Dredge 16

USGS DREDGE LOG

SHIP/LEG F7-91-WP

STATION # 24

DREDGE # 16

DATE JD 209 LOCAL July 29 19

TIME GMT 1824 LOCAL 2134

DEPTH INTERVAL(m) 3475 - 2685

LATITUDE 08°33.49 TO 08°33.64

DEPTH(m)corrected 3400 - 2260

LONGITUDE 135°36.37 TO 135°36.22

TOTAL WEIGHT: DREDGE mud 125 rock 65 CRUST <15

PERCENTAGE OF ROCK COVERED BY CRUST 100

PERCENT BROKEN FROM: OUTCROP 100 TALUS 0

THICKNESS OF MN CRUST: MAXIMUM 30 MINIMUM 5 AVERAGE 10

DOMINANT SURFACE TEXTURE Smooth, granular

SUBSTRATE LITHOLOGY (1) 100%? Breccia or Most likely
30% Breccia
70% basalt

NODULES PRESENT 0

REMARKS: The basalt looks like removed clasts from the breccia -

1 boulder, rest cobbles + pebbles

120 kg mud discarded

USGS DREDGE LOG

Depth Interval 3425-2340

Cruise I.D. F7-91-WP

Station No. 24

Dredge No. 16

Julian Date 209

Local Date (m/d/y) 29 JULY '91

Chief Scientist HEIN

Tech on Watch JON

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	1711	1824	2134	2236
LATITUDE	08°33.49'N	08° 33.49 N	08° 33.64	08° 33.65
LONGITUDE	135°36.33'E	135° 36.37 E	135° 36.22	135° 35.79
WATER DEPTH	3495m IN WATER 1719	3475 3472 WO	3600	3665

Site Description and Target : BETWEEN PALAU D AND K ON LINE 19

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
ON BOTTOM - DREDGE	1824	3475	3472		174	ON BOTTOM
	1840	3100	4100			ALL SCOPE OUT - SHIP MOVING UPSCOPE
	1902	2800	4100			NO ACTION YET
	1903	2800	4100			STOPPING SHIP - STARTING TO BRING WIRE
	1910		4000	~1.8		NO ACTION
Bite	1915	2900	3900	3.2		1st SLOW BITE
Bite	1920		3679	3.7		SAME AS 1st BITE - NOT SHARP
Bite	1923	2960	3606	3.2		
Bite	1924	"	3557	6.7		GOOD TUG! QUICK RELEASE
	1926					STOPPING WINCH - MOVING SHIP UPSCOPE
	1934			3.2		MUD-LIKE BITE
Stopped	1946	2640	3500			pulling in some scope
Hung	1951	2640	3300	~6.0		pulling ship down slope
Broke off	1957	2660	3300	7.0		
Hung	1958	2670				
Still Hung	2005	2760	3260			
"	2018					MOVING SHIP DOWNSCOPE TO RELIEVE WIRE TENSION

*on/off bottom, bites, etc.

OTHER COMMENTS:

OVER —

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
	2020	~3100	3239			MANEUVERING TO BREAK ANCHOR
	2028		3230	7.4		
	2046		3275	6.9-7.4		STILL HUNG UP!
	2052					BACKING DOWN & PAYING OUT
	2104	3240	3320			— HUNG —
	2119	3320	3418			WELL HUNG!
Broke	2132	3600	3392	5.5-6.0		
OFF BOTTOM	2133	3600	3380			

*on/off bottom, bites, etc.

OTHER COMMENTS:

D16

Palau C

Dredge Sample Summary Sheet

Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive
D16-1							X		X	
D16-2							X		2X	
-3							X		X	
-4							X		X	
-5	NO	# 5								
-6						2X	X			
-7										
-8										
-9							X			
-10					X	X	X			
-11										
-12	X		X X	X			X			
-13										
-14										
-15										
-16										

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SAMPLE DESCRIPTION

Palau C

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

Sample Id: D16-1 Weight (kg): ~50 kg Depth (m): 3400-3260

Mn Crust Description

Surface Texture:

No photo

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:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)
Paleo	XRD	D16-1	
All rock board but 1 kg in 16 oz container			

Substrate Description

Rock Type:

Description: light brown nannofossil foraminifera ooze mud, soft massive,

Biology (?):

Described by: Jorie

Subsampled by: JSS

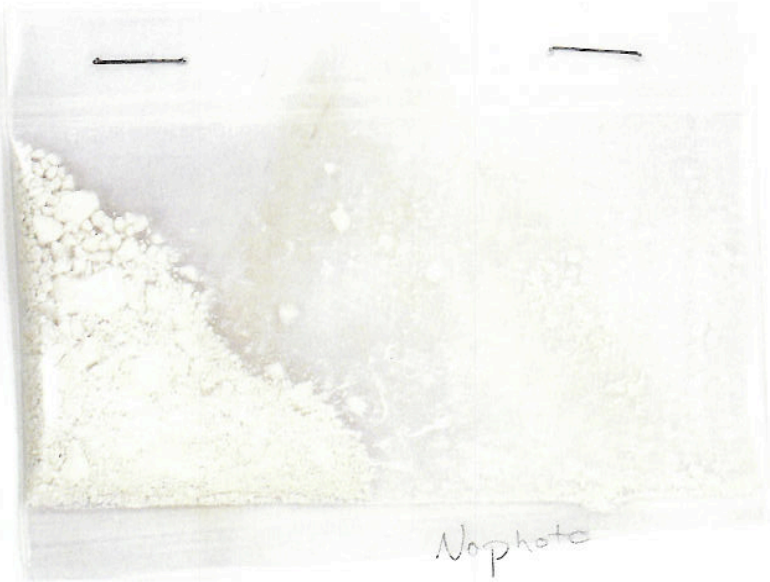
SAMPLE DESCRIPTION

Cruise Id: F7-90-WP Size (cm): — Location: Palau C [redacted]

Sample Id: D16-2 Weight (kg): ~75 kg Depth (m): 3400-3260

Mn Crust Description

Surface Texture:



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:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)
	1 in Rose Bengal		
D16-2	2 paleos, XRD		
	All overboard except 1 kg in 16 oz container		

Substrate Description

Rock Type: Off white [illegible] - [illegible] ooze

Very stiff mud, generally massive

w/a few burrows infilled w/ brown mud

Description: Scarce Mn mottling & Fe stain

Biology (?):

Described by: Jorie

Subsampled by: Jorie

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 2-8x4x3 Location: [redacted]

Sample Id: D16-3 Weight (kg): <1 Kg Depth (m): 3160 - 3260

Mn Crust Description

Surface Texture:

Some Mn Staining

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D 16-3

Comments and XRD Mineralogy:

Sub

D16-3 Paleo XRD

Substrate Description

Rock Type: Several small cobbles of a very altered volcaniclastic breccia, and and brown mud clasts. Very Friable

Description:

Biology (?):

Described by: Jozie

Subsampled by: JSS

SAMPLE DESCRIPTION

Cruise Id: EN-91-WP Size (cm): 7.5 x 3 x 3 Location: Palau C [redacted]

Sample Id: D16-4 Weight (kg): ~ 1 kg Depth (m): 3400 - 3260

Mn Crust Description

Surface Texture:

Mn staining in patches on one side

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D16-4

Comments and XRD Mineralogy:

Sul

D16-4 Palau XRD

Substrate Description

Rock Type: laminated calcareous muddy marl

Description:

Biology (?):

Described by: Jorie

Subsampled by: JSS

SAMPLE DESCRIPTION

Cruise Id: F7-91WP Size (cm): 16 X 9 X 5 Location: [redacted]

Sample Id: D16-6 Weight (kg): ~ 1.5 kg Depth (m): 3400-3260

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D16-6

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt

Description: Olivine phyric, mod. vesicular pillow pieces with glass rind (to 2cm) Olivine altered to iddingsite Fresh altered glass in rim

Biology (?):

Described by: ASD

Subsampled by: ASD

D16-6A DPTS

D16-6B XRD, DPTS, ICP MS - Alice took glass for ICP-MS & probe altered brown glass for XRD

D16-6B glass

HORDI 40%

USGS 60%

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 8x5x3 15x10x5 Location: [redacted] Glass C

Sample Id: D16-7 Weight (kg): 7.5 Depth (m): 3400-3260

D16-7

Mn Crust Description

Surface Texture: Granular to smooth

Mn Crust Thickness (mm):

Min: 0 Max: 10mm Ave: 5

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

S

Substrate Description

Rock Type: Basalt

Description: Olivine phyric, vesicular pillow wedges with glass rinds & altered hyaloclastite breccia

Biology (?):

Described by: ASD

50% KORDI
70% USGS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: [illegible] Size (cm): 13 x 12 x 10 Location: [redacted]

Sample Id: D16-8 Weight (kg): ~3 Depth (m): [illegible]

Mn Crust Description

Surface Texture: —

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D16-8

Comments and XRD Mineralogy:

Sub

Substrate Description

Rock Type: Basalt

50% KORDI
50% USGS

Description: Olivine phyric mod. vesicular near margin, vesicles decrease toward interior. Thin glassy mod. Olivine altered like in other

~~Biology~~ (?): Samples.

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: FC-91-WP Size (cm): 20x15x6 Location: ~~V2-91-CB~~ Palau C

Sample Id: D16-9 Weight (kg): 2.5 Depth (m): [illegible]

Mn Crust Description

Surface Texture: Granular to smooth [illegible]

Mn Crust Thickness (mm):

Min: 7 Max: 10 Ave: 8

Outer to Inner Layers (mm)

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

D16-9

Comments and XRD Mineralogy:

Sub

D16-9 XRD Calcite Fracture Fill w/ Mn dendrites

Substrate Description

Rock Type: Basalt

Description: Olivine phyric pillow wedge, vesicular + altered like other samples - some vesicles have frothy glass filling

50% (TORD)
50% USGS

Biology (?): Fractured lined w/ Calcite

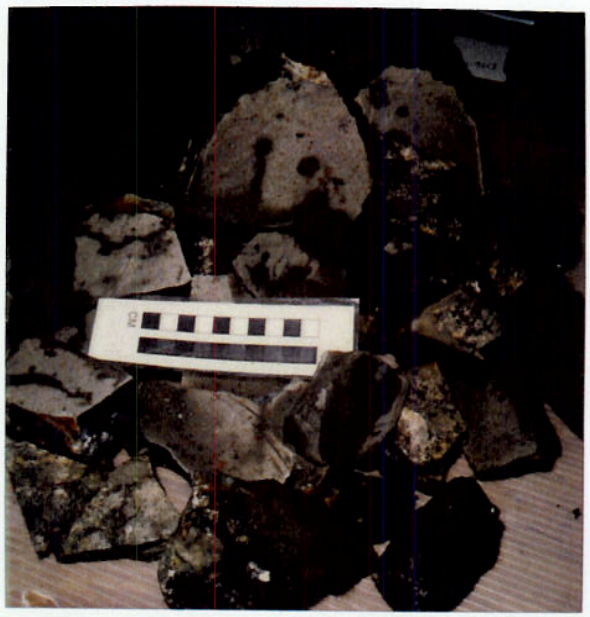
Described by: ASD

Subsampled by: HEM

SAMPLE DESCRIPTION

Cruise Id: [illegible] Size (cm): [illegible] Location: [redacted]

Sample Id: D16-10 Weight (kg): ~16 Depth (m): [illegible]



D16-10

Mn Crust Description

Surface Texture: Patina on a few cobbles

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

D16-10-1 OC, XRD 63 gm
XRD
TS
Typical basalt from [illegible]

50% [illegible]
50% [illegible]

Substrate Description

Rock Type: Basalt

Description: Olivine phyric vesicular basalt – few glass rinds and essentially no Mn crust same lithology as other samples

Biology (?):

Described by: [illegible]

Subsampled by: AD

SAMPLE DESCRIPTION

Cruise Id: FP-91-WP Size (cm): ~15x10x[illegible] Location: Palau C [redacted]

Sample Id: D16-11 Weight (kg): [illegible] Depth (m): 3400-3250

Mn Crust Description

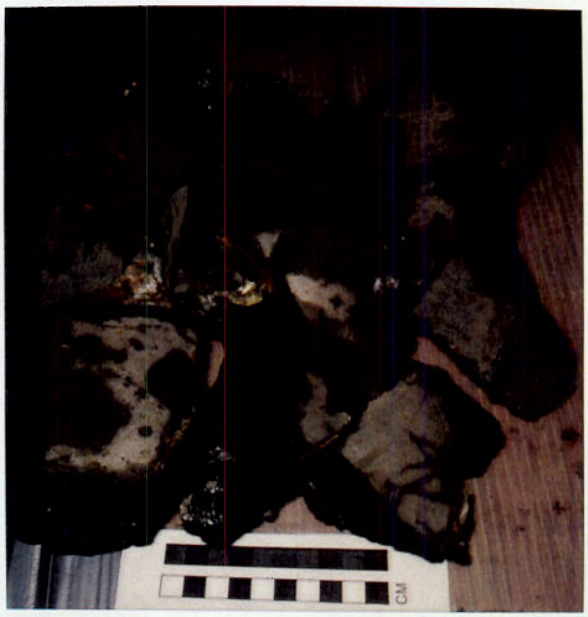
Surface Texture: Tops - Liquid Skin, Edges - current polished. Sides granular

Mn Crust Thickness (mm):

Min: 3 Max: 15 Ave: 10

Outer to Inner Layers (mm)

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



D16-11

Comments and XRD Mineralogy:

Su

60% HORDI

40% VSGS

Substrate Description

Rock Type: Basalt

Description: Vesicular, olivine phyric basalt, same pathology as before but no glass and have thin Mn crust - some orange altered olivine

Vitrobe Crusts

Biology (?): vesicles with frothy glass

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: [illegible] Size (cm): [illegible] Location: Palau C ~~V2-91-CP~~

Sample Id: D16-12 Weight (kg): 2. Depth (m): 3400 - 3260

Mn Crust Description

Surface Texture: granular, smooth
small botryoidal

Mn Crust Thickness (mm):

Min: 10 Max: 20 Ave: 15

Outer to Inner Layers (mm)

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

D16-12

Comments and XRD Mineralogy:

Su

D16-12-1 Ree. ? 81 gm
XRD 0-20mm
Bulkcrust CC Pt. Au) 97 gm

Substrate Description

Rock Type: Basalt

Description: Same lithology as other samples except have better developed mn crust

50% KORDT
50% USGS

Biology (?):

Described by: [illegible]

Subsampled by: G.S.

SAMPLE DESCRIPTION

Cruise Id: [illegible] Size (cm): [illegible] Location: Palau C [redacted]

Sample Id: [illegible] Weight (kg): [illegible] Depth (m): [illegible]

Mn Crust Description

Surface Texture: [illegible]

Mn Crust Thickness (mm):

Min: 15 Max: [illegible] Ave: [illegible]

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Substrate Description

Rock Type: [illegible]

Description: [illegible]

Biology (?): [illegible]

Described by: [illegible]

Subsampled by:

SAMPLE DESCRIPTION

Palau C

Cruise Id: F7-91WP Size (cm): 26x12x8 Location: [redacted]

Sample Id: D16-14 Weight (kg): ~ 2kg Depth (m): 3400 - 3260

D16-14

Mn Crust Description

Surface Texture: Thin crust + Patina, granular to Smooth

Mn Crust Thickness (mm):

Min: P Max: 1mm Ave: P

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subs

50% KORDT
50% USGS

Substrate Description

Rock Type: Basalt

Description: Vesicular, olivine phyric basalt, olivine phenos, altered to [illegible] and [illegible], calcite in most of the vesicles. More

Biology (?): altered than most of the other pieces

Described by: SD

Subsampled by:

SAMPLE DESCRIPTION

Lots of pebbles

Cruise Id: [illegible] Size (cm): [illegible] Location: Palau C [redacted]

Sample Id: D16-15 Weight (kg): 10 Depth (m): 2600-3250

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min: Max: 8 Ave:

Outer to Inner Layers (mm)

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

D16-15

Comments and XRD Mineralogy:

Sub

Substrate Description

Rock Type: Basalt

60% GSGS
40% KOROT

Description: uncut pebbles and cobbles, essentially without Mn crust

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: [illegible] Size (cm): many pieces [illegible] Location: [redacted]

Sample Id: [illegible] Weight (kg): [illegible] Depth (m): [illegible]

Mn Crust Description

Surface Texture: granular smooth

Mn Crust Thickness (mm):

Min: 2 Max: 15 Ave: 5

Outer to Inner Layers (mm)

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

D16-16

Comments and XRD Mineralogy:

Su

50% USGS
50% HORDI

Substrate Description

Rock Type: Basalt fragments with Mn crust

Description: uncut basalt pieces with Mn crust ranging from [illegible] to 1.5 cm

Biology (?):

Described by: ASD

Subsampled by: