HC = Hyaloclastites
VCL = Volcaniclastics

D 9 Wodejebato/Sylvania Guyot, Northern Slope, north of drill site.

12°06.0'N /164° 56.25 E (3000m)- 12° 03.6' N/ 164° 56.25'E (1500m).

Summary:
Mix of mostly basalts (about 100 kg), epiclastic and volcaniclastic rocks. Many dense, subrounded and non-quenched vesicular rocks may be subaerial.

Rock Groups:

Group I
ol, cpx rich, picritic basalt, with very large cpx phenos (> 1 cm, in part), #.s 1 (there are more small pebbles of this type as well, maybe with even more phenocrysts)

Group II
Similar to group 1, less phyric, maybe continuum with group IV #'s: 4,m 14, 17

Group III
Mn-crusts, for Hein, #'s: 8-11; 22, 23, 24, 25 (some samples later taken out because of duplication and total volume.

Group IV
sparsely ol/cpx phyric: #'s: 5, 6, 12

Group V
massive, aphyric, relatively fresh15, 16

Group VI
plag-phyric, rel fresh, internal fracturing as in nephelinites : #'s 2, 3, 14,

Group VII
all to malcolm

Group VI
hawaiiate: slightly pl phyric # 13 all to malcolm.

Work Plans:
Thin sections: 1, 2, one of (17, 4, 6) 13(@ MP), 15, (19 @ MP) also selected: 17, 16,3, 14, Chose 1, 2
Dating: some plag phyric (#s 13, 19 for Malcolm)
Isotopes: Sample 1 great for cpx phenocrysts
Alteration: quenched margin of 1 for zeol, plag (Kari)
Manganese Crusts: undescribed samples (often not labelled inside wet pack): 8-11, 22, 23, 24.

Dredge Number	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Sample Number	1	1	1	2	2	3	3	4	4	5	5	6	7	7	12
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	BML	BML	BML	BML	BML	BML	BMI	BMI	BMI
Approximate Weight <g>	10 kg	10 kg	10 kg	1 kg	1 kg	1 kg	1 kg	500	500	500	300	1000			
Mn crust thickness	1 mm	5 mm	2 mm	<1 mm	<1 mm	.25 mm	0.3	0	0	0-0.5	0-0.5	0-0.5			
Palagonite rind thickness						0	0	0	0	0	0	0			
ROCK TYPE:(PHENO-ROCK)	ol, cpx	ol, cpx	ol, cpx	pl, ol,cpx		plg,cpx	ol pl cp	ol cpx	ol cpx	ol pl cp	ol pl cp	basalt			
STRUCTURAL	porphyry			Porphyry		porph.	phyric	phyric	phyric	phyric	phyric	aphyric			
Mono-lithological?	Y	Y	Y	Y	Y	Y	Y	y	y	y	y	y			
Fresh Glass?	N	N	N	N	N	N	N	n	n	n	n	n			
Rock Color	brown/gray		br/gry	gray	gray	gray	m gray	m gray	m gray	brown	brown	m gray			
Groundmass Texture	holo	holo	holo	holo	holo	holo	holocry	holoxin	holoxin	suboph	suboph	holo			
Ave Grain Size (n	0.01	0.01	0.01	0.02	0.02	0.01	<.01								
% alteration				20		20	10	5	<5	>80	>85	>80			
Phenocryst Texture/Distr.	50%	30%	40%	2%		2%	2%	5%	3%	2	2	10(micro)			
Clinopyroxene %	40	40	35	10	10	15	20	60	45	1	1	99			
size (mm)	5 to 10	3 to 9	3 to 10	1	1 to 3	1 to 4	0.5-1.5	0.5-4	0.5-4	2	2	<0.3			
shape	eu	eu	eu	eu/sub	eu/sub	eu/sub	subhedr	subhed	sub-eu	subhed	subhed	anhedral			
alteration %	70	80	50	50	40	75	70	70	70	70+	70				
alteration phase							?								
Olivine %	60	60	65	10	15	15	50	40	50	95	98				
size (mm)	2 to10		2 to 8	1	1.5	0.5 to	0.5-3	0.5-3	0.5-3	0.5-2	0.5-1				
shape	eu	eu	eu	sub	sub	eu	subhedr	subhed	subhed	anhedr	anhedral				
alteration %	99	95	100	100	100		100	100	100	100	100				
alteration phase							?								
plagioclase %	0	0	0	80	75	70	5	1	5	4	trace				
size (mm)				1 to 2	1 to 3		0.5	1	0.5	<0.5	<0.5				
shape				sub/an	sub/an		sub-euh	euhedr	sub-eu	euhedr	euhedral				
alteration %				75	80		50	40	50	70	70				
alteration phase							?								
amphibole %	0	0	0	0	0										
size (mm)															
shape															
alteration %															
alteration phase															
other %															
type															
size (mm)															
shape															
alteration %															
alteration phase															
Vesicles %	15	15	15	5	5		1			<1	3				
type				veins	veins					bubbles	bubbles				
size (mm)	1	0.1-1	0.5-1	0.5-1	wide		<1.5			1	0.5-5.0				
shape	round	round	round	elong.	elong.		round			round	round				
total filling %	90	80	50	35%	40%		30			0	0				
filling-type	calcite	calcite	calcite	?	?										
%	100	100	100												
filling-type															
%															
General appearance															
and/or other distinguishing															
characteristics															

9	9	9	9	9	9	9	9	9	9	
13	13	14	15	16	17	18	19	20	21	
BMI	BMI	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM	
		1000	700	500	800	500	500	300	1000	
		<1	≤2	<1	0-6	0	≤1	0	<1	
		0	3	1 to 6	0	0	0-3	0	0	
		ol cpx	basalt	basalt	ol cpx basalt	hyaloclastite	hyaloclastite	cpx ol basa	cpx ol basalt	
		porphy	aphyric	aphyric	porphyritic	breccia	cc breccia	porphyritic	porphyry in a cc breccia	
		y	no	y	y	n	n	y	n	
		n	no	n	n	n	n	n	n	
		m gray	brown gray	brown gray	gray	rust, white &	multicolored	dk gray	multi	
		interse	micro holoxln	aphanitic	aphanitic	microxln	microxln	aphanitic	microxln	
		<0.1	<0.1	<0.1	<0.1	cc + smectite	cc + smectites			
		~50	60	>50	80	100	100			
		10	0	v.sparse micr	30	(in clasts) ~1	variable to 30	50	in 1 frag=30%	
		25			70	50	15	35	10	
		0.5 to 3			1 - 3	1 - 5	0.5-3	10	2 - 3	
		euhedral			euhedral	euhedral	subhedral	subhedral	euhedral	
		>85			90	0 - 20	30	70	50	
		calc?			smectites		mixed	smect+zeo	smect	
		20			30	30	10?	65	90	
		4-Jan			0.5-3	1 - 3	≤4	1 - 5	3	
		euhedral			euhedral	euhedral	euhedral	euhedral	euhedral	
		100			90	100	100	100	90	
		oxides			oxides	oxides	oxides	oxides	oxides	
		40			<5	1	3 to 70	<1		
		0.5-1.5			~1	1	2	0.5 x 3		
		euhedral			euhedral	euhedral	euhedral	euhedral		
		75			100	50	80	50%		
		cc			cc?	cc/clay	cc	cc?		
		15?			<2 (?)	?				
		~1			1					
		euhedral			euhedral					
		20			75					
		?			mixed					
		<1			10	3		15	20	
		weathered phenocryst sites?			bubbles	interstitial/veins		bubbles	bubbles	
		<1			1	3		1	1	
		irregular			round	irr		round	round	
		40			3	na		~50±	20	
		zeolites			cc&zeolites	zeo, (qtz?)		cc?	smectites	
		50			30	25		90	40	
		cc			smectites	smectites		zeo	zeo	
		50			70	75		10	60	

Tunes Dredge 10 Summary

Location: 12°07.0'N /165° 00.7 E (3000m)- 12° 06.5' N/ 165° 01.2'E (1500m).

Wodejebato/Sylvania Guyot, North-Eastern Satellite.

Summary:

pl, cpx, ol, basalts often vesicular, probably mostly subaerial, (unquenched, pipe vesicles, vesicularity). Some of group 2 show palagonitized quenched margins

Rock Groups:

Group I
moderately plag-phyric, vesicular
samples: 1 (50% to MP), 2

Group II
moderately cpx/plag/ol phyric, vesicular
samples: 5 (50% to MP), 9, 14, 23, (all to MP)

Group III
moderately plag phyric (10%), massive, somewhat intermediate between I and II
samples: 7 (100g all to MP)

Group IV
minimally plag (<2%) cpx (<<1%) and ol (<< 1), pipe vesicles common, probably subaerial
samples: 3, 4 , 6, 8, 17, 19, 20, 21,

Group V
picrite, rel. small sample from breccia with fresh cpx: only good sample for isotopes: same type of majority of dredge 9?

sample: 25

Work Plans:

Thin sections: 1, 5, 6, maybe 25
Dating: 1, 7

Isotopes: 25 for cpx concentrate (small sample)
Alteration: 14 for palagonite; 11-hyaloclastite for palagonite/celadonite.
Manganese Crusts: ?

Dredge Number	10	10	10	10	10	10
Sample Number	1	2	3	4	5	6
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	BML	BML
Approximate Weight <g>	1000	750	200	250	300	1000
Mn crust thickness	0	0	<1	0	0	0
Palagonite rind thickness	0	0	0	0	0	0
ROCK TYPE:(PHENO-ROCK)	pl ol basalt	pl cpx basalt	pl basalt	cpx ol pl basa	cpx ol pl bas	ol pl basalt
STRUCTURAL	porphyry	porphyry	porphyry	porphyry	phyric	phyric
Mono-lithological?	y	y	y	y	y	y
Fresh Glass?	n	n	n	n	n	n
Rock Color	gray	gray	tan	tan/gray	gray	tan-gray
Groundmass Texture	holo	holo	holo	holo	intersertal	doleritic
Ave Grain Size (mm	<0.05	0.05	~0.1	0.1	0.05	0.1
% alteration	?	30	40	75	30	70+
Phenocryst Texture/Distr.	20	15	~5%	0	15	1
Clinopyroxene %	0	4	0	5	3	0
size (mm)		~1.5		0.1	0.5-2	
shape		euhedral		sub-anhedral	euh	
alteration %		30		60	50	
alteration phase		?				
Olivine %	5	0	0	15	7	30
size (mm)	~0.5			7	1 - 3	0.1
shape	anhedral			anhedral	sub	sub
alteration %	100			100	100	100
alteration phase	oxides			ox	FeOx+ clay	?
plagioclase %	15	11	100	60	90	70
size (mm)	1 - 3	1 - 2	~1	<0.2	<2	0.1-1
shape	an - subhedra	sub-anhedral	anhedral	sub	euh	sub
alteration %	70	60	>50	?	<30	70
alteration phase	cc/clay	epidote/clays	clays/epi	?	?	?
amphibole %		0		0		
size (mm)						
shape						
alteration %						
alteration phase						
other %						
type						
size (mm)						
shape						
alteration %						
alteration phase						
Vesicles %	20	20	2	20	20	1
type	bubbles	bubbles	bubbles	bubbles	bubbles	bubb
size (mm)	2	0.5-1	~~1	.05-2	0.5-2	0.5
shape	round	irr-round	round	round	round	round
total filling %	30	20	15	35	10	5
filling-type	clays	clays	zeolites	clays	zeol	??
%	75	60	55	80	30	
filling-type	ep	zeo	clays	zeo	clay	
%	25	40	45	20	70	
General appearance						
and/or other distinguishing						
characteristics						

10	10	10	10	10	10	10	10
7	8	9	10	11	12	13	14
BML	BML	BML	BML	BML	PEJ	PEJ	PEJ
300	200	400	200	1000	400	100	500
0	0	0	0-0.1	0	<0.01 mm	1-10 mm	<0.01 mm
0	0	0	0	0		0.2	
ol pl cpx basa	cpx ol basalt	ol cpx pl basa	pl ol basalt	hyaloclastite	ol,cpx, plg	aphyric	plg, ol, cpx
phyric	phyric	phyric	phyric	breccia	porphyry	basalt	porphyry
y	y	y	y	n	Y	Y	N
n	n	n	n	n	N	N	N
tan-gray	or-gray	dk gray	gray	multi	light brown	tannish browr	med. brown
intersertal	ophitic	intersertal	intersertal	vari/micro	holocrystallin	holocrystallin	holocrystallin
0.05	0.1	0.01	0.01-0.1		0.05	0.02	0.02
80	85	60	70+	90+	>80	90	75
20	15	10	20	70	5%	0	10
70	1	20	1	30	1	10	3
1	0.5	1	1	2	1	0.02	1
an-subhedral	anhedral	subhedral	sub	sub	eu	an	eu
80+	40	60	20	60+	?	65	
				?			
10	14	10	90	70	3		2
0.5-1	0.2-0.5	.05-2	0.3-1	0.5-1	0.5-1.5	0.005	1
euhedral	an-subhedral	sub	sub	anhedral	eu	eu/sub	eu
100	100	100	100	100	100	100	100
Fe-clay?	?	?	?	?			
20		70	9		1	60	5
0.5-1		.03-2	1		0.5	<.01	.5 to 1
sub		sub	an-sub		eu	sub	eu
40		60	60		70		70
?		?	?				
					0	0	0
1	5	30	3		30	20	25
bubb	bubbles	bubbles	cracks, bubbles		bubbles	bubbles	bubbles
0.3	1 - 3	0.5-2	0.3-10		1-2 mm	0.5	0.1-1
round	round	round	round		round	round	round
0	5	10	30		90	20	60
	zeo	zeo	MnO2		calcite	clays (?)	clays
	60	90	80		65	100	100
	MnO2	MnO2	zeolites		clays		
	40	10	20		35		

10	10	10	10	10	10	10	10
15	16	17	18	19	20	21	22
PEJ	PEJ	KMM	KMM	KMM	KMM	KMM	KMM
5000	100	1200	500	2800	700	3000	200
<1 mm	1 mm	<1 mm	1 mm	<<1 mm		<1	<1 to 3
		2		0	0	0	0
ol	aphyric	cpx, plg,	aphyric	plg, ol, cpx	pyx, pl basalt	same as 19 &20,	
porphyry	basalt	microporphyr	basalt	microporph.	fine gr. porphyry		vescicular po
Y	Y	Y	Y	Y	Y	Y	Y
N	N	N	N	N	N	N	N
grayish tan	brown	gray	brown	gray	brownish gray		v. dark gray
holocrystallin	holocrystallin	doleritic	intersertal	aphanitic	microxtaline		microxtaline
0.02	0.05	0.2	0.02	< 0.001	<0.03		<0.02
40	95	80	>90	>90	>90		30
3	1	0	0	5	25		0
0	0	15	1	gone			
		<.02					
		sub					
		>50	100	100			
		hb	cc+ amp	amp & smect	amp & zeo		
3	0			gone			
1-3 mm							
eu							
100			100	100			
			oxides	oxides			
	1	50		2	25		
	1	<.02		10 to 2	1		
	an	an/sub		eu	sub-eu		
	80	100		70	60		
				cc, ep, clay	cc, clay		
0	0	0	0				
10	25	10	5				40
bubbles	bubbles	pheno. voids	pheno voids a	pheno voids	pheno voids		bubbles
0.3-0.5	1-3 mm	0.5-6	0.1-1	1	<1		2 to 7
round	round	ellipt./angula	angular	angular	ang./round		round
100	85	90	20	5	5		50-70
calcite	clays	calcite	calcite	cc	clay		zeo
100	40	30	20	100			70
	oxides	zeolites	zeolites				smect
	60	70	80				30

10	10	10	
23	24	25	
KMM	RvW	KMM	
150		100	
<1		1	
6		0	
		cpx ol picrite	
rphyry		y	
Y		n	
N		gray+orange	
dark brown		aphanitic	
microxtaline		<0.01	
<0.01		20	
50		40	
20		30/13	
5		0.1-2	
1 to 2		euhedral	
eu		50	
70 to 100		zeo	
amp & zeo		70/27	
10%/2%		0.5-8	
1		euhedral	
eu		100	
100		smect+oxides	
oxides		1	
85/17		0.5-5	
0.2 to 3		euhedral	
		100	
50		cc, clays	
cc, clay			
35		4	
bubbles		ves	
0.5 to 1		10-Jan	
round		irreg round	
10		1	
smectite		cc	
90		60/0.6	
zeo		smect + zeo	
10		40-0.4	
		broken out of a breccia	

Dredge 12 First dredge on Neen-Koiaak Guyot, west side, on a rift/northern flank of large amphitheatre with extremely steep west facing scarp.

14° 19.7"N /160° 52.5 E ()- 14° 20.6 N/ 160° 53.2'E (1500m).

Summary:

relatively small dredge with few large pieces of HC-pavement and Mn crusts. Complex textural relationships in some of the pavement, indicating mass wasting subsequent to first generation of Mn encrustation (no datable clasts in that particular example).

Rock Groups:

Group I
ol (micro-)phyric (<5%) basalts, all oxidized, quenched, prob submarine: samples: 2-5

Group II
similar to Group I but denser and more crystaline.

Group III
Clastic rocks: show complex brecciation and cementation processes: at least two generations of Mn-crusts, puzzle shards indicate in situ brecciation for some.

Group IV
Mn crusts

Work Plans:

Thin sections: 1, 2, one of (17, 4, 6) 13(@ MP), 15, (19 @ MP) also selected: 17, 16,3, 14, took 1

Dating: some plag phyric (#s 13, 19 for Malcolm)
Isotopes: Sample 1 great for cpx phenocrysts
Alteration: quenched margin of 1 for zeol, plag (Kari)
Manganese Crusts: undescribed samples (often not labelled inside wet pack): 8-11, 22, 23, 24.

Dredge Number	12	12	12	12	12	12
Sample Number	1	2	3	4	5	6
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	PEJ	
Approximate Weight <g>	1000	500	100	1000	350	
Mn crust thickness	0	1-2 mm	1 mm	2-20 mm	0	
Palagonite rind thickness			3 mm			
ROCK TYPE:(PHENO-ROCK)	ol, micro pl	ol porphyry	aphyric	ol porphyry	aphyric basalt	
STRUCTURAL	porphyry		basalt			
Mono-lithological?	Y	Y	Y	Y	Y	
Fresh Glass?	N	N	Y	N	Y	
Rock Color	gray-brown	brown	orange	tan	orange	
Groundmass Texture	holocrystalin	holocrystalin	holocrystalin	holocrystalin	holocrystaline	
Ave Grain Size (mm	0.1	0.1	0.05	0.05	0.1	
% alteration	35	>90	>90	70	>90	
composition (if v. coarse)						
Phenocryst Texture/Distr.	15	30	1	20	0	
Clinopyroxene %						
size (mm)						
shape						
alteration %						
alteration phase						
Olivine %	14	30		20		
size (mm)	1	0.5		1		
shape	eu	eu/sub		eu/sub		
alteration %	100	100		100		
alteration phase				clays		
Plagioclase %	1%-microphen	in groundmass	1%-microphen	in groundmass	in groundmass	
size (mm)	0.5		0.1			
shape	eu		eu			
alteration %	85					
alteration phase						
Amphibole %						
size (mm)						
shape						
alteration %						
alteration phase						
other %						
type						
size (mm)						
shape						
alteration %						
alteration phase						
Vesicles %	0	2	10	20	15	
Type		veins	pheno. voids	pheno. voids	pheno. voids	
size (mm)		0.5 across	0.1 to 1	1	0.1 to 1	
shape		veinlike	angular + rnd	angular + rnd	angular + rnd	
total filling %		100	20	30	30	
filling-type		?	clays	clays	clays	
%			100	100	100	
filling-type						
%						
General appearance		Samples 1 through 5 have essentially the same lithology: ol phyric with				
and/or other distinguishing		Extent of alteration is somewhat varied, however.				
characteristics						

Dredge 13 Second Dredge on Neen-Koiaak Guyot, on Southern rift of same amphitheatre as dredge 12

14° 17.06"N /160° 54.6 E ()- 14° 17.4 N/ 160° 55.8'E ().

Summary:

Dredge approx 1/4 full: one very large PBr (#11), some HC, basalts, most basalts could be subaerial.
very thin Mn crusts. Relatively short dredge, on relatively shallow slope, before big cliff.

Rock Groups:

Group I
Pl phyric (2-5%; 1-5mm), dense: rel fresh
Samples: 1, 3, 4, 5, 10

Group II

Aphanitic vesicular (20-30)
Samples: 2. 7, 8, 9

Group III

Dense, aphyric (little pl)
Samples: 6, 12, 13, 14,

Group IV

Hyaloclastites
samples 10, 12

Group V

Mn crusts (relatively little)

Work Plans:

Thin sections: 1, 7, 11,13, took 1, 2, 6
Dating: some plag phyric # 3; 10?
Isotopes: separate glass from sample 11?
Alteration: glass/palg: 10; 11, 12
Manganese Crusts: 13

Dredge Number	13	13	13	13	13	13
Sample Number	1	2	3	4	5	6
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ
Approximate Weight <g>	100	300	400	1000	500	600
Mn crust thickness	<1 mm	1-4 mm	<1 mm	<1 mm	<1 mm	<1 mm
Palagonite rind thickness						
ROCK TYPE:(PHENO-ROCK)	plg porphyry	aphyric basal	plg porphyry	plg porphyry	plg porphyry	aphyric basal
STRUCTURAL						
Mono-lithological?	Y	Y	Y	Y	Y	Y
Fresh Glass?	N	N	N	N	N	N
Rock Color	green-gray	green-gray	gray	green-gray	gray	green-gray
Groundmass Texture	holocryst.	holocryst.	holocryst.	microcryst.	holocryst.	microcryst.
Ave Grain Size (mm)	<0.1	<<0.1	<<0.1	<0.01	<<0.1	<0.01
% alteration	20-50	10-30%	5-20%	40-60	30-60	40-60
composition (if v. coarse)						
Phenocryst Texture/Distr.	5	0	2	1	1	0
Clinopyroxene %						
size (mm)						
shape						
alteration %						
alteration phase						
Olivine %						
size (mm)						
shape						
alteration %						
alteration phase						
Plagioclase %	5		2	1	1	
size (mm)	1 to 5		1 to 3	1 to 3	0.5-2	
shape	eu		eu	eu	eu	
alteration %	10-30%		5-25%	40-60	40	
alteration phase						
Amphibole %						
size (mm)						
shape						
alteration %						
alteration phase						
other %						
type						
size (mm)						
shape						
alteration %						
alteration phase						
Vesicles %	0	30	<1	0	2-3%	<<1
Type		pipe	bubbles		bubbles	bubbles
size (mm)		0.5-5	0.5-1		0.3-1	0.5-2
shape		round	round		round	round
total filling %		20	100		20	100
filling-type		zeo/cc	zeo/cc		clays	clays
%		70	100		20	
filling-type						
%						
General appearance						
and/or other distinguishing						
characteristics						

13	13	13	13	13		
7	8	9	10	11		
PEJ	PEJ	PEJ	PEJ	PEJ		
2000	800	100	40	20Kg		
2 mm	1-2 mm	<1 mm	cement?	0-10		
			0	to 5		
aphyric basal	same as #7	aphyric basal	plag porph ba	aphyric pillow fragments		
			clast in hyalc	in large pillow breccia		
Y	same as #7	Y	clastite? bre	n		
N	same as #7	N	n	YES, & good palag pillow rinds		
green-gray	same as #7	brown	dk gray	grey-brown-black		
microcryst.	same as #7	microcryst.	aphanitic	aphanitic		
<0.01	same as #7	<0.01	<<0.1	<<0.1		
50	same as #7	80	30-50	>75		
				0		
0	same as #7	0	5			
			0			
			0			
			5			
			~3			
			euhedral			
			20-30			
30	same as #7	30	0			
bubbles	same as #7	bubbles	aphyric clasts			
1 to 2	0.5-3	0.1-2	in the breccia			
round	same as #7	round	are vesicular			
40	same as #7	20	to 25%, mostly			
zeo/cc	same as #7	clays	filled w/clays			
	same as #7		and cc.			
	same as #7					
	same as #7					

Dredge 14 First Dredge on Aean-Kan Guyot.

14°'47.0375N /160° 18.2273'E (2800m)- 14° 47.08' N/ 160° 18.68'E (3035m).

Summary:

Rock Groups:

Group I

Highly ol--phyric (> 10%); vesicular (>10%)
samples: 1, 2, 3, 5, 6, 8, 9, 11, 12, 14, 15,
1:freshest; 5 most ol; some quenched PM. Most samples are unquenched, possibly fragments of subaerial flows.

Group II

ol (> 10%); cpx (>5%) phyric
sample 4 (TS)

Group III

pl+cpx (<3%) phyric
samples: 14: palg, phosphorite, save some material for palg separate
all to MP for dating -- possible but not encoraging.

Group IV

ol, cpx (< 2% phyric)
samples: 10

Group V

Light gray, vesicular aphyric (?)
Sample 13, TS

Sample 7 for palagonite/celadonite

Work Plans:

Thin sections: 1, 5 , 13? took 1

Dating: (#s 14 for Malcolm)

Isotopes: Sample 1, 4 ? for cpx phenocrysts

Alteration: 14?

Manganese Crusts: 16-19

Dredge Number	14	14	14	14	14	14	14	14
Sample Number	1	2	3	4	5	6	7	8
PETROGRAPHER	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM
Approximate Weight <g>	800	500	100	500	700	700	200	150
Mn crust thickness	1	<1	<1	1	<1	0	0	<<1
Palagonite rind thickness	0	0	0	0	0	0	0	0
ROCK TYPE:(PHENO-ROCK)	pl ol basa	ol basalt	cpx ol bas	cpx ol bas	ol basalt	cpx ol bas	hyaloclast	cpx ol bas
STRUCTURAL	porphyry	porphyry	porphyry	porphyry	porphyry	porphyry	clastic	porphyry
Mono-lithological?	y	y	y	y	y	y	n	y
Fresh Glass?	n	n	n	n	n	n	??	n
Rock Color	dk gray	dark brown	gray	dk gray	dk br gray	med gray	yellow gre	dk gray
Groundmass Texture	microxln	microxln	microxln	aphanitic	interserta	interserta	aphanitic	microxln
Ave Grain Size (mm)	<<0.1	<0.1	<0.05	<<0.01	1	0.03		<0.01
% alteration	40%	70%	70%	?	20%	30%		50%
composition (if v. coarse)					abundant p	abundant p	clays, cc, MnO	
Phenocryst Texture/Distr. %	0	0	0	0	0	0		0
Clinopyroxene % (of rock)	0%		8%	9%	0%	3%		30%
size (mm)			0.5	0.5-1		0.5		0.5
shape			euhedral	euhedral		euhedral		euhedral
alteration %			10%	20%		50%		90%
alteration phase			zeolites	zeolites		zeolites		oxi, smect
Olivine %	0	0	0	0	0	0		0
size (mm)	2	0.2-3	0.5-2	0.5-1.5	1-2.5	0.5-2		1 - 3
shape	euhedral	sub-euh	euhedral	euhedral	euhedral	euhedral		euhedral
alteration %	100%	100%	80%	80%	98%	100%		100%
alteration phase	oxides	oxides	oxides	oxides	oxides	oxides		oxides
Plagioclase %	1%							2%
size (mm)	1							<0.2
shape	euhedral							euhedral
alteration %	60%							100%
alteration phase	cc&clay							clay, ox, c
Amphibole %								
size (mm)								
shape								
alteration %								
alteration phase								
other %								
type								
size (mm)								
shape								
alteration %								
alteration phase								
Vesicles %	10%	30%	5%	40%	10%	10%		8%
Type	ves&pipes	ves & void	ves	ves	ves	ves		ves
size (mm)	0.5-1.0	1 - 12	≤1	1 - 2	10- 10	0.5-1		0.5-1
shape	rnd &long	irr	rnd	rnd	irr	rnd		
total filling(% of	5%	5%	10%	10%	50%	20%		5%
filling-type	zeolites	zeolites	zeolites	zeolites	zeo	clay		zeo
%	90%	90%	100%	70%	30%	70%		50%
filling-type	clays	MnO		cc	clays	zeo		smect
%	10%	10%		25%	50%	30%		50%
filling-type				clay	cc			
%				5%	20%			
General appearance							mostly	
and/or other distinguishing							celadonite	
characteristics								

14	14	14	14	14	14	14	
9	10	11	12	13	14	15	
KMM	KMM	KMM	KMM	KMM	KMM	KMM	
200	600	100	400	50	<100	200	
0	<1	10+	1	0	5	<1	
7	0	0	10+	0	10-30?	0	
cpx ol bas	ol basalt	clast of ol	ol basalt	??	plg basalt	cpx ol basalt	
porphyry	porphyry	porphyry	porphyry	porphyry	porphyry	porphyry	
y	y	n	y	y	y	y	
n?	n						
gray	m. gray	brown	brown	v. lt. gray	gray	brown	
aphanitic	interserta	aph	aph	intersert	aph	inters	
<0.01	0.005	<0.01	<0.001	<0.1		<0.5	
20%	20	50	90	90+	30+	40+	
10							
0	5	10	40	20 ??	3	40	
5%	100%			???	0%	100%	
<0.7	0.5			0.2-2		2-4%	
eu	eu			eu		eu	
50%	0-20			100%		50%	
				oxides		zeo	
0	2	10	40	??	0	39	
1	<2	1	0.5-3			0.5-3	
eu	eu	eu	eu			eu	
100%	100%	100%	100%			100%	
oxides	oxi	oxi	oxi, zeo			oxi	
				in groundm	300%		
					2-3 mm		
					eu		
					<50%		
					clay		
45%	10%	40%	15%	35%	30%	20%	
pipe	voids	ves	ves	v	v	v	
0.5-20	1-10 mm	0.5-3	1	1-5 mm	0.2-3	0.5-2	
rnd, irr, tu	irr	rnd	rnd	rnd	rnd	rnd	
5 to 50	50%	50%		5%	3%	5%	
zeo	smect	cc	zeo	zeo	zeo	smect	
100%	80%	30%	42%	30%	50%		
	zeo	zeo	smect	smect	smect	zeo	
	20%	15%	43%	70%	2%	3%	
	MnO	Sm-4/MnC	MnO-5			MnO-1	