USGS DREDGE LOG

SHIP/LEG EW-91-WP

STATION # 16

DREDGE # 10

DEPTH INTERVAL(m) 2250-1670

DEPTH(m)corrected 2250-2150

DATE JD 204 LOCAL July 24, 1991

TIME GMT 1144-1533 LOCAL _____

LATITUDE 9°13.29 TO 9°14.07

LONGITUDE 137°52.66 TO 137°52.99

TOTAL WEIGHT: DREDGE 130 CRUST ≈20

PERCENTAGE OF ROCK COVERED BY CRUST 100

PERCENT BROKEN FROM: OUTCROP 100 TALUS 0

THICKNESS OF MN CRUST: MAXIMUM 10 MINIMUM 2 AVERAGE 4

DOMINANT SURFACE TEXTURE Small Botryoidal, granular

SUBSTRATE LITHOLOGY Breccia, brown, poorly consolidated, Dacite? clasts in fine-grained volcaniclastic matrix)

Sheared

NODULES PRESENT 0

REMARKS: 1 huge boulder that broke up during dredging

50 kg discarded

USGS DREDGE LOG

Depth Interval 2255-1620

Cruise I.D. F7-91-WP

Station No. 16

Dredge No. D10

Julian Date 204

Local Date (m/d/y) 7/23/91

Chief Scientist Hein/Ann

Tech on Watch Walter/Jon

	On Station	Dredge on Btm	Dredge off btm	Off Station
GMT	1102	1144	1533	1607
LATITUDE	9° 13.30	9° 13.29	09° 14.07	09° 14.07
LONGITUDE	137 52.64	137 52.66	137° 51.99	137° 52.26
WATER DEPTH	2249	2255	1620	1600

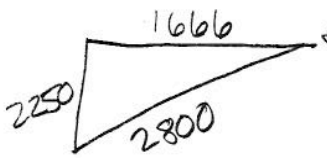
Site Description and Target : Dredging up east side of Knob south of Yap I. SSW Target depth 2250 to 1600 m

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
On bottom	1144	2255	2230			Moving up line/paying out sa
Scope is out	1156	2180	2800			Taking up slack
starting to Dredge	1253	1665	"	-1.5		
Bite	1308	1635	"	2.75		
Bite	1325	1630	"	3.5		fell off @ 1327
Bite-	1329	1610		3.8		fell off to a 1.8 T
Pulling wire in	1336	1600				Reached summit Pulling
						in wire while holding
						Position
"	1344	1600	2700			Dredge water?
Bite	1349	1610		2.3		fell off 2 T
		1615	2530			
Paying out to find BOTTOM	1352	1620?	2625			
Watch Change	1400					
	1414	1740	2400			No major pulls.
Ship Action	1430	1900	2080			turning ship to go back up slope
	1437	1910*				heading along line, dredge pulling up
Bites?	1513	1590		2.8, 2.9		Pulling Wire in Ship Stoppe

*on/off bottom, bites, etc.

OTHER COMMENTS:

steep slope here came up 100 meter only 3 or 4 min after the ship was in position to head back up slope. The slope appears to change at ~1740m a harder echo on recorder. Either a less steep slope or a different lithology



7840000
5062500
2777500

OPERATION*	GMT	DEPTH (m)	WIRE OUT (m)	TENSION	HDG/SPD	COMMENTS
Wire In	1531	1620	1700			
Off bottom	1533	1620	[illegible]			

*on/off bottom, bites, etc.

OTHER COMMENTS:

D10

SW of Yap I.

Dredge Sample Summary Sheet

Sample ID	Bulk CC	Layer CC	Pt & Au	Ree	OC	DPTS/TS	XRD	35mm Photo	Paleo	Archive
D10-1							2			
D10-2										
D10-3						1				
D10-4										
D10-5					✓	1	✓			
10-6										
10-7	✓		✓	✓		1	2			
10-8						1				
10-9						1				
10-10						1				
10-11										

Several thin sections were done without corresponding XRD samples. Alicé did these extra T.S. because of interesting inclusions; the rock and matrix are basically the same. There was generally not enough inclusion material to take an XRD sample.

JSS

Jim: I think this entire collection is possibly just one lithology of a tuff breccia with some portions welded and differential amounts of weathering. There is much variety within the clasts that will require more work and slabbing of rocks when we get back. Alicé

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 2x3 x 2 cm [illegible] 43x22x13 Largest Location: [redacted] S.W. of Yap Is

Sample Id: D10-1 Weight (kg): ~20 Depth (m): 2250-2150

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				

D10-1 SEE BACK

Comments and XRD Mineralogy:

This is a group w/o crust.

Sub

D10-1A XRD of Matrix

D10-1B Xtals from Matrix XRD

Substrate Description

Rock Type: Altered Volcaniclastic Breccia

very friable, matrix is green-grey (fine grained) w/ volcanic clasts of many different variety. Whole dredge probably same lithology. Matrix full of green mineral fragments - (epidote?) (organic amph hole) Rock has a general sheared look to it. Clasts are cobble to pebble sized)

(These samples may be just more highly altered volcanics similar to D10-3 thru D10-11 rather than a breccia)

Description:

Biology (?):

Described by: JSS

Subsampled by: JSS

D10-1 Cut Pieces

SAMPLE DESCRIPTION

Cruise Id: F7-90-WP Size (cm): 3x4x2.5 smallest 42x27x17 Largest Location: SW. of Yap Is [redacted]

Sample Id: D10-2 Weight (kg): ~28 Depth (m): 2250-2150

Mn Crust Description

Surface Texture: botryoidal, smooth, and granular botryoidal

Mn Crust Thickness (mm):

Min: patina Max: 10 Ave: 5

Outer to Inner Layers (mm)

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

See Back

D10-2

Comments and XRD Mineralogy:

Sub

Substrate Description

Rock Type: Altered Volcaniclastic Breccia; Same as 10-1 but these samples have crust on them

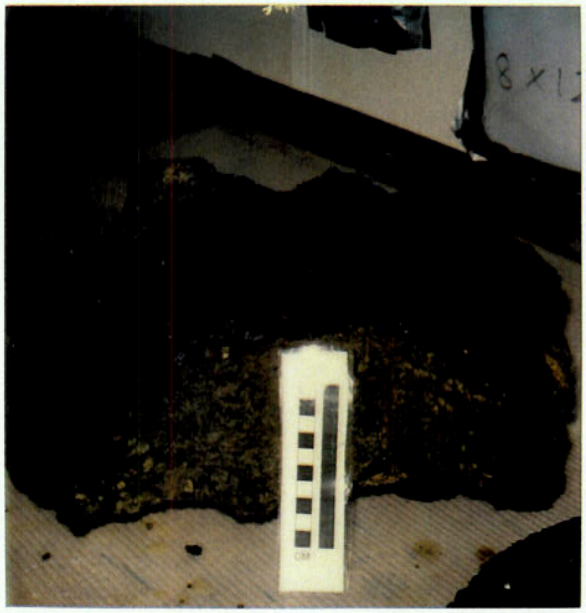
Description:

Biology (?):

Described by: JSS

Subsampled by:

D10-2



D10-2 large piece

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 15x11x12 Location: SW of Yap Isl. [redacted]

Sample Id: D10-3 Weight (kg): 3 Depth (m): 2250 - 2150

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				

D10-3

Comments and XRD Mineralogy:

Sub

D10-3 T.S.

Substrate Description

Rock Type: Andesite (?) or andesitic agglomerate

Description: gray, aphanitic to very fine-grained groundmass with highly abundant (~30%) inclusions. Some individual phenocrysts (amphibole or Cpx?)

~~Biology (?)~~: but mostly xenoliths mm to 1cm in size of highly

~~Described by~~: variable composition ranging from mafic (gabbro) to felsic (diorite?)

XSD.

Subsampled by: ASD

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 10x8x4 Location: [redacted] SW of [illegible]

Sample Id: D10-4 Weight (kg): 1.0 Depth (m): 2250-2150

Mn Crust Description

Surface Texture: botryoidal to granular

Mn Crust Thickness (mm):

Min: 2 Max: 5 Ave:

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	2	5mm	3	black/granular to botryoidal
2				
3				
4				
5				
6				

D10-4

Comments and XRD Mineralogy:

Sub

KORDI ~ 50%
USGS ~ 50%

Substrate Description

Rock Type: Andesite

Description: amygdaloidal with green schist minerals (eg chlorite, epidote?) filling amygdules. Variety of inclusions like D10-8.

Biology (?):

Described by: ISD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 22X20X9 Location: [redacted]

Sample Id: D10-5 Weight (kg): 4 Depth (m): 2250-2150

Mn Crust Description

Surface Texture: [illegible]

granular

Mn Crust Thickness (mm):

Min: [illegible] Max: 2 mm Ave: <1 mm

Outer to Inner Layers (mm)

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

D10-5

Comments and XRD Mineralogy:

Sub

[illegible]

[illegible]

D10-5 XRD, TS, OC - 36gms

Substrate Description

Rock Type: Andesite ?

Description: Similar to previous clasts but also contains volcanic clast (to 4 cm) of highly vesicular basalt, other

~~Biology (?)~~: inclusions like in D10-3 mostly plutonic

~~Described by~~: mafic to felsic! Irregularly shaped amygdules filled with green fibrous minerals.

ISD

Subsampled by: ASD & SDD

SAMPLE DESCRIPTION

Cruise Id: FT-91-WP Size (cm): 10 x 8 x 6 Location: [redacted]

Sample Id: D10-6 Weight (kg): 1.0 Depth (m): 2250 - 2150

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				

D10-6

Comments and XRD Mineralogy:

Sub:

Substrate Description

Rock Type: [illegible]

Description: [illegible]

Biology (?): [illegible]

Described by: KD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): ~~15~~ 15 x 15 x 10 Location: SW of Yap [redacted]

Sample Id: D10-7 Weight (kg): 2.5 Depth (m): 2000 - 2150

Mn Crust Description

Surface Texture: botryoidal

Crust covers part of the rock, dense black crust

Mn Crust Thickness (mm):

Min: 8 Max: 10 Ave: 8

Outer to Inner Layers (mm)

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

D10-7

Comments and XRD Mineralogy:

S

D10-7A CC, AV, P+ - 130gm 0-8mm

Bee 20gm XRD

D10-7B Thin Section

Substrate Description

Rock Type:

Description:

Biology (?): encrusting foram on crust

Described by:

Subsampled by:

SAMPLE DESCRIPTION

SW of Gap Isl.

Cruise Id: F7-91-WP Size (cm): 13×10×8 Location: [redacted]

Sample Id: D10-8 Weight (kg): 1.0 Depth (m): 2250-2150

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				

D10-8

Comments and XRD Mineralogy:

Sub

D10-8 T.S.

[illegible]

Substrate Description

Rock Type: Andesite

Description: Amygdaloidal [illegible] with chlorite + albite?? filled, round amygdules gray-green aphanitic groundmass inclusions + phenocrysts

~~Biology~~ (?): similar like D10-3 but more green schist type

~~Described~~ by: alteration

XRD

Subsampled by:

NO

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 8x8x6 Location: sw of Yap Island [redacted]

Sample Id: D10-9 Weight (kg): 0.4 Depth (m): 2200-2150

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				

D10-9

Comments and XRD Mineralogy:

Sul

D10-9 T.S.

Substrate Description

Rock Type: Andesite?

Description: Similar andesite agglomerate (or breccia) like other sample (not ...) but contains angular, massive basaltic clast with green sh & alteration

Biology (?):

Described by: ASD

Subsampled by: [illegible]

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 12 x 6 x 4 Location: [redacted]

Sample Id: D10-10 Weight (kg): 0.5 Depth (m): 2250 - 2150

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				

D10-10

Comments and XRD Mineralogy:

Sub

D10-10 - T.S.

Substrate Description

Rock Type: Andesite

Description: porphyritic andesite with some inclusions - less abundant than the pollinous samples - Green schist

Biology (?): alteration like in other samples

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

SW of [illegible]

Cruise Id: F7-91-WP Size (cm): 9x6x7 Location: [redacted]

Sample Id: D10-11 Weight (kg): ~0.5 Depth (m): 2250-2150

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				

D10-11

Comments and XRD Mineralogy:

Su

Substrate Description

Rock Type: Andesite

Description: porphyritic amygdaloidal andesite with green schist minerals in amygdules and in ground mass. Inclusions

Biology (?): less abundant

Described by: ASD

Subsampled by: