Dredge 18

USGS DREDGE LOG

SHIP/LEG FARNELLA

STATION # 29

DREDGE # 18

DATE JD 268 LOCAL 25 Sept. 1989

TIME GMT 1058 LOCAL

DEPTH INTERVAL(m) 1975-1940

DEPTH(m)corrected 1925-1800

LATITUDE 10°15.5 E TO 10°15.5' E

LONGITUDE 160°40.4' TO 160°40.7 N

TOTAL WEIGHT: DREDGE 125 CRUST 35

PERCENTAGE OF ROCK COVERED BY CRUST 95

PERCENT BROKEN FROM: OUTCROP 98 TALUS 2

THICKNESS OF MN CRUST: MAXIMUM 100 MINIMUM <1 AVERAGE 20

DOMINANT SURFACE TEXTURE Botryoidal, rarely smooth, granular on side

SUBSTRATE LITHOLOGY 1. Limestone (80%) 2. Basalt & Breccia (15%) 3. Clastic limestone, pumice, misc. (5%)

NODULES PRESENT 0

REMARKS: One large limest boulder, one smaller boulder, a lot of large cobbles, ½ bucket of pebble sized fragments

6 kg discarded

Dredge S ple Summary Sheet

	Sample ID	Bulk CC	Layer CC	Pt & Au	REE	OC	DPTS/TS	XRD	35mm Ph	Archive	Paleo	
Slab for Plaza string →	D18-1	✓				✓	✓	✓			✓	
	D18-2	ALL TO KORDI										
Sample interv? →	D18-3	✓	✓	✓				✓				HALF TO MR.
	D18-4											
	D18-5											
Sample interval? →	D18-6	✓						✓				
	D18-7	1/2 TO	KORDI									
	D18-8	✓										
	D18-9	surface	w D18-17, 18									
	D18-10	1/2 TO	KORDI									
	D18-11	1/2 TO	KORDI									
	D18-12	ALL TO	KORDI									
	D18-13											
	D18-14						✓ for M.P.					
	D18-15											
	D18-16	1/2 TO	KORDI									
	D18-17		1/2	TO KORDI								
	D18-18	surface ✓	1/2	TO KORDI								
	D18-19	1/2 TO	KORDI,	SEVERAL	PIECES	TO Sy	Schlanger					
	D18-20	1 piece	to Schlanger			✓	✓					
	D18-21	1/2 TO	KORDI									
	D18-22						75~					
	D18-23											
	D18-24											

USGS DREDGE LOG

Depth Interval 1975 - 1940

Cruise I.D. F10-89-CP

Station No. 29

Dredge No. 18

Julian Date 268

Local Date (m/d/y) _____

Chief Scientist Hein/Kang

Tech on Watch Corky

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	0814	0902	1058	1132
LATITUDE	10 15.5	1015.5	10 15.5	1015.7
LONGITUDE	160 40.1	160 40.4	160 40.4	160 40.2
WATER DEPTH	2240	1975	1940	

Site Description and Target : Rocks from 1975 - 1800

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
On bottom	0902	1975	2260			Letting out scope
2600m wire out	0909	1900	2600			taking up slack
Starting to dredge	0935	1800	"			
Bite	0941	1790	"	2.4		
Bite	0952	1785	"	4.1		broke off & hung up
Hung up still	0955	1785	"			
Popped off	0958		2630	2.6T		Reheing
Slipped off	1000	1780	"	2.2		Caught again
Slipped off	1001		"	2.4		
Bite - broke off	1002	1775	"	2.5, 2.5		
Bite	1004	1775	"	2.7		
Bite	1006		"	2.8		
Bite	1009	1770	"	2.7		
Snag	1010	1770	"	3.1		Broke off
Bite	1012	"	"	2.9		Broke off
"	1013	"	"	2.8		
"	1014	"	"	2.75		
"	1015	"	"	2.7		

background ≈ 1.5T

*on/off bottom, bites, etc.

OTHER COMMENTS:

1975-

USGS DREDGE LOG

Depth Interval _____ Julian Date _____

Cruise I.D. _____ Local Date (m/d/y) _____

Station No. _____ Chief Scientist _____

Dredge No. _____ Tech on Watch _____

Continued

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT				
LATITUDE				
LONGITUDE				
WATER DEPTH				

Site Description and Target : _____

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
~~1016~~ Bite	1016	1765	2630	2.8, 2.7		
Bite	1018		"	2.9		
"	1020		"	3.2		
Hung up	1025	1760	"	4.7		Paying out to 2660
Broke off	1026		"	2T		Relaying pulling 5.4
Backing down	1028		"	—		
Paying out to 2690	1032	1780		—		
2400m wire out	1039					Still backing down.
Broke off	1053	1970	2170	5.8T		Dinging it up
off bottom	1058	1970	1900			

*on/off bottom, bites, etc.

OTHER COMMENTS:

Cruise Id: F10-89-CP Size: 44×58-22 (cm) Location: F Seamount

Sample Id: D18-1 Weight: 35 (kg) Depth: 1925-1800 (m)

Mn Crust Description

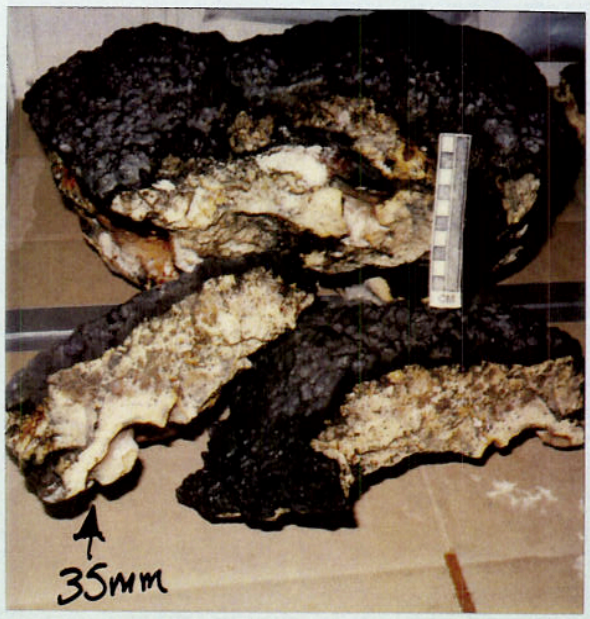
Surface Texture: botryoidal, current modified; polished and fluted

granular on side

Mn Crust Thickness (mm):
Min: 7 Max: 15 Ave: 10

Layers (Outer to Inner)(mm):

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



D18-1

F10-89-CP

Comments and XRD Mineralogy:

D18-1-1 Foram Sand in Veal, scooped from fracture in micrite

Mn is very massive, dense

ANAL

Subsample Number	Analysis	LayerThickness
D18-1A	CC	bulk (498)(10
D18-1B	CC	substrate bulk (.59g)
D18-1C	PPTS	substrate

35 mm slides G Smith 6/90

Large Piece > 400 cm² sent to François Chabaux, Keith O'Nions for U-Series on ion Probe

phosphate lined borings - Preferentially phosphatized - dark brown dense borrow fill; tense cream patches - gray porous patches + lt cream porous patches -

used for phosphate study

Substrate Description

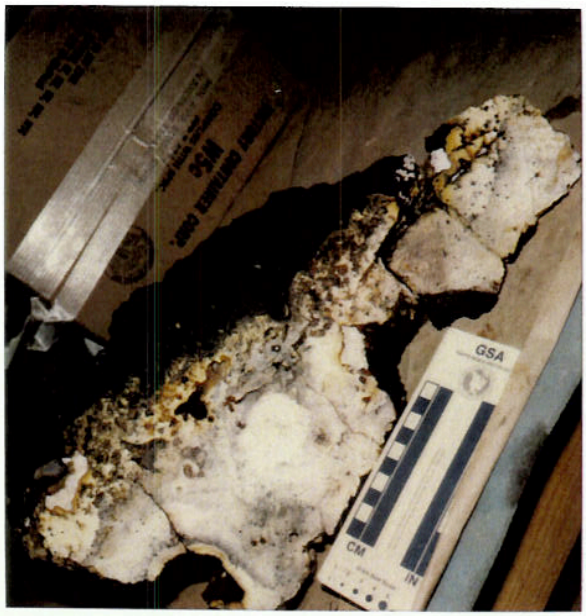
Rock Type: burrowed, replaced foraminiferal limestone

Description: burrows and fillings replaced by phosphates, Mn stained and Fe stained throughout. Some foram filled fractures within the limestone lined w/ Mn dendrites

Biology ?: encrustation - foraams - bored

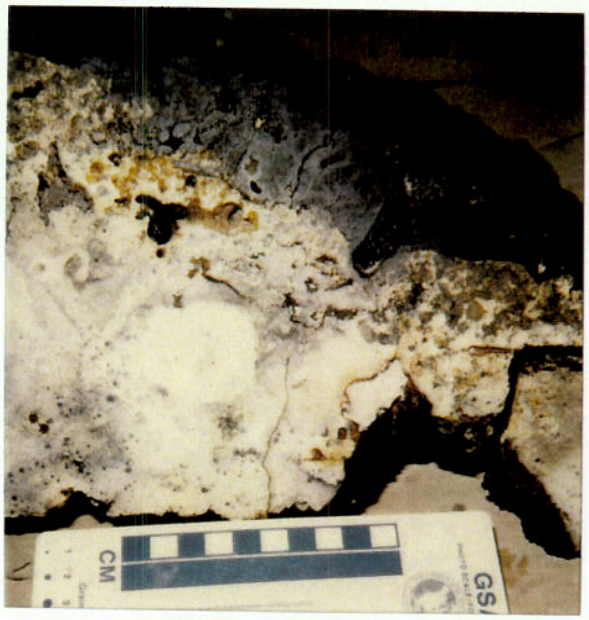
sent crust sample to François + Keith O'Nions 3/94

Described By: JORIE Subsampled By:

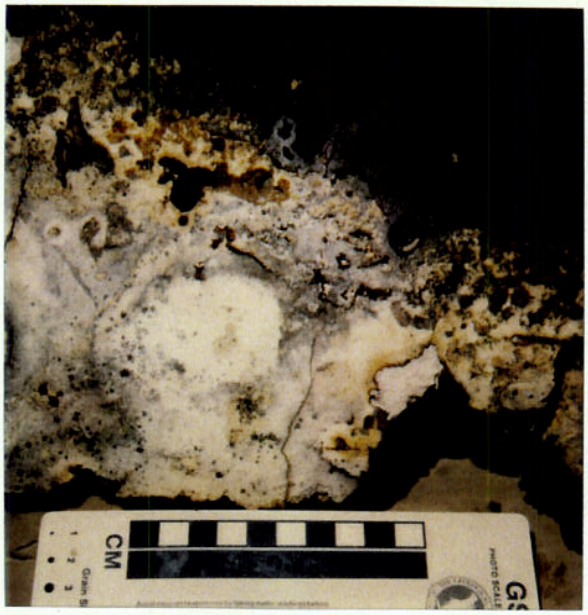


F10-89-CP
D18-1

F10-89-CP
D18-1



F10-89-CP
D18-1



F10-89-CP
D18-1

DESCRIPTION

Cruise Id: F10-89-CP Size: 42 x 35 x 13 (cm) Location. F Seamount

Sample Id: D18-2 Weight: 20 (kg) Depth: 1925 1800 (m)

Mn Crust Description.

Surface Texture: boytriodal w/ current influenced smoothed and fluted surfaces. Deep pills with microbots.

Mn Crust Thickness (mm):
Min: 5 Max: 18 Ave: 13

Layers (Outer to Inner)(mm):

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

D18-2

F10-89-CP

Comments and XRD Mineralogy:
Dense Massive crust

Substrate Description

Rock Type: limestone, burrowed Mn, Fe stain especially along fractures. Foraminiferous lenses

Description:
more massive than D18-1, fewer burrows phosphatized burrow infillings.

Biology ?: encrusting forams and foram sand on top

ANAL

Subsample Number	Analysis	LayerThickness

All to KORDI

Described By: JORIE

Subsampled By:

Cruise Id: F10-89-CP Size: 20x15x11 (cm) Location: F Seamount

Sample Id: D18-3 Weight: 10 (kg) Depth: 1925-1800 (m)

Mn Crust Description

Surface Texture: Fluted & smoothed bottom side top, porous but polished sides

Mn Crust Thickness (mm):

Min: 40 Max: 55 Ave: 50

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.	11	20	16	Dense, massive w/a few porous laminae
2.	9	12	10	porous w/ Fe staining between bot. columns
3.	20	25	24	minor porosity (radial w/in bot. columns)
4.				
5.				
6.				

D18-3

F10-89-CP

Comments and XRD Mineralogy:

side crust up to 5 mm, dark black dense

ANAL

Subsample Number	Analysis	Layer Thickness
D18-3A	Bulk CC, XRD (100 g.)	(0-50 mm)
D18-3B	CC, XRD	layer 1 (0-16 mm) 55g
D18-3C	CC, XRD	layer 2 (16-26 mm) 14g
D18-3D	CC XRD	layer 3 (26-50 mm) 38g
D18-3E	CC, Au, Pt XRD	bottom & side (0-5 mm) 20g

half to Mr. Lee

Substrate Description

Rock Type: foraminiferal limestone; bioeroded fractured Fe & Mn stained bored

Description:

some phosphate infilling of chambers, gradational bottom of crust and top of limestone, grey difficult to distinguish, Mn probably diffusing downwards and replacing limestone

Biology ?: encrusting foram

Described By: Josie Subsampled By: Jean

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 24 x 27 x 11 (cm) Location: F Seamount

Sample Id: D18-4 Weight: 7 (kg) Depth: 1125-1800 (m)

Mn Crust Description

Surface Texture: irregular botryoidal w/ microbots
part stripped away by dredging

Mn Crust Thickness (mm):
Min: 30 Max: 55 Ave: 40

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.	10	20	15	porous w/ Fe stainings
2.	15	40	too variable	dense fractured w/ phosphate partings, massive
3.				
4.				
5.				
6.				

D18-4

F10-89-CP

Comments and XRD Mineralogy:
Basalt grains scattered
Throughout Crust

ANALY

Subsample Number	Analysis	LayerThickness

Mn removed from one slab + sent basalt to Staudigel for Ar-Ar + isotopes
3/4 of crust intact but 3/4 of basalt sent

Substrate Description

Rock Type: Massive olivine phyric basalt

Description:
edges are moderately altered, olivines are altered - separated from crust by phosphatized limestone -

Biology ?: encrusting, forams abundant

Described By: Jorie Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 35x21x9 (cm) Location: F Seamount

Sample Id: D18-5 Weight: 10 (kg) Depth: 1925-1800 (m)

Mn Crust Description

Surface Texture: botryoidal to porous on edges & sides. Some smooth fluted texture

Mn Crust Thickness (mm):
Min: 5 Max: 15 Ave: 10

Layers (Outer to Inner)(mm):

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

D18-5

F10-89-CP

Comments and XRD Mineralogy:
massive black crust
up to 2 mm of granular porous crust on bottom.

Substrate Description

Rock Type: Foraminiferal limestone, laced w/ Mn dendrites

Description:
Fractured and burrowed. Mn & Fe stain light brown phosphate in some of the burrows and fractures

Biology ?: encrusting forams and a brown cuplike animal piece at the bottom as hollow

ANAL

Subsample Number	Analysis	LayerThickness

Described By: Jorie Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 9x31x23 (cm) Location: F Seamount

Sample Id: D18-6 Weight: 7 (kg) Depth: 1925/1800 (m)

Mn Crust Description

Surface Texture: porous, granular w/some botryoidal texture

Mn Crust Thickness (mm):

Min: 75 Max: 150 Ave: ~ to variable

Layers (Outer to Inner)(mm):

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

D18-6

F10-89-CP

Comments and XRD Mineralogy:

Crust is very porous and irregular w/ areas of dense crust. Variability and texture possibly due to the infilling of dissolution vugs(?). pores in crust Fe stained and often sediment filled It is not clear which is top. and which is side extreemly porous

Substrate Description small amount of

Rock Type: foraminiferal limestone Fe-Mn stained dissolution vugs infilled w/ foram sand

Description:

Biology ?:

ANALY

Subsample Number	Analysis	LayerThickness
D18-6	CC Bulk (10cm)	Upper portion for CC-clay dispersed uniformly; worked hard to eliminate, but probably not totally successful

Described By: [illegible] Subsampled By: [illegible]

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 18x15x9 22x6x6 (cm) Location: Seamount F

Sample Id: D18-7 Weight: 2.5 (kg) Depth: 1925-1800 (m)

Mn Crust Description

Surface Texture: botryoidal w/ granular or botryoid surface. side w/ granulars

Mn Crust Thickness (mm):

Min: 38 10 Max: 48 15 Ave: 45 12

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.	13	20	16	dense and massive
2.	22	28	26	relatively porous
3.				
4.				
5.				
6.				

F10-89-CP
D18-7

Comments and XRD Mineralogy:

Strongly Fe-stained in placent porosity filled w/ Gods

in one = 3 botryoidal crust generations

Substrate Description

Rock Type: limestone w/ pores caused by burrow animals, bored

Description: burrow replaced by phosphorite. Mn dendrite and Fe stains are abundant. boundary between crust and substrate is gradational

Biology ?: encrusting forams

ANALY

Subsample Number	Analysis	LayerThickness

½ TO KORDI

Described By: KANG Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 23 x 13 x 13 (cm) Location: F Seamount

Sample Id: D18-8 Weight: 2 (kg) Depth: 1925-1800 (m)

Mn Crust Description

Surface Texture: botryoidal w/ granular on botryoid surface

Mn Crust Thickness (mm):
Min: 45 Max: 55 Ave: 50

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.	10	15	13	dense and millimetric sublayers
2.	22	25	23	porous w/ lime filling
3.	13	15	14	relatively denser than layer 2. not clear contact zone w/ substrate - gradational
4.				
5.				
6.				

F10-89-CP
D18-8

Comments and XRD Mineralogy:

Fe stains

2 or 3 botryoidal generations

ANALY

Subsample Number	Analysis	LayerThickness

Substrate Description

Rock Type: limestone w/ filling of phosphorite and w/ Mn dendrite and Fe stains laced throughout -

Description: borings filled w/ phosphorite and foram ooze.
boundary between crust and substrate is not clear, gradational

Biology ?: encrusting forams
brown-green organic film like on previous one (D18-2)

Described By: KANE Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: F10-89-CP Size: 14 x 13 x 6.5 (cm) Location: F Seamount

Sample Id: D18-9 Weight: 2 (kg) Depth: 1925-1800 (m)

Mn Crust Description

Surface Texture: botryoidal w/ microbotryoids granular on sides + bottom

Mn Crust Thickness (mm):
Min: 45 Max: 60 Ave: 60

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.	5	10	8	Dense
2.	40	50	50	Very porous, large vugs, some infilled w/ clay, fe-staining
3.				
4.				
5.				
6.				

D18-9

F10-89-CP

Comments and XRD Mineralogy:

sample has holes & dissolution? infilled(?) areas on bottom. Probably foramin. or limestone which has totally removed from this piece

ANALY

Subsample Number	Analysis	LayerThickness

Substrate Description

Rock Type: None

Description:

Biology ?: encrusting forams

Scraped along w/ D18-17 ↑ D18-18

Described By: Joie Subsampled By: