Dredge 34 Missy seamount, Marcus/Wake Group

20°57.0'N, 154°57.25E to 20°57.25N, 154°55,4'E, 2300m - 1650m (check loc.)

Summary: 150 lbs basalts and breccias coated with MnOx crusts and nice sponge specimens.

Basaltic Rock Groups:

Group I: Olivine and cpx phyric (ol ~8-10%, cpx ~ 3-5%), non-vesicular (massive) basalt.
Samples 1, 2, 3

Work Plans:

Thin sections: took # 2, no other billets avail.

Dating:

Isotopes: 1,2,3

Alteration:

Dredge Number	34	34	34	34	34	34	34
Sample Number	1	2	3	4	5	6	7
PETROGRAPHER	KMM	KMM	KMM				
Approximate Weight <g>	500	700	40				
Mn crust thickness	20	60	60+				
Palagonite rind thickness	0	0	10				
ROCK TYPE:(PHENO-ROCK)	cpx,ol	cpx,ol	cpx,ol				
STRUCTURAL	micro porph	micro porph	micro porphyry				
Mono-lithological?	y	y	y				
Fresh Glass?	n	n	n				
Rock Color	brown gray	brown gray	brown gray				
Groundmass Texture	microcrysta	microcrysta	microcrystaline				
Ave Grain Size (mm	<0.05	0.05	<0.05				
% alteration	20	20	20				
Phenocryst Texture/Distr.	micro	micro	micro				
Clinopyroxene %	micro	micro	micro				
size (mm)	<0.5	≤0.5	0.1-1				
shape	euh	euh	euh				
alteration %	10	10	10				
alteration phase							
Olivine %	micro	micro	micro				
size (mm)	<0.05	<0.05	<0.05				
shape	euh	euh	euh				
alteration %	100	100	100				
alteration phase	ox	ox	ox				
plagioclase %	in grndmass	in grndmass	in grndmass				
size (mm)							
shape							
alteration %							
alteration phase							
amphibole %							
size (mm)							
shape							
alteration %							
alteration phase							
other %							
type							
size (mm)							
shape							
alteration %							
alteration phase							
Vesicles %							
type							
size (mm)							
shape							
total filling %							
filling-type							
%							
filling-type							
%							
General appearance							
and/or other distinguishing							
characteristics							

Dredge 35 Missy Guyot

Location: 21° 18.8N / 154° 44.2'E - 21°16.9'N / 154° 46.7'E

Depth range: 00-xx00 m.

Summary:

Mostly pelagic carbonate ooze, two basalt pieces

Group I

800g of ol, pl, cpx phyric basalt

Group II,

plag phyric (phosphatized?)

Group III, Sediments.

Work Plans:

Thin sections: 1, 2

Geochemistry/isotopes:

Alteration (

Comments:

Dredge Number	35	35	35	35	35		
Sample Number	1	2	3	4	5		
PETROGRAPHER	KMM	KMM	KMM	KMM	KMM		
Approximate Weight <g>	700	600	800	1100	1000		
Mn crust thickness	3	<1	<<1	25	2 - 20		
Palagonite rind thickness	0	0					
ROCK TYPE:(PHENO-ROCK)	ol, pl, cpx	plag/plagioc	carbonate	carbonate	phosphorite?		
STRUCTURAL	porphyry	porphyry	ooze/chalk	ooze/chalk	breccia		
Mono-lithological?	y	y	y	y	n		
Fresh Glass?	n	n	n	n	n		
Rock Color	gray	whiteish gra	white	white &blac	gray		
Groundmass Texture	microxtln	microxtln	clastic	w/ MnOx			
Ave Grain Size (mm	<0.02	0.1	fine grained	and Fe staining			
% alteration	60	(all feldspar?)		pelagic			
Phenocryst Texture/Distr.	1	2	has sparse				
Clinopyroxene %	<1		, altered				
size (mm)	0.2-0.8		volcanic				
shape	sub-anhedral		fragments				
alteration %	~50		and crystals				
alteration phase	zeo						
Olivine %	<<1						
size (mm)	≤0.5						
shape	euhedral						
alteration %	100						
alteration phase	oxides						
plagioclase %	<<1	1					
size (mm)	0.5-1	2 - 3					
shape	euh-sub	euh					
alteration %	80	20					
alteration phase	cc, clay	cc					
amphibole %		<1					
size (mm)		≤3					
shape		euh					
alteration %		100					
alteration phase		clays					
other %							
type							
size (mm)							
shape							
alteration %							
alteration phase							
Vesicles %	6	1					
type							
size (mm)	0.1-8	0.1-2					
shape	irr	rnd, irr					
total filling %	50	50					
filling-type	cc	cc					
%	75	75					
filling-type	zeo	smectites					
%	25	25					
General appearance							
and/or other distinguishing							
characteristics							

Dredge 36 Golden Dragon Seamount (Guyot)

21° 22.1N / 153° 08.8'E - 21°22.45'N / 153° 09.94'E; 1700-1200 m.

Summary:

Content comprised of about 300 lbs of mostly basalt boulders, Mn crusts, and pelagic carbonates (no reef).

Group I, Basalts. Hornblende phyric, 3 to 10%, (± ~1% olivine), vesicular basalt. Samples 1 through 9, green cobbles in 22c&d. (#5 has smaller penocrysts and vesicles.)

Group II, Basalts. Plagioclase phyric, alkalic mugearite/trachyte. Samples 10 &11.

Group III, Sediments. Breccias: 12-15, 20 w/ phos., 22. 16-27 pelagic limestone. 27-28 highly phosphatized sediments and basalt.

Work Plans:

Thin sections: 1, 2, 5, 11, 12a, 13a, 20, 22a, 22b First choice: 1, 11

Geochemistry/isotopes: 1, 2,3 ,4, 5, 11, 12, 13,

Dating (Malcolm Pringle): 1 ts, 2-1000g, 3-500g, 4-500g, 5-500g, 10 all,

Alteration (Kari): 1 zeo vugs

Comments:

Dredge Number	36	36	36	36	36	36	36	36
Sample Number	1	2	3	4	5	6	7	10
PETROGRAPHER	KMM	KMM	KMM	KMM	PEJ	PEJ	PEJ	PEJ
Approximate Weight <g>	800	1000	1000	800	1000	600	500	150
Mn crust thickness	4	<1	20	10	0-5	0-10	0-2	
Palagonite rind thickness	0	0	8	10	0	0	0	0
ROCK TYPE:(PHENO-ROCK)	hb, ol	ol, hb	same as #2	same as	same as	hb	hb	plag
STRUCTURAL	porphyry	porphyry		#2,3	#2,3,4	porphyry	porphyry	porphyry
Mono-lithological?	Y	Y	Y	Y	Y	Y	Y	Y
Fresh Glass?	N	N	N	N	N	N	N	N
Rock Color	Dark gray	Dark gray				Dark gray	Dark gray	Dark gray
Groundmass Texture	aphanitic	aphanitic				aphanitic	aphanitic	aphanitic
Ave Grain Size (mm	<0.01	<0.01				<0.01	<0.01	<0.01
% alteration	10	?				10-30%	10-30%	25
Phenocryst Texture/Distr.	3	10				10	7	5
Clinopyroxene %								
size (mm)								
shape								
alteration %								
alteration phase								
Olivine %	1	1						
size (mm)	0.5-1	0.5-1						
shape	eu	sub						
alteration %	100	100						
alteration phase	ox							
plagioclase %								5
size (mm)								1-6 mm
shape								an/eu
alteration %								10-20 %
alteration phase								
amphibole %	2	9				10	7	
size (mm)	1-13 mm	0.5-10			1-8 mm	1-8 mm	1-8 mm	
shape	10	5				eu	eu	
alteration %	z,ox,sm	z,ox,sm	zeo	ox, zeo		10-30 %	5-20%	
alteration phase						?		
other %								
type								
size (mm)								
shape								
alteration %								
alteration phase								
Vesicles %	2	7				15	10	10
type								
size (mm)	0.5-10	0.5-10				0.5-10	1-12 mm	1-20 mm
shape	rnd	rnd				rnd	rnd	irreg
total filling %	30	80				90	100	10
filling-type	cc	zeo				cc	cc	cc/zeo
%	10	70				30	50	100
filling-type	zeo	zeo				zeo	zec	
%	90	30				70	50	
General appearance								
and/or other distinguishing								
characteristics								

36	36	36	36	36	36	36	36	36	36
8	9	11	12	12A	13	13A	14	15	16
PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ
300	600	2500	300	100	600	80	900	2500	900
0-15	2-20`	0-40	0-30		0-40		0-30	10-20`	<2
0									
hb	hb	plg porphyry	hyaloclastite	plg/cpx	same as #12	aphyric	hyaloclastite	hyaloclastite	LS with
porphyry	porphyry	(trachyte)	breccia	porphyry		basalt	breccia	breccia	basalt fragmen
Y	Y	Y	N	Y		Y	N	N	N
N	N	N	N	N		N	N	N	N
same as #7	same as #7	lt. gray	tan/brn/gry	dk. gray		dk. gray	Breccia	similar to	limestone with
							contains	#14 but also	≈1% small hb
							numerous	contains	phyric basalt
							basalt frags	pieces of LS	fragments.
							and cobbles	w/ burrows	
							of types that	(filled) and	
							have already	hb basalts	
							been	similar to	
							described	#2-4	
							Most are		
							heavily		
							altered		
							(>60%).		

36	36	36	36	36	36	36	36	36
17	18	19	20	21	22a	22b	22c	22d
PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ
			500	800				
			<10					
							similar to	similar to
LS with	LS with	LS with	cpx phyric	sed/	hyaloclastite	hyaloclastite	22a&b but	22a&b but
<1% basalt	<1% basalt	<1% basalt	basalt frag in	no igneous	breccias	breccias	contain a few	contain a few
fragments	fragments	fragments	sed rock		containing	containing	large cobbles	large cobbles
					small, very	small, very	of green basalt	of green basalt
			pink-tan		altered basalt	altered basalt	(≈100 g ea)	(≈100 g ea)
			aphanitic		fragments	fragments	with very nice	with very nice
			<0.01				large hbl xls	large hbl xls
			?				up to 20mm	up to 20mm
			<1				long	long
			tr					
			0.5					
			euh					
			>60					

Dredge 37 Golden Dragon Seamount (Guyot):

21° 15.45N / 153° 02.45'E - 21°14.85'N / 153° 04.20'E 2600-2250 m.

Summary:

250-800 lbs of mostly basalts and hyaloclastites, including one small volcaniclastic boulder, abundant Mn crusts (.5-2" thick), minor carbonate (pelagic ooze), phosphorite, no reef.

Group I

Sparsely ol-phyric basalts
(representative samples chosen and described; 2 bags disposed; 3 bags of undescribed basalt cobbles curated. Subgroups:

Group A: Sparsely, microvesicular to vesicular basalts with abundant zeolite and carbonate (?) amygdules. Maybe one or more lithologies, difficult to tell with varying degrees of alteration and vesicularities, often in the same rock.
Spls: 1, 3, 4, 5, 7, 8, 8, 9, 10, 11, 12, 13, 14, 15, 18,

Group B: higly vesicular (#6)

Group C: sparsely hbl+±tr cpx, vesicular (#2, 12; 4 maybe PL))

Group II

volcaniclastics
19 (phosphatized), 20, 21, 27 (Mn-cemented conglomerate?,

Group III

Phosphorites: 22, 23, 29

Group VI

Pelagic limestones (# 26) and basalt cobbles

Work Plans:

Thin sections: TS Selected: 1
Polished slabs:
Geochemistry: some very nice examples for clean phosphorites.
Comments:

(MST)

Dredge Number	37	37	37	37	37	37	37	37	37
Sample Number	1	2	3	4	5	6	7	8	9
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ
Approximate Weight <g>	5000	5000	600	600	500	650	600	900	1000
Mn crust thickness	<3	<2	<1	<1	1	0-10	0-10	<1	
Palagonite rind thickness	0	<20mm	<1	0	0	0	0	0	
ROCK TYPE:(PHENO-ROCK)	cpx/ol	bbl/ol	ol/cpx	ol/cpx	cpx/pl?	ol/cpx?	ol/cpx	ol/cpx	ol
STRUCTURAL	porphyry	porphyry	porph	pl porph	porph	porph	pl(?)por	porph	porph
Mono-lithological?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fresh Glass?	N	N	N	N	N	N	N	N	N
Rock Colour	dk gray	dk gray	dk gray	m gray	dk gray	dk gray	gray-green	d gray	d gray
Groundmass Texture	micro	int	micro	inter	micro	micro	micro	inter	micro
Ave Grain Size (mm)	0.01	0.05	.01	0.05	0.01	0.01	0.02	0.03	0.01
% alteration	~20	<15	>40	?	?	?	>30	>20	
Phenocryst Texture/Distr.	35		3	6	3	4	3	1	3
Clinopyroxene %	3	<1?	1	1-2	2-3	(tr?)	1	<1	0
size (mm)	0.5-2		0.5-1	0.5-1	0.5-1.5		1-1.5	1-1.5	
shape	sub		sub	eu/sub	eu		eu	eu	
alteration %	85		90	100	100		70	<20	
alteration phase	clay?								
Olivine %	2	<1	2	1-2	tr?	4	2	1	3
size (mm)	0.5-1	1-2	0.5-2	0.5-1	eu	eu	0.5-1.5	0.5-2	0.5-2
shape	eu	eu	eu	eu	100	100	eu	eu	eu
alteration %	100	100	100	100		0.5-1	100	100	100
alteration phase									
plagioclase %		<1?		3?	10-1		tr(?)		
size (mm)				1	0.5-1.5				
shape				eu	eu				
alteration %				?	100				
alteration phase									
amphibole %		1							
size (mm)		0.5-4							
shape		tabular							
alteration %		<10							
alteration phase									
other %									
type									
size (mm)									
shape									
alteration %									
alteration phase									
Vesicles %	15	20	15	2-4	4	25	10	10	10
type									
size (mm)	0.5-1	1-4	1-4	1-3	2-5	3-6	1-2	1-2	0.5-1.5
shape	rnd	rnd	rnd	irr	rnd	rnd	rnd	rnd	rnd/irr
total filling %	20	35	75	35	100	25	90	75	25
filling-type	zeo	zeo	zeo	zeo	zeo	clay	zeo	zeo	zeo
%	70	85	90	50	100	100	100	100	100
filling-type	clay	clay	clay	clay					
%	30	15	10	50					

Dredge Number	37	37	37	37	37	37	37	37	37
Sample Number	10	11	12	13	14	15	16	17	18
PETROGRAPHER	PEJ	PEJ	PEJ	PEJ	PEJ	PEJ	KMM	KMM	KMM
Approximate Weight <g>	100	1500	1200	1200	1	1200	1000	1200	150
Mn crust thickness	0-5		<1	<20	<30	<20	≤20	20	20
Palagonite rind thickness	0	0	0			0	0	0	0
ROCK TYPE:(PHENO-ROCK)	Same		ol/				ol	ol	ol
STRUCTURAL	as		porph				porphyr	porph	porph
Mono-lithological?	#3		Y				Y	Y	Y
Fresh Glass?			N				N	N	N
Rock Colour			m.gray				m.gray	m.gray	v.lt.gray
Groundmass Texture			inter				inter	inter	aph
Ave Grain Size (mm)			0.03				0.1	0.1	—
% alteration			1				100	100	100
Phenocryst Texture/Distr.			3				5	6	—
Clinopyroxene %			0				tr?	~1	?
size (mm)								4x8	0.1
shape								anh	e.h
alteration %							100	70	100
alteration phase							smect	zeo, smct	ox
Olivine %			3				5	5	?
size (mm)			0.5-2				0.5	0.2-3	0.1
shape			eu				anh	anh	anh
alteration %			100				100	100	100
alteration phase							ox	ox	ox
plagioclase %			~~0.1~~				in GM	in GM	?
size (mm)									≤0.5
shape									anh
alteration %							100	100	100
alteration phase									zeo, clay
amphibole %									
size (mm)									
shape									
alteration %									
alteration phase									
other %									
type									
size (mm)									
shape									
alteration %									
alteration phase									
Vesicles %		15	15	10	10	<1	10	10	40
type									
size (mm)		2-3	0.5-2		2-4	1-3	0.5-3	0.3-3	0.1-0.7
shape		rnd	irr/bar		rnd/irreg	rnd/irreg	irr-rnd	rnd	irr-rnd
total filling %		60	90		30	25	85	30	95
filling-type		zeo	zeo		zeo	zeo	zeo	smect	zeo
%		100	100		40	50	85	80	100
filling-type					clay	clay	ox	zeo	
%	✓				40	50	?	20	
							smct		

Same

Same

Same

Dredge Number	37	37	37	37	37	37	37	37	37
Sample Number	26	27	19	20	21	22	23	24	23
PETROGRAPHER	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM
Approximate Weight <g>	2	70	500	3000	15,000	1000	500	3000	20
Mn crust thickness	1-3	25		20	15	20	<1	6	8
Palagonite rind thickness	0	0		—					10
ROCK TYPE:(PHENO-ROCK)	cpx	cpx'd		hyalo					cpx'd
STRUCTURAL	porph	porph		clastic					porph
Mono-lithological?	clast in chalk	clast		N					clast in chalk
Fresh Glass?	N	N		??					N
Rock Colour	grn	grn	yellow	grn-yell					yell grn
Groundmass Texture	aphan	aph							intergr
Ave Grain Size (mm)	—	1							0.1
% alteration	10	100 (clay)							20
Phenocryst Texture/Distr.	5	2							3
Clinopyroxene %	1	tr?							1?
size (mm)	0.5								0.2
shape	euh								euh
alteration %	10	100							10
alteration phase		smect							
Olivine %	4	2							2
size (mm)		0.1							0.2
shape		euh							euh
alteration %		100							100
alteration phase		ox							ox
plagioclase %	tr?								GM
size (mm)	0.3								
shape	euh								
alteration %	100								
alteration phase	ox								
amphibole %									
size (mm)									
shape									
alteration %									
alteration phase									
other %									
type									
size (mm)									
shape									
alteration %									
alteration phase									
Vesicles %	10	10							10
type									
size (mm)	1	1-4							0.5-1
shape	rnd/irr	rnd							rnd
total filling %	50	50							75
filling-type	zeo	smect							zeo
%	50	25							[illegible]
filling-type		zeo							smect
%		25							25

hyaloclastite + phosphatized

greenish yellow + orange + smectite + phosphorite

same as 20

white phosphatized - carbonate?

pink phosphatized - carbonate?

same as 23

Dredge 38 Bellevue Guyot

23° 48.1N / 150° 30.0'E - 23°47.8'N / 150° 32.4'E; 3100-2300 m.

Summary:

~50 lbs of small pieces, mostly hyaloclastites, some basalts, abundant Mn crusts and nodules, some phosphorite, no carbonate, no reef.

Rock group I, basalt: slightly to moderately olivin phyric w/ ± cpx, all micro-sized phenocrysts. 20-50% vesicles, not well-filled.
Samples 1,2,3,4,5,6,7, (9,10,11) 13,14,15.

Rock group II, basalt: Olivine, cpx (1-3%) porphyry, 1% vesicles.
Sample 8.

Rock group III, basalt: Aphyric vesicular basalt.
Sample 12.

Rock group IV, sediments: Chalk, sample 16; chalk and phosphorite,
Sample 18.

Rock group V, vcl: Celadonite hyaloclastite
Sample 21.

Work Plans:

Thin sections: 3,5,8,12,13 took 3, 8
Polished slabs:
Geochemistry: 3,5,8,12,13
Other: Kari: 3 (50g palagonite), 21 (50g celadonite)
Comments:

Dredge Number	38	38	38	38	38	38	38	38
Sample Number	1	2	3	4	5	6	7	10
PETROGRAPHER	BML	BML	BML	BML	KMM	KMM	KMM	KMM
Approximate Weight <g>	700	1000	1500	1700	200	100	100	20
Mn crust thickness	15	10 - 20			5	5	3	3
Palagonite rind thickness	8	0 - 10	this rock		15	20	10 - 20	0
ROCK TYPE:(PHENO-ROCK)	cpx ol	cpx ol	is mostly		cpx? ol	ol	cpx ol	(cpx/ol)
STRUCTURAL	phyric	phyric	palagonite		aphyric	aphyric	porphyry	apheric
Mono-lithological?	y	n	n		y	y	y	y
Fresh Glass?	n	n	n	same as #2	n	n	n	n
Rock Color	rust-brown	brown	browns		dk brown	v. dk brown	dk brown	dk. brown
Groundmass Texture	intersertal	inter			aphanitic	aphanitic	aphanitic	aphanitic
Ave Grain Size (mm	0.05	0.05						
% alteration	80	70	70-100		60	60	70	60
Phenocryst Texture/Distr.	8				0	0	1	micro
Clinopyroxene %	2				micro	micro	0.2	
size (mm)	0.5-1	same as					0.5 - 2	0.2
shape	euh	#1 except					euhedral	euhedral
alteration %	30	this is a pillow					50	75
alteration phase		breccia					zeo, sm, ox	
Olivine %	6				micro	micro	0.8	
size (mm)	0.5						≤2	0.1-1
shape	sub						euhedral	euhedral
alteration %	100						100	100
alteration phase	ox						ox	ox
plagioclase %								
size (mm)								
shape								
alteration %								
alteration phase								
amphibole %								
size (mm)								
shape								
alteration %								
alteration phase								
other %								
type								
size (mm)								
shape								
alteration %								
alteration phase								
Vesicles %	40	25	50	60	50	50	40	50
type								
size (mm)	0.5	0.5	0.5	0.5	0.5-5	0.5-5	1-Jan	0.5
shape	rnd	rnd	rnd	rnd	rnd	rnd	rnd	rnd
total filling %	10	5	0	15	5	5	50	2
filling-type	clay	clay		clay?	zeo	zeo	zeo	mnOx
%	100	100		100	100	100	30	1
filling-type							smect	zeo
%							70	1
General appearance								
and/or other distinguishing								
characteristics								

38	38	38	38	38	38	38	38	38	38
8	9	11	12	13	14	15	16	18	21
KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM	KMM
<100	50	50	50	70	100	100	10	5	50
3	0	5	2	15	6	<10	<1		8
10 to 20	0	8	6	10	5	10	0		
cpx/ol	cpx/ol	(ol)	apheric	(ol)	(ol)	(ol)	chalk+phos.	chalk	celadonite
porphyry	porphyry	apheric		apheric	apheric	apheric			hyaloclastite
y	y	y	y	y	n	y			
n	n	n	n	n	n	n			
lt. grn.-brn.	brown	brown	dk. gray	dk. brown	gray-brown	brown			
microxtl	microxtn	aphanitic	microxtn						
,0.01	<0.01		<0.02						
50?	50+	100	20						
10	(micro)	micro	0						
3									
0.2-88									
euhedral									
70									
zeolite									
7									
0.1-6		0.2							
euhedral		euhedral							
100		10							
ox		ox							
1	15	30	40	40	20	30			
0.2	0.5-2	0.1-2	0.1-3	0.5	0.5	15-Jan			
rnd	rnd	rnd	rnd	rnd	rnd	rnd			
<10	1	1	2	<5	<5	<5			
smect	Zeo+smect.	smect	smect+zeo	same as #12	same as #12	same as #12			
		1							
zeo	MnOx		MnOx, Cal.						
?									