Dredge 22

Dredge Sample Summary Sheet

Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive

SAMPLE DESCRIPTION

one boulder

Cruise Id: F11-90-CP Size (cm): 39 X 42 X 18.5 Location: YAP J

Sample Id: D22 - 1 Weight (kg): 30 Depth (m): 2550 - 2100

Pale

D22-1

Mn Crust Description

Surface Texture: Granular

Mn Crust Thickness (mm):

Min: _____ Max: Patina Ave: _____

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subs

D22-1 Paleo Limestone

XRD

Substrate Description

Rock Type: Limestone (white) and Sandstone (yellow + brown)

30 % HORDE

70 % USGS

Description: Massive pebbly + Sandy limestone (white) has abundant randomly-dispersed sand and granules. Sandstone is small-channelized turbidite and shows crude stratification, graded bedding. Sands are mostly altered volcanic glass and basalt fragments and are cemented by carbonate.

Biology (?):

Described by: Yoon / JW

Subsampled by: [illegible]

The SS cement is identical to the limestone & the sand + granules in the Lms are identical to the SS

SAMPLE DESCRIPTION

one flat boulder

Cruise Id: F11-90-CP Size (cm): 67 x 48 x 11 Location: YAP J

Sample Id: D22-2 Weight (kg): 35 Depth (m): 2550 - 2100

D22-2

Mn Crust Description

Surface Texture: Granular and irregular, Botryoidal (to subdued)

Mn Crust Thickness (mm):

Min: <1 Max: 5 Ave: 2

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

some impregnation of the SS by the Mn

Subs

50% KORDI
50% USGS

Substrate Description

Rock Type: Sandstone and white limestone w/ animal borings.

Description: • Yellow sandstone is composed of coarse- to very coarse-sands and granules (mainly volcanic glasses and altered basalt fragments). shell & foram debris
• Sandstone is amalgamated; shows crude lamination and grading. - Carbonate cement
• Inner walls of boring in limestone are coated with manganese.
• Boundary between sandstone and limestone is irregular, but sharp

Biology (?): Encrusting forams

Same unit as D22-2 except emphasizes SS + (-2) emphasizes Lms

Described by: Yoon

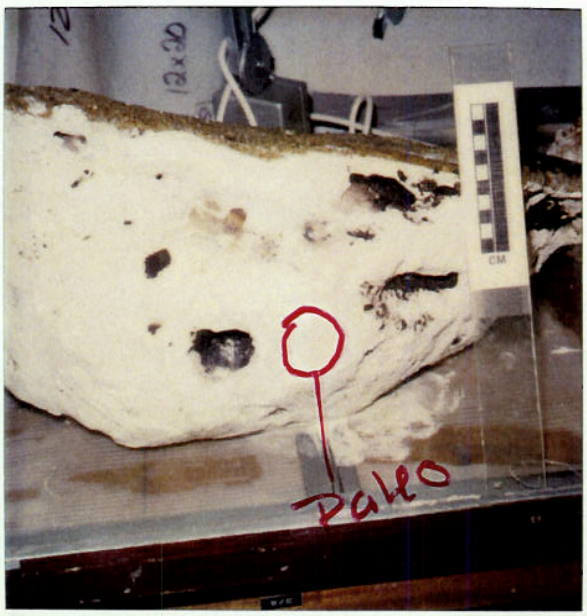
Subsampled by:

SAMPLE DESCRIPTION

one uncut boulder

Cruise Id: F11-90-CP Size (cm): 56 x 23 x 25 Location: YAP J

Sample Id: D22-3 Weight (kg): 20 Depth (m): 2550 ~ 2100



D22-3

Mn Crust Description

Surface Texture: Granular

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave: Patina

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Su

D22-3 Paleo Limestone

XRD

Substrate Description

Rock Type: Thin (5mm) pebbly sandstone blanket underlain by limestone w/ animal borings

Same as D22-1 + 2 except only thin layer of SS present + Lms is whiter + more massive

Description: • Sandstone is composed of medium-sand- to granule-sized altered basalt fragments, Shell Fragments and volcanic glasses, and cemented by carbonate (poorly sorted).
• Limestone is dominantly composed of foram sands and shows Mn-coated borings and <1% volcanic sands

Biology (?):

Described by: Yan

Subsampled by: G.S.

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 38 x 15 x 14 Location: Yap J

Sample Id: D22-4 Weight (kg): 12 Depth (m): 2550-2100

D22-4

Mn Crust Description

Surface Texture: Patina, granular

Mn Crust Thickness (mm):

Min:_____ Max: patina Ave:_____

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subsampl

Substrate Description

Rock Type: Limestone

60% USGS
40% HORDI

Description: white, massive, dense, recrystallized clastic limestone of mostly reef debris, moldic porosity - bored near the upper surface - few basalt pebbles near lower surface

Biology (?):

Described by:

HEIN

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 45.2X31X11 Location: YAP J

Sample Id: D22-1 Weight (kg): 66 Depth (m): 2550 - 2100

Not All Rocks Shown

Basalt w/out glass / Basalt w/ Glass

D22-5

Mn Crust Description

Surface Texture: Granular, small botryoids

Mn Crust Thickness (mm):

Min: Patina Max: 10 Ave: 2

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	Patina	10	2	50% w/ Crust 50% Patina Black, massive & dense
2				minor red iron staining
3				
4				
5				
6				

Comments and XRD Mineralogy:

Subsam

D22-5-1 OC T.S 47gm

XRD

50% TORDI, 50% USGS

Substrate Description

Rock Type: Vesicular Basalt Brown

Description: Vesicular aphanitic basalt w/ some transparent shiny acicular plagioclase in the groundmass; some alteration; minnaltered phenocrysts? Alteration on exposed surfaces and from minor to some in the interior some basalt. with a few fractures Calcite fills some fractures and vesicles. Only 4 Rocks.

Sparcely to moderately Plag phyric - some olivine phyric altered to Fe oxides

Biology (?): Encrusting foram

Some vesicles filled w/ calcite

Described by: JW

Subsampled by: GS

The largest one & 3 small cobbles contains a black glassy layer near an exposed surface interbedding with a yellow brown hyaloclastite flow material? Some altered cracks & some fractures filled with calcite. One rock with phosphorite filling in a large crack & some small cracks

Next to this layer is a thin slightly altered basalt layer with lighter

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 23x20x2.8 Location: Yap J

Sample Id: D22-6 Weight (kg): 4.5 Depth (m): 2550 - 2100

Mn Crust Description

Surface Texture: Subdued botryoids - semi granular

Mn Crust Thickness (mm):

Min: 3 Max: 9 Ave: 5

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	3	9	5	Black dense towards substratum with porous area at surface
2				
3				
4				
5				
6				

D22-6

On mo Sam wa ad af pic wa tal ↓ high vesic Basal w/ yello brown hyaloc tite ri

Comments and XRD Mineralogy:

Botryoids are roughly 1 to 3mm high on sides with average thickness on sides with maximum thickness the crust is lizard skin like

Subsam

D22-6-1 CC + Pt 0-6 mm. 23gm.

XRD

60% USGS

40% ITORDF

Substrate Description

Rock Type: Breccia

Description: Clasts: Basalt dark brown vesicular

Vesicles are half filled with dark tan mud.

Matrix: hyaloclastite-altered + Calcite cement

Calcite vesicle

Biology (?): encrusting forams

oxidation rims around clasts and grey

Described by: G.S.

Subsampled by: G.S.

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 6 Large cobbles to large pebbles Location: Yap J

Sample Id: D22-7 Weight (kg): 9.8 Depth (m): 2550-2100

Mn Crust Description

Surface Texture: Granular botryoids on side with lizard like skin on the top.

Mn Crust Thickness (mm):

Min: P Max: 6 Ave: 1

Outer to Inner Layers (mm)

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

D22.7

Comments and XRD Mineralogy:

Black dense to porous.

Subsa

D22-7-1 OC T.S 74gm
XRD

Substrate Description

Rock Type: Hyaloclastite breccia

50% USGS
50% KORDI

Description: clasts: glassy vesicular basalt with calcite vesicle fill - mostly centimeter-size or smaller, but some to 12 cm - That are less glassy
Matrix: altered hyaloclastite + minor phosphorite cement

Biology (?): Encrusting forams on top.

[edge of flow]

Described by: G.S.

Subsampled by: G.S.

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 16 - Large Cobble to pebble Location: Yap I

Sample Id: D22-8 Weight (kg): 22.2 Depth (m): 2550 - 2100

Mn Crust Description

Surface Texture: Lizard like skin granular with subdued botryoids to Patina

Mn Crust Thickness (mm):

Min: P Max: 2 Ave: P

Outer to Inner Layers (mm)

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

D22-8

Comments and XRD Mineralogy:

borings in some lms lined w/ Mn & infilled w/ mud

Subs

60% USGS, 40% GORDI

Substrate Description

Rock Type: Coarse to finer-grained Breccia sandstone, poorly sorted, interbedded with fine grained Limestone for aminiferal

Description: 90% of limestone sandstone (s.s.) boundary is sharp with 10% gradational.

(basalt) Clasts in s.s. are angular to subrounded. Some minor bedding + sorting with calcite cement

Biology (?):

clasts = VRF, glass, shell debris, lms frags.

Same unit as D22-1, 2, 3 etc -

Lms - massive to pebbly lms - as in D22-10

Described by: G.S.

Subsampled by: Same unit

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles & Cobbles Location: Map J

Sample Id: D22-9 Weight (kg): 8.4 kg Depth (m): 2550-2100

Mn Crust Description

Surface Texture: Patchy granular patina

Mn Crust Thickness (mm):

Min: Max: patina Ave:

Outer to Inner Layers (mm)

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

D22-9

Comments and XRD Mineralogy:

Subsample N

D22-9-1 T.S., XRD

Substrate Description

Rock Type: Volcaniclastic Sandstone

60% HORDR
40% USGS

Description: Coarse-grained, bedded, graded beds, VRF, glass, shell debris, Carbonate cement, Lms Lenses

Biology (?):

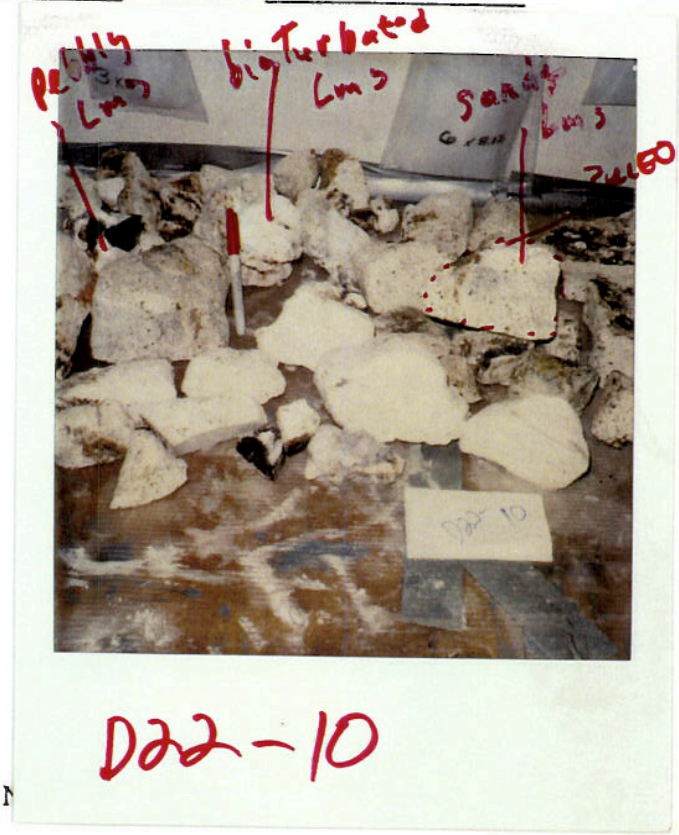
Described by: HEIN

Subsampled by: GS

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles ≈ 17, Cobbles ≈ 12 Location: Pap J

Sample Id: D22-10 Weight (kg): 6.4 Depth (m): 2550-2100



D22-10

Mn Crust Description

Surface Texture: patchy patina, smooth to granular

Mn Crust Thickness (mm):

Min: ____ Max: patina Ave: ____

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subsample N

D22-10-1 Paleo

XRD

60% HORDI

40% USGS

Substrate Description

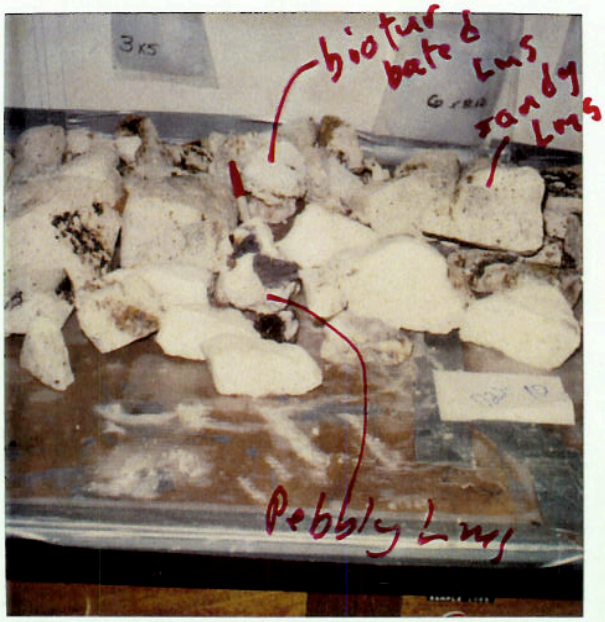
Rock Type: Pebbly & Sandy Limestone

Description: (1) Most are sandy to granule-sized volcaniclastic grains dispersed in white foram Lms – (2) one cobble is pebbly Lms w/ 5 cm-sized basalt pebbles & some foram matrix (3) some show layering of pebbles as in D22-1 (4) one cobble is bioturbated w/ burrows filled in w/ v. white – Lms – (5) several sandy Lms cobbles faced w/ Mn oxides

Biology (?):

Described by: HEIN

Subsampled by: G.S.



D22-10

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles + V-small cobbles Location: Yap J

Sample Id: D22-11 Weight (kg): 1.6 kg Depth (m): 2550-2100

Mn Crust Description

Surface Texture: Lizard Skin

Mn Crust Thickness (mm):

Min: patina Max: 2 Ave: 1

Outer to Inner Layers (mm)

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

D22-11

Comments and XRD Mineralogy:

animal borings lined w/ granular Mn

Subsample N

Substrate Description

Rock Type: Limestone extensively bored

50% GORDD
50% USGS

Description: The upper surface (exposed at seafloor) of Lms outcrop - the bored interval - Foram Lms?

Biology (?):

Described by: HEIN

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): small cobbles Location: Cap J

Sample Id: D22-12 Weight (kg): 2.7 Depth (m): 2550-2100

D22-12

Mn Crust Description

Surface Texture: Patchy Patina

Mn Crust Thickness (mm):

Min: patina Max: 5 Ave: 2

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subsample

Substrate Description

Rock Type: Breccia + Sandstone + granulestone

Description: Coarser-grained variety of D22-9 — fresh glass, Lmc clasts

50% HORDP
50% USGS

Biology (?):

Described by: HEIN

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles & Small cobbles Location: YAP J

Sample Id: D22-13 Weight (kg): 6.8 Depth (m): 2550-2100

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)
	KORDI 40%		
	USGS 60%		

Substrate Description

Rock Type: Sandy & Pebbly Limestone (miscellaneous)

Description:

Biology (?):

Described by: Ahn

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles & Small Cobbles Location: YAP J

Sample Id: D22-14 Weight (kg): 4.5 Depth (m): 2550 - 2100

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)
	KORDL 40%		
	USGS 60%		

Substrate Description

Rock Type: Miscellaneous Altered Basalts

Description:

Biology (?):

Described by: Ahn

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): Pebbles & Small Cobbles Location: Yap J

Sample Id: D22-15 Weight (kg): 3.6 Depth (m): 2550-2100

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min: Max: Ave:

No Photo

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Miscellaneous

Coarse Sandstone Turbidite

Description:

Biology (?):

Described by: Ahn

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)
	KORD I	40%	
	USGS	60%	

Subsampled by: