DREDGE 2

USGS DREDGE LOG

SHIP/LEG F7-91-CUP

STATION # 02

DREDGE # 02

DEPTH INTERVAL(m) 2998-3380

DEPTH(m)corrected ~~[illegible]~~ 3000-2900 3050-3000

DATE JD 196 LOCAL 7/15/0 16/91

TIME GMT 1216 LOCAL 2216

LATITUDE 7° 09.56 TO 7° 11.00

LONGITUDE 143° 06.88 TO 143° 11.84

TOTAL WEIGHT: DREDGE 40 CRUST < 5

PERCENTAGE OF ROCK COVERED BY CRUST 30% Crust 80% Crust + Patina

PERCENT BROKEN FROM: OUTCROP 70 TALUS 30

THICKNESS OF MN CRUST: MAXIMUM 30 MINIMUM < 1 AVERAGE 5

DOMINANT SURFACE TEXTURE smooth to lizard skin

SUBSTRATE LITHOLOGY (1) Basalt gray ≈ 50% (2) basalt Red ≈ 50% minor breccia

NODULES PRESENT 0

REMARKS: large cobbles to pebbles

USGS DREDGE LOG

Depth Interval 3000 – 2900 [redacted]

Cruise I.D. F7-91-WP

Station No. 2

Dredge No. D2

Julian Date 196 [redacted]

Local Date (m/d/y) 7/15-16/91

Chief Scientist Hein / Ahn

Tech on Watch Walt / John

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	196/1216	1310	1900	2019
LATITUDE	7°09.61 N	7°09.56	7° 11.00	7°10.64
LONGITUDE	143° 06.94E	143°06.88	143° 11.84	143° 11.15
WATER DEPTH	2975m	2998m	3380	3125

Site Description and Target : Dredging over the northern lip of the central trough area of the Eastern Caroline Ridge.

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
On Bottom	1310	2998	2955			Letting out scope
Taking up slack	1323	2970	3700			Scope is out
Lost GPS	1337			using rho,	GPS	should be back ~20 min
Bite	1425		3700	4000		DREDGE WORKING
	1500	2838	3700			Small bites; bouncing along
Bite	1505	2850	3700	12000 lb	6.2 pull	
Bite	1510	2850	3700	3.8		Finally biting
Bite	1511	2850	"	4.1		
Bite	1512	2850	"	5.0		
"	1513	2800	"	5.2		
Hung Up; Anchored	1517	2900	"	5.1, 5.5		Hung Up; letting ship pull around, ease off wire
	1526	2900	"	5.5		Still Hung Up, Slowly rising back up
	1534	2900	3600			Pulling in Slack to try & break off
	1548	2950	3600	7.3		Still pulling in slack
	1553	3010	3500	6 to 7.5		" " " "
	1600	3040	3420	"		" " " "
	1605	3040	3357	7.1		Broke Off
Scope / Wire Out	1611	3040				putting out 300 meters to start dredging again

*on/off bottom, bites, etc.

OTHER COMMENTS:

Wire counter maybe off. Hit bottom with less wire out than water depth?!

Wind is blowing ship right over the wire. We will be going upslope sideways most likely

D2

Carolina Ridge
Near Woleai Atoll

Dredge Sample Summary Sheet

Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive
D2-1	✓		✓	✓		✓	2 X			
2-2										
2-3										
2-4										
2-5						✓	X			
2-6										
2-7										
2-8						✓	X			
2-9										
2-10						✓	X			
2-11					✓	✓	X			
2-12						✓	X			
2-13										
2-14						✓	X			
2-15					✓	X	X			
2-16										
2-17										
2-18										
2-19										
2-20										
2-21										
2-22						✓	X			
2-23										
2-24										
2-25										
2-26						✓	X			

SAMPLE DESCRIPTION

E flank of Caroline Ridge

Cruise Id: F7-91WP Size (cm): 16x10x15 Location: [redacted]

Sample Id: D2-1 Weight (kg): ~6 Kg Depth (m): 3000-2900

Mn Crust Description

Surface Texture: smooth on top [illegible] on sides

Mn Crust Thickness (mm):

Min: <2mm Max: 30 Ave: 15

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	2mm	30	15	dense, black
2				smooth
3				
4				
5				
6				

D2-1

Comments and XRD Mineralogy:

Subsa

D2-1A Ree 0-10mm 5.2gm

D2-1A CC, Pt, AU 0-10mm 68.3gm

XRD

D2-1B TS [illegible]

XRD

USGS

Substrate Description

Rock Type: Basalt

Description: gray, massive, fresh basalt, aphyric interstitial clastic material between pillow wedges has fresh glass

Biology (?):

Described by: XSD

Subsampled by:

G.S

SAMPLE DESCRIPTION

Cruise Id: FT-91WP Size (cm): 15x8x20 Location: Caroline Ridge [redacted]

Sample Id: D2-2 Weight (kg): ~4 kg Depth (m): 3000-2900

Mn Crust Description

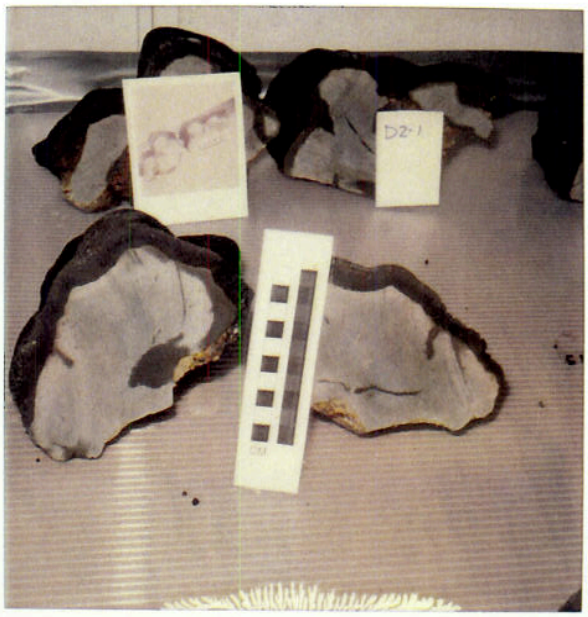
Surface Texture: smooth and botryoidal areas on top granular + porous at sides

Mn Crust Thickness (mm):

Min: 3 Max: 15 Ave: 8

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	3	15	8	mostly smooth / black
2				
3				
4				
5				
6				



D2-2

Comments and XRD Mineralogy:

Subs

½ to KOXD1

Substrate Description

Rock Type: Basalt

Description: gray, aphanitic fresh basalt — same lithology as #-1

Biology (?):

Described by:

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: FT-91 WP Size (cm): 11cm x 10 x 15 Location: Carolina Ridge [redacted]

Sample Id: D2 - 3 Weight (kg): ~ 3 Kg Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: smooth on top granular at sides

Mn Crust Thickness (mm):

Min: 5mm Max: 20 Ave: 10

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	5mm	20mm	10mm	smooth/granular
2				black
3				
4				
5				
6				

D2-3

Comments and XRD Mineralogy:

Subsam

Substrate Description

Rock Type: Basalt

Description: grey aphanitic basalt — small amount of hyaloclastite with fresh glass attached on one side

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Caroline Ridge

Cruise Id: FY-91 WP Size (cm): 8 X 10 X 13 Location: [redacted]

Sample Id: D2-4 Weight (kg): 2 1/2 kg Depth (m): 3000 - 2900

Mn Crust Description

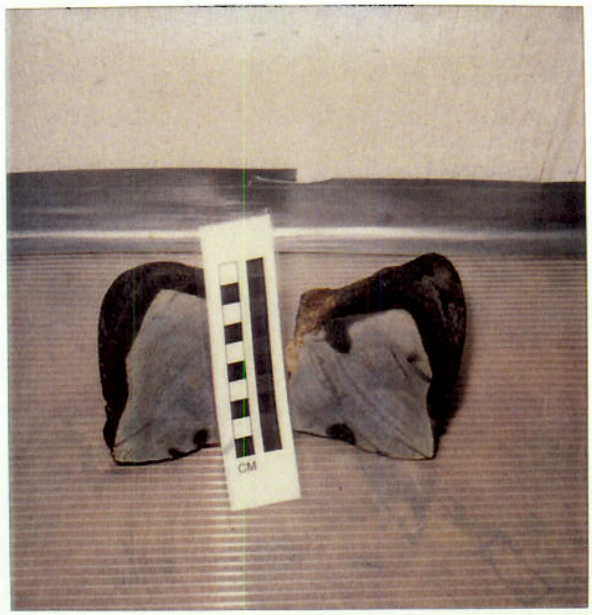
Surface Texture: Smooth on top granular on sides

Mn Crust Thickness (mm):

Min: 1.0 Max: 10 mm Ave: 8 mm

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	1.0	10.0	8.0	smooth / granular
2				black
3				
4				
5				
6				



D2-4

Comments and XRD Mineralogy:

Subsa

1/2 to KORDI

Substrate Description

Rock Type: Basalt

Description: gray aphanitic fresh basalt + rare vesicles oxidized margin rare vesicles have some calcite + greenish-white zeolite? coating

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91 WP Size (cm): 10 x 20 x 16 Location: Caroline Ridge [redacted]

Sample Id: D2-5 Weight (kg): ~7 kg Depth (m): 3000 - 2900

Mn Crust Description

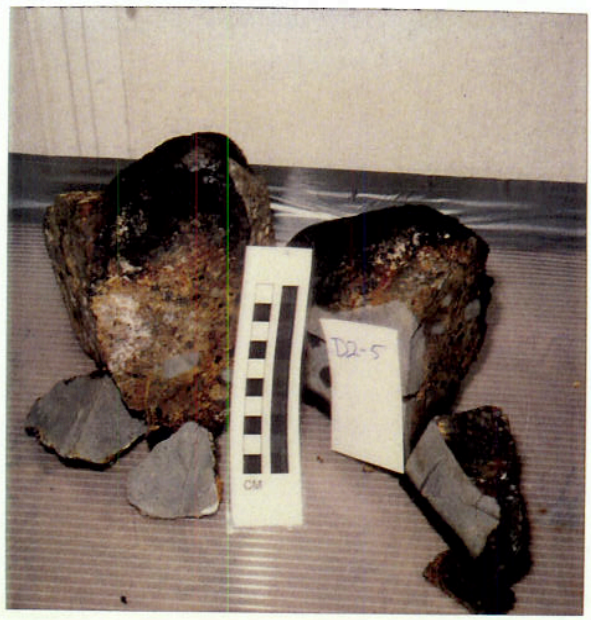
Surface Texture: smooth on top sides granular

Mn Crust Thickness (mm):

Min: 2.0 Max: 20.0 Ave: 10.0

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	2	20	10	smooth/granular
2				some botryoids
3				black
4				
5				
6				



D2-5

Comments and XRD Mineralogy:

Subsa

T.S.

D2-5 TS Breccia

XRD

Substrate Description

Rock Type: Hyaloclastite breccia

Description: clasts of aphyric gray basalt (to 7 cm) and mm to cm size glassy basalt pieces in yellow-brown sedimentary matrix

Biology (?):

Described by: ASD

Subsampled by: D.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 10x9.5x6 ~ 7.5x5.5x4.5 Location: E-Plank of Cowline Ridge [redacted]

Sample Id: D2-6 Weight (kg): 2.2 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: smooth on top granular on sides

Mn Crust Thickness (mm):

Min: 1mm Max: 10 mm Ave: 8

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	1.0	10.0	8.0	smooth/granullar
2				blade
3				
4				
5				
6				

D2-6

Comments and XRD Mineralogy:

Subs

1/2 to KORDI

Substrate Description

Rock Type: Basalt

Description: manganese-covered pebbles and cobbles of gray, aphyric basalt some have glassy selvages

Biology (?):

Described by: A.S.D.

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91WP Size (cm): pebbles + cobbles to 8x5x5 max Location: Carolina Ridge ~~[illegible]~~

Sample Id: D2-7 Weight (kg): 2.5 kg Depth (m): 3000-2900

Mn Crust Description

Surface Texture: smooth and granular

Mn Crust Thickness (mm):

Min: 1 Max: 12 Ave: 6 mm

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	1	12	6	smooth/granular
2				black
3				
4				
5				
6				

D2-7

Comments and XRD Mineralogy:

Subsar

1/3 to KARDI

Substrate Description

Rock Type: Basalt

Description: gray/aphanitic basalt pebbles + cobbles with small amount of volcaniclastic breccia adhering to some pieces

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP
Sample Id: D2-8

Size (cm): 16 x 13 x 8.5
Weight (kg): 2.5

Location: E-plank of Caroline Ridge [redacted]
Depth (m): 3000 - 2900

D2-8

Mn Crust Description

Surface Texture: patina of Mn crust

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	0	patina		smooth / black
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Subs

DPTS. after probe of glass

D2-8 DPTS
XRD

Substrate Description

Rock Type: Basalt

Description: gray, aphyric fresh basalt with good glass rind — some oxidation below glass rind

Biology (?):

Described by: ASD

Subsampled by: D.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91 WP Size (cm): 9x14x10 Location: Caroline Ridge [redacted]

Sample Id: D2-9 Weight (kg): 2.2 kg Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: no crust

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	—	—	—	—
2				
3				
4				
5				
6				

D2-9

Comments and XRD Mineralogy:

Sub:

Substrate Description

Rock Type: Basalt

Description: fine to med. grained holocrystalline basalt sparsely porphyritic with plagioclase (+cpx?) glomerocrysts clear looking plagioclase

plagioclase looks o.k. (?) maybe o.k. for dating

Biology (?):

Described by: KD.

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 22 x 18 x 9 Location: E-plank of Gardine Ridge

Sample Id: D2-10 Weight (kg): 2.7 Depth (m): 3000 - 2900

Mn Crust Description

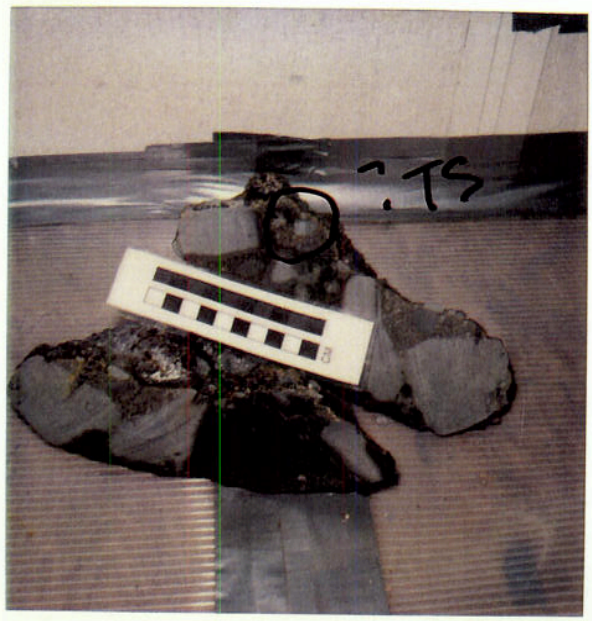
Surface Texture: Patina over part of rock

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	—	—	—	smooth / black
2				
3				
4				
5				
6				



D2-10

Comments and XRD Mineralogy:

Subs

D2-10 TS

XRD Breccia

Substrate Description

Rock Type: Basalt clasts in breccia

Description: gray, aphyric basalt (to 6cm max) mostly subrounded in matrix of gray breccia - mostly clasts - very little matrix / fresh glass

Biology (?):

Described by: ASD

Subsampled by: A.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 12x12x9 Location: E-plank of Caroline Ridge

Sample Id: D2-11 Weight (kg): 1.2 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: smooth patina over part of rock

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	0	patina		smooth/black
2				
3				
4				
5				
6				

D2-11

Comments and XRD Mineralogy:

Subsam

D2-11 OC 26.6 gm
TS
XRD

Substrate Description

Rock Type: Basalt

Description: gray, fine grained holocrystalline basalt with rare plagioclase phenocrysts — groundmass plagioclase looks good → may be dateable

Biology (?):

Described by:

Subsampled by: S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 5.5x5x3 ~ 2.5x1.8x1.5 Location: Eastern Flank Carolina Ridge [redacted]

Sample Id: D2-12 Weight (kg): 0.25 Depth (m): 3000-2900

Mn Crust Description

Surface Texture: granular to porous

Mn Crust Thickness (mm):

Min: patina Max: 12 Ave: <1mm

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	1.0	12	1.0	granular +
2				porous
3				black
4				
5				
6				

D2-12

Comments and XRD Mineralogy:

Subsa

D2-12 DPTS XRD

Substrate Description

Rock Type: Volcaniclastic Breccia

Description: breccia of subrounded angular basalt (1 to 4 cm) and glass fragments in yellow- to red brown matrix. Very well indurated

Biology (?):

Described by: ASD

Subsampled by: D.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 8x5x4 ~ 1.9x1.5x1.5 Location: E-plank of Caroline Ridge [redacted]

Sample Id: D2-13 Weight (kg): 1.7 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: Botryoidal, granular to smooth and lizardskin.

Mn Crust Thickness (mm):

Min: patina Max: 10 Ave: 5

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Sub

1/3 to KORDI

Substrate Description

Rock Type: Volcaniclastic breccia; various pieces of volcaniclastic breccia w/ crusts of varied thicknesses.

Description: clasts mainly of basalt in matrix of fine grained sediment often w/ glass fragments.

Biology (?):

Described by: J.S.S.

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 11x8.5x6 Location: E-plank of Cordine Ridge

Sample Id: D2-14 Weight (kg): 1.5 Depth (m): 3000-2900

Mn Crust Description

Surface Texture: smooth

Mn Crust Thickness (mm):

Min: 0 Max: pathing Ave:

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	0	pathing		smooth / black
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Subsa

D2-14 TS

XRD

Substrate Description

Rock Type: basalt

Description: porphyritic basalt with large (10 6mm) glomerocrysts (somewhat rounded - may be xenoliths) fine grained, holocrystalline groundmass

Biology (?):

Described by: ASD

Subsampled by: D.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 15.5 x 9.5 x 5.5 (largest) 7.5 x 6.5 x 5.5 (smallest) Location: [redacted] eastern flank rainbow Ridge

Sample Id: D2-15 Weight (kg): 2.5 kg Depth (m): ~~3000~~ 2900

Mn Crust Description

Surface Texture: None, patina of Manganese on several samples

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Subsa

See - D2-22 for glomeocrusts thin section

T.S. D2-15-1

D2-15-1 OC 45 gm

XRD

TS

Substrate Description

Rock Type: Altered Basalts

Fine grained w/ scarce plagioclase, pyroxene glomeocrusts

Description:

Fractures and outer edges are altered to a brick Red color (hematite?)

Biology (?):

Described by: JSS

Subsampled by: G.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 6.5×4.5×3.3 ~ 3.3×2.5×1.3 (AVG=4.5×4×2) Location: E-plank of Caroline Ridge

Sample Id: D2-16 Weight (kg): 4.25 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture:

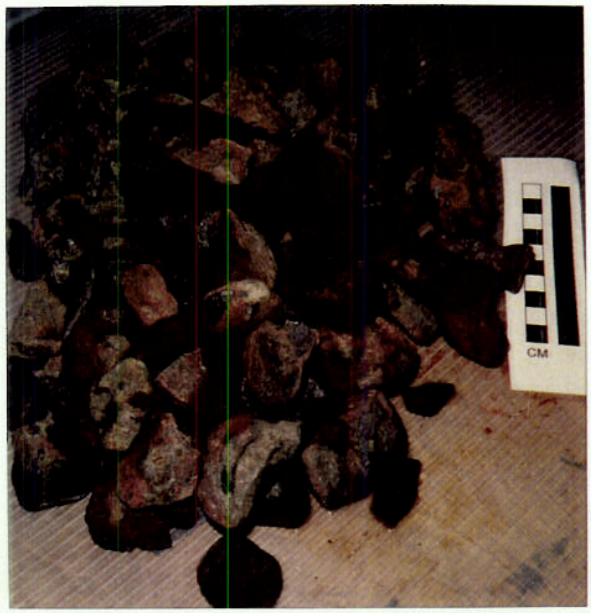
patina of Mn on some fragments

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				



D2-16

Comments and XRD Mineralogy:

Subs

1/3 to KORDI

Substrate Description

Rock Type: Altered basalt cobbles.

Description: Fine-grained green basalts altered along fractures and outer rims to brick red color. All pieces are cut. Similar to D2-14, D2-15, D2-19

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): (AVG: 5×3.5×2.5) 7.5×4×2.5–3.5×2.5×1.3 Location: E-Plank of Caroline Ridge

Sample Id: D2-17 Weight (kg): 1.5 Depth (m): 3000-2900

Mn Crust Description

Surface Texture:

Mn patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-17

Comments and XRD Mineralogy:

Sub

1/3 to KORDI

Substrate Description

Rock Type: Green moderately altered fine-grained basalt cobbles; A few of these pieces have altered to brick-red color in small areas

Description: Unaltered pieces

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 3.2 x 2.7 x 1 Location: [redacted]

Sample Id: D2-18 Weight (kg): < 1 kg Depth (m): 3000 - 2900

D2-18

Mn Crust Description

Surface Texture: None

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Pumice pebble

Description:

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

7.5 x 6 x 3.5 Largest

Eastern side of Caroline Ridge

Cruise Id: F7-91-WP Size (cm): 7.0 x 3.0 x 3.5 smallest Location: [redacted]

Sample Id: D2-19 Weight (kg): 2 kg Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: None

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-19

Comments and XRD Mineralogy:

Su

½ to KORDI

Substrate Description

Rock Type: Altered basalts: Green Fine-grained w/ sparce glomerocryst & xenoliths (?)

Description: Similar to D2-15 smaller pieces, more highly altered Alteration appears to be replacement; same brick red color as D2-15

Biology (?):

Described by: JSS

Subsampled by: JSS

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 9x7x3.5 ~ 4.5x3.5x2 Location: E-plank of Caroline Ridge ~~V2-91-CP~~

Sample Id: D2-20 Weight (kg): 3.5 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: —

no crust

some red iron oxide(?) coating

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	—	—	—	—
2				
3				
4				
5				
6				

D2-20

Comments and XRD Mineralogy:

Sub

1/3 to Kordi

Substrate Description

Rock Type: Basalt

Description: fine grained/holo-crystalline, mostly aphyric rare plag. glomerocrysts in some pieces/red, oxidized margins on some + in fractures

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 6×3.5×5.0 Location: E-plank of Caroline Ridge [redacted]

Sample Id: D2-21 Weight (kg): 0.2 Depth (m): 3000-2900

Mn Crust Description

Surface Texture: None

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-21

Comments and XRD Mineralogy:

Subsa

Substrate Description

Rock Type: [illegible] fine-grained grey basalt w/ alteration of part of the sample has turned it pinkish in color.

Description: Vesicles have white zeolite in them.

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 7 x 5 x 4 Location: E-plank of Caroline Ridge

Sample Id: D2-22 Weight (kg): 0.5 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: —

no crust

red oxide coating

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Sub

D2-22 DPTS

XRD

Substrate Description

Rock Type: Basalt

Description: fine grained, holo-crystalline basalt with rare, large (10 cm size) glomerocrysts of plag, olivine and/or cpx — rounded may be xenoliths

Biology (?):

Described by: ASD

Subsampled by: D.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 6.5 x 8 x 4 Location: Caroline Ridge ~~F2-91-CP~~

Sample Id: D2-23 Weight (kg): 0.5 Depth (m): 3000-2900

Mn Crust Description

Surface Texture: smooth to granular

Mn Crust Thickness (mm):

Min: patina Max: 3 Ave: 2

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-23

Comments and XRD Mineralogy:

Sub

1/2 to KORDI

Substrate Description

Rock Type: Volcaniclastic Breccia

Clasts of vesicular altered basalts. One clast has phenocrysts altered to iron oxide

Description: matrix of fine grained material contains areas of less alteration with fresher clasts. Very uniform.

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 4.5 ~ 9.5 Location: Carolina Ridge ~~[illegible]~~

Sample Id: D2-24 Weight (kg): 1.0 Depth (m): 3000-2900

Mn Crust Description

Surface Texture: patina on several of the cobbles

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-24

Comments and XRD Mineralogy:

Sul

1/2 to KORDI

Substrate Description

Rock Type: Volcaniclastic Breccia Cobbles. Grey to Blue Grey w/ Altered to moderately altered basalt clasts.

Description: Matrix is fine grained w/ calcite veins. Texture in some cobbles appears strained or sheared w/ greenish material (chlorite? or serpentine in the matrix)

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 25x20x2.0 Location: Caroline Ridge ~~V8-91-CP~~

Sample Id: D2-25 Weight (kg): 0.3 Depth (m): 3000 - 2900

Mn Crust Description

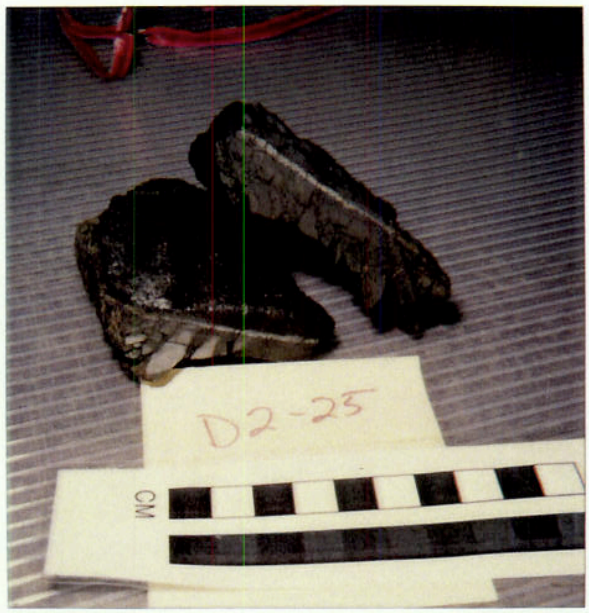
Surface Texture: botryoidal to granular

Mn Crust Thickness (mm):

Min: <1 Max: 6 mm Ave: 4 mm

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	<1	6	4	botryoidal /
2				granular
3				black
4				
5				
6				



D2-25

Comments and XRD Mineralogy:

Sul

1/2 to KORDI

Substrate Description

Rock Type: Basalt

Description: highly fractured gray aphyric basalt has margin that is devitrified glass — autobrecciation but clasts not separated

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 6.5x4.2x1 Largest Location: [redacted] E-Flank Cascadia Ridge

Sample Id: D2-26 Weight (kg): <1 Depth (m): 3000 - 2900

Mn Crust Description

Surface Texture: Smooth, botryoidal to granular.

Mn Crust Thickness (mm):

Min: patina Max: 5 Ave: 3

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D2-26

Comments and XRD Mineralogy:

Subs

DPTS D2-26 XRD

Substrate Description

Rock Type:

Basalt & Volcaniclastic Breccias

Description: These small pieces have Mn that appears to be more hydrothermal in origin than hydrogenous. Color and texture of broken Mn appears hydrothermal

Biology (?):

Described by: JSS

Subsampled by: JSS