP AN64-50, ALBITE TWINNING
 CLINOPYX 25
 MAGN 5
 ILMENITE 1
 GLASS 24
 ALTERATION: CHLORITE OLIVINE

407-41- 1, 83- 91 ROCK TYPE: OLIVINE-CLINOPYX MICROPHYRIC BASALT
 PIECE NO: 11
 TEXTURE: MICROPHYRIC, HYALOCRYSTALLINE (GROUNDMASS)
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 5
 COMMENT: COMPLETELY ALTERED
 PLAG TR 1.0
 CLINOPYX 5
 GROUNDMASS: PLAG 15 0.1-0.5 ELONGATED
 COMMENT: APPROX COMP AN55-46
 OTHER
 COMMENT: GROUNDMASS PARTIALLY GLASS, PARTIALLY CRYSTALLINE
 ALTERATION: CHLORITE OLIVINE

407-41- 1, 97-101 ROCK TYPE: PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 PIECE NO: 12
 TEXTURE: MICROPHYRIC, INTERGRANULAR, INTERSERTAL
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-5
 COMMENT: APPROX COMP AN70-52, FRESH, NORMAL ZONING
 CLINOPYX 1-5
 COMMENT: FRESH AUGITE
 GROUNDMASS: PLAG 30 0.1-1.0
 CLINOPYX 40 0.1-1.0
 GLASS 20
 COMMENT: ALTERED
 ALTERATION: SMECTITE GLASS
 COMMENT: IDENTITY UNCERTAIN FOR GLASS AND SMECTITE

407-42- 1, 87- 89 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 11
 TEXTURE: INTERSERTAL, PARTLY GLASSY, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5
 COMMENT: ALTERED
 PLAG 40
 COMMENT: APPROX COMP AN62, ALBITE TWINNING
 CLINOPYX 25
 MAGN NEEDLE-LIKE
 ILMENITE NEEDLE-LIKE
 GLASS 25
 PYRITE
 COMMENT: FILLS CAVITIES AND CRACKS
 ALTERATION: SMECTITE GLASS
 CHLORITE OLIVINE

407-42- 2, 141-143 ROCK TYPE: PLAG-CLINOPYX-OLIVINE MICROPHYRIC BASALT
 PIECE NO: 18
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: MICROPHYRIC, GLOMEROPORPHYRITIC
 PHENOCRYSTS: OLIVINE <1 ANHEDRAL, SUBHEDRAL
 COMMENT: ALTERED
 PLAG 7 ANHEDRAL, SUBHEDRAL
 COMMENT: FRESH-ZONED

THIN-SECTION DESCRIPTIONS

	CLINOPYX	1-5	ANHEDRAL, SUBHEDRAL
	COMMENT:	FRESH-AUGITIC	
GROUNDMASS:	OLIVINE	30	
	PLAG	10	
	OP.MINS		
	COMMENT:	INCLUDES MAGNETITE+ILMENITE	
	GLASS	40	
	COMMENT:	ALTERED	
ALTERATION:	SMECTITE		PHENOCRYSTS, GROUNDMASS, GLASS SMECTITE
VESICLES:	<1	TR	

407-44- 1, 17- 19 ROCK TYPE: OLIVINE-PLAG MODERATELY PHYRIC BASALT
PIECE NO: 2
TEXTURE: SUBOPHITIC, INTERGRANULAR, PORPHYRITIC
WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS:	OLIVINE	5	0.4-1.0
	PLAG	5	0.4-1.0
	APPROX COMP	AN75-72*	
GROUNDMASS:	OLIVINE	15	
	COMMENT:	COMPLETELY ALTERED	
	PLAG	27	.01-.1
	CLINOPYX	20	.01-.1
	MAGN	4	
	ILMENITE	1	
	GLASS	35	
	COMMENT:	ALTERED	
ALTERATION:	SMECTITE		GLASS, OLIVINE
	CHLORITE		GLASS, OLIVINE

407-45- 1, ROCK TYPE: OLIVINE MODERATELY MICROPHYRIC BASALT
PIECE NO: 18
TEXTURE: INTERSERTAL, MODERATELY MICROPHYRIC
WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS:	OLIVINE	>5	
	COMMENT:	ALTERED	
GROUNDMASS:	OLIVINE	15	
	PLAG	25	
	CLINOPYX	15	
	MAGN	1	
	ILMENITE	4	
	GLASS	40	
	COMMENT:	ALTERED	
ALTERATION:	CARB		PHENOCRYSTS
	SMECTITE		PHENOCRYSTS, GROUNDMASS, GLASS
	CHLORITE		PHENOCRYSTS
VESICLES:	1	3	PYRITE

407-45- 2, ROCK TYPE: PILLOW MARGIN
PIECE NO: 13, 15
WHERE SAMPLED: NEXT TO GLASSY MARGIN
TEXTURE: VITROPHYRIC

PHENOCRYSTS:	OLIVINE	<1	
	COMMENT:	ALTERED	
	PLAG	1-5	
	COMMENT:	FRESH	
GROUNDMASS:	PLAG	5	0.1-1.0 LATHS-SOME SWALLOWTAIL AND A FEW HOLLOW HOPPER TYPES
	GLASS	90	
	COMMENT:	ALTERED, THE FRESHEST GLASS IS PALE BROWN AND FULL OF HYDRATION CRACKS, PALAGONTIZED	

ALTERATION:	CARB	GLASS
	COMMENT: PIECES 13,15	
	HEMATITE	PHENOS
	COMMENT: IDENTITY UNCERTAIN	
	IDDINGS	PHENOS
	COMMENT: IDENTITY UNCERTAIN	
	PALAG	GLASS
	FE.OX	GLASS
407-45- 2, 40- 42	ROCK TYPE: APHYRIC BASALT	
	COMMENT: ALTERED	
	PIECE NO: 6A	
	TEXTURE: INTERSERTAL, APHYRIC	
GROUNDMASS:	OLIVINE 7 .01-0.1	
	COMMENT: ALTERED	
	PLAG 25 .01-0.1	
	COMMENT: PARTLY ALTERED	
	CLINOPYX 17 .01-.1	
	MAGN 5 .01-.1	
	ILMENITE 1 .01-.1	
	GLASS 45	
ALTERATION:	CARB	GLASS, GROUNDMASS, OLIVINE
	CLAY.MIN	GROUNDMASS, GLASS
	TREMOL	OLIVINE, GROUNDMASS
	CHLORITE	OLIVINE, GROUNDMASS
407-45- 3,	ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT	
	PIECE NO: 11	
	TEXTURE: INTERSERTAL, SPARSELY MICROPHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
PHENOCRYSTS:	OLIVINE <5	
	COMMENT: ALTERED	
	PLAG <1	
	COMMENT: APPROX COMP AN76-62, PARTIALLY ALTERED, ZONED	
GROUNDMASS:	OLIVINE 15 .01-.1	
	CLINOPYX 15 .01-.1	
	PLAG 25 .01-.1	
	MAGN 4 .01-.1	
	ILMENITE 1 .01-.1	
	GLASS 40	
ALTERATION:	CARB	PHENOS
	SMECTITE	PHENOS, GLASS, GROUNDMASS
	PYRITE	GLASS
	CHLORITE	GLASS, PHENOS
407-45- 4, 53- 55	ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT	
	COMMENT: HIGHLY ALTERED	
	PIECE NO: 8A	
	TEXTURE: INTERSERTAL, SPARSELY MICROPHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
PHENOCRYSTS:	OLIVINE >5	
	COMMENT: ALTERED	
	PLAG <1	
	COMMENT: ALTERED	
GROUNDMASS:	OLIVINE 15 .01-.1	
	PLAG 25 .01-.1	
	CLINOPYX 5 .01-.1	
	GLASS 60	
VESICLES:		SMEC, CHLOR
407-46- 1, 63- 65	ROCK TYPE: APHYRIC BASALT	
	COMMENT: ALTERED	

THIN-SECTION DESCRIPTIONS

PIECE NO: 5
 TEXTURE: INTERSERTAL
 GROUNDMASS: OLIVINE 7 .01-.1
 PLAG 23 .01-.1
 CLINOPYX 15 .01-.1
 GLASS 45
 COMMENT: ALTERED
 ALTERATION: CARB GROUNDMASS, GLASS
 CLAY.MIN GROUNDMASS, GLASS
 CHLORITE GROUNDMASS, GLASS
 VESICLES: 1 2 SMEC, CHLOR, CARB
 COMMENT: SMEC ALONG WALL, CHLOR 2ND LAYER IN FROM WALL,
 CARB 3RD LAYER IN FROM WALL

407-46- 2, 59- 61 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1F
 TEXTURE: INTERSERTAL
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 7
 PLAG 33
 CLINOPYX 15
 GLASS 45
 COMMENT: ALTERED
 ALTERATION: CARB GROUNDMASS, GLASS
 CLAY.MIN GROUNDMASS, GLASS
 CHLORITE GROUNDMASS, GLASS
 VESICLES: 1 SMEC, CHLOR, CARB
 COMMENT: SMEC ALONG WALL, CHLOR 2ND LAYER IN FROM WALL,
 CARB 3RD LAYER IN FROM WALL

407-46- 3, 66- 68 ROCK TYPE: OLIVINE-PLAG-CLINOPYX MICROPHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 4A
 TEXTURE: APHANITIC-CRYPTOCRYSTALLINE, MICROPHYRIC
 PHENOCRYSTS: OLIVINE >5
 COMMENT: ALTERED
 PLAG >5
 COMMENT: PARTIALLY ALTERED
 CLINOPYX 1-5
 COMMENT: AUGITIC
 GROUNDMASS: OLIVINE 15
 PLAG 15
 CLINOPYX 5
 GLASS 65
 COMMENT: ALTERED
 ALTERATION: CARB PHENOS
 SMECTITE PHENOS, GLASS
 CHLORITE PHENOS
 FE.OX GLASS
 VESICLES: CARB

407-46- 4, 68- 72 ROCK TYPE: APHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 4
 TEXTURE: INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5
 PLAG 15
 CLINOPYX 5
 GLASS 80
 COMMENT: ALTERED

ALTERATION:	CARB	GROUNDMASS, GLASS, VEIN MINERALS
	SMECTITE	GROUNDMASS
	CHLORITE	GROUNDMASS, GLASS
VESICLES:	1 TR	CARB, PYR
	COMMENT: TRACE ONLY OF PYRITE	

407-47- 1, 44- 46	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 1C	
	TEXTURE: SUBOPHITIC, INTERSERTAL, COARSE-GRAINED, APHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
GROUNDMASS:	OLIVINE	
	COMMENT: ALTERED	
	PLAG 25	
	CLINOPYX 20	
	COMMENT: VERY FE-TI RICH(COLORED)	
	MAGN 5	
	ILMENITE 1	
	GLASS 37	
ALTERATION:	CARB	OLIVINE, GLASS
	CHLORITE	OLIVINE, GLASS

407-47- 1, 65- 68	ROCK TYPE: OLIVINE-PLAG-CLINOPYX PHYRIC BASALT	
	PIECE NO: 2	
	TEXTURE: SUBOPHITIC, PORPHYRITIC	
	WHERE SAMPLED: FLOW INTERIOR	
PHENOCRYSTS:	OLIVINE >5	
	COMMENT: ALTERED	
	PLAG >5	
	COMMENT: MOSTLY FRESH	
	CLINOPYX >5	
	COMMENT: AUGITIC	
GROUNDMASS:	OLIVINE 10 .1-1.0	
	PLAG 40 .1-1.0	
	COMMENT: APPROX COMP AN55-50, SLIGHT ZONING	
	CLINOPYX 25	
	OP.MINS 1	
	COMMENT: INCLUDES MAGNETITE+ILMENITE	
	GLASS 25	
ALTERATION:	CARB	GLASS, GROUNDMASS
	SMECTITE	GLASS, GROUNDMASS
	CHLORITE	VEIN MINERALS, GLASS, GROUNDMASS
VESICLES:	<.1 TR	CHLOR, CLAY.MINS
	COMMENT: IDENTITY UNCERTAIN FOR CHLORITE AND CLAY	

407-47- 1, 81- 83	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 3A	
	TEXTURE: SUBOPHITIC, COARSE-GRAINED, APHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
GROUNDMASS:	OLIVINE 20	
	PLAG 30	
	CLINOPYX 20	
	MAGN 3	
	ILMENITE 1	
	GLASS 27	
	COMMENT: ALTERED	
ALTERATION:	CARB	OLIVINE, GLASS
	SMECTITE	OLIVINE
	CHLORITE VEINS	GLASS, OLIVINE
	COMMENT: CHLORITE IN VEINS ALSO	

THIN-SECTION DESCRIPTIONS

407-47- 2, 10- 12 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1B
 TEXTURE: SUBOPHITIC, INTERSERTAL, COARSE-GRAINED, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 10 .01-.1
 PLAG 25 .01-.1
 CLINOPYX 20 .01-.1
 COMMENT: TWO GENERATIONS OF CLINOPYX
 MAGN 5 .01-.1
 ILMENITE 1 .01-.1
 GLASS 39
 ALTERATION: GROUNDMASS
 COMMENT: BROWN MATERIAL (IN VEINS ONLY)

407-47- 2, 86- 88 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 2
 TEXTURE: SUBOPHITIC, INTERSERTAL, COARSE GRAINED, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 10
 COMMENT: ALTERED
 PLAG 25
 CLINOPYX 20
 MAGN 5
 ILMENITE 1
 GLASS 39
 COMMENT: ALTERED
 ALTERATION: CARB OLIVINE
 CHLORITE OLIVINE

407-47- 3, 24- 26 ROCK TYPE: APHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 2
 TEXTURE: SUBOPHITIC, COARSE-GRAINED, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 14 .01-0.1
 COMMENT: COMPLETELY ALTERED
 PLAG 31 .01-0.1
 CLINOPYX 12 .01-0.1
 COMMENT: TWO GENERATIONS CPX, LATE PHASE FE-TI RICH
 MAGN 3
 ILMENITE 1
 GLASS
 ALTERATION: SMECTITE GROUNDMASS, GLASS

407-47- 4, 44- 45 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1E
 TEXTURE: SUBOPHITIC, INTERSERTAL, TRACHYTOID, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 7
 COMMENT: ALTERED
 PLAG 25
 COMMENT: APPROX COMP AN55 (NOT GOOD)
 CLINOPYX 18
 MAGN 2
 ILMENITE 1
 GLASS 47
 COMMENT: ALTERED
 ALTERATION: CARB OLIVINE
 CHLORITE OLIVINE, GLASS

408-34-CC, ROCK TYPE: HYALOCLASTITE
 TEXTURE: HYALOCLASTIC

PHENOCRYSTS: CLINOPYX <1
 PLAG 1-5
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 OLIVINE
 COMMENT: ALTERED
 PLAG
 CLINOPYX
 GLASS
 COMMENT: ALTERED

408-35- 1, 75- 80 ROCK TYPE: HYALOCLASTITE
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 4D
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 TEXTURE: HYALOCLASTIC
 PHENOCRYSTS: PLAG 1-5 SWALLOWTAIL LATHS OR HOLLOW
 HOPPER XTLS
 COMMENT: APPROX COMP AN48, ALTERED, A FEW MICROPHENOS
 GROUNDMASS: OLIVINE TR
 PLAG 20
 CLINOPYX 30
 OP.MINS 1-2
 COMMENT: ILMENITE+MAGNETITE
 ALTERATION: CARB OLIVINE
 COMMENT: IDENTITY UNCERTAIN FOR OLIVINE
 SMECTITE GROUNDMASS
 VESICLES: .5 5 SMECTITE

408-35- 1, 108-110 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 8
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED
 PLAG <1
 COMMENT: APPROX COMP AN66
 GROUNDMASS: OLIVINE 2
 PLAG 40
 CLINOPYX 20 SPHERULITES
 GLASS 2
 ALTERATION: CARB OLIVINE,
 GROUNDMASS
 GROUNDMASS
 VESICLES: SMECTITE 18
 .5 5 SMEC, CARB, HEMA
 COMMENT: SMECTITE ALONG THE WALL, CARBONATE 2ND LAYER IN,
 THIN RIM HEMA BETWEEN SMEC AND CARB AT TIMES

408-36- 1, 100-103 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 10B
 TEXTURE: SUBOPHITIC, INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-5
 COMMENT: FRESH
 GROUNDMASS: PLAG 50
 CLINOPYX 30
 OP.MINS 2
 COMMENT: INCLUDES ILMENITE+MAGNETITE

THIN-SECTION DESCRIPTIONS

ALTERATION:	CARB	5	GROUNDMASS
	SMECTITE	15	GROUNDMASS
VESICLES:	.75-1	2	SMEC, CARB
	COMMENT: SMEC NEXT TO WALL, CARB NEXT LAYER IN FROM WALL		

408-36- 2, 12- 14 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1B
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, INTERGRANULAR, SUBVARIOLITIC, APHYRIC

PHENOCRYSTS:	PLAG	<1	
	COMMENT: MICROPHENOS, A FEW GLOMEROPORPHYRITIC		
ALTERATION:	CARB		GROUNDMASS
	SMECTITE		GROUNDMASS
VESICLES:	.5-.75	5	SMEC, CARB
	COMMENT: SMEC ALONG WALL, CARB NEXT LAYER IN, NOT ALWAYS BOTH MINERALS IN SAME VESICLE		

408-36- 4, 37- 40 ROCK TYPE: APYRIC BASALT
 PIECE NO: 3C
 TEXTURE: SUBOPHITIC, APHYRIC

PHENOCRYSTS:	PLAG	<1	
	COMMENT: APPROX COMP AN80		
GROUNDMASS:	OLIVINE	TR	
	PLAG	40	
	CLINOPYX	20	
	OP.MINS	3	
	COMMENT: INCLUDES MAGNETITE+ILMENITE GLASS		
	COMMENT: ALTERED		
ALTERATION:	SMECTITE		GROUNDMASS
VESICLES:	.1-.5	20-30	SMEC, LIM, GOET

408-36- 5, 44- 47 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 4A
 TEXTURE: SUBOPHITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS:	PLAG		
	COMMENT: APPROX COMP AN68-58, MICROPHENOS		
GROUNDMASS:	OLIVINE	TR	
	PLAG	40	
	CLINOPYX	40	
	OP.MINS	1-3	
	COMMENT: INCLUDES ILMENITE+MAGNETITE GLASS		
	COMMENT: ALTERED		
ALTERATION:	CLAY.MIN		GLASS
	FE.HYDRX		GLASS
	SMECTITE		GROUNDMASS
	CALCITE	<1	GROUNDMASS
VESICLES:	.5-1.5	5	SMEC, ZEOL, CARB ROUND

408-37- 1, 140-141 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 15
 WHERE SAMPLED: FLOW AT CONTACT WITH SEDIMENT
 TEXTURE: VARIOLITIC, APHYRIC

PHENOCRYSTS:	PLAG		
	COMMENT: APPROX COMP AN48		
GROUNDMASS:	PLAG	30	
	CLINOPYX	10	
	GLASS	50-60	
	COMMENT: ALTERED, DARK BROWN MAGN		

	COMMENT: DUST IN GLASS	
ALTERATION:	SMECTITE	GLASS
VESICLES:	.1-1.5 5-10	
408-37- 2, 44- 46	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 7	
	TEXTURE: VARIOLITIC, APHYRIC	
	WHERE SAMPLED: CHILLED MARGIN	
GROUNDMASS:	GLASS	
	COMMENT: ALTERED	
ALTERATION:	SMECTITE	GLASS
VESICLES:	0.2-1.5 10-15	
408-37- 2, 70- 75	ROCK TYPE: APHYRIC BASALT	
	WHERE SAMPLED: CHILLED MARGIN	
	PIECE NO: 11	
	TEXTURE: APHYRIC	
GROUNDMASS:	GLASS	
ALTERATION:	SMECTITE	GLASS
VESICLES:	.1-1 20	SMEC, CALCITE
408-37- 2, 103-105	ROCK TYPE: PILLOW MARGIN	
	PIECE NO: 16	
	WHERE SAMPLED: GLASSY MARGIN	
	COMMENT: SECTION THROUGH GLASS TO SPHERULITIC ZONE TO	
	COMPLETELY DEVITRIFIED GLASS	
	TEXTURE: VARIOLITIC	
	COMMENT: FOR DEVITRIFIED GLASS ZONE	
408-37- 3, 35- 37	ROCK TYPE: APHYRIC BASALT	
	COMMENT: EXTENSIVELY ALTERED	
	PIECE NO: 5	
	WHERE SAMPLED: FLOW INTERIOR	
	TEXTURE: VARIOLITIC, APHYRIC	
GROUNDMASS:	OLIVINE 10 0.1-1.0	
	COMMENT: ALTERED TO SMECTITE	
	PLAG 40 0.1-1.0	
	COMMENT: NORMALLY ZONED, ALTERED,	
	CLINOPYX 25 0.1-1.0	
	COMMENT: PALE BROWN, PLEOCHROIC	
	GLASS 10	
	COMMENT: ALTERED	
ALTERATION:	SMECTITE	GLASS
	CARB	GLASS
VESICLES:	15	SMEC, CARB
408-38- 1, 142-145	ROCK TYPE: APHYRIC BASALT	
	COMMENT: FRESH	
	PIECE NO: 20	
	WHERE SAMPLED: FLOW INTERIOR	
	TEXTURE: VARIOLITIC, OPHITIC, SUBOPHITIC, APHYRIC	
PHENOCRYSTS:	PLAG	
	COMMENT: APPROX COMP AN45	
GROUNDMASS:	OLIVINE TR	
	PLAG 40	
	COMMENT: APPROX COMP AN56-45	
	CLINOPYX 25	
	ILMENITE 1	
	MAGN 4	
ALTERATION:	SMECTITE	GLASS
VESICLES:		SMECTITE

THIN-SECTION DESCRIPTIONS

408-38- 2, 4- 7 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1
 TEXTURE: VARIOLITIC, APHYRIC
 GROUNDMASS: PLAG 40
 COMMENT: APPROX COMP AN62-57
 CLINOPYX 40
 COMMENT: COLORED (FE-TI RICH)
 OLIVINE 10
 GLASS
 ALTERATION: SMECTITE OLIVINE, GLASS
 CALCITE OLIVINE
 VESICLES: FIBROUS MINS
 COMMENT: VESICULAR

408-38- 2, 53- 55 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 WHERE SAMPLED: FLOW MARGIN
 TEXTURE: APHYRIC
 GROUNDMASS: PLAG TR
 GLASS
 COMMENT: ALTERED
 OP.MINS
 COMMENT: LOCATED IN THE GLASS
 VESICLES: 1 5 CHLOR, ZEOL

408-38- 3, 88- 90 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 15
 TEXTURE: VARIOLITIC, OPHITIC, SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED
 PLAG
 COMMENT: APPROX COMP AN56-46
 GROUNDMASS: OLIVINE 1
 PLAG 45
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNITE
 GLASS 20
 COMMENT: ALTERED
 ALTERATION: CHLORITE OLIVINE
 CALCITE OLIVINE
 SMECTITE PHENOS
 VESICLES: SMEC, CHLOR

408-38- 4, 30- 32 ROCK TYPE: APHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 5
 TEXTURE: VARIOLITIC, OPHITIC, GLASSY, VERY FINE-GRAINED,
 APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 PLAG 30
 CLINOPYX 20
 ILMENITE 1
 MAGN 4
 GLASS 45
 COMMENT: ALTERED
 ALTERATION: SMECTITE PHENOS, GLASS
 CHLORITE GLASS
 PYRITE GLASS
 VESICLES: 1-5 10

409- 7- 6, 70- 74 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 5
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, SPARSELY MICROPHYRIC
 PHENOCRYSTS: PLAG 1-5
 COMMENT: SPARSE MICROPHENOS, APPROX COMP AN65, SOME HAVE
 INCLUSIONS OF OLIVINE (PARTLY ALTERED TO SMECTITE)
 GROUNDMASS: OLIVINE TR
 COMMENT: ALTERED
 PLAG 35
 CLINOPYX 30
 OP.MINS 1-3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 10
 COMMENT: DARK BROWN, ALTERED
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-.5 20 SMEC, VOLC.GLASS
 COMMENT: GLASS IS DEVITRIFIED

409- 7- 7, 1- 5 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, APHYRIC
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN70
 GROUNDMASS: OLIVINE TR
 PLAG 40
 CLINOPYX 35
 OP.MINS 1-3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 5
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-.8 20 SMEC, OP.MINS.
 VOLC.GLASS
 COMMENT: FILLINGS RIMMING PART OF WALL

409- 7- 7, 90- 95 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, APHYRIC
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN68
 GROUNDMASS: PLAG 40
 CLINOPYX 35
 OP.MINS
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 5
 COMMENT: DARK BROWN GREEN
 ALTERATION: SMECTITE GLASS, PHENOS
 VESICLES: 0.2-1.5 15-20 UNEVEN DISTRI SMEC, OP.MINS,
 BUTION CELAD
 COMMENT: OP.MINS PARTLY RIM VESICLES

409- 8- 1, 20- 22 ROCK TYPE: PLAG-CLINOPYX SPARSELY PHYRIC BASALT
 PIECE NO: 2
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: INTERGRANULAR, SPARSELY PORPHYRITIC
 PHENOCRYSTS: PLAG 1-5
 COMMENT: ALTERED SLIGHTLY, APPROX COMP AN53-40
 CLINOPYX <1
 COMMENT: ALTERED SLIGHTLY

THIN-SECTION DESCRIPTIONS

GROUNDMASS: GLASS 1-3
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 40
 GLASS 1-3
 COMMENT: ALTERED
 ALTERATION: SMECTITE GLASS
 COMMENT: IDENTITY UNCERTAIN FOR SMECTITE
 VESICLES: .5-3 20 SMEC, ZEOL
 COMMENT: SMEC ALONG THE WALL, ZEOL 2ND LAYER IN FROM WALL,
 IDENTITY UNCERTAIN FOR FILLINGS

409- 8- 1, 55- 58 ROCK TYPE: CLINOPYX-PLAG-OLIVINE MODERATELY MICROPHYRIC
 BASALT
 PIECE NO: 6
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: INTERGRANULAR, MODERATELY MICROPHYRIC,
 GLOMEROPORPHYRITIC AGGREGATES CLINOPYX+OLIVINE+PLAG
 PHENOCRYSTS: OLIVINE <1 .7-1.2
 CLINOPYX 1-5
 COMMENT: MICROPHENOS
 PLAG 1-5
 COMMENT: APPROX COMP AN55, MICROPHENOS
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED
 OLIVINE 1-5 .7-1.2
 PLAG 35
 CLINOPYX 30
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-1 20 SMECTITE, GLASS
 COMMENT: ALONG VESICLE WALL IS LAYERED VOLC. GLASS AND
 SMECTITE

409- 8- 1, 115-120 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 13
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: INTERGRANULAR, APHYRIC
 PHENOCRYSTS: PLAG <1
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 OLIVINE 5
 PLAG 35
 CLINOPYX 30
 OP.MINS 5 SKELETAL
 COMMENT: INCLUDES MAGNETITE+ILMENITE, SOME ALTERED TO
 LEUCOXENE ?
 VESICLES: 1-4 20 SMEC, CARB
 COMMENT: SOME VESICLES PARTLY FILLED BY SMECTITE

409- 9- 1, 4- 6 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1
 TEXTURE: INTERSERTAL, APHYRIC, FINE GRAINED, GLOMEROPORPHYRI
 TIC AGGREGATES PLAG+OLIVINE+CLINOPYX
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG <1
 COMMENT: APROX COMP AN70, MICROPHENOS
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 OLIVINE 1-2
 COMMENT: FRESH
 PLAG 35
 CLINOPYX 35

OP.MINS 2-5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE OLIVINE
 VESICLES: .2-3 20 SMEC,CARB
 COMMENT: SOME VESICLES PARTLY FILLED BY SMECTITE

409- 9- 1, 130-132 ROCK TYPE: APHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 17
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN47
 GROUNDMASS: PLAG 50
 CLINOPYX 40
 OP.MINS 10
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: 1 2-5

409- 9- 1, 135-140 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 18
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: INTERSERTAL, APHYRIC
 GROUNDMASS: GLASS 35
 COMMENT: ALTERED
 PLAG 30
 COMMENT: APPROX COMP AN65-58, NORMAL ZONING
 CLINOPYX 30
 OP.MINS 2
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 COMMENT: IDENTITY UNCERTAIN FOR GLASS
 VESICLES: <.5 20 SMEC, ZEOL, CELAD
 COMMENT: A FEW VESICLES 2-5 MM, SMECTITE ALONG WALL, CELAD
 IS 2ND LAYER IN, ZEOLITE IS 3RD LAYER IN FROM WALL

409- 9- 2, 145-150 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 19
 TEXTURE: INTERGRANULAR, APHYRIC, GLOMEROPORPHYRITIC
 AGGREGATES PLAG+CLINOPYX+OLIVINE MICROPHENOS,
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN65
 GROUNDMASS: GLASS 15
 PLAG 35
 CLINOPYX 30
 OP.MINS 1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-4 20 SMEC, GLASS
 COMMENT: DEVITRIFIED VOLCANIC GLASS IN VESICLES

409- 9- 3, 12- 17 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 2
 TEXTURE: INTERGRANULAR, APHYRIC, GLOMEROPORPHYRITIC
 AGGREGATES PLAG+CLINOPYX
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN50, MICROPHENOS
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED, DARK COLOR
 OLIVINE TR
 PLAG 40

THIN-SECTION DESCRIPTIONS

CLINOPYX 35
 OP.MINS 1-3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: .1-1.0 10 SMEC,VOLC.GLASS
 COMMENT: VOLC.GLASS IS ALTERED, SMEC ALONG WALL OF SOME
 VESICLES, VESICLE SIZE RARELY 2-4 MM

409- 9- 3, 80- 86 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 9
 TEXTURE: SUBOPHITIC, INTERGRANULAR, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN60
 GROUNDMASS: GLASS 5
 OLIVINE 5
 PLAG 45
 CLINOPYX 40
 OP.MINS 1-3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .1-.4 5 SMEC, CALCITE,
 VOLC.GLASS
 COMMENT: RARE 3 MM SIZE, SOME VESICLES FILLED BY DEVITRIFIED
 VOLCANIC GLASS

409- 9- 3, 119-122 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 14
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SUBOPHITIC, INTERGRANULAR, APHYRIC, GLOMEROPORPHYRI
 TIC AGGREGATES PLAG+CLINOPYX MICROPHENOS
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN55, MICROPHENOS
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED, BROWN
 OLIVINE TR
 PLAG 45
 CLINOPYX 40
 OP.MINS 1-3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-1 5 SMECTITE
 COMMENT: SOME VESICLES PARTLY FILLED BY SMECTITE

409-10- 1, 9- 11 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 2
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX <1
 COMMENT: FRESH, MICROPHENOS
 PLAG <1
 COMMENT: FRESH, MICROPHENOS
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED, BROWN
 OLIVINE TR
 PLAG 45
 CLINOPYX 35
 OP.MINS 3-5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: .1-.7 10 SMECTITE
 COMMENT: SOME VESICLES PARTLY FILLED BY SMECTITE, VESICLES
 RIMMED WITH ALTERED (TO SMECTITE) VOLC.GLASS

409-10- 1, 112-114 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 10
 TEXTURE: INTERGRANULAR, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX <1
 COMMENT: FRESH, MICROPHENOS, GLOMEROPORPHYRITIC
 PLAG <1
 COMMENT: FRESH, MICROPHENOS, GLOMEROPORPHYRITIC
 GROUNDMASS: GLASS <1
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 40
 OP.MINS 1-5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .1-2 5-10 SMEC, VOLC.GLASS
 COMMENT: SOME VESICLES PARTLY RIMMED WITH VOLCANIC GLASS
 AND PARTLY FILLED BY IT, INSIDE WALLS OF SOME
 VESICLES PARTLY COVERED BY VERY RARE SMECTITE

409-10- 2, 28- 31 ROCK TYPE: APHYRIC BASALT
 WHERE SAMPLED: FLOW INTERIOR
 PIECE NO: 3
 TEXTURE: APHYRIC
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN65
 GROUNDMASS: GLASS 15
 COMMENT: ALTERED, DARK
 PLAG 35
 CLINOPYX 25
 COMBINE 5
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GLASS
 VESICLES: .2-2 25 SMECTITE
 COMMENT: INSIDE WALLS OF SOME VESICLES PARTLY COVERED BY
 SMECTITE, MOST PARTS OF VESICLES ARE EMPTY

409-10- 2, 90- 94 ROCK TYPE: PLAG-CLINOPYX-OLIVINE SPARSELY PHYRIC BASALT
 PIECE NO: 10B
 TEXTURE: INTERGRANULAR, INTERSERTAL, SPARSELY PHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 CLINOPYX <1
 COMMENT: FRESH, ZONED, GLOMEROPORPHYRITIC
 PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN65
 ALTERATION: SMECTITE GROUNDMASS
 VESICLES: < 5 10 SMECTITE, GLASS

409-10- 2, 136-139 ROCK TYPE: CLINOPYX-PLAG MODERATELY PHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 TEXTURE: INTERGRANULAR, INTERSERTAL, MODERATELY PHYRIC
 PIECE NO: 16
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX 1-5
 COMMENT: FRESH, ALTERED, MICROPHENOS
 PLAG 1-5
 COMMENT: FRESH, ALTERED, MICROPHENOS
 GROUNDMASS: GLASS 5

THIN-SECTION DESCRIPTIONS

GROUNDMASS: OLIVINE
 COMMENT: ALTERED
 PLAG 50
 CLINOPYX 30
 OP.MINS 20
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 SMECTITE OLIVINE
 CHLORITE OLIVINE
 VESICLES: SMECTITE

409-11- 3, 80- 82 ROCK TYPE: PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 2F
 TEXTURE: SUBOPHITIC, INTERSERTAL, SPARSELY PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX <1
 COMMENT: FRESH
 PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN70-80
 GROUNDMASS: OLIVINE 5-10
 PLAG 40
 CLINOPYX 35
 OP.MINS <5
 COMMENT: INCLUDES ILMENITE+MAGNETITE AS DUST IN GLASS
 VESICLES: .5-1 5-10 CARBONATE
 COMMENT: A BROWN AMORPHOUS MINERAL LINES AND FILLS
 VESICLES

409-11- 4, 38- 40 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 2A
 TEXTURE: APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE
 COMMENT: COMPLETELY ALTERED
 PLAG 45
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 ALTERATION: SMECTITE GLASS, OLIVINE
 VESICLES: 1 5-10 SMECTITE

409-12- 1, ROCK TYPE: OLIVINE-PLAG-CLINOPYX MODERATELY PHYRIC BASALT
 PIECE NO: 15B
 TEXTURE: INTERGRANULAR, INTERSERTAL, MODERATELY PHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: RARE GLOMEROPORPHYRITIC
 CLINOPYX <1
 COMMENT: FRESH, GLOMEROPORPHYRITIC, MICROPHENOS
 PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN60-55, GLOMEROPORPHYRITIC, MICROPHENOS
 GROUNDMASS: GLASS 15
 COMMENT: ALTERED
 OLIVINE TR
 PLAG 40
 CLINOPYX 35
 OP.MINS <5
 COMMENT: INCLUDES ILMENITE+MAGNETITE

409-10- 7, 4- 6 ROCK TYPE: APHYRIC BASALT
COMMENT: FRESH
PIECE NO: 1
TEXTURE: SUBOPHITIC, INTERSERTAL, APHYRIC
WHERE SAMPLED: FLOW INTERIOR
GROUNDMASS: GLASS >10
COMMENT: ALTERED
PLAG 45 .1-1.0
COMMENT: APPROX COMP AN75, EARLY AND LATE PHASES-LATE PHASE
OFTEN HIGHLY ZONED
CLINOPYX 30 .1-1.0
COMBINE 5 .1-1.0 SOME SKELETAL
COMMENT: INCLUDES ILMENITE+MAGNETITE
ALTERATION: SMECTITE GLASS
ILMENITE GLASS
MAGN GLASS
VESICLES: .5 <5 SMECTITE

409-10- 8, 58- 60 ROCK TYPE: APHYRIC BASALT
PIECE NO: 7
TEXTURE: SUBOPHITIC (CLINOPYX+PLAG), INTERSERTAL (OLIVINE+
PLAG), APHYRIC
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: PLAG <1
COMMENT: FRESH, APPROX COMP AN70-80, MICROPHENOS,
GLOMEROPORPHYRITIC
GROUNDMASS: GLASS <5
COMMENT: ALTERED, BROWN
OLIVINE 10 .1-1.0
PLAG 35 .1-1.0
CLINOPYX 30 .1-1.0
OP.MINS 2
COMMENT: INCLUDES ILMENITE+MAGNETITE
ALTERATION: SMECTITE GLASS
VESICLES: .5-1 15 SMECTITE ANGULAR

409-11- 1, ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
PIECE NO: 6
TEXTURE: SUBOPHITIC, INTERGRANULAR, SPARSELY MICROPHYRIC,
COARSE GRAINED
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: OLIVINE 1-5
PLAG
COMMENT: APPROX COMP AN60
GROUNDMASS: GLASS
COMMENT: ALTERED
OLIVINE 5
PLAG 40
CLINOPYX 30
OP.MINS 5
COMMENT: INCLUDES ILMENITE+MAGNETITE
GLASS 20
ALTERATION: CHLORITE OLIVINE
VESICLES: 1 3 CHLOROPHAEITE
OR EPIDOTE
COMMENT: IDENTITY UNCERTAIN

409-11- 2, 80- 82 ROCK TYPE: APHYRIC BASALT
PIECE NO: 8A
TEXTURE: APHYRIC, COARSE GRAINED
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: PLAG
COMMENT: APPROX COMP AN60

THIN-SECTION DESCRIPTIONS

	COMMENT: ALTERED	
	PLAG 50	
	CLINOPYX 40	
	COMMENT: SOME TWINNING	
	OP.MINS 2	
	COMMENT: INCLUDES ILMENITE+MAGNETITE	
ALTERATION:	SMECTITE	GLASS
	CARB	GROUNDMASS
VESICLES:	2 10	SMECTITE, GLASS
409-10- 3, 60- 64	ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT	
	PIECE NO: 4C	
	WHERE SAMPLED: FLOW INTERIOR,	
	TEXTURE: MODERATELY MICROPHYRIC	
PHENOCRYSTS:	OLIVINE <1	
	PLAG 1-5	
	COMMENT: MICROPHENOS	
GROUNDMASS:	OLIVINE 1-2	
	COMMENT: COMPLETELY ALTERED	
VESICLES:		SMECTITE
409-10- 3, 130-133	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 13	
	WHERE SAMPLED: FLOW INTERIOR	
	TEXTURE: INTERSERTAL, APHYRIC	
GROUNDMASS:	GLASS	
	COMMENT: ALTERED	
	PLAG 40	
	CLINOPYX 40	
	OP.MINS 5	
	COMMENT: INCLUDES ILMENITE+MAGNETITE	
ALTERATION:	SMECTITE	GLASS
VESICLES:	.1-1 15	SMECTITE
	COMMENT: PARTS OF VESICLES RIMMED WITH VOLCANIC GLASS WHICH IS ENRICHED BY OPAQUE MINERALS	
409-10- 4, 86- 88	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 9	
	TEXTURE: INTERGRANULAR, APHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
GROUNDMASS:	GLASS 2	
	COMMENT: ALTERED	
	OLIVINE 5	
	PLAG 40	
	COMMENT: APPROX COMP AN65-50, NORMALLY ZONED	
ALTERATION:	SMECTITE	OLIVINE, GLASS
VESICLES:	1-2 7-10	ZEOLITE
409-10- 6, 136-138	ROCK TYPE: APHYRIC BASALT	
	PIECE NO: 11	
	TEXTURE: SUBOPHITIC, INTERGRANULAR, COARSE GRAINED, APHYRIC	
	WHERE SAMPLED: FLOW INTERIOR	
PHENOCRYSTS:	PLAG	
	COMMENT: APPROX COMP AN55-45	
GROUNDMASS:	PLAG 50	
	CLINOPYX 35	
	OP.MINS 15	
	COMMENT: INCLUDES ILMENITE+MAGNETITE	
ALTERATION:	SMECTITE	GLASS
VESICLES:	1 10	SMECTITE

ALTERATION: SMECTITE GLASS
 CHLOROPH GLASS
 VESICLES: .2-.8 5 VOLC.GLAS,
 SMEC,CALCITE,
 ZEOL

COMMENT: IDENTITY UNCERTAIN FOR ZEOLITE
 409-12- 1, 48- 55 ROCK TYPE: PLAG MODERATELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 6
 TEXTURE: MODERATELY MICROPHYRIC, INTERSERTAL,
 APHANITIC-CRYPTOCRYSTALLINE
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN60
 GROUNDMASS: OLIVINE 10
 COMMENT: FRESH
 PLAG 40
 CLINOPYX 30
 ILMENITE TR
 GLASS 20
 ALTERATION: SMECTITE GLASS
 CHLORITE GLASS
 VESICLES: SMECTITE,
 CARBONATE

409-13- 1, 70- 75 ROCK TYPE: BASALT BRECCIA
 PIECE NO: 9
 WHERE SAMPLED: GLASSY MARGIN
 TEXTURE: APHANITIC-CRYPTOCRYSTALLINE, PORPHYRITIC
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: FRESH
 CLINOPYX 1-5
 COMMENT: FRESH
 PLAG >5
 COMMENT: FRESH, ZONED
 ALTERATION: CARB GLASS
 COMMENT: IDENTITY UNCERTAIN FOR GLASS, COLOR IS BROWN

409-13- 2, ROCK TYPE: BASALT GLASS
 PIECE NO: 11
 WHERE SAMPLED: GLASSY MARGIN
 TEXTURE: GLASSY
 PHENOCRYSTS: PLAG TR
 OLIVINE TR
 COMMENT: HIGHLY ALTERED
 GROUNDMASS: GLASS
 COMMENT: RECRYSTALLIZED

409-13- 2, 114-121 ROCK TYPE: BASALT GLASS
 PIECE NO: 15
 TEXTURE: APHANITIC-CRYPTOCRYSTALLINE, PORPHYRITIC, GLASSY
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 5
 PLAG 10
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: TRANSITION FROM MICROCRYSTALLINE-BLACK GROUNDMASS
 TO GLASSY BROWN (1 CM THICK EACH), FRESH TO
 ALTERED
 ALTERATION: ZEOLITE GLASS
 COMMENT: GLASS GRADES FROM FRESH YELLOW TO GREEN YELLOW TO
 BROWN

THIN-SECTION DESCRIPTIONS

VESICLES: 1 10-20 CARB, ZEOL
 COMMENT: IDENTITY UNCERTAIN FOR CARBONATE

409-13- 3, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 5
 TEXTURE: APHYRIC, VARIOLITIC, APHANITIC-CRYPTOCRYSTALLINE, APHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 GROUNDMASS: GLASS 10-20
 COMMENT: ALTERED
 OLIVINE 5 SUBHEDRAL
 COMMENT: FRESH, SMALL
 PLAG 40
 COMMENT: TWO PHASES
 CLINOPYX 35
 ALTERATION: SMECTITE GLASS
 COMMENT: COLOR FROM BROWN TO BLACK
 VESICLES: .1-1 >10 SMECTITE
 COMMENT: LINES WALL ONLY

409-14- 1, 148-152 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 6
 TEXTURE: VARIOLITIC, APHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 GROUNDMASS: OLIVINE 5
 PLAG 50
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 10
 VESICLES: 1 10

409-14- 7, 52- 59 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 5
 TEXTURE: SUBOPHITIC, INTERGRANULAR
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: PLAG 40
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 10
 COMMENT: ALTERED
 ALTERATION: SMECTITE GLASS
 COMMENT: ABUNDANT
 VESICLES: 5-10 SMECTITE

409-15- 1, 132-134 ROCK TYPE: PLAG-OLIVINE MODERATELY PHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 16
 TEXTURE: VARIOLITIC, MODERATELY PORPHYRITIC, GLASSY
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1 .5
 COMMENT: SOME SUBOPHITIC
 GROUNDMASS: GLASS 30
 COMMENT: ALTERED
 OLIVINE <1 .01-0.1
 PLAG 35
 CLINOPYX TR
 COMMENT: ONLY VERY SMALL GRAINS
 VESICLES: < 3 >10 CARBONATE ELONGATE

409-15- 2, 35- 37 ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC, SUBOPHITIC,
 APHANITIC-CRYPTOCRYSTALLINE, GLASSY
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 5-10
 GROUNDMASS: GLASS 10-15
 COMMENT: ALTERED
 OLIVINE 1-5
 PLAG 35
 CLINOPYX 35
 ALTERATION: CARB OLIVINE
 VESICLES: 10 CARB, ALT. GLASS
 COMMENT: ONLY SMALLER VESICLES FILLED WITH CALCITE

409-15- 3, 104-106 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 9
 TEXTURE: APHYRIC, SUBOPHITIC, COARSE GRAINED
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN60
 GROUNDMASS: OLIVINE 5
 COMMENT: ALTERED
 PLAG 50
 CLINOPYX 30
 COMMENT: COLORED
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 10
 ALTERATION: SMECTITE
 VESICLES: 1 5-10 SMECTITE

409-15- 3, 104-106 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 9,
 TEXTURE: VARIOLITIC, SUBOPHITIC, GLASSY, APHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 GROUNDMASS: GLASS 10-20
 COMMENT: ALTERED
 OLIVINE 5-10
 PLAG 40
 CLINOPYX 30
 ALTERATION: SMECTITE GLASS
 VESICLES: < 1 5-10 SMEC, EPID
 COMMENT: IDENTITY UNCERTAIN FOR EPIDOTE

409-15- 4, 62- 65 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 5A
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC,
 APHANITIC-CRYPTOCRYSTALLINE
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 GROUNDMASS: GLASS 25
 COMMENT: ALTERED
 OLIVINE 5 >.1
 PLAG 30 .5 NARROW LATHS
 CLINOPYX 10 <.1
 OP.MINS <.1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: CHLOROPH GROUNDMASS
 VESICLES: .1-3. 30 SMEC, CARB,
 CHLOROPH
 COMMENT: VERY THIN LINING CHLOROPHAEITE

THIN-SECTION DESCRIPTIONS

409-16- 1, 122-125 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 8A
 TEXTURE: SUBOPHITIC, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 COMMENT: RELICT
 PLAG 40
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 COMMENT: FRESH ALTERED
 ALTERATION: SMECTITE GLASS
 VESICLES: 1 5

409-16- 2, 16- 18 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1B
 TEXTURE: APHYRIC, VARIOLITIC, SUBOPHITIC, HOLOCRYSTALLINE
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: GLASS 1-2 .1-1
 OLIVINE <5 .1-1
 PLAG 45 .1-1
 CLINOPYX 35 .1-1
 OP.MINS 5 .1-1
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GLASS
 VESICLES: 10 CARB, EPID
 COMMENT: >5% CALCITE, IDENTITY UNCERTAIN FOR EPIDOTE- IT IS
 A GREEN HIGHLY PLEOCHROIC MINERAL

409-17- 1, 36- 38 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 5A
 TEXTURE: SUBOPHITIC, INTERSERTAL
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED
 OLIVINE 5-10 SUBHEDRAL
 PLAG 40
 CLINOPYX 35
 OP.MINS 5 SKELETAL
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: < 1. >10 CARB, EPID,
 CHLOROPH
 COMMENT: 2-3% CALCITE, IDENTITY UNCERTAIN FOR EPIDOTE AND
 CHLOROPHAEITE

409-17- 2, 11- 13 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 1
 TEXTURE: APHYRIC, SUBOPHITIC, INTERGRANULAR
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: PLAG 35 .1-1
 CLINOPYX 20 .1-1
 OLIVINE
 COMMENT: ALTERED TO SMECTITE AND CALCITE
 OP.MINS 5 .1-1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE 10 OLIVINE
 CALCITE 30 OLIVINE
 VESICLES: 1-2 5 SMEC, CARB, HEMA

COMMENT: IDENTITY UNCERTAIN FOR HEMATITE, SMECTITE ALONG
THE WALL, CARBONATE ALONG THE WALL AND 2ND LAYER,
HEMATITE 2ND LAYER IN FROM WALL

409-18- 1, 140-150 ROCK TYPE: APHYRIC BASALT
PIECE NO: 17
TEXTURE: APHYRIC, SUBOPHITIC
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: PLAG
COMMENT: APPROX COMP AN60
OLIVINE <1
GROUNDMASS: OLIVINE
COMMENT: ALTERED
PLAG 45
CLINOPYX 40
COMMENT: COLORED
OP.MINS 3
COMMENT: INCLUDES MAGNETITE+ILMENITE
GLASS 12
VESICLES: SMEC, PYR

409-18- 2, ROCK TYPE: OLIVINE-CLINOPYX-PLAG SPARSELY MICROPHYRIC BASALT
COMMENT: MODERATELY ALTERED
PIECE NO: 11A
TEXTURE: INTERGRANULAR, SPARSELY MICROPHYRIC
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: OLIVINE <1
COMMENT: PARTIALLY ALTERED TO CALCITE + SMECTITE
CLINOPYX
COMMENT: FRESH
PLAG 1-5
COMMENT: FRESH, APPROX COMP AN70
GROUNDMASS: PLAG 45 .1-1.0
CLINOPYX 35 .1-1.0
OP.MINS 2 .1-1.0
COMMENT: INCLUDES ILMENITE+MAGNETITE
GLASS
COMMENT: ALTERED
ALTERATION: SMECTITE 5 GLASS, PHENOS, GROUNDMASS
CARB PHENOS, GROUNDMASS
VESICLES: 1-2 3 SMEC, CARB

409-18- 3, 54- 57 ROCK TYPE: APHYRIC BASALT
PIECE NO: 6
TEXTURE: APHYRIC, SUBOPHITIC, GLASSY
WHERE SAMPLED: FLOW INTERIOR
GROUNDMASS: GLASS 30
COMMENT: PARTLY ALTERED TO SMECTITE
OLIVINE
COMMENT: MAY HAVE BEEN ELIMINATED BY ALTERATION
CLINOPYX 35
OP.MINS
COMMENT: INCLUDES ILMENITE+MAGNETITE
ALTERATION: SMECTITE GLASS
VESICLES: .5 5-10 SMEC, CARB
COMMENT: SMECTITE LINES WALL, CARBONATE IS 2ND LAYER IN

409-18- 3, 120-125 ROCK TYPE: PLAG-CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
TEXTURE: INTERGRANULAR, SPARSELY MICROPHYRIC
PIECE NO: 13
WHERE SAMPLED: FLOW INTERIOR

THIN-SECTION DESCRIPTIONS

PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED
 CLINOPYX 1-5
 COMMENT: FRESH, ALTERED
 PLAG 1-5
 COMMENT: FRESH
 GROUNDMASS: OLIVINE 5 .1-1.0
 CLINOPYX 35 .1-1.0
 PLAG 45 .1-1.0
 OP.MINS 5 .1-1.0
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE 5 PHENOS, GROUNDMASS
 CARB PHENOS, GROUNDMASS
 IDTINGS PHENOS
 VESICLES: 1.-2.5 5 SMEC, CARB
 COMMENT: SMECTITE LINES WALL, CARBONATE IS 2ND LAYER IN

409-18- 4, 20- 23 ROCK TYPE: OLIVINE-PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 2
 TEXTURE: SUBOPHITIC, SPARSELY MICROPHYRIC
 PHENOCRYSTS: PLAG <1 .1-1.0
 COMMENT: NORMAL ZONATION, APPROX COMP AN70-64
 OLIVINE 1-5 .1-1.0
 COMMENT: ALTERED, SOME FRESH MATERIAL REMAINS
 CLINOPYX <1 .1-1.0
 COMMENT: FRESH
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED
 OLIVINE 10 .1-1.0
 PLAG 35 .1-1.0
 ALTERATION: SMECTITE 10 GROUNDMASS, PHENOS
 SERP PHENOS
 COMMENT: IDENTITY UNCERTAIN FOR SERPENTINE
 VESICLES: 2-3 10 SMECTITE
 COMMENT: ALSO IN VEINS

409-18- 4, 100-105 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 11
 TEXTURE: APHYRIC, SUBOPHITIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 PLAG 45
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 GLASS 15
 ALTERATION: CARB OLIVINE
 VESICLES: .2-0.5 2 SMEC, CARB
 COMMENT: SMECTITE LINES WALL, CARBONATE IS NEXT LAYER IN

409-19-CC, 15- 20 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 2
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED
 ALTERATION: CARB OLIVINE
 VESICLES: 0.2-1 3 CARBONATE

409-20- 1, 53- 60 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC,
 WHERE SAMPLED: NEXT TO MARGIN
 GROUNDMASS: GLASS 20
 COMMENT: ALTERED
 OP.MINS 5 .01-.1 ELONGATED, BARBED
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: < 1 10

409-20- 1, 85- 90 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH (RELATIVELY)
 PIECE NO: 12
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 1-5
 PLAG 1-5
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED

409-20- 1, 145-150 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 21
 TEXTURE: SUBVARIOLITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN60
 GROUNDMASS: OLIVINE 1-5
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 35
 OTHER 20

409-21- 1, 7- 10 ROCK TYPE: PLAG-OLIVINE-CLINOPYX SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 1
 TEXTURE: VARIOLITIC, MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: PLAG >5
 COMMENT: APPROX COMP AN70, FRESH
 OLIVINE 1-5
 CLINOPYX <1
 COMMENT: FRESH
 GROUNDMASS: PLAG 40
 CLINOPYX 35
 GLASS 5
 MAGN 5
 ALTERATION: SMECTITE GLASS
 CHLOROPH GLASS, GROUNDMASS
 COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE REPLACING
 GLASS
 VESICLES: .1-.5 <1

409-21- 1, 100-105 ROCK TYPE: PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 PIECE NO: 11
 TEXTURE: INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX 1-5
 COMMENT: FRESH, ALTERED
 PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN65-60
 CLINOPYX 1-5
 COMMENT: FRESH, ALTERED

THIN-SECTION DESCRIPTIONS

GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 OLIVINE 10 SKELETAL (LATE)
 COMMENT: STABLES MODERATELY ALTERED
 PLAG 45
 CLINOPYX 40
 OP.MINS 3
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE 10 GROUNDMASS, GLASS
 CARB GROUNDMASS
 VESICLES: 1 2 SMEC, CARB
 COMMENT: SMECTITE LINES WALL, CARBONATE IS NEXT LAYER IN

409-21- 1, 145-150 ROCK TYPE: OLIVINE-PLAG-CLINOPYX MODERATELY PHYRIC BASALT
 PIECE NO: 16
 TEXTURE: GLASSY, MODERATELY PORPHYRITIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 1-5
 CLINOPYX 1-5
 PLAG 1-5
 COMMENT: APPROX COMP AN80
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED
 ALTERATION: SMECTITE GLASS
 CHLORITE GLASS
 CLAY.MIN GLASS

409-21- 2, 79- 82 ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 9
 TEXTURE: VARIOLITIC, SPARSELY PORPHYRITIC
 WHERE SAMPLED: NEXT TO MARGIN

409-21- 2, 145-150 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 16
 TEXTURE: SUBOPHITIC, APHYRIC, COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN70
 GROUNDMASS: OLIVINE 3
 COMMENT: FRESH
 PLAG 45
 CLINOPYX 35
 OP.MINS 10
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 GLASS 10
 VESICLES: .5-1. 15

409-21- 3, 20- 25 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 3
 TEXTURE: SUBVARIOLITIC, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 PLAG 30
 CLINOPYX 25
 COMMENT: COLORED
 ALTERATION: SMECTITE GLASS
 VESICLES: 2-.5 2-3 SMEC, PYR, LEUCOX

409-21- 3, 141-144 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 19
 TEXTURE: VARIOLITIC, SUBOPHITIC, APHYRIC, COARSE GRAINED,
 VERY FINE GRAINED AROUND CAVITIES

GROUNDMASS: OLIVINE TR
 PLAG 50
 COMMENT: APPROX COMP AN72
 CLINOPYX 30
 OP.MINS 5
 GLASS 15
 VESICLES: SMEC, CALCITE
 COMMENT: SMECTITE IS YELLOW

409-22- 1, 53- 57 ROCK TYPE: PLAG-CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 6
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED
 CLINOPYX <1
 COMMENT: FRESH, ALTERED
 PLAG 1-5 HOLLOW HOPPER (A FEW)
 COMMENT: FRESH, ALTERED
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 OLIVINE 5 .1-1
 PLAG 40 .1-1
 CLINOPYX 30 .1-1
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: COMBINE 20 GLASS, GROUNDMASS, PHENOS
 COMMENT: INCLUDES CALCITE+SMECTITE
 VESICLES: 2-3 15 SMEC, CARB, GLASS
 COMMENT: SMECTITE AND GLASS LINE WALL, CARBONATE IS 2ND LAYER IN FROM WALL

409-22- 1, 94- 97 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 10
 TEXTURE: INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 1-5
 PLAG 1-5
 ALTERATION: CARB GLASS
 VESICLES: 1-5 10

409-23- 1, 30- 35 ROCK TYPE: PLAG-OLIVINE-CLINOPYX SPARSELY MICROPHYRIC BASALT
 PIECE NO: 4
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE 1-5 SKELETAL (SOME)
 COMMENT: FRESH
 CLINOPYX <1
 COMMENT: FRESH
 PLAG >5
 COMMENT: FRESH
 ALTERATION: CHLOROPH GLASS
 VESICLES: 1-5 5-10 CARBONATE

409-24- 1, 14- 17 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 2
 TEXTURE: SUBVARIOLITIC, APHYRIC, INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN

THIN-SECTION DESCRIPTIONS

GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 PLAG 35 .1-1.0
 CLINOPYX 25 .1-1.0
 OP.MINS 10
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE 25 GROUNDMASS
 VESICLES: < 5 20 EMPTY

409-24- 1, 84- 86 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 9
 TEXTURE: INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: PLAG 40
 CLINOPYX 20
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE, MAGNETITE-CORRODED
 GLASS 35
 ALTERATION: LEUCOX GLASS
 COMMENT: IDENTITY UNCERTAIN FOR LEUCOXENE
 VESICLES: 1-2 5-10 SMEC, PYR, LEUCOX

409-24- 2, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: SUBOPHITIC, COARSE GRAINED, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 PLAG 50
 CLINOPYX 35
 COMMENT: COLORED
 VESICLES: 1 5-10

409-24- 4, 88- 93 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: OPHITIC, APHYRIC, COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE TR
 CLINOPYX
 COMMENT: COLORED

409-24- 5, 67- 73 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 5B
 TEXTURE: SUBOPHITIC, INTERSERTAL, APHYRIC
 COMMENT: ALTERED IN PLACES TO GLASSY AND SUBVARIOLITIC
 GROUNDMASS: OLIVINE 1-2 .01-1
 PLAG 45 .01-1
 COMMENT: APPROX COMP <AN60
 CLINOPYX 30 .01-1
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: CHLOROPH OLIVINE, GLASS
 COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE
 SMECTITE GLASS
 OP.MINS GLASS
 VESICLES: .5 5 SMEC, CHLOROPH,
 EPID
 COMMENT: IDENTITY UNCERTAIN FOR EPIDOTE

409-24- 6, 65- 71 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4B
 TEXTURE: SUBOPHITIC, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR

GROUNDMASS: GLASS 10-15
 OLIVINE RARE
 PLAG 40
 COMMENT: APPROX COMP <AN60
 CLINOPYX 35 <1
 OP.MINS 5 ELONGATED, BARBED
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: 0.5 5-10 CHLOROPHAEITE
 COMMENT: 3-5% CHLOROPHAEITE

409-25- 1, 85- 86 ROCK TYPE: CLINOPYX-PLAG MICROPHYRIC BASALT
 PIECE NO: 6
 TEXTURE: SUBOPHITIC, INTERGRANULAR, MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX 10 .1-1
 COMMENT: SECTION ZONATION, SLIGHT BROWN COLORATION
 PLAG
 COMMENT: APPROX COMP AN60
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 OLIVINE
 PLAG 50
 CLINOPYX 30
 OP.MINS 3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GROUNDMASS
 VESICLES: 3-5 5 EMPTY

409-25- 2, 33- 36 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4
 TEXTURE: SUBOPHITIC, APHYRIC, COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 OLIVINE 0 .1-1.0
 PLAG 45 .1-1.0
 CLINOPYX 40 .1-1.0
 OP.MINS 5 .1-1.0
 COMMENT: INCLUDES ILMENITE+MAGNETITE, QUITE LARGE
 ALTERATION: CHLOROPH GLASS
 COMMENT: BROWN-GREEN
 VESICLES: <.5 5-10 CHLOROPHAEITE

409-25- 2, 140-142 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 15
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 OLIVINE <1
 PLAG <1 ELONGATED
 COMMENT: APPROX COMP AN80
 GROUNDMASS: OLIVINE 2-5
 PLAG 50
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 VESICLES: .1-1 20 SMEC

409-25- 3, 85- 90 ROCK TYPE: APHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 9

THIN-SECTION DESCRIPTIONS

TEXTURE: VARIOLITIC, INTERGRANULAR, APHYRIC
WHERE SAMPLED: NEXT TO MARGIN

PHENOCRYSTS: PLAG
COMMENT: APPROX COMP AN55

GROUNDMASS: OLIVINE 5 .1-1.0
COMMENT: UNALTERED
PLAG 50 .1-1.0
CLINOPYX 40 .1-1.0
OP.MINS 3 .1-1.0
COMMENT: INCLUDES ILMENITE+MAGNETITE

ALTERATION: SMECTITE GLASS, GROUNDMASS
CARB GROUNDMASS
SERP OLIVINE
COMMENT: IDENTITY UNCERTAIN FOR SERPENTINE

VESICLES: .5-2 10 SMEC, CARB
COMMENT: SMEC LINES WALL, CARB IS 2ND LAYER IN, MOST EMPTY

409-25- 3, 130-135 ROCK TYPE: OLIVINE-PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
PIECE NO: 14
TEXTURE: GLASSY, SPARSELY MICROPHYRIC
WHERE SAMPLED: GLASSY MARGIN

PHENOCRYSTS: OLIVINE 1-5
PLAG 1-5
COMMENT: APPROX COMP AN67
CLINOPYX <1
COMMENT: FRESH

GROUNDMASS: GLASS
COMMENT: FRESH, ALTERED

VESICLES: ZEOLITE

409-25- 4, 102-105 ROCK TYPE: APHYRIC BASALT
PIECE NO: 11
TEXTURE: SUBVARIOLITIC, SUBOPHITIC, APHYRIC, INTERSERTAL
COMMENT: SUBVARIOLITIC IN PLACES ONLY
WHERE SAMPLED: FLOW INTERIOR

GROUNDMASS: GLASS 10-15
COMMENT: ALTERED
OLIVINE 0
PLAG 45
CLINOPYX 35
OP.MINS 5
COMMENT: INCLUDES ILMENITE+MAGNETITE

ALTERATION: SMECTITE GLASS
CHLOROPH GLASS

VESICLES: .5 10 CARB, CHLOROPH
COMMENT: PATCHES OF CARBONATES OCCUR AS VESICLE FILLINGS

409-26- 1, 30- 32 ROCK TYPE: PLAG-OLIVINE SPARSELY PHYRIC BASALT
COMMENT: MODERATELY ALTERED
PIECE NO: 5
TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
WHERE SAMPLED: NEXT TO MARGIN

PHENOCRYSTS: OLIVINE <1
COMMENT: FRESH
PLAG 1-5
COMMENT: FRESH

GROUNDMASS: GLASS 15-20
COMMENT: VERY ALTERED
OLIVINE 5
OP.MINS 5
COMMENT: INCLUDES ILMENITE+MAGNETITE

ALTERATION: OP.MINS GLASS
 CHLOROPH GLASS
 COMMENT: HEAVILY ALTERED TO BROWN
 VESICLES: <3 15-20 SMEC, CHLOROPH
 COMMENT: CHLOROPHAEITE IS BROWN?

409-26- 1, 76- 79 ROCK TYPE: APHYRIC BASALT
 COMMENT: MODERATELY ALTERED
 PIECE NO: 8
 TEXTURE: INTERGRANULAR, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: COMBINE 20 GLASS, GROUNDMASS,
 COMMENT: INCLUDES SMECTITE+CALCITE
 LEUCOX OLIVINE
 COMMENT: OLIVINE ALTERED TO LEUCOXENE THEN TO CALCITE
 VESICLES: <5 15 SMEC, CALCITE
 COMMENT: SMECTITE LINES WALL, CALCITE IS 2ND LAYER IN

409-26- 1, 145-150 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 16
 TEXTURE: GLASSY, APHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED
 VESICLES: 1-3 10 SMEC, PYR, CARB
 COMMENT: LATE PYRITE

409-26- 2, ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 4
 TEXTURE: INTERSERTAL, FINE GRAINED, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED TO CALCITE
 PLAG <1
 GROUNDMASS: OLIVINE 3
 COMMENT: ALTERED
 PLAG 25
 CLINOPYX 35
 GLASS 37
 TITAN.MG
 COMMENT: IN GLASS
 ALTERATION: CALCITE OLIVINE
 VESICLES: <1 10 SMEC, CARB,
 LEUCOX
 COMMENT: LEUCOXENE IS BLACK, CARBONATE IS LATE

409-27- 1, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4
 TEXTURE: VARIOLITIC, INTERGRANULAR, APHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 GROUNDMASS: OLIVINE 5
 PLAG 40 SWALLOWTAIL, ELONGATED LATHS
 COMMENT: SCARCE RESORPTION
 CLINOPYX 30 SHEAF-LIKE VARIOLES
 OP.MINS 5

THIN-SECTION DESCRIPTIONS

COMMENT: INCLUDES ILMENITE+MAGNETITE
 COMBINE 25
 COMMENT: INCLUDES SMECTITE+ALTERED GLASS
 ALTERATION: SMECTITE GLASS, GROUNDMASS
 CARB TR GROUNDMASS
 VESICLES: 2. 5 SMEC, GLASS
 409-27- 1, 69- 71 ROCK TYPE: APHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 8
 TEXTURE: INTERSERTAL, INTERGRANULAR, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN60
 GROUNDMASS: OLIVINE 5
 COMMENT: FRESH
 PLAG 40
 CLINOPYX 30
 GLASS 25
 VESICLES: .5-2.0 15 SMEC, CARB, CHLOR ROUND
 409-28- 1, 40- 45 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 TEXTURE: VARIOLITIC, GLASSY, SPARSELY MICROPHYRIC
 PIECE NO: 5
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: PLAG 1-5
 COMMENT: FRESH
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED
 OLIVINE 0
 PLAG 45
 MAGN 5 BARBED
 ALTERATION: CHLOROPH GLASS
 VESICLES: < 0.5 <5 SMEC, CARB,
 CHLOROPHAEITE
 409-28- 1, 145-150 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 18
 TEXTURE: VARIOLITIC, APHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: OLIVINE 5 .01-.1
 GLASS 5
 PLAG 5 .01-.1
 CLINOPYX 35 .01-.1
 OP.MINS 5 .01-.1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS, OLIVINE
 COMMENT: SMECTITE? REPLACES PART OF OLIVINE
 CHLOROPH GLASS
 COMMENT: BROWN CHLOROPHAEITE
 VESICLES: <3 10-15 CARB, CHLOROPH
 COMMENT: 2-5% CARBONATE
 409-29- 1, 55- 58 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN55
 GROUNDMASS: GLASS 50
 COMMENT: FRESH, ALTERED
 OLIVINE
 COMMENT: ALTERED TO CALCITE
 PLAG 30
 CLINOPYX 20
 OP.MINS TR
 COMMENT: INCLUDES ILMENITE+MAGNETITE, IN GLASS
 ALTERATION: CARB RARE OLIVINE
 VESICLES: 10 SMEC, CARB, CHLOR ROUND
 SULFIDE

409-29- 1, 83- 88 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 12
 TEXTURE: APHYRIC, GLASSY
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN80
 OLIVINE
 COMMENT: MICROPHENOS, IDdingsitized
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED, BLACK COLOR
 OLIVINE 2
 PLAG 30
 COMMENT: FRESH?
 CLINOPYX 25
 ILMENITE 1
 MAGN 3
 ALTERATION: SMECTITE GROUNDMASS
 VESICLES: .3-.5 10-15 SMEC, CALCITE,
 SULFIDE
 COMMENT: CALCITE IS ABUNDANT, SULFIDE IS RARE

409-30- 1, 24- 26 ROCK TYPE: APHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 3
 TEXTURE: INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 5-10
 PLAG 45-50
 CLINOPYX 30-40
 OTHER 10
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: CARB

409-31- 1, 104-107 ROCK TYPE: PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 COMMENT: SLIGHTLY ALTERED
 PIECE NO: 14
 TEXTURE: INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-5
 COMMENT: FRESH
 CLINOPYX <1
 COMMENT: FRESH
 GROUNDMASS: OLIVINE TR .1-1.
 PLAG 50 .1-1.
 CLINOPYX 40 .1-1.
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE

THIN-SECTION DESCRIPTIONS

ALTERATION:	SMECTITE	2	GROUNDMASS
VESICLES:	.5	3	

409-31- 2, 4- 7 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 1
 TEXTURE: SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR

409-32- 1, 138-140 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 16
 TEXTURE: VARIOLITIC, APHYRIC
 WHERE SAMPLED: NEXT TO MARGIN

GROUNDMASS:	OLIVINE	3-5	.1-1.0	
	PLAG	20	.1-1.0	LATHS ELONGATED, SOME ARE HOLLOW HOPPER CRYSTALS
	CLINOPYX	35	.1-1.0	FEATHERY OR SHEAF-LIKE BUNDLES
	OP.MINS	5	.1-1.0	

ALTERATION:	SMECTITE	30	GROUNDMASS
	CALCITE	10	GROUNDMASS
VESICLES:	1.-2.	5	SMECTITE

410-37- 1, 104-108 ROCK TYPE: OLIVINE-CLINOPYX-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 11
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN

PHENOCRYSTS:

OLIVINE	<1	
COMMENT:	FRESH	
CLINOPYX	<1	
COMMENT:	FRESH	
PLAG	<1	
COMMENT:	FRESH	

GROUNDMASS:

GLASS	5-10	
COMMENT:	ALTERED	
OLIVINE	5-10	
COMMENT:	CONCENTRATED IN CERTAIN AREAS	
PLAG	45	
COMMENT:	APPROX COMP AN55-60	
CLINOPYX	30	
COMMENT:	SOME MICROPHENOS RESORBED	
MICROLIT		
COMMENT:	IN GLASS	
OP.MINS		
COMMENT:	INCLUDES MAGNETITE+ILMENITE+PYRITE, IN PATCHES	

ALTERATION:	SMECTITE	GLASS, GROUNDMASS
	COMMENT:	YELLOW BROWN, APPROX 1%
	CHLOROPH	GROUNDMASS

VESICLES: <1 <5
 COMMENT: GLASS CONCENTRATED AROUND VESICLES

410-37- 1, 117-120 ROCK TYPE: PLAG MODERATELY PHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 13
 TEXTURE: VARIOLITIC, GLASSY, PORPHYRITIC, APHANITIC-CRYPTOCRYSTALLINE
 WHERE SAMPLED: GLASSY MARGIN

PHENOCRYSTS:

OLIVINE	<.1
CLINOPYX	<.1
PLAG	8.5

GROUNDMASS: GLASS
 COMMENT: BROWN BLACK, FRESH TO ALTERED

VESICLES: 20 CARB, ZEOL
 COMMENT: PERCENT VALUE INCLUDES VEINS

410-38- 1, 11- 16 ROCK TYPE: OLIVINE-PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 PIECE NO: 2
 TEXTURE: MICROCRYSTALLINE, SPARSELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 1-5 EUHEDRAL
 COMMENT: FRESH, GLOMEROPORPHYRITIC AGGREGATES
 CLINOPYX <1
 PLAG <1 SUBHEDRAL
 COMMENT: APPROX COMP AN68-70, FRESH, GLOMEROPORPHYRITIC AGGREGATES
 GROUNDMASS: GLASS >90
 COMMENT: ALTERED, DARK BROWN
 ALTERATION: CARB GLASS
 VESICLES: .3-2.0 5-7 CARB, ZEOL
 COMMENT: SMALLER VESICLES PARTLY OR COMPLETELY FILLED BY CALCITE

410-38- 2, 60- 65 ROCK TYPE: LIMESTONE BASALTIC BRECCIA
 PIECE NO: 8
 TEXTURE: GLASSY, MICROCRYSTALLINE
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH TO ALTERED
 GROUNDMASS: GLASS 100
 COMMENT: ALTERED, GRAY BROWN
 VESICLES: ZEOL

410-39- 1, ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 10B
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: FRESH
 CLINOPYX RARE
 PLAG <1 FELTY
 COMMENT: FRESH
 ALTERATION: CARB GLASS
 VESICLES: CARB

410-39- 1, 13- 19 ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 2
 TEXTURE: SUBVARIOLITIC, GLASSY
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE <1 QUENCH MORPHOLOGIES
 COMMENT: FRESH
 PLAG <1 QUENCH MORPHOLOGIES
 COMMENT: FRESH
 GROUNDMASS: GLASS 72
 COMMENT: FRESH
 OLIVINE 3
 PLAG 20
 CLINOPYX 5

410-39- 1, 76- 78 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 9A
 TEXTURE: VARIOLITIC, FINE-GRAINED, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1

THIN-SECTION DESCRIPTIONS

GROUNDMASS: COMMENT: FRESH
 GLASS .01-.1
 COMMENT: ALTERED, BROWN
 OLIVINE 5 .01-.1
 PLAG 45 .01-.1
 CLINOPYX 35 .01-.1
 PYRITE RARE .01-.1
 COMMENT: RARE
 ALTERATION: SMECTITE GLASS
 CHLOROPH VESICLE GLASS
 FILLING
 VESICLES: <.5 10-15 SMEC, CHLOROPH
 COMMENT: BROWN?, MOST VESICLES UNFILLED
 410-39- 2, ROCK TYPE: BASALT BRECCIA
 PIECE NO: 1
 TEXTURE: SPARSELY MICROPHYRIC
 PHENOCRYSTS: PLAG
 OLIVINE
 GROUNDMASS: GLASS
 VESICLES: CALCITE OR
 ZEOLITE
 410-39- 2, 62- 63 ROCK TYPE: OLIVINE-CLINOPYX-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 6
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1 SUBHEDRAL
 COMMENT: FRESH
 CLINOPYX <1 SUBHEDRAL
 COMMENT: FRESH
 PLAG <1 SUBHEDRAL
 GROUNDMASS: GLASS 5
 COMMENT: BROWN
 PLAG .01-.1
 ALTERATION: SMECTITE GLASS
 CHLOROPH GROUNDMASS
 COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE
 VESICLES: <.5 5-10 SMEC, CARB
 410-39- 3, 22- 24 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1C
 TEXTURE: APHYRIC
 VESICLES: CARB, ZEOL
 COMMENT: PCE 1C
 410-39- 3, 93- 95 ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 6
 TEXTURE: SUBOPHITIC, SPARSELY MICROPHYRIC
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: ALTERED
 GROUNDMASS: OLIVINE 3
 PLAG 45
 CLINOPYX 25
 COMMENT: BROWN, EVOLVED
 OTHER 27
 ALTERATION: CARB PHENOS
 IDTINGS PHENOS
 VESICLES: CARB, ZEOL
 COMMENT: PCE 6

410-39- 3, 108-110 ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
COMMENT: EXTENSIVELY ALTERED
PIECE NO: 7
TEXTURE: VARIOLITIC, SUBOPHITIC, SPARSELY MICROPHYRIC
WHERE SAMPLED: NEXT TO MARGIN
PHENOCRYSTS: OLIVINE QUENCHED
COMMENT: ALTERED
PLAG ELONGATE
COMMENT: APPROX COMP AN55-70, GLOMEROPORPHYRITIC
GROUNDMASS: OLIVINE <5 0.01-0.5 QUENCHED
PLAG 45 0.01-0.5 MICROLITES, QUENCHED
CLINO 35 0.01-0.5 QUENCHED, ELONGATE
OP.MINS 2
COMMENT: INCLUDES ILMENITE+MAGNETITE, RESTRICTED TO GLASS
GLASS 5
COMMENT: CLOUDY, BROWN, ALTERED
ALTERATION: SMECTITE GLASS
CARB PHENOS
IDDINGS OLIVINE
VESICLES: <.5 10-15 CARB
COMMENT: ABOUT 5% CARBONATE

410-39- 4, ROCK TYPE: LIMESTONE BASALTIC BRECCIA
PIECE NO: 9B
TEXTURE: INTERGRANULAR, APHYRIC
PHENOCRYSTS: OLIVINE <1
GROUNDMASS: OLIVINE 3
PLAG 40
CLINOPYX 30
COMMENT: PALE BROWN COLOR
GLASS
ALTERATION: IDDINGS OLIVINE
CALCITE FILLINGS OLIVINE
VESICLES: 10-15 CARB

410-39- 4, 51- 58 ROCK TYPE: APHYRIC BASALT
PIECE NO: 4
TEXTURE: VARIOLITIC, APHYRIC
WHERE SAMPLED: NEXT TO MARGIN
PHENOCRYSTS: OLIVINE TR
COMMENT: ALTERED
GROUNDMASS: GLASS 5
COMMENT: BROWN, CLOUDY, ALTERED
OLIVINE TR
PLAG 45 SOME SKELETAL
CLINOPYX 35
OP.MINS 2
COMMENT: INCLUDES ILMENITE+MAGNETITE+MICROLITES IN GLASS
ALTERATION: CARB PHENOS
CHLOROPH PHENOS
IDDINGS PHENOS
COMMENT: IDENTITY UNCERTAIN FOR IDDINGS AND CHLOROPH
VESICLES: <1 10-15 EMPTY

410-39- 5, 12- 13 ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
COMMENT: FRESH
PIECE NO: 1B
TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
WHERE SAMPLED: NEXT TO MARGIN
PHENOCRYSTS: OLIVINE 2 1.0 EUHEDRAL
COMMENT: ALTERED

THIN-SECTION DESCRIPTIONS

GROUNDMASS: GLASS 5-10
 COMMENT: ALTERED, BROWN
 OLIVINE 5
 PLAG 45
 COMMENT: APPROX COMP AN60
 CLINO 35 SOME ELONGATED, OTHERS
 SUBOPHITIC
 OP.MINS 2-3 SOME ELONGATED, OCTAHEDRAL
 COMMENT: INCLUDES ILMENITE+MAGNETITE, CONFINED TO GLASS
 ALTERATION: SMECTITE PATCHES OF OLIVINE
 GROUNDMASS
 CARB OLIVINE
 CHLOROPH OLIVINE
 VESICLES: <1 10-15

410-39- 6, ROCK TYPE: PLAG-OLIVINE-CLINOPYX SPARSELY MICROPHYRIC BASALT
 COMMENT: BASALT BRECCIA?-FILLING BY CALCITE AND FORAMS,
 ANGULAR FRAGMENTS
 PIECE NO: 1B
 TEXTURE: INTERGRANULAR, INTERSERTAL, SPARSELY MICROPHYRIC
 PHENOCRYSTS: PLAG 1-5
 COMMENT: ALTERED
 CLINOPYX <1
 COMMENT: FRESH, EARLY, COLORLESS, SECTOR ZONING
 OLIVINE <1
 COMMENT: ALTERED
 GROUNDMASS: GLASS 12
 OLIVINE 3
 PLAG 40
 CLINOPYX 35
 TITAN.MG TR
 COMMENT: IN GLASS
 ALTERATION: IDTINGS OLIVINE
 CALCITE OLIVINE

410-39- 6, 40- 45 ROCK TYPE: CLINOPYX-PLAG-OLIVINE SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 5
 TEXTURE: INTERSERTAL, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-2
 COMMENT: PARTLY ALTERED
 OLIVINE <1
 COMMENT: ALTERED
 CLINOPYX 1-3
 COMMENT: FRESH
 GROUNDMASS: OLIVINE <5
 COMMENT: ALTERED COMPLETELY
 PLAG 45
 CLINOPYX 35
 GLASS 5-10
 ALTERATION: SMECTITE GLASS
 CARB PHENOS
 IDTINGS OLIVINE
 CALCITE PLAG
 COMMENT: PLAG PHENOS PARTLY ALTERED TO CALCITE
 VESICLES: 1.0 5 CARB, ZEOL
 COMMENT: MANY FILLED

410-39- 7, ROCK TYPE: HYALOCLASTITE
 COMMENT: LIMESTONE MATRIX-FORAM-RICH
 PIECE NO: 5
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC

PHENOCRYSTS: OLIVINE >5 .5-1.0 SKELETAL
 PLAG 1-5 .1-.7
 COMMENT: APPROX COMP AN73, TWO GENERATIONS OF PLAG -
 ONE UNSTABLE
 CLINOPYX 1-5 0.2-0.5

GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED
 OLIVINE 10 SKELETAL
 CLINOPYX 4
 PLAG 5

ALTERATION: CALCITE GLASS
 VESICLES: CARB, ZEOL

410-40- 1, 44- 45 ROCK TYPE: CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 5 (?)
 TEXTURE: INTERSERTAL
 WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS: OLIVINE 1
 COMMENT: FRESH
 CLINOPYX 2
 COMMENT: FRESH

GROUNDMASS: GLASS 20
 COMMENT: PERCENTAGE UNCERTAIN, HEAVILY OXIDIZED
 OP.MINS 0

VESICLES: 1.0-3.0 10-20 CARB, ZEOL
 COMMENT: CARB CONSTITUTES 5-10% OF ROCK

410-41- 1, 13- 15 ROCK TYPE: CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 2
 TEXTURE: VITROPHYRIC, SPARSELY MICROPHYRIC

PHENOCRYSTS: OLIVINE 2-3
 COMMENT: ALTERED
 CLINOPYX 4-6
 COMMENT: FRESH

GROUNDMASS: GLASS 50-80
 PLAG
 COMMENT: DOUBLE CYCLIC ZONATION
 OLIVINE

ALTERATION: CALCITE OLIVINE

410-41- 1, 119-121 ROCK TYPE: CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 13
 TEXTURE: INTERGRANULAR, INTERSERTAL

PHENOCRYSTS: CLINOPYX 5
 COMMENT: FRESH
 OLIVINE 3
 COMMENT: ALTERED

GROUNDMASS: OLIVINE 3
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 30
 GLASS 27

ALTERATION: CARB OLIVINE
 FE.HYDRX OLIVINE

VESICLES: 3-10 15 CARB, ZEOL

410-41- 2, 27- 30 ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 4
 TEXTURE: INTERSERTAL, GLASSY
 COMMENT: CHANGES FROM INTERSERTAL TO GLASSY IN SINGLE
 FRAGMENT

THIN-SECTION DESCRIPTIONS

PHENOCRYSTS:	OLIVINE	<1	
	COMMENT:	ALTERED	
	CLINOPYX	1-5	1.0-2.0
	COMMENT:	FRESH, MAINLY	EARLY
	PLAG	1-5	
	COMMENT:	ALTERED	
GROUNDMASS:	OLIVINE	2	
	PLAG	40	
	CLINOPYX	30	
	GLASS	20	
ALTERATION:	CARB		PHENOS
VESICLES:			CARB, ZEOL
410-41- 2, 47- 50	ROCK TYPE:	BASALTIC GLASS	
	COMMENT:	FRESH, SOME PALAGONITIZED	
	PIECE NO:	6	
	TEXTURE:	GLASSY, APHANITIC-CRYPTOCRYSTALLINE	
	WHERE SAMPLED:	GLASSY MARGIN, AT CONTACT WITH	
		CARBONATE SEDIMENTS	
PHENOCRYSTS:	OLIVINE	<1	
	COMMENT:	FRESH	
	CLINOPYX	<1	
	PLAG	1-5	
	COMMENT:	ZONED, APPROX COMP AN70-75	
GROUNDMASS:	GLASS		
	COMMENT:	FRESH, ALTERED	
VESICLES:			CARB, ZEOL
410A- 1- 7, 10- 15	ROCK TYPE:	OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT	
	COMMENT:	EXTENSIVELY ALTERED	
	PIECE NO:	1	
	TEXTURE:	GLASSY, VARIOLITIC, SPARSELY MICROPHYRIC	
	WHERE SAMPLED:	GLASSY MARGIN AT CONTACT WITH	
			CARBONATE (+FORAMS)
PHENOCRYSTS:	OLIVINE	1	<1.0 EUHEDRAL
	COMMENT:	FRESH	
	PLAG	<1	
	COMMENT:	FRESH, APPROX COMP AN65-70	
GROUNDMASS:	GLASS		
	COMMENT:	COMPLETELY PALAGONITIZED, GLASS IS BLACK TO	
		PALE BROWN	
ALTERATION:	CARB		GLASS, GROUNDMASS
	ZEOL		GLASS, GROUNDMASS
	PALAG		GROUNDMASS (GLASSY)
VESICLES:			CARB
	COMMENT:	5% CARBONATE	
410A- 1- 7, 19- 28	ROCK TYPE:	OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT	
	COMMENT:	SLIGHTLY ALTERED	
	PIECE NO:	3	
	TEXTURE:	GLASSY, SPARSELY MICROPHYRIC, EMBRYONIC	
		VARIOLITIC	
	WHERE SAMPLED:	GLASSY MARGIN	
PHENOCRYSTS:	OLIVINE	<1	
	PLAG	<1	
GROUNDMASS:	GLASS	97	
	OLIVINE	1	
	PLAG	2	
VESICLES:	<1	2	CALCITE
410A- 2- 1,	ROCK TYPE:	APHYRIC BASALT	
	COMMENT:	SLIGHTLY ALTERED	
	PIECE NO:	3	

TEXTURE: GLASSY, APHYRIC
 WHERE SAMPLED: FLOW OR PILLOW MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 90-99

410A- 2- 1, 48- 52 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: VARIOLITIC, GLASSY, INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 GROUNDMASS: GLASS
 COMMENT: BLACK
 OLIVINE 5-10
 PLAG 20-30
 VESICLES: QUENCH MORPHOLOGY
 GLASS (BLACK) ROUND

410A- 2- 1, 93- 96 ROCK TYPE: CLINOPYX-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 11
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 GLASSY MARGIN, CONTACT WITH FORAM LIMESTONE
 PHENOCRYSTS: CLINOPYX <1
 PLAG <1
 GROUNDMASS: GLASS
 OLIVINE TR
 PLAG TR
 COMMENT: EMBRYONIC FELDSPAR IN THE MOST CRYSTALLINE
 GROUNDMASS (3 CM FROM MARGIN)
 VESICLES: CARB

410A- 2- 2, 50- 52 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED (GROUNDMASS)
 PIECE NO: 8
 TEXTURE: VARIOLITIC, GLASSY, SPARSELY MICROPHYRIC
 WHERE SAMPLED: GLASSY MARGIN TO NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1 SUBHEDRAL TO EUHEDRAL
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: COMPLETELY PALAGONITIZED, GLASSY MARGIN UNALTERED
 ALTERATION: CARB GLASS
 ZEOL GLASS
 PALAG GROUNDMASS
 VESICLES: CARB
 COMMENT: >5% CARBONATE

410A- 2- 2, 114-117 ROCK TYPE: BASALTIC GLASS
 COMMENT: FRESH
 PIECE NO: 18
 WHERE SAMPLED: MARGIN OF BRECCIA FRAGMENT
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 90
 COMMENT: FRESH
 ALTERATION: CHLOROPH GLASS
 COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE
 VESICLES: CARB

THIN-SECTION DESCRIPTIONS

410A- 2- 3, 50- 52 ROCK TYPE: BASALTIC GLASS
 PIECE NO: 6A
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 90
 COMMENT: GRADUAL INCREASE IN PALAGONITIZATION AWAY FROM
 MARGIN
 ALTERATION: CHLOROPH GLASS
 COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE
 PALAG GLASS
 VESICLES: <1 >5 CARB
 COMMENT: PIECE 6A

410A- 2- 3, 52- 55 ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 6B
 TEXTURE: GLASSY
 WHERE SAMPLED: GLASSY MARGIN IN CONTACT WITH CARBONATE CEMENT
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 ALTERATION: SMECTITE RIMS FRAGMENT GLASS
 COMMENT: PIECE 6B
 SMECTITE IS GREEN/BROWN AND VERMICULAR

410A- 2- 3, 85- 90 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 11
 TEXTURE: VARIOLITIC, GLOMEROPORPHYRITIC, SPARSELY
 MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1 EUHEDRAL (SOME)
 PLAG <1
 COMMENT: APPROX COMP > AN70
 GROUNDMASS: PLAG
 GLASS
 COMMENT: PALAGONITIZED
 ALTERATION: CARB GROUNDMASS
 ZEOLITE GROUNDMASS
 COMMENT: IDENTITY UNCERTAIN FOR ZEOLITE
 PALAG GROUNDMASS
 COMMENT: EXTENSIVE BUT NOT COMPLETE PALAGONITIZATION
 VESICLES: <0.5 <5 CARB

410A- 2- 4, 35- 40 ROCK TYPE: APHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 4
 TEXTURE: INTERSERTAL-VARIOLITIC
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 2-5 SUBHEDRAL
 PLAG 45
 CLINOPYX 30
 OP.MINS 2
 COMMENT: INCLUDES ILMENITE+MAGNETITE, IN GLASS
 GLASS 15-20
 COMMENT: PARTIALLY ALTERED, BROWN BLACK
 VESICLES: <1 4 CARB, CHLOROPH
 COMMENT: CHLOROPHAEITE IN SOME VESICLES-GREEN YELLOW

410A- 2- 4, 75- 80 ROCK TYPE: BASALTIC GLASS
 PIECE NO: 8
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC
 PHENOCRYSTS: OLIVINE <1 EUHEDRAL
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: PALAGONITIZED, SMALL AMOUNT FRESH GLASS REMAINS
 ALTERATION: SMECTITE GLASS
 ZEOLITE GLASS
 COMMENT: IDENTITY UNCERTAIN FOR ZEOLITE
 PALAG GLASS

410A- 2- 5, 25- 30 ROCK TYPE: BASALTIC GLASS
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 3
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC, GLASSY
 WHERE SAMPLED: GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED
 ALTERATION: SMECTITE GLASS
 CARB GLASS
 CHLOROPH GLASS
 ZEOLITE GLASS
 PALAG GLASS
 VESICLES: <1 10 ZEOL FILLED SMECT, CARB, ZEOL
 VESICLES
 PARALLEL TO
 GLASSY MARGIN
 COMMENT: 10% CARBONATES

410A- 2- 5, 88- 92 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 12
 TEXTURE: VARIOLITIC-INTERSERTAL
 WHERE SAMPLED: FLOW MARGIN
 GROUNDMASS: OLIVINE 1-2
 PLAG 45
 CLINOPYX 30
 MAGN 2
 COMMENT: IN GLASS
 GLASS 10
 COMMENT: PARTIALLY ALTERED, BLACK BROWN
 ALTERATION: SMECTITE GLASS
 PALAG GLASS
 VESICLES: <1 10 SMECTITE
 COMMENT: LINES MOST VESICLES

410A- 3- 1, 74- 76 ROCK TYPE: APHYRIC BASALT
 COMMENT: MODERATELY ALTERED, QUENCH FACIES
 PIECE NO: 7
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC
 WHERE SAMPLED: GLASSY MARGIN, CONTACT WITH LIMESTONE-FEW FOSSIL
 FRAGMENTS
 GROUNDMASS: GLASS 60
 COMMENT: FRESH
 PLAG 30
 OLIVINE 0
 CLINOPYX <10
 COMMENT: VERY SMALL
 OP.MINS 0

THIN-SECTION DESCRIPTIONS

ALTERATION:	SMECTITE	GLASS
VESICLES:	.5 10	SMEC, CARB

410A- 3- 1, 110-112 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 13
 TEXTURE: GLASSY
 WHERE SAMPLED: PILLOW MARGIN
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 GROUNDMASS: GLASS
 COMMENT: BROWN
 VESICLES: CARB

410A- 3- 1, 132-134 ROCK TYPE: BASALTIC BRECCIA
 PIECE NO: 16
 TEXTURE: GLASSY, HYALOCLASTIC, APHYRIC
 WHERE SAMPLED: PILLOW MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: FRAGMENTED INTO ANGULAR FRAGMENTS WITH LATE
 CALCITE FILLINGS
 VESICLES: CARB

410A- 3- 2, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 6
 TEXTURE: SUBOPHITIC, APHANITIC-CRYSTOCRYSTALLINE, APHYRIC
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 30
 COMMENT: RELATIVELY FRESH, BLACK BROWN
 OLIVINE 5-7
 PLAG 40-45
 CLINOPYX 10-20
 VESICLES: SMECTITE
 GLASS

410A- 3- 2, 107-109 ROCK TYPE: APHYRIC BASALT
 COMMENT: QUENCH FACIES, MODERATELY ALTERED
 PIECE NO: 14
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 TEXTURE: APHYRIC, VARIOLITIC, GLASSY
 GROUNDMASS: GLASS 80
 COMMENT: FRESH
 PLAG 20
 CLINOPYX TR
 ALTERATION: SMECTITE
 VESICLES: GROUNDMASS
 SMEC, CARB

410A- 3- 2, 107-109 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 14
 TEXTURE: VARIOLITIC, INTERSERTAL, GLASSY
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, ALTERED, GLOMEROPORPHYRITIC
 PLAG <1
 COMMENT: FRESH, GLOMEROPORPHYRITIC
 GROUNDMASS: GLASS 40
 COMMENT: ALTERED
 OLIVINE TR
 PLAG 40

CLINOPYX 20
 OP.MINS <1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: SMEC,CARB

410A- 3- 2, 142-143 ROCK TYPE: APHYRIC BASALT
 COMMENT: CHILLED FACIES,SLIGHTLY ALTERED
 PIECE NO: 16
 TEXTURE: VARIOLITIC,GLASSY,APHYRIC
 GROUNDMASS: GLASS
 COMMENT: FRESH
 PLAG 25
 CLINOPYX 5
 ALTERATION: SMECTITE GLASS
 VESICLES: .25 3 SMECTITE

410A- 3- 3, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 10B
 TEXTURE: VARIOLITIC,INTERSERTAL,GLASSY,APHYRIC
 COMMENT: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED,IDENTITY UNCERTAIN,INTERSERTAL
 GROUNDMASS: GLASS 40
 COMMENT: PARTIALLY ALTERED,PLAG AND CLINOPYX VARIOLITES,
 ELONGATED QUENCH CRYSTALS
 OLIVINE TR
 VESICLES: <.5 10 IN GLASS SMEC,CARB

410A- 3- 3, 3- 8 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1A
 TEXTURE: APHYRIC,GLASSY
 PHENOCRYSTS: OLIVINE TR
 GROUNDMASS: OLIVINE TR
 PLAG 20 SKELETAL
 CLINOPYX 5
 COMMENT: SUBZONIC

410A- 3- 3, 120-129 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 11
 TEXTURE: APHYRIC,VARIOLITIC,GLASSY
 WHERE SAMPLED: NEXT TO MARGIN
 GROUNDMASS: GLASS 30
 COMMENT: PARTIALLY ALTERED,VARIOLITIC PLAG AND CLINOPYX
 ALTERATION: SMECTITE GLASS
 VESICLES: <.5 10-15 CARB,ZEOL
 COMMENT: CARB IS 5-10% OF ROCK,SOME VESICLES TO 2 MM

410A- 3- 4, 1- 5 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 1
 WHERE SAMPLED: GLASSY MARGIN
 TEXTURE: SPARSELY MICROPHYRIC,GLASSY
 PHENOCRYSTS: OLIVINE 1-5
 PLAG 1-5
 GROUNDMASS: GLASS 94
 COMMENT: FRESH
 OLIVINE 3
 PLAG 3
 VESICLES: CARB

THIN-SECTION DESCRIPTIONS

- 410A- 3- 4, 72- 78 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 12B
 TEXTURE: GLASSY, APHYRIC
 PHENOCRYSTS: OLIVINE <1
 COMMENT: VERY ALTERED
 PLAG LATHS
 GROUNDMASS: GLASS 90
 COMMENT: ALTERED
 VESICLES: 0.1-3.0 10 SMEC, CARB
 COMMENT: VESICLES RIMMED WITH DK VOLCANIC GLASS WHICH HAS
 BEEN ENRICHED WITH OPAQUES
- 410A- 3- 4, 116-119 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED,
 PIECE NO: 10
 TEXTURE: VARIOLITIC, APHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1 PSEUDOMORPHS
 COMMENT: ALTERED
 GROUNDMASS: GLASS
 COMMENT: PLAG AND CLINOPYX VARIOLITES
 ALTERATION: SMECTITE OLIVINE
 VESICLES: < 0.5 5-10 SMEC, CARB
- 410A- 3- 5, 48- 52 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 6
 TEXTURE: VARIOLITIC, INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN
 GROUNDMASS: OLIVINE 5 SUBHEDRAL
 CLINOPYX SKELETAL, SUBOPHITIC, DENDRITIC
 COMMENT: PALE BROWN
 OP.MINS
 VESICLES: < .1 10
- 410A- 4- 1, 53- 60 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4B
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 GROUNDMASS: PLAG 40
 CLINOPYX 20 SHEAVES
 COMMENT: RADIATING VARIOLITIC CLUSTERS
 GLASS 40
 COMMENT: BROWN-GREEN, 56% IS ALTERED
 OPAQUES
 ALTERATION: SMECTITE GLASS, GROUNDMASS
 CHLOROPH GLASS
 VESICLES: <1 10 SMEC, CHLOROPH
- 410A- 4- 1, 110-115 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 11 (12?)
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC
 GROUNDMASS: GLASS 30
 COMMENT: ALTERED, PLAG AND CLINOPYX VARIOLITES
 ALTERATION: SMECTITE GLASS
 VESICLES: 1.0 5-10 SMEC
 VEIN CARB
- 410A- 4- 2, 7- 10 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 2
 TEXTURE: SPARSELY MICROPHYRIC, GLASSY
 PHENOCRYSTS: OLIVINE <1 EUHEDRAL, SUBHEDRAL
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH

GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED, DARK BROWN
 VESICLES: 0.2-3.0 7-10 SMEC, CARB, ZEOL
 COMMENT: IDENTITY UNCERTAIN FOR ZEOLITE, INSIDE WALLS OF
 SOME VESICLES PARTLY COVERED WITH SMECTITE,
 SOME VESICLES PARTLY FILLED BY CARB, CARBONATE
 VEINS

410A- 4- 2, 87- 93 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 16
 TEXTURE: VARIOLITIC-INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 CLINOPYX 40
 PLAG 40
 VESICLES: 0.3 10 SMEC, CARB, ZEOL

410A- 4- 3, ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4
 TEXTURE: GLASSY
 PHENOCRYSTS: OLIVINE <1 SKELETAL
 COMMENT: SOME GLOMEROPORPHYRITIC AGGREGATES
 GROUNDMASS: GLASS 100
 COMMENT: DARK, FRESH, ALTERED, SOME PALAGONITIZED
 ALTERATION: PALAG NEAR CARB GLASS
 VEIN
 COMMENT: YELLOW COLOR
 VESICLES: 0.5-1.5 5 SMEC, CARB

410A- 4- 3, 130-137 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 18
 TEXTURE: VARIOLITIC, GLASSY
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED
 GROUNDMASS: GLASS 60
 OLIVINE TR
 COMMENT: ALTERED
 PLAG 30
 CLINOPYX 10
 ALTERATION: CARB OLIVINE
 VESICLES: CARB

410A- 4- 4, 65- 70 ROCK TYPE: APHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 7A
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 TEXTURE: VARIOLITIC, GLASSY, APHYRIC
 GROUNDMASS: GLASS 30
 COMMENT: ALTERED, BROWN
 OLIVINE TR
 PLAG 40 ELONGATED
 CLINOPYX 30 ELONGATED
 MICROLIT
 COMMENT: IN ALTERED GLASS
 ALTERATION: SMEC GLASS
 CHLOROPH GLASS
 PALAG GLASS
 VESICLES: .5 5-10 SMEC, CHLOROPH

410A- 5- 1, 69- 76 ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 1
 TEXTURE: VARIOLITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: PILLOW MARGIN

THIN-SECTION DESCRIPTIONS

PHENOCRYSTS: OLIVINE 1-5
COMMENT: FRESH
PLAG 45
CLINOPYX 20 SHEAVES
GROUNDMASS: GLASS 20
COMMENT: ALTERED
VESICLES: 0.3 15 CARB, ZEOL

410A- 5- 1, 127-129 ROCK TYPE: APHYRIC BASALT
PIECE NO: 19
TEXTURE: VARIOLITIC, GLASSY, APHYRIC
WHERE SAMPLED: NEXT TO GLASSY MARGIN
PHENOCRYSTS: OLIVINE <1
COMMENT: VERY RARE, FRESH
PLAG <1
COMMENT: VERY RARE, FRESH
GROUNDMASS: GLASS 99
COMMENT: VERY ALTERED, GRAY BROWN
ALTERATION: CARB GLASS
ZEOLITE GLASS
VESICLES: .2-2.0 10 CARB, ZEOL
COMMENT: SOME VESICLES PARTLY OR COMPLETELY FILLED BY CARBONATE OR ZEOLITE

410A- 5- 2, 40- 42 ROCK TYPE: APHYRIC BASALT
PIECE NO: 4
TEXTURE: VARIOLITIC, GLASSY, APHYRIC
WHERE SAMPLED: NEXT TO MARGIN
PHENOCRYSTS: OLIVINE <1
COMMENT: FRESH, ALTERED
GROUNDMASS: GLASS 40-50
PLAG 30
OP.MINS 1
COMMENT: INCLUDES ILMENITE+MAGNETITE
ALTERATION: SMECTITE GLASS
CARB 25 GLASS, GROUNDMASS
VESICLES: .2-3.0 15-20 CARB, ZEOL
COMMENT: SOME VESICLES FILLED COMPLETELY WITH CARBONATE, SOME PARTLY BY CARB AND ZEOLITE, SOME COMPLETELY BY ZEOLITE, SOME BY DARK VOLCANIC GLASS

410A- 5- 2, 105-119 ROCK TYPE: APHYRIC BASALT
COMMENT: SECTION TOO THIN
PIECE NO: 14
TEXTURE: VARIOLITIC, GLASSY, APHYRIC
WHERE SAMPLED: NEXT TO GLASSY MARGIN
GROUNDMASS: GLASS 50
COMMENT: ALTERED
OLIVINE TR
PLAG VARIOLITIC
CLINOPYX
COMMENT: MICROCRYSTALLINE
ALTERATION: SMECTITE GLASS
PALAG GLASS
VESICLES: 0.1 10 SMEC, ZEOL, CHLOROPH
COMMENT: IDENTITY UNCERTAIN FOR CHLOROPHAEITE
CARB VEINS

410A- 5- 3, 38- 45 ROCK TYPE: APHYRIC BASALT
PIECE NO: 4
WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, TRACE AMOUNT
 GROUNDMASS: GLASS 30
 COMMENT: GRAY BROWN, ALTERED
 OLIVINE TR
 PLAG 40
 CLINOPYX 30
 OP.MINS 1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 CARB GLASS
 VESICLES: 0.2-0.5 1-3 SMEC, CARB
 COMMENT: SOMETIMES FILLED BY SMECTITE, SOMETIMES BY CARBONATE

410A- 5- 4, 95-106 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 12
 TEXTURE: VARIOLITIC-INTERSERTAL, SPARSELY MICROPHYRIC
 WHERE SAMPLED: PILLOW MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 25
 COMMENT: ALTERED
 PLAG 55
 CLINOPYX 15
 VESICLES: 0.3 15 IN VEINS CARB

410A- 6- 1, ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 2A
 TEXTURE: INTERSERTAL, SPARSELY PHYRIC
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE <1 .2-1.0
 COMMENT: GROWING ZONES
 PLAG <1 .2-1.0 QUENCH
 GROUNDMASS: GLASS 80-99
 COMMENT: FRESH, ALTERED
 PLAG 0-20
 VESICLES: .2-1.0 3 CARB

410A- 6- 1, 110-112 ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 16
 TEXTURE: VARIOLITIC, INTERSERTAL, SPARSELY PHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, ALTERED
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASSY 30
 COMMENT: BROWN, ALTERED
 PLAG 40
 CLINOPYX 20
 OP.MINS 1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: CARB GLASS
 SMECTITE GLASS
 ZEOLITE GLASS
 VESICLES: <3 10-15 SMEC, CARB, ZEOL
 COMMENT: SOME VESICLES PARTLY OR COMPLETELY FILLED BY CARBONATE AND ZEOLITE, SOME VESICLES FILLED BY VOLCANIC GLASS, SOME RIMMED WITH DARK GLASS

THIN-SECTION DESCRIPTIONS

- 410A- 6- 1, 118-126 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 17
 TEXTURE: VARIOLITIC, INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE EUHEDRAL
 COMMENT: SOME AS INCLUSIONS IN PLAG MICROPHENOS,
 GLOMEROPORPHYRITIC AGGREGATES
 CLINOPYX
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES OF MICROPHENOS
 PLAG
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES OF MICROPHENOS
 ALTERATION: SMECTITE GLASS
 VESICLES: 0.2 1 SMEC, CARB
 COMMENT: SOME VESICLES RIMMED WITH DARK VOLCANIC GLASS
 ENRICHED WITH OPAQUES, INSIDE WALLS OF SOME
 VESICLES COMPLETELY FILLED BY SMECTITE AND
 CARBONATE, VEINS OF CARBONATE AND ZEOLITE
- 410A- 6- 2, 90- 94 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 13
 TEXTURE: GLASSY
 PHENOCRYSTS: OLIVINE <1 0.2-0.8 EUHEDRAL
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES
 PLAG <1
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED, DARK BROWN
 ALTERATION: SMECTITE GLASS
 VESICLES: 0.2-2.0 5-7 SMEC, CARB
- 410A- 6- 2, 122-132 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 17
 TEXTURE: VARIOLITIC, GLASSY
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS
 COMMENT: ALTERED, TURBID
 PLAG 40
 CLINOPYX 30 SHEAVES
 VESICLES: .2 20-25 SMECTITE
- 410A- 6- 3, 2- 8 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 1
 TEXTURE: INTERSERTAL, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES OF MICROPHENOS
 PLAG <1
 COMMENT: GLOMEROPORPHYRITIC AGGREGATES OF MICROPHENOS
 GROUNDMASS: OLIVINE 1-5
 PLAG 45
 CLINOPYX 30
 ALTERATION: SMECTITE GLASS
 CARB GLASS
 VESICLES: .1-.2 20 CARB
- 410A- 6- 3, 29- 32 ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 PIECE NO: 4
 TEXTURE: GLASSY, SPARSELY PHYRIC BASALT
 WHERE SAMPLED: FLOW INTERIOR

PHENOCRYSTS: OLIVINE <1
 PLAG <1
 GROUNDMASS: GLASS
 COMMENT: FRESH, ALTERED, DARK
 VESICLES: .2-.5 <1 CARB, ZEOL
 COMMENT: SOME VESICLES PARTLY FILLED BY CARBONATES AND
 ZEOLITE, ZEOLITES HAVE RADIAL AGGREGATES OF SMALL
 PRISMATIC CRYSTALS

410A- 6- 3, 84- 86 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 12
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC BASALT
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, ALTERED
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 35
 COMMENT: ALTERED, YELLOW BROWN
 OLIVINE 5
 PLAG 35
 CLINOPYX 25
 OP.MINS 1
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 CARB GLASS
 VESICLES: 0.3-2.0 5-7 SMEC, CARB, ZEOL
 COMMENT: SOME VESICLES PARTLY OR ENTIRELY FILLED WITH
 CARBONATE, SOME VESICLES FILLED WITH CARBONATE
 AND ZEOLITE, RARE VESICLES PARTLY FILLED WITH
 VOLCANIC GLASS (DARK, FRESH), SMALL VESICLES AND
 INSIDE WALLS OF SOME LARGE VESICLES COVERED BY
 SMECTITE

411- 1- 1, 30- 34 ROCK TYPE: OLIVINE-PLAG MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 4
 TEXTURE: VARIOLITIC-INTERSERTAL, MICROPHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 1-5
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 40
 COMMENT: TURBID
 OLIVINE 1-5
 PLAG 40
 CLINOPYX 1-10
 COMMENT: MAY BE PRESENT ONLY AS DEVITRIFIED GLASS
 VESICLES: .04-.15 3 ZEOL, CELAD

411- 1- 1, 78- 82 ROCK TYPE: OLIVINE PHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 8B
 TEXTURE: INTERSERTAL, PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE 10
 COMMENT: FRESH
 GROUNDMASS: OLIVINE 11
 PLAG 42
 CLINOPYX 30
 OP.MINS 2
 COMMENT: INCLUDES ILMENITE+MAGNETITE

THIN-SECTION DESCRIPTIONS

		SPINEL	TR
		GLASS	15
		COMMENT: PERCENTAGES OBTAINED BY POINT COUNT	
VESICLES:		<1	<1

411- 2- 1,	17- 22	ROCK TYPE: OLIVINE-PLAG MICROPHYRIC BASALT	
		PIECE NO: 3	
		TEXTURE: VARIOLITIC-INTERGRANULAR,MICROPHYRIC	
		WHERE SAMPLED: NEXT TO MARGIN	
PHENOCRYSTS:		OLIVINE	>5
		COMMENT: FRESH	
		PLAG	1-5
		COMMENT: QUANTITY UNCERTAIN FOR PLAG	
GROUNDMASS:		OLIVINE	15
		COMMENT: QUANTITY UNCERTAIN FOR OLIVINE	
		PLAG	45
		CLINOPYX	45
		OP.MINS	1
		COMMENT: INCLUDES ILMENITE+MAGNETITE	
VESICLES:		0.1	2
			CELAD

411- 2- 2,	2- 13	ROCK TYPE: OLIVINE PHYRIC BASALT	
		COMMENT: FRESH	
		PIECE NO: 1	
		TEXTURE: INTERSERTAL,PORPHYRITIC	
		WHERE SAMPLED: FLOW INTERIOR	
PHENOCRYSTS:		OLIVINE	10
		COMMENT: FRESH	
GROUNDMASS:		OLIVINE	19
		PLAG	35
		CLINOPYX	17
		MAGN	2
		SPINEL	TR
		GLASS	28
		COMMENT: PERCENTAGES ARRIVED AT BY POINT COUNTS	
VESICLES:		<1	1

411- 3- 1,	44- 46	ROCK TYPE: OLIVINE SPARSELY MICROPHYRIC BASALT	
		PIECE NO: 7	
		TEXTURE: VARIOLITIC,GLASSY,SPARSELY MICROPHYRIC	
		WHERE SAMPLED: NEXT TO GLASSY MARGIN	
PHENOCRYSTS:		OLIVINE	1-5
		COMMENT: FRESH	
GROUNDMASS:		PLAG	15
		GLASS	80
		COMMENT: TURBID,ALTERED	
VESICLES:		.05-0.1	5

411- 3- 1,	96-100	ROCK TYPE: OLIVINE MICROPHYRIC BASALT	
		PIECE NO: 13	
		TEXTURE: VARIOLITIC-INTERGRANULAR,MICROPHYRIC	
PHENOCRYSTS:		OLIVINE	>5 < 1.0
		COMMENT: FRESH	
GROUNDMASS:		OLIVINE	5
		PLAG	40
		CLINOPYX	40
VESICLES:		.05-0.3	5

411- 3- 1,	125-128	ROCK TYPE: OLIVINE-CLINOPYX-PLAG MICROPHYRIC BASALT	
		PIECE NO: 16	
		TEXTURE: INTERSERTAL,GLOMEROPORPHYRITIC,MICROPHYRIC	
		WHERE SAMPLED: FLOW INTERIOR	

PHENOCRYSTS: OLIVINE 1-5
 COMMENT: FRESH, GLOMEROPORPHYRITIC AGGREGATES
 CLINOPYX 1-5
 PLAG 1-5
 COMMENT: APPROX COMP AN65, FRESH, SOME ZONED, MOST HAVE SODIC
 RIMS, GLOMEROPORPHYRITIC AGGREGATES
 SPINEL TR .03-.05 EUHEDRAL
 COMMENT: INCLUSIONS IN SOME OLIVINE MICROPHENOS, REDDISH
 BROWN, PICOTITE SPINEL
 GROUNDMASS: GLASS 60-70
 COMMENT: ALTERED, GRAY
 PLAG 15
 CLINOPYX 10
 OP.MINS 1-3
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GLASS
 VESICLES: 0.2-0.8 10 SMECTITE

411- 3- 1, 134-138 ROCK TYPE: PLAG-OLIVINE PHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 18
 TEXTURE: VARIOLITIC, INTERGRANULAR, INTERSERTAL,
 PORPHYRITIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: PLAG 20
 COMMENT: APPROX COMP AN65-70
 OLIVINE <1
 COMMENT: FRESH, .2 MM SMALLER THAN PLAG
 GROUNDMASS: GLASS 15
 COMMENT: ALTERED, TURBID
 PLAG 25
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .05-0.1 3 ZEOL, CELAD

411- 4- 1, 60- 70 ROCK TYPE: PLAG-OLIVINE PHYRIC BASALT
 PIECE NO: 8
 TEXTURE: PORPHYRITIC
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 PLAG 22
 COMMENT: FRESH
 PERCENTAGES OBTAINED BY POINT COUNT
 GROUNDMASS: OLIVINE 3
 PLAG 18
 CLINOPYX 28
 OP.MINS 2
 GLASS 26
 COMMENT: PERCENTAGES OBTAINED BY POINT COUNT
 VESICLES: <1 2

411- 5- 1, 9- 11 ROCK TYPE: CLINOPYX-OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 2
 WHERE SAMPLED: NEXT TO MARGIN
 TEXTURE: VARIOLITIC, INTERGRANULAR, SPARSELY MICROPHYRIC
 PHENOCRYSTS: CLINOPYX 1-5
 OLIVINE <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: OLIVINE 27
 COMMENT: PRESENT IN TRACE AMOUNTS IN ORIGINAL ESTIMATE

THIN-SECTION DESCRIPTIONS

PLAG 54
 CLINOPYX 37
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE,
 PERCENTAGES OBTAINED BY POINT COUNT
 VESICLES: .02 6
 COMMENT: 5% VESICLES ARE .02 MM, IDENTITY UNKNOWN FOR
 FILLING

412-14-CC, 1- 10 ROCK TYPE: CLINOPYX-PLAG-OLIVINE PHYRIC BASALT
 PIECE NO: 1
 TEXTURE: HOLOCRYSTALLINE, INTERGRANULAR, PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX 1-5
 COMMENT: FRESH, ZONED, RESORBED
 PLAG 1-5
 COMMENT: FRESH, APPROX COMP AN75, NORMAL ZONING
 OLIVINE <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 10
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 35
 OP.MINS 2-3
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: CARB GLASS

412-14-CC, 37- 42 ROCK TYPE: OLIVINE-CLINOPYX-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: GLASSY, SPARSELY MICROPHYRIC, SERIATE
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH
 CLINOPYX <1
 COMMENT: FRESH, CLOTS PRESENT
 PLAG <1
 COMMENT: FRESH, CLOTS PRESENT
 GROUNDMASS: GLASS 90
 COMMENT: ALTERED, ALSO GRANULAR OPAQUES AND CLINOPYROXENE
 SHEAVES IN GROUNDMASS

412-14-CC, 46- 60 ROCK TYPE: PLAG-CLINOPYX SPARSELY PHYRIC BASALT
 PIECE NO: 6
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: SPARSELY PORPHYRITIC
 PHENOCRYSTS: CLINOPYX <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH, NORMALLY ZONED, APPROX COMP AN75
 GROUNDMASS: PLAG
 CLINOPYX
 ALTERATION: CHLORITE GROUNDMASS

412-15- 1, 50- 56 ROCK TYPE: PLAG-CLINOPYX SPARSELY PHYRIC BASALT
 COMMENT: CF CORE 14CC, PIECE 6
 PIECE NO: 6

412-15- 1, 62- 68 ROCK TYPE: PLAG-CLINOPYX PHYRIC BASALT
 PIECE NO: 7
 TEXTURE: INTERGRANULAR, PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: CLINOPYX 1-5
 COMMENT: ZONED
 PLAG >5
 COMMENT: ZONED, APPROX COMP AN72-63

GROUNDMASS: OLIVINE TR
 VESICLES: 3-5 20

412A- 1- 1, 2- 10 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 1
 TEXTURE: SUBOPHITIC, INTERGRANULAR, COARSE-GRAINED,
 SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG <1
 COMMENT: APPROX COMP AN61-54, FRESH
 GROUNDMASS: GLASS 5
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 45
 ALTERATION: CHLORITE GLASS
 OP.MINS GLASS
 VESICLES: < 0.3 1

412A- 1- 1, 30- 32 ROCK TYPE: OLIVINE-PLAG SPARSELY PHYRIC BASALT
 COMMENT: SLIGHTLY ALTERED
 PIECE NO: 3
 TEXTURE: SUBOPHITIC, INTERGRANULAR, INTERSERTAL, SPARSELY
 PHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 COMMENT: APPROX COMP AN65
 GROUNDMASS: OLIVINE 5-7
 PLAG 40
 CLINOPYX 35
 COMMENT: COLORLESS
 OP.MINS 5-7
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 10-15
 COMMENT: FRESH, ALTERED, PALE BROWN WHEN FRESH
 ALTERATION: SMECTITE GLASS
 VESICLES: 1.0 3-5 SMEC, IDTINGS

412A- 2- 1, 18- 22 ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
 PIECE NO: 3
 TEXTURE: SUBOPHITIC, INTERGRANULAR, PORPHYRITIC
 COMMENT: FLOW INTERIOR
 PHENOCRYSTS: PLAG >5 2.0
 COMMENT: FRESH, APPROX COMP AN77
 CLINOPYX >5 2.0
 COMMENT: FRESH, RIMMED
 OLIVINE <1 0.5
 COMMENT: FRESH
 GROUNDMASS: OLIVINE TR
 PLAG 45
 CLINOPYX 45
 OP.MINS TR
 COMMENT: INCLUDES ILMENITE+MAGNETITE, LATE

412A- 2- 2, 25- 30 ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
 COMMENT: FRESH (SLIGHT ALTERATION)
 TEXTURE: SUBOPHITIC, INTERGRANULAR, PORPHYRITIC, COARSE
 GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 10-15
 COMMENT: FRESH, APPROX COMP AN65, NORMAL ZONING

THIN-SECTION DESCRIPTIONS

GROUNDMASS: OLIVINE 2-3
 PLAG 40
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: 3.0 2-4

412A- 3- 1, 7- 10 ROCK TYPE: PLAG-OLIVINE SPARSELY PHYRIC BASALT
 PIECE NO: 2
 TEXTURE: VARIOLITIC, INTERGRANULAR, SPARSELY PORPHYRITIC
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: PLAG 45 0.1-0.3
 CLINOPYX 45 0.1-0.3
 COMMENT: 2ND GENERATION ARE QUENCH
 VESICLES: .1-0.3 2-4

412A- 3- 1, 36- 40 ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
 PIECE NO: 6
 TEXTURE: PORPHYRITIC
 PHENOCRYSTS: PLAG >5
 COMMENT: FRESH, APPROX COMP AN80-50, NORMAL ZONING, NA-RICH RIMS
 CLINOPYX 1-5
 COMMENT: FRESH
 OLIVINE <1
 COMMENT: FRESH TO PARTLY ALTERED
 GROUNDMASS: GLASS
 COMMENT: ALTERED
 OP.MINS
 CLINOPYX SHEAVES
 ALTERATION: CARB OLIVINE
 VESICLES: 0.2 <1

412A- 3- 1, 70- 80 ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
 PIECE NO: 9
 TEXTURE: SUBOPHITIC, INTERGRANULAR, COARSE-GRAINED, PORPHYRITIC
 PHENOCRYSTS: PLAG >5
 COMMENT: NORMAL ZONING, FRESH
 CLINOPYX 1-5
 COMMENT: ZONED, FRESH
 OLIVINE <1
 COMMENT: FRESH, ALTERED
 GROUNDMASS: OLIVINE 1-3
 PLAG 50
 CLINOPYX 25
 OP.MINS 7
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS
 ALTERATION: SMECTITE PHENOS, GLASS

412A- 3- 2, 70- 80 ROCK TYPE: PLAG-CLINOPYX-OLIVINE PHYRIC BASALT
 COMMENT: SLIGHTLY ALTERED
 PIECE NO: 4B
 TEXTURE: SUBOPHITIC, INTERGRANULAR, COARSE GRAINED, PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 10
 COMMENT: FRESH
 CLINOPYX 4
 COMMENT: FRESH
 OLIVINE 1-5

COMMENT: FRESH
 GROUNDMASS: OLIVINE 10
 PLAG 40
 CLINOPYX 30
 GLASS 3
 OP.MINS 17
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS, PHENOS
 VESICLES: 1 1 SMECTITE

412A- 3- 3, 27- 30 ROCK TYPE: CLINOPYX-PLAG-OLIVINE PHYRIC BASALT
 COMMENT: QUENCH FLOW
 PIECE NO: 3
 TEXTURE: GLASSY, VITROPHYRIC
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: CLINOPYX >5
 COMMENT: FRESH, HOURGLASS EXTINCTION
 PLAG >5
 COMMENT: FRESH, NORMAL ZONING, APPROX COMP AN65(?), NA-RICH RIMS
 OLIVINE 1-5
 COMMENT: FRESH, ALTERED
 GROUNDMASS: GLASS 70
 COMMENT: FRESH
 OLIVINE TR .01-.05
 PLAG 5 .01-.05
 CLINOPYX 5 .01-.05 PLUMOSE
 ALTERATION: SMECTITE GLASS
 CHLORITE PHENOS
 VESICLES: .01-.05 2-4 CHLORITE

412A- 4- 1, 20- 25 ROCK TYPE: APHYRIC BASALT
 COMMENT: MODERATELY ALTERED (FOR GLASS)
 PIECE NO: 3A
 WHERE SAMPLED: FLOW INTERIOR
 TEXTURE: INTERGRANULAR, APHYRIC, COARSE GRAINED
 PHENOCRYSTS: PLAG <1
 COMMENT: FRESH
 GROUNDMASS: OLIVINE
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 ALTERATION: SMECTITE GLASS
 VESICLES: 1-2 2

412A- 4- 1, 40- 43 ROCK TYPE: OLIVINE-PLAG-CLINOPYX SPARSELY MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: VARIOLITIC-INTERGRANULAR
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, ALTERED
 CLINOPYX <1
 COMMENT: FRESH
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: OLIVINE 3-5
 PLAG 40
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20

THIN-SECTION DESCRIPTIONS

ALTERATION:	SMECTITE	GROUNDMASS
	ZEOLITE	GROUNDMASS
VESICLES:	< 0.1	1

412A- 5- 1, 50- 54 ROCK TYPE: PLAG-OLIVINE-CLINOPYX MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: SUBOPHITIC-INTERSERTAL, MICROPHYRIC
 PHENOCRYSTS: PLAG 0-17
 OLIVINE 4-6
 COMMENT: FRESH, ALTERED
 CLINOPYX 3-5
 GROUNDMASS: OLIVINE 5-7
 PLAG 40
 CLINOPYX 30
 OP.MINS 7
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 15
 ALTERATION: SMECTITE GLASS, OLIVINE (PARTLY)

412A- 5- 1, 91- 94 ROCK TYPE: PLAG-CLINOPYX-OLIVINE MICROPHYRIC BASALT
 PIECE NO: 10
 TEXTURE: INTERSERTAL, MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 10
 CLINOPYX 5
 COMMENT: ROTATING
 OLIVINE 3
 GROUNDMASS: GLASS
 COMMENT: FRESH, RECRYSTALLIZED
 PLAG
 CLINOPYX
 OP.MINS
 COMMENT: INCLUDES ILMENITE+MAGNETITE

412A- 6- 1, 70- 73 ROCK TYPE: APHYRIC BASALT
 COMMENT: SLIGHTLY ALTERED
 PIECE NO: 6 (ROCK NUMBER DOES NOT MATCH INTERVAL)
 TEXTURE: SUBOPHITIC, APHYRIC, COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 GROUNDMASS: OLIVINE 3
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 25
 ALTERATION: SMECTITE GLASS, OLIVINE

412A- 7- 1, 2- 5 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 1
 TEXTURE: SPARSELY MICROPHYRIC, OPHITIC
 PHENOCRYSTS: PLAG <1
 COMMENT: ALTERED, FRESH
 GROUNDMASS: OLIVINE 0.2
 PLAG 40
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 25
 ALTERATION: SMEC PHENOS, OLIVINE
 CARB PHENOS, OLIVINE
 VESICLES: 0.5-2.0 10-15 SMEC, CARB, CLAY

412A- 7- 2, 60- 62 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: SUBOPHITIC, APHYRIC, COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG <1
 COMMENT: FRESH, ALTERED
 GROUNDMASS: OLIVINE 10
 PLAG 35
 COMMENT: LARGE EARLY
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 ALTERATION: SMECTITE GLASS, OLIVINE (PARTLY)
 VESICLES: 1

412A- 7- 2, 110-115 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 12
 TEXTURE: VARIOLITIC-SUBOPHITIC, SPARSELY MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: PLAG <1
 COMMENT: APPROX COMP AN65
 OLIVINE <1
 GROUNDMASS: OLIVINE 5
 PLAG 40
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 ALTERATION: SMECTITE OLIVINE
 VESICLES: 2.0-3.0 15-20 SMECTITE

412A- 8- 1, 22- 26 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 3
 TEXTURE: SUBOPHITIC, APHYRIC,
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 PLAG
 COMMENT: APPROX COMP AN72
 GROUNDMASS: OLIVINE 2
 PLAG 40
 CLINOPYX 40
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 13
 ALTERATION: SMECTITE PHENOS, GLASS
 VESICLES: 1-5 35-40 SMECTITE

412A- 8- 1, 130-133 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 17
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE
 COMMENT: FRESH, ALTERED
 PLAG
 COMMENT: APPROX COMP AN72
 GROUNDMASS: OLIVINE 3
 PLAG 40
 CLINOPYX 35
 COMMENT: LATE 2ND GENERATION
 OP.MINS 5-7

THIN-SECTION DESCRIPTIONS

COMMENT: INCLUDES ILMENITE+MAGNETITE, LARGE, IN PALE BROWN
 GLASS
 GLASS 15
 ALTERATION: SMECTITE GLASS, PHENOS
 VESICLES: SMECTITE

412A- 8- 2, 35- 39 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 4A
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE RARE
 COMMENT: FRESH, ALTERED
 GROUNDMASS: OLIVINE 3-5
 PLAG 40
 CLINOPYX 35
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 15
 ALTERATION: SMECTITE GLASS, PHENOS
 VESICLES: SMECTITE

412A- 9- 1, 68- 72 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: EXTENSIVELY ALTERED
 PIECE NO: 8
 TEXTURE: VARIOLITIC TO INTERSERTAL, FINE GRAINED, SPARSELY
 MICROPHYRIC
 PHENOCRYSTS: OLIVINE 3
 COMMENT: FRESH, ALTERED
 PLAG 2
 COMMENT: FRESH, RESORBED
 GROUNDMASS: OLIVINE 5
 PLAG 30
 CLINOPYX 15
 OP.MINS TR
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 50
 ALTERATION: SMECTITE GLASS, OLIVINE
 VESICLES: < 1.0 5

412A-10- 1, 54- 56 ROCK TYPE: PLAG-OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: INTERGRANULAR, INTERSERTAL, FINE GRAINED, SPARSELY
 MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 PLAG <1
 GROUNDMASS: OLIVINE 5
 PLAG 40
 CLINOPYX 30
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 GLASS 20
 VESICLES: 1.0 5

412A-11- 1, 32- 36 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
 COMMENT: FRESH
 PIECE NO: 4
 TEXTURE: SUBOPHITIC, HOLOCRYSTALLINE, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1 SKELETAL (FEW)
 PLAG <1
 COMMENT: ZONED, APPROX COMP AN60

GROUNDMASS: GLASS 2-3
 COMMENT: FRESH, ALTERED
 OLIVINE 5-10 .1-1.0
 PLAG 45 .1-1.0
 CLINOPYX 40 .1-1.0
 OP.MINS 1-2 .1-1.0 OCTAHEDRAL
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GLASS, OLIVINE
 VESICLES: 1.0 <1

412A-11- 1, 97-102 ROCK TYPE: PLAG-CLINOPYX-OLIVINE MICROPHYRIC BASALT
 PIECE NO: 11
 TEXTURE: GLASSY, MICROPHYRIC
 PHENOCRYSTS: OLIVINE 2-3
 CLINOPYX 5-7
 PLAG 10-15
 COMMENT: APPROX COMP AN62
 GROUNDMASS: GLASS 80
 COMMENT: FRESH, ALTERED
 ALTERATION: SMECTITE GLASS

412A-11- 2, 17- 21 ROCK TYPE: PLAG MODERATELY PHYRIC BASALT
 PIECE NO: 2
 TEXTURE: SUBOPHITIC, MODERATELY PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG 1-5 < 5.0
 COMMENT: APPROX COMP AN60, ZONED, RESORBED SPARSELY
 DISTRIBUTED
 GROUNDMASS: GLASS >5
 COMMENT: FRESH
 OLIVINE <5 .1-1.0
 PLAG 45 .1-1.0
 CLINOPYX 40 .1-1.0
 MAGN 2 .1-1.0
 COMMENT: WELL DEVELOPED IN GLASSY REGIONS
 VESICLES: 1.0 1

412A-11- 3, 69- 71 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 7
 TEXTURE: SUBOPHITIC, APHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG
 COMMENT: APPROX COMP AN60
 CLINOPYX <1 0.5
 COMMENT: 1 CRYSTAL
 GROUNDMASS: GLASS 5
 COMMENT: FRESH
 OLIVINE 2-5
 COMMENT: FRESH
 PLAG 45
 CLINOPYX 40
 OP.MINS 5
 COMMENT: INCLUDES MAGNETITE+ILMENITE
 ALTERATION: SMECTITE GLASS
 VESICLES: 1.0 2-3 SMECTITE
 COMMENT: BROWN

412A-12- 1, 10- 15 ROCK TYPE: PLAG-CLINOPYX-OLIVINE MICROPHYRIC BASALT
 PIECE NO: 2
 TEXTURE: GLASSY, MICROPHYRIC, GLOMEROPORPHYRITIC
 WHERE SAMPLED: FLOW MARGIN

THIN-SECTION DESCRIPTIONS

PHENOCRYSTS: PLAG 10
COMMENT: FRESH
CLINOPYX 5
COMMENT: FRESH, HOURGLASS EXTINCTION
OLIVINE 3
COMMENT: SOME FRESH, SOME PARTLY ALTERED
GROUNDMASS: GLASS 80
COMMENT: ALTERED, TURBID
PLAG 1-5
CLINOPYX 1-5
VESICLES: <1.0 <1

412A-13- 1, 20- 25 ROCK TYPE: APHYRIC BASALT
COMMENT: FRESH
PIECE NO: 2B
TEXTURE: INTERGRANULAR, EQUIGRANULAR, APHYRIC
WHERE SAMPLED: FLOW INTERIOR
PHENOCRYSTS: PLAG <1
COMMENT: FRESH, PART OF 1 PHENOCRYST ONLY
OLIVINE 0
GROUNDMASS: GLASS 5
COMMENT: ALTERED
PLAG 45
CLINOPYX 45
COMMENT: HOURGLASS EXTINCTION
OLIVINE 0
VESICLES: 0.4-0.7 5-10 SMECTITE

412A-13- 2, 55- 60 ROCK TYPE: OLIVINE-PLAG SPARSELY MICROPHYRIC BASALT
PIECE NO: 5
TEXTURE: VARIOLITIC-INTERGRANULAR, SPARSELY MICROPHYRIC
WHERE SAMPLED: NEXT TO MARGIN
PHENOCRYSTS: OLIVINE 5-7
COMMENT: PARTLY ALTERED
PLAG <1
COMMENT: FRESH, NORMAL ZONING, NA-RICH RIMS, SOME
GLOMEROPORPHYRITIC AGGREGATES
GROUNDMASS: GLASS 5
COMMENT: ALTERED
OLIVINE
PLAG 50
CLINOPYX 40
COMMENT: HOURGLASS EXTINCTION
ALTERATION: SMECTITE OLIVINE
VESICLES: 0.1-0.3 5

412A-13- 3, 31- 36 ROCK TYPE: APHYRIC BASALT
PIECE NO: 4
TEXTURE: SUBOPHITIC, INTERGRANULAR, HOLOCRYSTALLINE,
APHYRIC, EQUIGRANULAR
WHERE SAMPLED: FLOW INTERIOR
GROUNDMASS: GLASSY 3
COMMENT: ALTERED
OLIVINE 0
PLAG 45
CLINOPYX 45
COMMENT: HOURGLASS EXTINCTION, SECTOR ZONED
OP.MINS 3-4
COMMENT: INCLUDES ILMENITE+MAGNETITE
VESICLES: 0.1-0.3 5-7 RECRYSTALLIZED ROUND

412A-14- 1, 4- 14 ROCK TYPE: PLAG-CLINOPYX-OLIVINE SPARSELY MICROPHYRIC BASALT
PIECE NO: 1

TEXTURE: SUBOPHITIC TO INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: PARTLY ALTERED
 CLINOPYX <1
 COMMENT: FRESH, HOURGLASS EXTINCTION
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 3
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 45
 ALTERATION: SMECTITE GLASS
 VESICLES: < 0.1 1-2 GLASS

412A-14- 2, 70- 80 ROCK TYPE: PLAG SPARSELY MICROPHYRIC BASALT
 PIECE NO: 7
 TEXTURE: SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 5-10
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 45
 COMMENT: HOURGLASS EXTINCTION
 VESICLES: 0.1 1

412A-14- 3, 67- 70 ROCK TYPE: PLAG-OLIVINE SPARSELY MICROPHYRIC BASALT
 PIECE NO: 4A
 TEXTURE: SUBOPHITIC-INTERGRANULAR, SPARSELY MICROPHYRIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH TO ALTERED
 PLAG <1
 COMMENT: FRESH
 GROUNDMASS: GLASS 3
 COMMENT: ALTERED
 PLAG 45
 CLINOPYX 45
 COMMENT: HOURGLASS EXTINCTION
 ALTERATION: SMECTITE OLIVINE
 VESICLES: 0.1 <1 SMECTITE

412A-14- 4, 124-127 ROCK TYPE: PLAG-OLIVINE SPARSELY PHYRIC BASALT
 PIECE NO: 14
 TEXTURE: SUBOPHITIC-INTERGRANULAR, SPARSELY PORPHYRITIC,
 COARSE GRAINED
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: ALTERED, POSSIBLE RELICT OLIVINE
 PLAG <1
 GROUNDMASS: GLASS 7
 PLAG 45

412A-14- 5, 22- 29 ROCK TYPE: PLAG-OLIVINE SPARSELY PHYRIC BASALT
 PIECE NO: 3
 TEXTURE: SUBOPHITIC-INTERGRANULAR, FINE GRAINED,
 SPARSELY PORPHYRITIC
 WHERE SAMPLED: FLOW INTERIOR
 PHENOCRYSTS: OLIVINE <1
 COMMENT: FRESH, ALTERED
 PLAG <1

THIN-SECTION DESCRIPTIONS

GROUNDMASS: COMMENT: FRESH, APPROX COMP AN60
 OLIVINE
 COMMENT: RARE PSEUDOMORPHS
 GLASSY 7-10
 COMMENT: ALTERED
 PLAG 40
 CLINOPYX 40
 OP.MINS 3-5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 ALTERATION: SMECTITE GLASS
 VESICLES: 0.1 1

413- 1- 2, 38- 42 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 COMMENT: ALTERED
 PIECE NO: 5
 TEXTURE: VARIOLITIC, GLASSY, MICROPHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 10 0.2-0.4
 COMMENT: FRESH
 GROUNDMASS: GLASS 97
 COMMENT: ALTERED
 OLIVINE RARE QUENCHED
 PLAG RARE QUENCHED
 CLINOPYX PLUMOSE
 OP.MINS 3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .1-.5 <1

413- 1- 2, 123-124 ROCK TYPE: APHYRIC BASALT
 PIECE NO: 14
 TEXTURE: APHYRIC, OPHITIC, HOLOCRYSTALLINE
 WHERE SAMPLED: FLOW INTERIOR
 GROUNDMASS: OLIVINE 10
 PLAG 55
 CLINOPYX 35
 COMMENT: SECTOR ZONING, COLORED
 OP.MINS 5
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .1-.4 2 SMECTITE

413- 2- 1, 42- 46 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 PIECE NO: 5
 TEXTURE: MICROPHYRIC, VARIOLITIC, INTERSERTAL, GLASSY
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 10
 COMMENT: FRESH
 GROUNDMASS: GLASS 65
 COMMENT: ALTERED, GRAY
 OLIVINE 5
 PLAG 15
 CLINOPYX 15

413- 2- 1, 70- 74 ROCK TYPE: OLIVINE MICROPHYRIC GLASSY BASALT
 PIECE NO: 8
 TEXTURE: MICROPHYRIC, GLASSY
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE 7-10 QUENCHED
 COMMENT: FRESH
 GROUNDMASS: GLASS 90-93
 COMMENT: ALTERED (DEVITRIFIED), DARK BROWN

413- 3- 1, 24- 27 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 PIECE NO: 4

TEXTURE: MICROPHYRIC, VARIOLITIC, INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE >5 .3-.4
 COMMENT: FRESH, RARE PHENOS UP TO 1.5MM, SPINEL INCLUSIONS
 GROUNDMASS: GLASS 20
 COMMENT: ALTERED, GRAY BROWN
 OLIVINE 5
 PLAG 35
 CLINOPYX 30
 OP.MINS 3
 COMMENT: INCLUDES ILMENITE+MAGNETITE

413- 3- 1, 44- 48 ROCK TYPE: OLIVINE MICROPHYRIC GLASSY BASALT
 PIECE NO: 6
 TEXTURE: GLASSY, MICROPHYRIC
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE 7-10 QUENCHED
 COMMENT: FRESH
 GROUNDMASS: GLASS 90-95
 COMMENT: ALTERED, GRAY BROWN

413- 4- 1, 23- 27 ROCK TYPE: OLIVINE MICROPHYRIC GLASSY BASALT
 PIECE NO: 3
 TEXTURE: GLASSY, MICROPHYRIC
 WHERE SAMPLED: FLOW MARGIN
 PHENOCRYSTS: OLIVINE 10
 COMMENT: FRESH
 GROUNDMASS: GLASS 90
 COMMENT: ALTERED, YELLOW BROWN
 ALTERATION: PALAG GLASS
 VESICLES: .01 RARE

413- 4- 1, 65- 67 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 PIECE NO: 7
 TEXTURE: VARIOLITIC, GLASSY, MICROPHYRIC
 WHERE SAMPLED: NEXT TO GLASSY MARGIN
 PHENOCRYSTS: OLIVINE 10
 COMMENT: FRESH
 GROUNDMASS: GLASS 40
 COMMENT: ALTERED, GRAY
 SPINEL
 OLIVINE 5
 PLAG 35
 CLINOPYX 10
 VESICLES: .2-.4 1 CARBONATE

413- 5- 1, 20- 22 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 PIECE NO: 3
 TEXTURE: VARIOLITIC, INTERSERTAL, MICROPHYRIC
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE 10
 COMMENT: FRESH
 SPINEL
 COMMENT: INCLUSIONS IN OLIVINE MICROPHENOS
 GROUNDMASS: GLASS 20
 COMMENT: ALTERED
 OLIVINE TR
 PLAG 40
 CLINOPYX 30

413- 5- 1, 45- 50 ROCK TYPE: OLIVINE MICROPHYRIC BASALT
 PIECE NO: 8

THIN-SECTION DESCRIPTIONS

TEXTURE: VARIOLITIC, INTERSERTAL
 WHERE SAMPLED: NEXT TO MARGIN
 PHENOCRYSTS: OLIVINE 7
 COMMENT: FRESH
 GROUNDMASS: GLASS 30
 COMMENT: ALTERED, COLORED TO REDDISH BROWN BY IRON OXIDES
 PLAG 30
 OLIVINE 5
 CLINOPYX 25
 OP.MINS 3
 COMMENT: INCLUDES ILMENITE+MAGNETITE
 VESICLES: .02-.4 <1