DREDGE 3

D3

Chunk A

Dredge Sample Summary Sheet

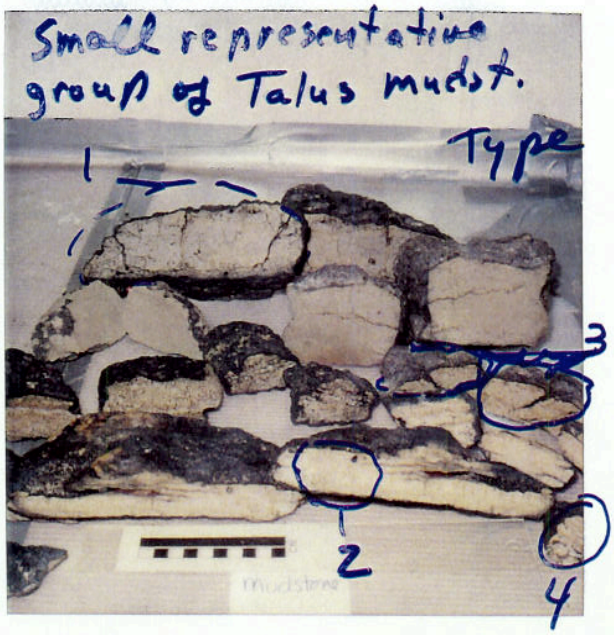
Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive
D3-1-1A							X			
-1-1B							X			
-1-2							X			
-1-3							X			
-1-4							X			
D3-1								X surface		
D3-2-1A					X		X		X	
-2-1B	X		X X	X			X			
D3-3-1						X				
D3-3-2					X	X	X			
-3-3	X						X			
D3-4-1A					X		X	X-Section	X	
B3-4-1						X		X-Surface		
-4-1B	X						X			
D3-5					X	X	X		X	
3-6					X	X	X		X	
3-7									X	
3-8A						X				
8A1	O+C isotopes						X			

* At least 50 kg discarded

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 45 x 30 x 14 ~ 5 x 3.5 x 2 Location: Chunk A

Sample Id: D3-1 Weight (kg): 200 * Depth (m): 2650 - 2633



D3-1

Mn Crust Description

Surface Texture: Botryoidal; granular

Mn Crust Thickness (mm):

Min: patina Max: 17 Ave: 3

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	>1	17	3	massive or porous; black
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Sub

D3-1-1A XRD ~1gm
D3-1-1B XRD ~1gm
D3-1-2 XRD ~1gm
D3-1-3 XRD ~1gm
D3-1-4 XRD ~1gm
D3-1-3 OC, ICP 25.6g
50% KORDI D3-1-3 TS
50% USGS

see back for sam Locat

& 18.5 need more samp for

Substrate Description

Rock Type: Brown to yellowish brown mudstone + phosphorite

Description:

- mottled by bioturbation
- inner wall of tiny and larger burrows coated with thin manganese
- some layered -

Biology (?): Encrusting forams

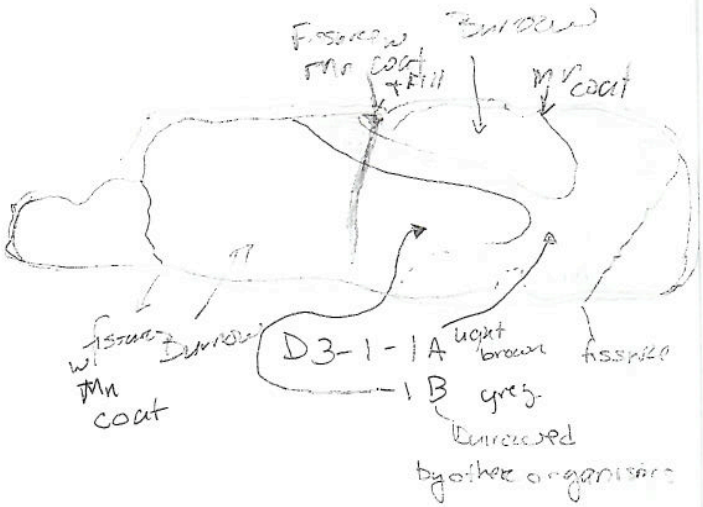
upper parts near crust microbored + lined w/ mn -

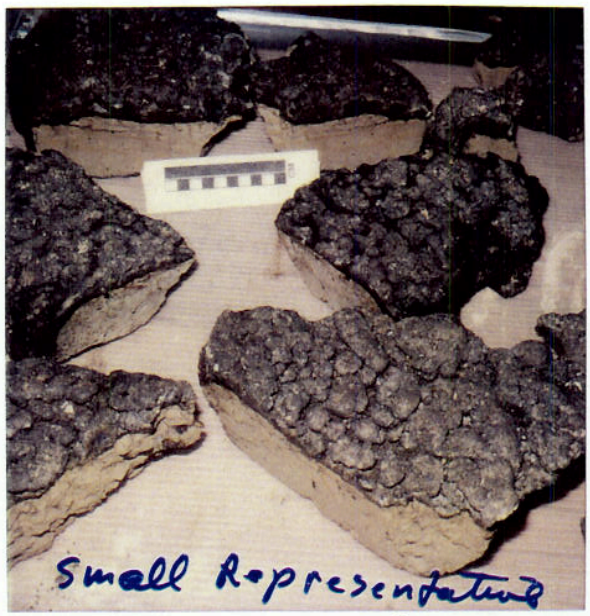
2 Types: (Talus ≈ 10%
outcrop 90%)

Described by: Yoon

Subsampled by:
G.S.
35 mm of deep surface botryoids

JW



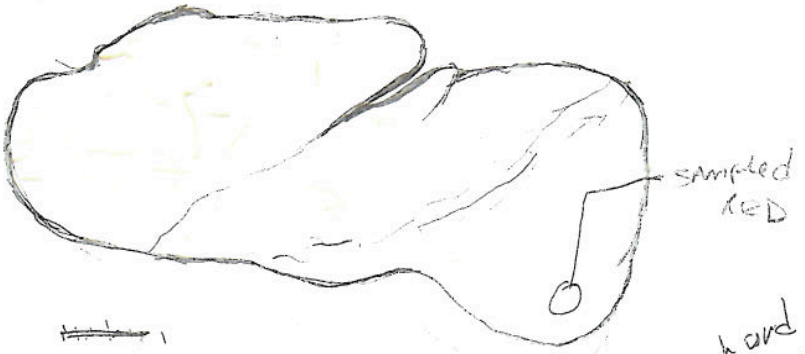


D3-1 group of outcrop mudst. type

D3-1-2

light yellow siltstone w/ Fe stain occasionally small burrows or old surfaces that contain Mn.

D3-1-3



substrate is light tan

very few burrows are darker in color + mn consolidated

Sample hard couldn't help but take burrow fill

D3-1-4

Substrate is siltstone homogenous except for various stained layers (dashed lines)

Mudstones w/ Thickest Crusts

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 10 x 9 x 4 ~19 x 10 x 9 Location: Chuuk A

Sample Id: D3-2 Weight (kg): 3.2' Depth (m): 2690 - 2633

D3-2

Mn Crust Description

Surface Texture: Botryoidal (0.5~3 cm) with high relief; granular on side

Mn Crust Thickness (mm):

Min: 6 Max: 25 Ave: 20

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	6	25	20	Massive & dense; partially porous
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

pores and vugs in recessed parts of botryoids

Mudstones w/ Thickest Crusts separated + described here

Substrate Description

Rock Type: mudstone (yellow brown)

Description:

fractures and tiny burrows are abundant in the upper part of the substrate and they are filled with black manganese

Biology (?): Encrusting forams

Su

D3-2-1A DC 17.8gm

D3-2-1A Paleo

D3-2-1B Au, CC, Pt, REE Bulk Crust (> 220 gms) (0-25-mm)

60% KORDI

40% USGS

Described by: Yoon

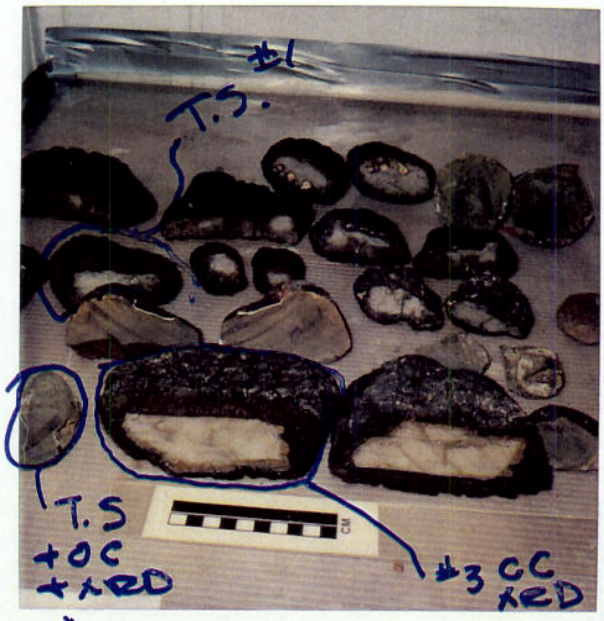
Subsampled by: HEIN

Basalts

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 7×3.5×3.5 ~16×15×6 Location: Chuuk A

Sample Id: D3-3 Weight (kg): 4 Depth (m): 2650 - 2633



D3-3

Mn Crust Description

Surface Texture: Botryoidal (3-15 mm) granular, irregular for Thinner crusts

Mn Crust Thickness (mm):

Min: 0 Max: 20 Ave: 5

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	0	20	5	Slightly porous
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

micro fractures and vugs filled with iron oxide and phosphorite (?),

Substrate Description

Rock Type: grey basalt - (all Talus) - fine + coarse grained types 2 pebbles of pumice + siltstone - hard

Description: Vugs and fractures filled with manganese and calcareous sediment

Biology (?): Encrusting forams

Subs

D3-3-1	T.S.	
D3-3-2	T.S	
D3-3-2	OC Bulk	6 gm
D3-3-2	XRD	0.5 gm Bulk
D3-3-3	CC	(0-18 mm) Bulk 86
D3-3-3	XRD	1.5 gm

Described by: Yson

Subsampled by: G.S

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 7 x 6 x 3 ~11 x 12 x 8 Location: Chunk A

Sample Id: D3-4 Weight (kg): 3.5 Depth (m): 2650-2633

Mn Crust Description

Surface Texture: Granular and subdued botryoidal

Mn Crust Thickness (mm):

Fossil crust Min: 0 Max: 26 3 Ave: 2 2

recent crust — patina

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
fossil crust 1	0	24	2	massive, black
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

- Thin fossil crust intercalated between two different substrate rocks
- Internal crusts are commonly folded

Sub

D3-4-1A - Paleo - siltstone

D3-4-1 - DPTS

D3-4-1A - OC - siltst (10.1 gr

D3-4-1B - CC fossil Crust (0-2 m

(17.1 g

Substrate Description

Rock Type: limestone; siltstone

Description: Lms overlain by crust (now fossil crust) covered by brown siltstone turbidite + finally that covered by thin contemporary crust - siltst. commonly mixed w/ cream-colored foram sed.

60% USGS

40% HORDI

Biology (?): Encrusting forams

35 mm photo of

Described by: Yvon

Subsampled by: HEIN

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 22.5 x 16 x 8 to 2 x 2 x 1.5 Location: Chuuk A

Sample Id: D3-5 Weight (kg): 5.0 Depth (m): 2650-2633

D3-5

Mn Crust Description

Surface Texture: Rough patina

Mn Crust Thickness (mm):

Min: Max: Patina Ave:

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Sub

D3-5 Paleo

D3-5 TS

D3-5 OC pebbly SS (26.0 gm)

Substrate Description

Rock Type: Volcaniclastic Pebbly Sandstone

Yellowish-Brown

60% USGS

40% HORDI

Description: Coarse-grained, variably altered volcanic clasts, poorly sorted, subangular, pebble & sand-sized, plus shell fragments (including red coral) in Calcite rim cement

clasts: Basalt Volcanic fragments

Biology (?): encrusting forams, worm tube on surface

Described by:

Subsampled by: HEIN

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 10 X 7.5 X 5.2 to 2.5 X 1.7 X 8 Location: CHUUKA

Sample Id: D3-6 Weight (kg): 3.2 Depth (m): 2650 - 2633

Mn Crust Description

Surface Texture: Smooth

Crust dominantly absent

patina - rarely occurring

Mn Crust Thickness (mm):

Min:_____ Max: patina Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				Black Patina with red Fe staining
2				
3				
4				
5				
6				

more yellow in color

D3-6

Comments and XRD Mineralogy:

Subsam

D3-6	Paleo	Foram Lms
D3-6	OC	Bulk (41.50
D3-6	TS	

Substrate Description

Rock Type: Foraminifera Bioclastic limestone

- Yellowish

White to Grey

Pale

60% USGS

40% KORDI

Description:

Moderately to Highly

Compacted Lms Common

small to med. borings. or lined by

some infilled by Mn oxide or lined

with Mn oxide. Some w/ basalt pebbles = pebbly Lms

Biology (?):

minor pebble sized Mn

Described by: inclusions

Subsampled by:

HEIN

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 9x4.5x4.1 3.7x2.4x2 Location: Chook A

Sample Id: D3-7 Weight (kg): 0.45 Depth (m): 2650-2633

Mn Crust Description

Surface Texture: Smooth - one one piece only

Mn Crust Thickness (mm):

Min: <1 Max: 5 Ave: 3

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	<1	5	3	Black, porous
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Subsa

D3-7 Paleo Nanno-foram Lms

60% USGS
40% HORDI

(all have Mn diffusion)

Substrate Description

Rock Type: Limestone Yellowish White to Grey Soft To hard

Description: Fine sand to silt sized calcite grains, high to moderately compacted, in one piece bioturbation(?) = micro-sized burrows stained with Mn; with Mn oxide or filled with Mn oxide

Biology (?): common borings from large to small lined encrusting forams on patina

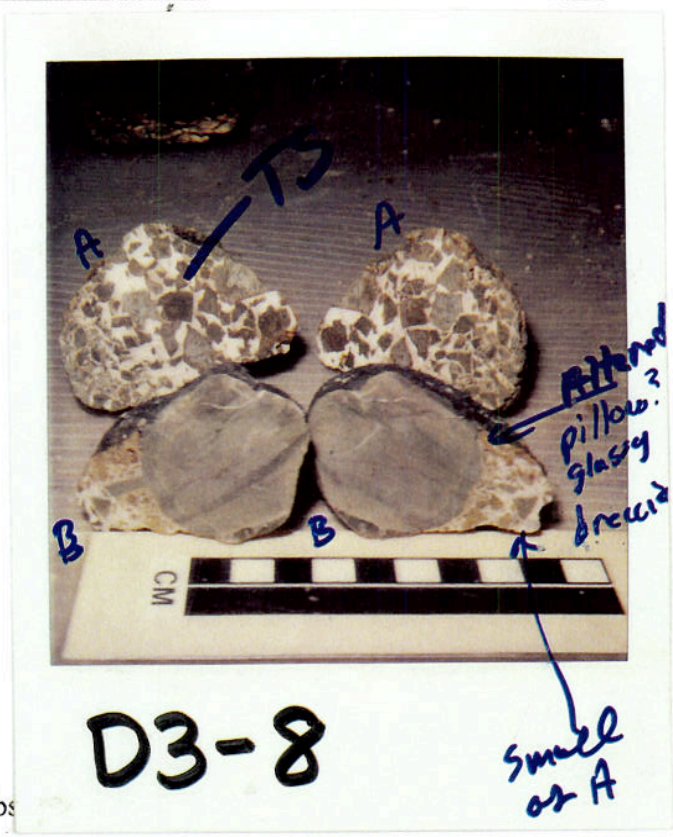
Described by: J.W.

Subsampled by: HEIN

SAMPLE DESCRIPTION

Cruise Id: F11-90-CP Size (cm): 9x6.6x4.9 / 6.8x6x3.8 Location: Chuuk A

Sample Id: D3-8 Weight (kg): 0.45 Depth (m): 2680-2633



Mn Crust Description

Surface Texture: Smooth Patina on one side of one piece

Mn Crust Thickness (mm):

Min: Max: Patina Ave:

Outer to Inner Layers (mm)

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

Comments and XRD Mineralogy:

Subs

D3-8A TS

D3-8A1 O+C isotopes Calcite Cement

XRD

Substrate Description

Rock Type: Breccia (2 Types) Green and White

Description: V. Angular, altered basalt clasts, pebbled sized, poorly sorted in calcite cement, partly phosphatized. basalt clasts have intricate alteration around fracture patterns — diffusion fronts. 2nd Type small basalt cobble surrounded by pillow breccia & grading into Type one

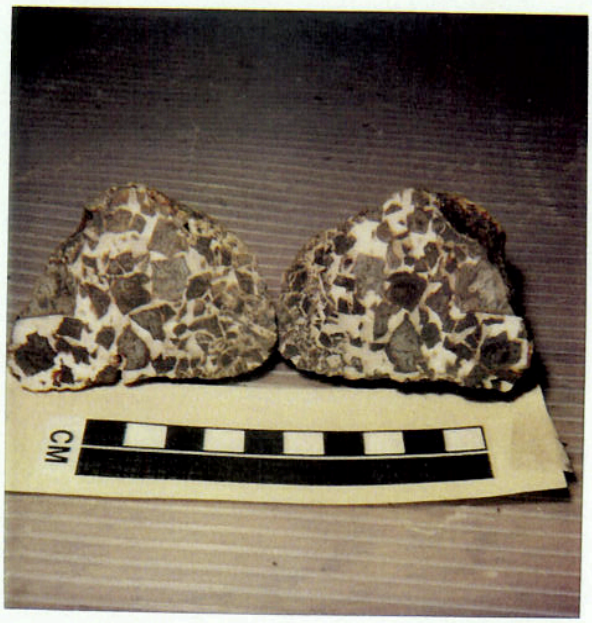
Biology (?):

Described by:

Subsampled by:

TS Ahn

isotopes G.S.



D3-8