DREDGE 1-91
Hatzakaia Ridge

MOST recent Haleakala dredge – lots of Mn coating breccia + hyaloclastite and as cement.

U.S.G.S. STATION OPERATIONS LOG

MDIG 1.77

SHIP/LEG Farnella AREA Haleakala Ridge STATION # 1

CHIEF SCI. Lee/Torresan CRUISE LOCATOR (COL. 73-78) F11 (ID) – 91 (YR.) AREA CODE (COL. 79-80) CP LAT (ST/ED) 20° 35.08 N LONG (ST/ED) 155° 48.07 W

PUNCH FLAG	TIME & POSITION: JULIAN DAY	GMT TIME HR-MIN	LINE NO	STA. NO. OR SHOT POINT	SPEC. CODE 3 LET	EQUIP CODE 4 LETTERS	SAMPLE ATTEMPT NO 5 LET/NO.	X IN ONE BOX ONLY – SAMPLING LOCATION: DISCRETE E.G. CART CORE	VARIABLE E.G. DRIDGE STRT	END	OPERATIONS COMMENTS, OR DATA MEASUREMENTS	STATION DATA ONLY: RECOVERY? Y/N	WATER DEPTH 4 NO	DEPTH UNIT LET
X	320	1006		1	NAV	STAT	*		X		ON STATION 1		* 1927	m
		1010					01D01				DREDGE 1-D1 IN WATER			
X	320	1104		1	SAM	CHAN	1-D1		X		DREDGE 1-D1 ON BOTTOM 20°36.14 155°48.48 1871 m w/o		1800	m
		1120									BITE 1.25 20°36.45 155°48.54			
		1243									BITE 1.70 20°38.21 155°49.58			
		1245									BITE 1.51 20°38.25 155°49.62			
		1249									BITE 5.7 20°38.33 155°49.63			
		1252									BITE 1.70 20°38.37 155°49.69			
		1255									BITE 5.0 20°38.45 155°49.71			
		1257									BITE 2.8 20°38.50 155°49.74			
		1258									BITE 8.25 20°38.51 155°49.76			
		1302									BITE 2.15 20°38.57 155°49.80			
		1318									BITE 3.8 20°38.64 155°49.96			
X	320	1339		1	SAM	CHAN	1-D1		X		OFF BOTTOM 20°38.66 155°50.15 1400 m w/o	Y	1310	m
X	320	[illegible]		1	NAV	STAT			X		END STATION 1		1255	m
	13	5-6			21-23	25-28	29-33	36	37	38	41-64	66	67-70	71

REMARKS EQUIP. OPER. ETC

This is on a lava flow that is seen in the GLORIA data
Flow is alkalic lava (hawaiite) of Kula Volcanics.

* PL

** FORMAT FOR SAMPLE LABEL IS CRUISE LOCATOR-SAMPLE ATTEMPT

U.S.G.S. STATION OPERATIONS LOG

STATION # 1

SHIP/LEG Farnella AREA Haleakala Ridge LAT (ST/ED) 20° 35.08 N

CHIEF SCI. Lee/Torresan CRUISE LOCATOR (COL. 73-78) F11 - 91 ID. YR. AREA CODE (COL. 79-80) CP LONG (ST/ED) 155° 48.07 W

PUNCH FLAG	TIME & POSITION * JULIAN DAY	GMT TIME HR.-MIN.	LINE NO.	STA. NO. OR SHOT POINT	SPEC. CODE 3 LET.	EQUIP. CODE 4 LETTERS	SAMPLE ** ATTEMPT NO. 5 LET./NO.	X IN ONE BOX ONLY SAMPLING LOCATION DISCRETE E.G., DART CORE	VARIABLE E.G., DREDGE STRT	END	OPERATIONS, COMMENTS, OR DATA MEASUREMENTS	STATION DATA OR RECOVERY? Y/N	WATER DEPTH 4 NO.
X	320	1,00.6		1	NAV	STAT	*		X		ON STATION 1		* 1,927
		1,01.0					01,D-01				DREDGE 1-D1 IN WATER		
X	320	1,10.4		1	SAM	CHAN	1-D1		X		DREDGE 1-D1 ON BOTTOM 20°36.14 155°48.48 1871 m w/o		1,800
		1,1.20									BITE 1.25 20°36.45 155°48.54		
		1,24.3									BITE 1.70 20°38.21 155°49.58		
		1,24.5									BITE 1.51 20°38.25 155°49.62		
		1,24.9									BITE 5.7 20°38.33 155°49.63		
		1,25.2									BITE 1.70 20°38.37 155°49.69		
		1,25.5									BITE 5.0 20°38.45 155°49.71		
		1,25.7									BITE 2.8 20°38.50 155°49.74		
		1,25.8									BITE 8.25 20°38.51 155°49.76		
		1,30.2									BITE 2.15 20°38.57 155°49.80		
		1,31.8									BITE 3.8 20°38.64 155°49.96		
X	320	1,33.9		1	SAM	CHAN	1-D1			X	OFF BOTTOM 20°38.66 155°50.15 1400 m w/o	Y	1,310
X	320	1,4.20		1	NAV	STAT				X	END STATION 1		1,255
	1-3	5-8	12-15	16-19	21-23	25-28	29-33	36	37	38	41-64	66	67-70

REMARKS: EQUIP., OPERATION, WEATHER, ETC.

* PLEASE RIGHT-JUSTIFY THESE ENTRIES

** FORMAT FOR SAMPLE LABEL IS: CRUISE LOCATOR-SAMPLE ATTEMPT # (E.G., S2-76-103)

SAMPLE DESCRIPTION

Cruise Id: F11 91-HW Size (cm): 18X12½X7½ Location: ~~V2-91-CP~~ F11-91-HW

Sample Id: 1-D1-1 Weight (kg): 1.2 kg Depth (m): 1800

Mn Crust Description

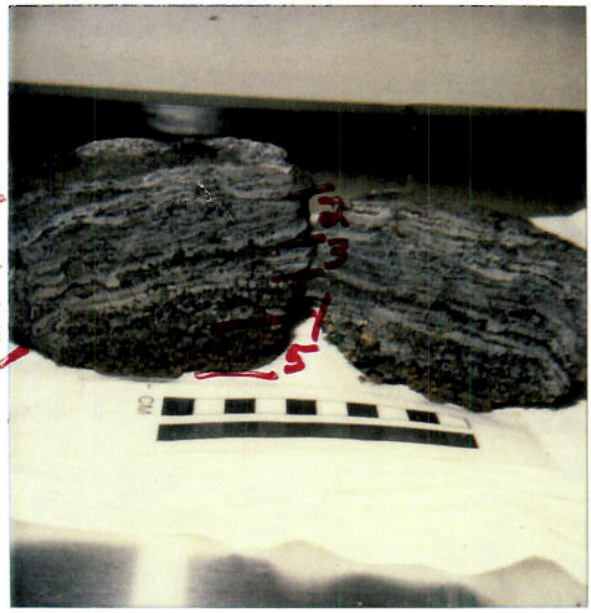
Surface Texture: Eroded Smooth Surface some very small botryoids hydro-thermal Mn

Mn Crust Thickness (mm):

Min: 50 Max: 55 Ave: 53

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	14	16	15	Submetallic blackish gray
2	13	15	14	to light blackish gray
3	11	13	12	Combination of
4	12	12	12	dense and porous laminated layers
5				There are more porous layers
6				Rare pebble sized clasts in the middle layers



1-D1-1

Comments and XRD Mineralogy:

more pebble sized clasts near the bottom

Subsam

35 mm Slides

1-D1-1A	CC, XRD, Pt, RtE	17.4g	3.6g	Bulk - from Surface to top of pebbly layer
	DPTS			
1-D1-1B	CC, XRD	22.3g	layer 1	0-15 mm
1-D1-1C	" "	16.3g	" 2	15-29
1-D1-1D	" "	6.5g	" 3	29-31
1-D1-1E	" "	10.1g	" 4	31-5
1-D1-1E, F	DPTS (2)		layers 4, 5	get Two of Them

Substrate Description

Rock Type: Breccia Orange Brown

Description: Altered, moderately sorted, angular to subangular pebble sized, clast supported breccia impregnated partially with Hydrothermal

Biology (?): Mn

Some forams

Described by: JW

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: FII-91-HW Size (cm): 23X19X6.4 Location: ~~FII-91-HW~~ ~~V2-91-CP~~

Sample Id: 1-D1-2 Weight (kg): 2.27 Depth (m):

Mn Crust Description

Surface Texture: Smooth to granular microbotryoids greyish black

Mn Crust Thickness (mm):

Min: Patina Max: 12 Ave: 6

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	Patina	12	6	Grayish black, slight porous
2				
3				
4				
5				
6				

1-D1-2

Comments and XRD Mineralogy:

Subs

35mm Slides

1-D1-2 CC, XRD Top 4-5mm metallic layer 0-12mm 18.5g

Substrate Description

Rock Type: Hydrothermal Mn cemented breccia blackish orange brown with some submetallic bluish grey

Description: Poorly sorted, subangular, pebble sized clast supported breccia impregnated with hydrothermal Mn. — roughly in layers

Biology (?): Clasts are dominantly vesicular basalt

Described by: JW

some encrusting foram

Subsampled by:

Sc Won Chang took subsample 10/97

SAMPLE DESCRIPTION

Cruise Id: F11-91-HW Size (cm): 23x13x7 Location: ~~F11-91-HW~~ ~~V2-91-CP~~

Sample Id: 1-D1-3 Weight (kg): 1.7 Depth (m):

Mn Crust Description

Surface Texture: smooth to granular microbotryoids

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

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

1-D1-3

Comments and XRD Mineralogy:

Subsam

35mm Slides

1-D1-3A DPTS, XRD

Substrate Description

Rock Type: Hydrothermal Mn Cemented Breccia

Description: Greyish black orange brown with some submetallic bluish grey. Poorly sorted, subangular to subrounded, clast supported pebble sized breccia impregnated with hydrothermal Mn. Some vesicular basalt clasts

Biology (?): encrusting sponges?

Described by: JW

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-91-HW Size (cm): 18x12x6 Location: ~~V2-91-CP~~ ~~F11-91-HW~~

Sample Id: 1-D1-4 Weight (kg): 0.95 Depth (m):

Mn Crust Description

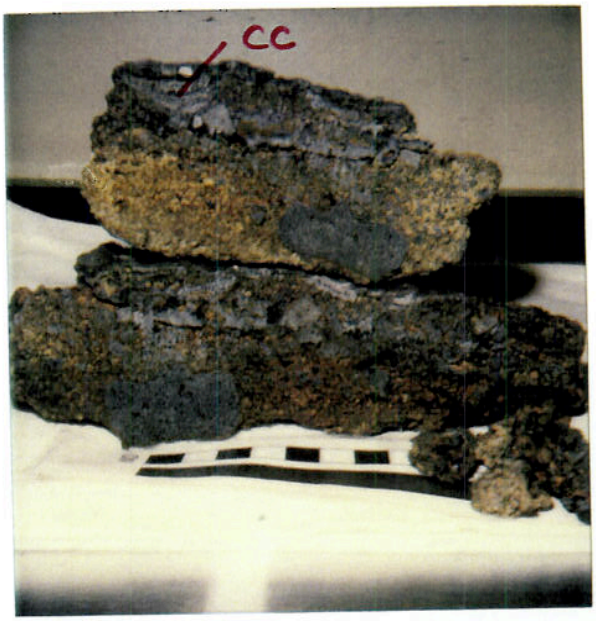
Surface Texture: granular to smooth microbotryoids hydrothermal Mn

Mn Crust Thickness (mm):

Min: 4 Max: 19 Ave: 15

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	4	19	15	varying degrees of ~~[illegible]~~
2				laminated sub metallic blackish
3				grey dense &
4				porous layers
5				
6				



1-D1-4

Comments and XRD Mineralogy:

Subsan

35mm Slides

1-D1-4 CC, XRD metallic upper layers only — No rocks
0-15mm 14.7g

Substrate Description

Rock Type: Hydrothermal cemented breccia orange brown mostly altered

Description: Poorly sorted angular to subangular pebble sized breccia impregnated with hydrothermal Mn

Biology (?): Some vesicular basalt clasts

Described by:

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F11-91-HW Size (cm): 14½ x 15 x 3.3 Location: ~~V2-91-CP~~

Sample Id: 1-D1-5 Weight (kg): 1.02 Depth (m): _____

Mn Crust Description

Surface Texture: Granular botryoids top & bottom

Mn Crust Thickness (mm):

Min: Patina Max: 6 Ave: 3

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	Patina	6	3	Foraminiferal sand in hydrothermal Mn some oxidation
2				black brown with tints
3				of bluish grey
4				Few pebble sized clasts on
5				surface
6	Patina	1	2	Bottom layer: black brown orange with tints of bluish grey hydrothermal Mn some oxidation

1-D1-5

Comments and XRD Mineralogy:

Subsa

35 mm slides

1-D1-5 CC, XRD, DPTS

0-5 mm 5.3g

Substrate Description

Rock Type: Breccia Grey

Description: There are 3 layers: ① A thin ½-1 mm unknown oxidized orange layer separates the Manganiferous foram sand layer. ② Grey, poorly sorted, pebble sized, Mn cemented breccia. Clasts are dominately vesicular basalt

Biology (?): encrusting forams top & bottom

Described by: JW

Subsampled by:

③ Bottom part of the breccia is oxidized orange-brown

SAMPLE DESCRIPTION

Cruise Id: F11-91-HW Size (cm): 9 x 8 1/2 x 1 1/2 4 1/2 x 2.2 x 1 1/2 Location: ~~V2-91-CP~~ ~~F11-91-HW~~

Sample Id: 1-D1-6 Weight (kg): 0.36 Depth (m):

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				

1-D1-6

Comments and XRD Mineralogy:

Subsam

1-D1-6 XRD, OC substrate bulk

29 g

Substrate Description

Rock Type: Light Brown Mudstone

Description: many burrows with Mn oxide lining the inside

Biology (?):

Described by: JW

Subsampled by: