Dredge 17

N Ngeruangel I.

USGS DREDGE LOG

SHIP/LEG F7-91-WP

STATION # 25

DREDGE # D17

DEPTH INTERVAL(m) 3820 - 3485

DEPTH(m)corrected 3950 - 3500

DATE JD 210 LOCAL 7/29/91

TIME GMT 0256 - 0435 LOCAL 1256 - 1935

LATITUDE 8°44.066' TO 8°44.38'

LONGITUDE 134°44.64' TO 134° 43.87'

TOTAL WEIGHT: DREDGE 450 kg CRUST ?

PERCENTAGE OF ROCK COVERED BY CRUST 10%

PERCENT BROKEN FROM: OUTCROP 70% TALUS 30%

THICKNESS OF MN CRUST: MAXIMUM 3mm MINIMUM patina AVERAGE patina

DOMINANT SURFACE TEXTURE smooth: eroded

SUBSTRATE LITHOLOGY (1) serpentine - sheared
(2) Basalt - ultramaphics
Hydrothermally altered w/ Metamorphism

NODULES PRESENT —

REMARKS:

10 Boulders
100's of Pebbles + cobbles

150 Kg thrown over - pebbles, cobbles, Mud

D17-1 is the Brown mud that coated the rocks.

USGS DREDGE LOG

Depth Interval 3980 - 3485

Cruise I.D. F7-91-WP

Station No. 25

Dredge No. 17

Julian Date 210

Local Date (m/d/y) 7/29/91

Chief Scientist Hein/Ahn

Tech on Watch Walter

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	0257	0415	0935	1041
LATITUDE	8°44.12	8°44.06	8°44.38'	8°44.2
LONGITUDE	134°44.53	134°44.64	134°43.87°	134°44.3
WATER DEPTH	3820	3980	3485	3720

Site Description and Target :

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
On bottom	0415	3960	4156			Letting out scope - moving up line.
Scope is out	0440		5000			Taking up slack
Tension inc.	0526	3375		~4		not dredging yet
On a bite	0616	3190		4.25		
Still on it	618	"		5T		up to 7T
Still hung	625			7.55		moving to right of line to pull
pulling from right of line	634			over 7		Still hung
Bite	635	3175		6.91		~ Broke off?
Bite	637			7		
Bite	0639			7.8		Getting back on course
Bite	0641	3170		3.92		
Pulling in scope	0703	3170	5000			Holding position
Bite	0728	3230	4675	4.9		
Dredging up slope	0739	3245	4500	4T		not hung moving up line
Tension inc.	0804	3350?		5T		
Bite	0810	3320		6.2T		
Broke!	0816	3290		6.0T		cont. up slope
Bite	0826	3280		4.5T		

*on/off bottom, bites, etc.

OTHER COMMENTS:

3000/2860/2800/2700

4000/4100/4150/4200

5000

25000000
16000000
9

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
Broke	0836	3220	4500	4.70		
On a bite	0830			4.9, 5.25, 5.5,		
Broke	0832			5.9		Tension drop
Bite	0833	3200?		5.5, 6.0, 6.5		
Broke	0834			6.85		Tension Dropped
0839 Bringing wire in		Holding position				
Bite	0845	3200	4330	4.35		
Bite	0857	3330	4165	5.8		
	0900					Doggy skiing
off Bottom	0935	3490	3400			
	0937		3390			~off bottom by wet

*on/off bottom, bites, etc.

OTHER COMMENTS:

D17

N. Ngeruangel Island
Palau D

Dredge Sample Summary Sheet

Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	ICP ~~Archive~~ — minors
D17-1									2X	
D17-3							2X			
D17-4							2X			
D17-5			X		X	X	X			X
D17-6							X			
D17-7					X	X	X			X
D17-9							X			
D17-10							2X			
D17-11						X	2X			
D17-12							3X			
D17-14						X	X			
D17-16						X	2X			
D17-17							2X			
D17-20						X	X			
D17-25							X			
D17-27						X	X			X
end D17-28							X			

SAMPLE DESCRIPTION

Palau D

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

Sample Id: D17-1 Weight (kg): 0.172 Depth (m): 3950 - 3500

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)
D17-1	Paleo - Rose Bengal		~60 g
"	Paleo - 20.1 g		
	~38 g Kordi		
	~61.1 U.S.G.S. - 6oz. container		

Substrate Description

Rock Type: foraminiferal - Nanno fossil? Brown Mud

Description: Mod. Yellowish Brown (10YR 5/4) (wet) contains foramo + Rock fragments - off Rocks in Dredge

Biology (?):

Described by: A.S.

Subsampled by: A.S.

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): ~200 Cobbles Location: [redacted]

Sample Id: D17-2 Weight (kg): ~30 Kg Depth (m): 3950-3500

Mn Crust Description

Surface Texture: Patina, smooth eroded

Mn Crust Thickness (mm):

Min: Max: Patina Ave:

Outer to Inner Layers (mm)

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

D17-2

Comments and XRD Mineralogy:

Sub

Substrate Description

Rock Type: Serpentine Subangular clasts from talus Breccia (highly altered basalt?)

Description: Clasts are sheared Serpentines contains quartz veins. ~ Orangeish yellow green

Biology (?): encrusting forams on crusts

Described by: L.S.

6 Box KORDI

5 Box USGS

Subsampled by:

D17-2

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 3 boulders Location: [redacted] Palau D
Sample Id: D17-3 Weight (kg): 75 kg Depth (m): 3950-3500

D17-3

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				

Comments and XRD Mineralogy:

Subsample

D17-3-1A XRD shear matrix
-1B XRD magnetite-serpentine

40% HORDI
60% USGS

Substrate Description

Rock Type: Serpentinized Breccia

Description: Strongly altered basalt + ultramafic clasts in sheared serpentine + epidote (?) matrix, veins of magnetite, asbestos, calcite, + shear breccia matrix

Large

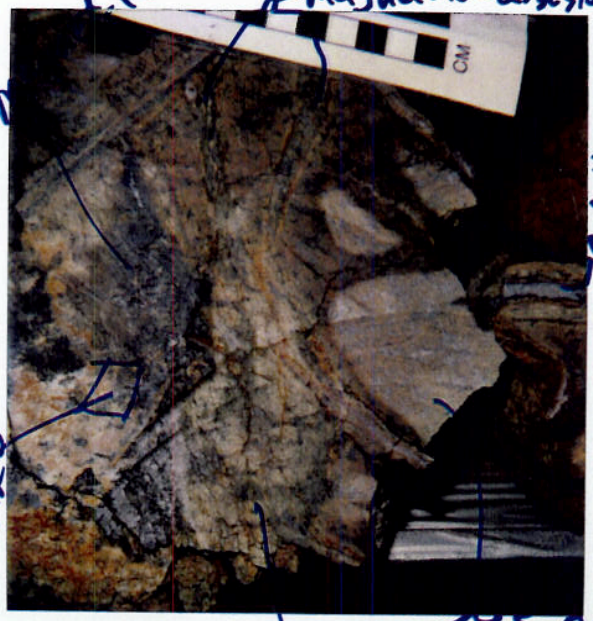
Biology (?):

V. magnetic!

Cut pieces on saw

Described by: HEIN

Subsampled by: HEIN



D17-3 sheared matrix XRD

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): a large cobbles Location: Palau D [redacted]

Sample Id: D17-4 Weight (kg): 6 kg Depth (m): 3950 - 3500

Mn Crust Description

Surface Texture: Smooth Palisa

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:

Subsar

D17-4A XRD Brown host Rx
4B XRD white min mag band
Fracture breccia

60% USGS
40% HORDI

Substrate Description

Rock Type: Hydrothermally altered basalt (?)

Description: banded Magnetite + epidote (?) replaced brown volc. Rx + mag. white-mineral band bands are explosion hydraulic fracture

Biology (?): Breccias
2 sets of Fractures

Described by: HEIN

Subsampled by: HEIN

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 8x5x4 24x22x15 Location: Palau [redacted]

Sample Id: D17-5 Weight (kg): ~40 Depth (m): 2900 - 3100

Mn Crust Description

Surface Texture: Pitted
Smooth Patches

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D17-5

Comments and XRD Mineralogy:

Sub

D17-5-1 XRD Type 1
OC, ICP, Au 108 gm
TS

Substrate Description

Rock Type: Altered Ultramafic Rock
2 types (1) Tiger pattern - greenish-orange w/ black Magnetite discontinuous stripes
Description: (2) Banded magnetite, asbestos, smectite?, graphite?

Serpentine-magnetite veins in all
all magnetitic

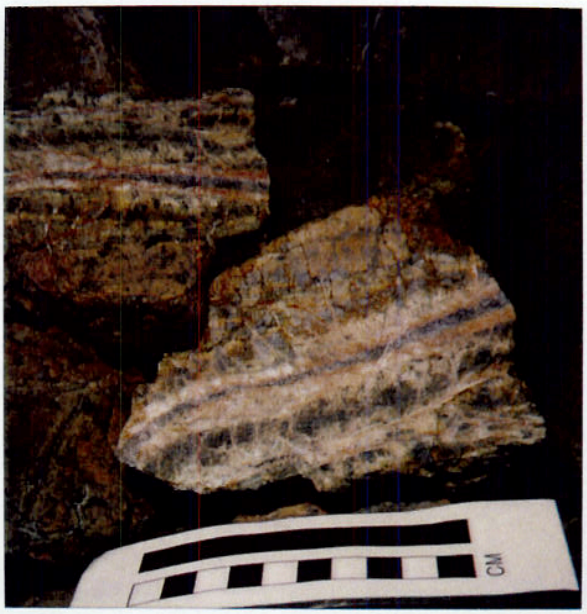
50% HORDI
50% USGS

Biology (?):

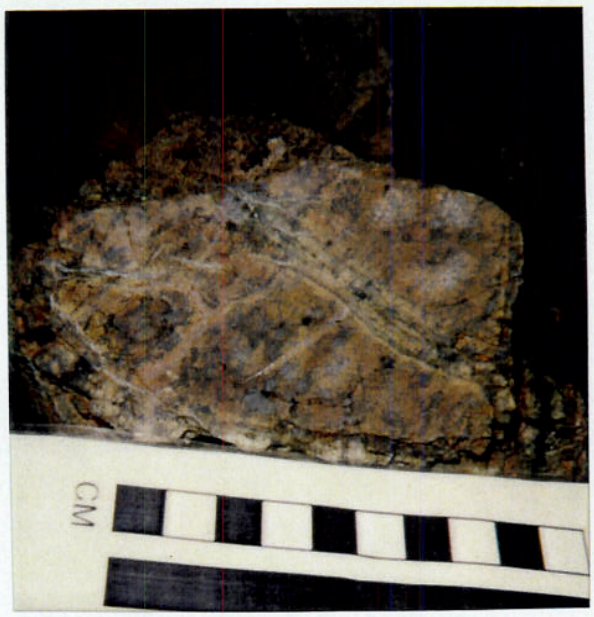
Described by: AEW

Subsampled by: JSS

D17-5 Type 2



D17-5 Type 2



D17-5 Type 1

SAMPLE DESCRIPTION

Palau D

Cruise Id: F7-91-WP Size (cm): 7x5x4 ~ 11x10x6 Location: ~~V2-91-ND~~

Sample Id: D17-6 Weight (kg): 4 Depth (m): 3950-3500

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				

D17-6

Comments and XRD Mineralogy:

Subs

D17-6-1 XRD - brown center

Substrate Description

Rock Type: Altered basalts?

Description: Magnetite - serpentine rocks w/ boxwork fracture & alteration all have Fe-oxide orange centers - some have Fracture breccia cemented by calcite

40% NORD
50% USGS

Biology (?):

Described by: HEIN

Subsampled by: HEIN

D17-6 Box work

Fracture

Breccia w/ Calcite Cement

D17-6

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): ~25 Small to large cobbles Location: Pelou D [redacted]

Sample Id: D17-7 Weight (kg): ~15 Depth (m): 3950 - 3500

Mn Crust Description

Surface Texture: Patina - eroded

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D17-7

Comments and XRD Mineralogy:

Su

D17-7-1 DPTS, XRD, OC 30gm, ICP 18gm Bulk

60% USGS

40% KORDI

Substrate Description

Rock Type: Serpentinized Basalts?

Description: sheared!! Conjugate shears with alternation and mineralization around shears.

Giraffe patterns - yellowish orange brown.

alteration & diffusion along conjugate fractures and other oriented fractures

strongly magnetic

Biology (?): green areas - serpentine

Serpentinized! Black zeolites magnetic!

Described by: G.S.

Subsampled by: JSS

D12-7

D17-7

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 7 cobbles Location: [redacted]

Sample Id: D17-8 Weight (kg): ~4 Depth (m): 3950 - 3500

Mn Crust Description

Surface Texture: Patina - eroding

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

ultramafic mag + hematite

serpentine

D17-8

Comments and XRD Mineralogy:

Sub

Substrate Description

50% USGS

Rock Type: Highly Altered Basalt + ultramaphic 50% KORDI

Serpentinized

Description: highly altered and sheared - conjugate shears w/ alteration + mineralization - orangish green (hematite?) w/ magnetite magnetite.

Biology (?):

Described by: GS

Subsampled by:

D17-8

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 10 x 15.5 x 11.5 Location: Palau D [redacted]

Sample Id: D17-9 Weight (kg): ~ 2.5 Depth (m): 3950 - 3500

Mn Crust Description

Surface Texture: Patina granular to smooth

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

D17-9

Comments and XRD Mineralogy:

Subsa

D17-9 XRD host w/ zeolite?

Substrate Description

Rock Type: Serpentinized ultramafic

40% FORDI
60% USGS

Description: Magnetic!! Magnetic vein! highly altered. stained Green - Black - magnetite → serpentine, orange hematite?

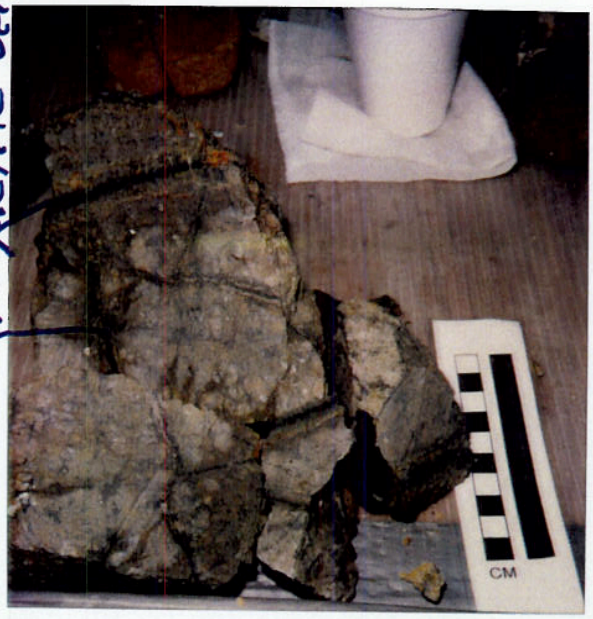
2 at about 120° to each other

zeolite? xstals in host RX.

Biology (?): encrusting growths

Described by: LS.

Subsampled by: HEIN



D17-9