Dredge 11

USGS DREDGE LOG

SHIP/LEG F7-91-WP

STATION # 17

DREDGE # 11

DATE JD 205 LOCAL 7/24/91

TIME GMT 0600Z - LOCAL 1600

DEPTH INTERVAL(m) 2650-2420

LATITUDE 07°46.32' TO 07°46.39'

DEPTH(m)corrected 2650-2450

LONGITUDE 137°14.98' TO 137°14.87'

TOTAL WEIGHT: DREDGE 75 (50kg mud, 25kg Rocks) CRUST <5

PERCENTAGE OF ROCK COVERED BY CRUST 100%

PERCENT BROKEN FROM: OUTCROP 10 TALUS 90

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

DOMINANT SURFACE TEXTURE Smooth + Granular

SUBSTRATE LITHOLOGY 70% basalts cobbles + pebbles, 30% others - Lms, SS?, hydrothermal, breccia, plutonics, Andesite?

NODULES PRESENT 0

REMARKS: 50 kg brown ooze collected (probably 100 kg before it left sea floor) about 1 kg kept of mud -

2600

USGS DREDGE LOG

Depth Interval 2650-2450

Cruise I.D. F7-91-WP

Station No. 17

Dredge No. 11

Julian Date 205

Local Date (m/d/y) 7/24/91

Chief Scientist Hein/Ahn

Tech on Watch Walter

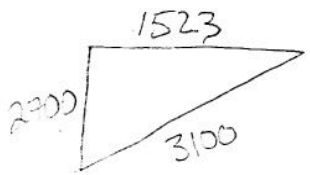
	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	0609	0707	10:01	1104
LATITUDE	07°46.3	07 46.32	07°46.39'	7°46.2
LONGITUDE	137° 15.2	137 14.98	137° 14.87'	137°15.26
WATER DEPTH	2575	? 2650	2420	

Site Description and Target : Dredging up south side of seamount called "Yap O". Target = ~2500-2000

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
Stopped paying out	0706	2520	2700			moving up line to put dredge slope - should have hit by now
On bottom	0707	2500	2700	moving up line paying out scope		Apparently fell back down slo
Scope is out	0720		3100			Taking up slack
Bite - Starting to dredge	0754	2220		3.6		Broke off
Bite	0806			4.6		"
Bite	0806	2215		3.8		"
On a bite	0808					
Broke off	0809	2210		5.1		
On a bite	0821	2200	3100	4.5		
moving to left to pull from ~~left to right angle~~	0832	2185	3110	up to 7.4		stuck fast
	0903	2225				Stop and pull dredge u
Stop paying out	0921	2305	3000	7.8		Hung up: can't pull anymo
Backing down	0938	2400	2900			Still stuck back ship do
Backed off!?	0959	2420	2600	2.4-2.8		un-stuck?
off bottom	1000	2420	2550	steady	2	might be off bottom

*on/off bottom, bites, etc.

OTHER COMMENTS:



9610000
7290000
2320000

D11

SSW Ngulu Atoll

ICP-minors

Dredge Sample Summary Sheet

Sample ID	~~Bulk CC~~	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive	ICP
D11-1									2X		
11-2					✓	1	✓				
11-3						1	✓				
11-4											
11-5	✓		Au		✓	1	✓				✓
11-6											
11-7					~~2~~	~~2~~	2				
11-8	✓		Au		✓	1	✓				✓
11-9						1	✓				
11-10						1					
11-11											
11-12							✓				
11-13	✓		Au		✓	1	✓				✓
11-14											
11-15											
11-16											
11-17						1	✓				
11-18											
11-19											
11-20											

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): ~ Location: S.S.W. Ngulu Atoll [redacted]

Sample Id: D11-1 Weight (kg): 1.05 Kg Depth (m): 2650-2450

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				

No Photo

Comments and XRD Mineralogy:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)
D11-1	Paleo		89.1 gm
	Paleo w/ Rose Bengal		237.5 gm
	~ 20 min after on Deck		
	KORDI		131.1 gm
	USGS		590.7 gm

Substrate Description

Rock Type: foraminiferal mud

Description: very pale orange (10YR 8/2) dry, Grayish orange (10YR 7/4) wet
- Contains > 0.5mm chips of basalt.
unconsolidated, calcareous.

Biology (?): forams

Described by: J.S

Subsampled by: J.S.

SAMPLE DESCRIPTION

S.SW. Ngaku atoll

Cruise Id: FZ-91-WP Size (cm): 10.5x3.5x3 Location: [redacted]

Sample Id: D11-2 Weight (kg): 42 kg Depth (m): 2655-2450

Mn Crust Description

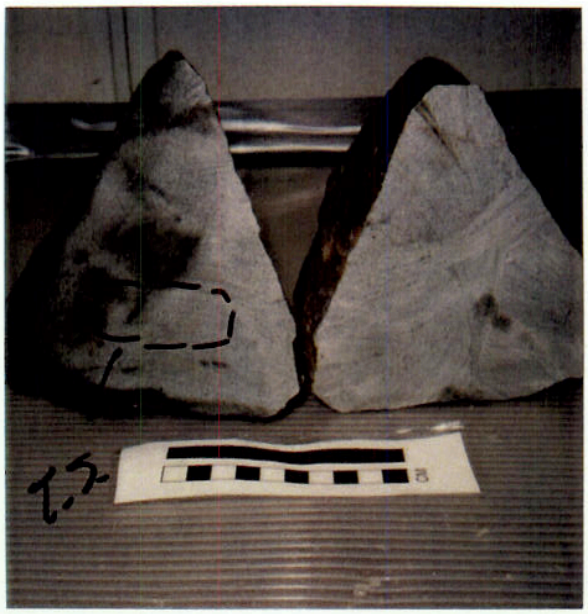
Surface Texture: Patina - granular to smooth covers ~70%

Mn Crust Thickness (mm):

Min:_____ Max: P Ave:_____

Outer to Inner Layers (mm)

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



Rx greener than Photo. D11-2

Comments and XRD Mineralogy:

Sub

D11-2 OC 35.8 gm

T.S.

XRD

KORDI 40%

USGS 60%

Substrate Description

Rock Type: Coarse-grained Andesite or Fine-grained Diorite

Description: green tinted, feldspars, quartz? with hornblend fine crystalline - phaneritic green crystalline coating [illegible]

Flag.

NO! olivine

Biology (?): encrusting forams

Described by: [signature]

Subsampled by: [signature]

SAMPLE DESCRIPTION

S.S.W. Nguia Atoll

Cruise Id: F7-91-WP Size (cm): 9.5 x 13 x 20.5 Location: [redacted]

Sample Id: D11-3 Weight (kg): ~ 4 Depth (m): 2650 2850

Mn Crust Description

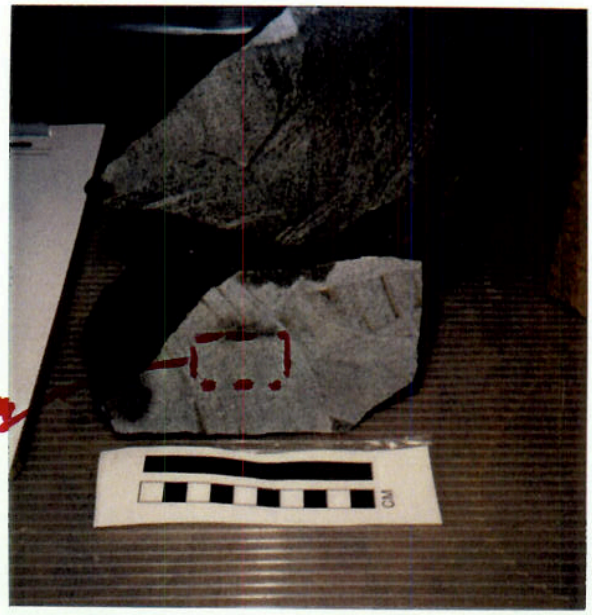
Surface Texture: Patina, smooth
covers 80% of Rock

Mn Crust Thickness (mm):

Min:_____ Max: P Ave:_____

Outer to Inner Layers (mm)

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



D11-3

Comments and XRD Mineralogy:

Sub

D11-3 T.S.
XRD

KOPD: 30%
USGS 70%

Substrate Description

Rock Type: Coarse grained Andesite
or fine-grained Diorite

Description: greenish tint —
saussurized plag (quartz?) horn. and
fine crystalline. - phenocritic
trace [illegible]

Biology (?): encrusting forams

Described by: G.S.

Subsampled by: G.S.

SAMPLE DESCRIPTION

S.S.W Ngulu Atoll

Cruise Id: FT-91-WP Size (cm): 15x10x10 Location: [redacted]

Sample Id: D11-4 Weight (kg): 1.8 kg Depth (m): 2650 - 2450

Mn Crust Description

Surface Texture: Patina - smooth 80% of Rx surface.

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-4

Comments and XRD Mineralogy:

Sul

KORDI 30%
USGS 70%

Substrate Description

Rock Type: Breccia, clast-supposed Andesite - Diorite

Description: phaneritic - finely crystalline. Similar composition to D11-3. Matrix is hydrothermally altered diorite with lenses of ~~[illegible]~~ + quartz??

Biology (?): encrusting forams

Described by: G.S.

Subsampled by:

[illegible] - [illegible] of feldspar [illegible]

SAMPLE DESCRIPTION

S.S.W. Ngulu Atoll

Cruise Id: F7-91-WP Size (cm): 17x8x6 Location: V3-91-NP

Sample Id: D11-5 Weight (kg): 2 kg Depth (m): 2050-2850

Mn Crust Description

Surface Texture: Patina, smooth
~ 40% of surface

Mn Crust Thickness (mm):

Min: Max: P Ave:

Outer to Inner Layers (mm)

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

D11-5

cl cm

T.S.

Comments and XRD Mineralogy:

Black w/ Reddish brown Fe-Mn Crust Stain

Sul

D11-5 OC, Au, ICP 70.5 gm
XRD
T.S.

Substrate Description

Rock Type: Breccia, Cataclastic Andesite?

KORD: 30%
USGS 70%

Description: Basalt? clasts
Must have been fractured and moderately indurated in a (matrix supported) matrix of crushed volcanic rock + alteration products - epidote? chlorite?
Host Rock → Monzonite!

Biology (?): encrusting forams

Described by: J.S.

Subsampled by: J.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 12×8×5 L / 6×3×2 S Location: S.S.W. Ngulu Atoll V3-91-NP

Sample Id: D11-6 Weight (kg): 3.5 Depth (m): 2650 - 2450

Mn Crust Description

Surface Texture: Patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-6

Comments and XRD Mineralogy:

Sub

Substrate Description

Rock Type: Highly Fractured Andesites, fractures w/ 2 types of hematite fracture fill: Brick red to red infilling of probable

Description: hydrothermal origin, grey-green infilling.

KORDI 20%

USGS 60%

Biology (?):

Described by: JSS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-P1-WP Size (cm): 10x7.5x6 Location: S.S.W. Ngulu atoll [redacted]

Sample Id: D11-7 Weight (kg): 0.8 Depth (m): 2650-2450

Mn Crust Description

Surface Texture: Patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-7

Comments and XRD Mineralogy:

Subsa

D11-7A XRD Rx

-7B XRD ~~Epidote~~ Smect-In

50% HORDI

50% USGS

Substrate Description

Rock Type: Pyroclastic agglomerate - Breccia (reworked)

Description: dark green to black color various fragment. subrounded or rounded carbonate, clay, oxide matrix. (vitric + calcite) + (oxidized margin + aphyric crystalline) + etc

~~Epidote~~ Coats one side

smect Amount

Biology (?): —

Described by: J. B., Park

Subsampled by:

HEIN

SAMPLE DESCRIPTION

SSW of Ngula Atoll

Cruise Id: F7-91-WP Size (cm): 1 small Cobble Location: [redacted]

Sample Id: D11-8 Weight (kg): ~1 Depth (m): 2650-2450

More green

D11-8

Mn Crust Description

Surface Texture: Red Fe-oxide patina

Patchy Mn on 1 side

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:

Subsamp

Substrate Description

Rock Type: hydrothermally altered Volcanic? rock - mostly vein material

Description:

Magnetite, hematite, quartz, epidote, minor calcite, + others Py?, ...

V. V. magnetite

~~Biology (?)~~:

D11-8 DATS, XRD

OC, ICP, Au > 88 gm

60% USGS

40% KORDI

Described by:

HEIN

Subsampled by:

HEIN

DIL-8

SAMPLE DESCRIPTION

SSW. Nagular [illegible]

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

Sample Id: D11-9 Weight (kg): ~1kg Depth (m): 2650-2450

Mn Crust Description

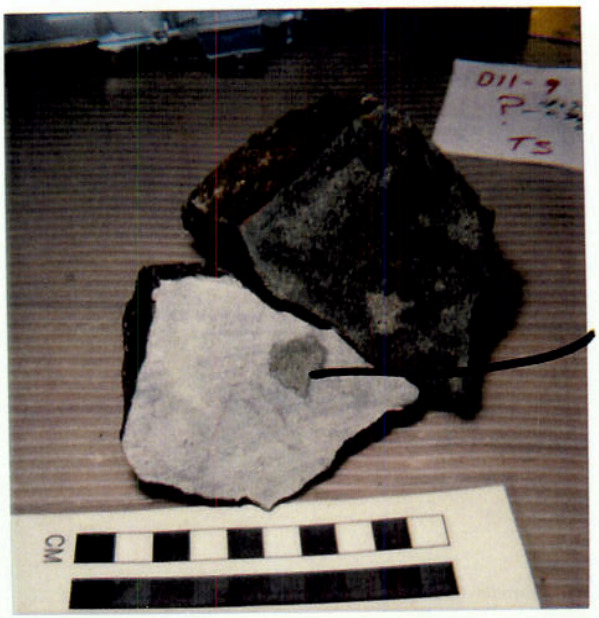
Surface Texture: granular to smooth patina

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

Outer to Inner Layers (mm)

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



D11-9

Comments and XRD Mineralogy:

Subsa

D11-9 TS

Substrate Description

Rock Type: Diorite ?

Description: fine grained, phaneritic has inclusions of more altered "diorite" or "gabbro" red-brown alteration along fractures

Biology (?):

Described by: [illegible]

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 10x5x5(L) 6x4x2(S) Location: S.S.W Ngulu atoll [redacted]

Sample Id: D11-10 Weight (kg): ~3.5 kg Depth (m): 2650-2450

Mn Crust Description

Surface Texture: Smooth

Mn Crust Thickness (mm):

Min: <1 Max: Ave:

Outer to Inner Layers (mm)

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

D11-10

Comments and XRD Mineralogy:

Subs

T.S D11-10 (No XRD)

KORDI 20%

USGS 80%

Substrate Description

Rock Type: Cobbles of Andesites

Description: Slightly green color. massive.
aphyric. crystalline groundmass (pl. ch. hb(?) opaque)
mainly brecciated (oxidized: reddish brown color) hematite(?)
some calcite veinlets. vesicular, calcite-coated

Biology (?): —

Described by: J. B., Park Subsampled by: ASD

SAMPLE DESCRIPTION

Cruise Id: F7-91WP Size (cm): many small cobbles Location: SSW Nagata 2 [illegible] [redacted]

Sample Id: D11-11 Weight (kg): ~ 2 kg Depth (m): 2650 - 2450

Mn Crust Description

Surface Texture: Smooth

[illegible]

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-11

Comments and XRD Mineralogy:

Subsa

Substrate Description

Rock Type: Diorite ?

Description: Mod. to badly altered diorite, fractured and fractures filled with red-brown "stuff"

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-MP Size (cm): 8x5x3 Location: S.S.W. Ngulu atoll [redacted]

Sample Id: D11-12 Weight (kg): 0.15 Depth (m): 2650 - 2450

Mn Crust Description

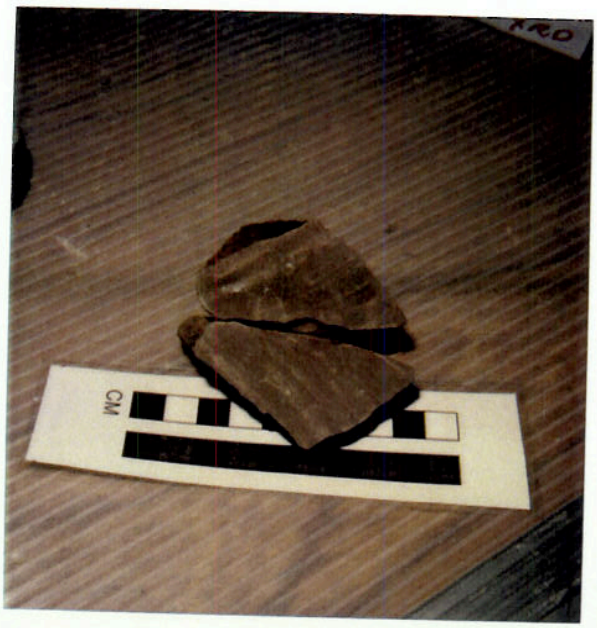
Surface Texture: Patena

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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



D11-12

Comments and XRD Mineralogy:

Subs

Substrate Description

Rock Type: Tuffaceous sandstone

D11-12 XRD

brick-red

Description: reddish brown color
poorly sorted. fine-grained
slightly fractured
Hematite-rich

Biology (?): —

Described by: J.B. Park

Subsampled by:

HEIN

SAMPLE DESCRIPTION

8x4x3; 6x5x4

SSW of Ngula Atoll

Cruise Id: F7-91-WP Size (cm): 2 Mod. Pebbles Location: [redacted]

Sample Id: D11-13 Weight (kg): 6.6 kg Depth (m): 2650-2450

Mn Crust Description

Surface Texture: Patchy Patina

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:

Subsam

D11-13-1 DP7S

XRD

OC

ICP } 63 gm

Au

13-2 To 4ORDL

13-1 Chips left to USGS

Substrate Description

Rock Type: Gabbro ?

Magnetite-rich rocks

Description: Clasts from breccia, Olivine, magnetite, plagioclase, epidote?

Qtz xstals in vugs

Biology (?): Qtz veins

#2 is finer-grained

Described by: HEIN

Subsampled by: HEIN

Too light

D11-13

SAMPLE DESCRIPTION

Cruise Id: F7-91 [illegible] Size (cm): 6x6x4 cm Location: SSW Nagura Ridge [redacted]

Sample Id: D11-14 Weight (kg): 0.5 kg Depth (m): 2650-2450

Mn Crust Description

Surface Texture: smooth
patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-14

Comments and XRD Mineralogy:

Subsa

50% KORDI
50% USGS

Substrate Description

Rock Type: Andesite

Description: Sparsely amygdaloidal. amygdules and fractures filled w/ calcite. Sparse to very fine grained phenocrysts. Rare "d wire" inclusions

Biology (?):

Described by: [illegible]

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: FD-91-WP Size (cm): 4x3x2 Location: S.S.W Ngulu atoll [redacted]

Sample Id: D11-15 Weight (kg): 0.04 Depth (m): 2650-2450

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				

No Photo

Comments and XRD Mineralogy:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)

Substrate Description

Rock Type: Calcite veinlet - calcareous mudstone.

Description: chocolate color calcareous matrix. fine-medium grained calcite vein.

Biology (?): —

Described by: J. B. Park

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: 57-91WP Size (cm): [illegible] Location: [redacted]

Sample Id: D11-16 Weight (kg): 2 kg Depth (m): 2650-2450

Mn Crust Description

Surface Texture: patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-16

Comments and XRD Mineralogy:

Sub

D11-16 TS

Substrate Description

Rock Type: Andesite

Description: phanaritic, fine grained, aphyric some pebbles fractured + more altered than others

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

S.S.W. Ngulu Atoll

Cruise Id: F7.91-WP Size (cm): 7x5x2, 8x7x4, 7x4x2 Location: V3-91-NP

Sample Id: D11-17 Weight (kg): 0.05 Depth (m): 2650-2450

Mn Crust Description

Surface Texture: Patina - eroded
Smooth

Mn Crust Thickness (mm):

Min:_____ Max: P Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				Black w/ Reddish
2				Brown stain
3				
4				
5				
6				

D11-17

Comments and XRD Mineralogy:

Subs

KORDI 30%
USGS 70%

T.S. D11-17 XRD

1 piece w/ coarse grained layers

Substrate Description

Rock Type: Sandstone

Description: fine grained to very fine grained. Dark greyish brown with reddish brown patches. calcite matrix. Cross cutting calcite veins

slightly Magnetic

Biology (?): — similar to D11-12

Described by: A.S.

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 100's Pebbles Location: SSW of Ngula Atoll [redacted]

Sample Id: D11-18 Weight (kg): ≈ 35 Depth (m): 2650-2450

Mn Crust Description

Surface Texture: black, smooth to granular Patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

No photo
Misc uncut
Pebbles
All Rx Types
as in D11-1 → 17

Comments and XRD Mineralogy:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)
	50% HORD1		
	50% UCGS		

Substrate Description

Rock Type: Misc. uncut Pebbles

Description:

Biology (?):

Described by: HEIN

Subsampled by:

SAMPLE DESCRIPTION

SSW Ngulu atoll

Cruise Id: FZ-91-WP Size (cm): 2 Pebbles Location: [redacted]

Sample Id: D11-19 Weight (kg): 0.02 Depth (m): 2050-2450

Mn Crust Description

Surface Texture: Patina

eroded - 2% of Rock

Mn Crust Thickness (mm):

Min: Max: P Ave:

Outer to Inner Layers (mm)

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

NO PHOTO

Comments and XRD Mineralogy:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)

Substrate Description

Rock Type: Pumice

Description: light tan

Black glass fragments?

Biology (?): —

Described by: [illegible]

Subsampled by:

SAMPLE DESCRIPTION

S.S.W. Ngulu Atoll

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

Sample Id: D11-20 Weight (kg): 200 gms Depth (m): 2650 - 2450

Mn Crust Description

Surface Texture:

Patina of Mn on [illegible] several surfaces

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D11-20

Comments and XRD Mineralogy:

Su

Substrate Description

Rock Type: Biomicrite (Packstone)

yellow ochre micritic cement w/ white

Description: bioclasts, recrystallized, fossil ghosts

KORDI 40%

USGS 60%

Biology (?):

Described by: JSS

Subsampled by: