Necker

Ridge

Necker Ridge : Co - with Depth of Water

Z	Co %	
1970	0.64	
2100 - 2350	0.68 0.74	East
2402	0.53	
3950 - 4200	0.44	
2100	1.15	
	0.54	
2100 - 2400	0.64 0.55 0.65 1.24 0.52	Central
2400	0.71	
	0.63 1.05	West
4500 - 4800	0.38	
	0.34	
	0.42	
	0.36	

14 Samples : 1900 - 2400 m Average 0.73 %; range 0.52 - 1.24 %

5 Samples : 3900 - 4800 m " 0.39 %; " 0.34 - 0.44 %

* Chemistry

Nechter Ridge

	Dredges			Cores		
* 1-D1	12 lbs	3950-4200 m	East End	4-PC1	3403 m	ooze
2-D2	0	2400-3100		* 5-PC 2	2402	Crusts
3-D3	0	— —		* 6-PC 3	1970	minor Crusts
4-D4	0	1985-2050				
* 8-D5	300	2100-2350				
* 9-D6	1000	2100-2400	Central Ridge	* 11-PC4	4123	rare Mn-Coated pebble
* 10-D7	280	2100				
* 12-D8	20	4500-4800	West End			
13-D9	0	2500-2600				
14-D10	15	2400				
	1627 lbs.					

60% recovery of Crusts

25% recovery of usable crusts

Necker Ridge Dredge D-001 Hein

Nov. 1/83 L5-83-HW

Dredge 1: (very small recovery ~5kg or less)
CA = volcanic rocks, B = sedim. no sample

D1-A1:
dk gray, olivine and plagioclase phyric basalt, low vesicularity (<5%), incipient trachytic texture — plagioclase looks "chalky" altered, vesicles filled with iron oxide & minor clay, very thin discontinuous Mn crust (<2mm).

D1-A2:
dk gray, sparsely vesicular (<2% olivine phyric basalt — (olivine altered to clay?) incipient trachytic texture near margin under Mn crust (probably was pillow margin) Mn crust <4 mm.

D1-A3: brownish-gray, highly vesicular (>15%), olivine phyric basalt with pronounced trachytic texture. Vesicles small mostly filled with iron & minor clay (montmorillonite?)

D1-A4: like D1-A2 but has a few large cavities (to 2cm) and no Mn crust.

D1-A5:
med. gray, vesicular (<5%) olivine phyric basalt no pronounced trachytic texture — a few large cavities w/ sediment grains, + botryoidal $Mn(C^?)$ min. crystals

D1-A6:
dk. gray, low in vesicles (<2%), olivine phyric basalt — groundmass v. fine grnd. rich in opaques?, no pronounced texture

D1-A7:
mod. vesicular (<10%) olivine + plagioclase phyric basalt; trachytic texture

D1-A8: highly vesicular (>20%) basalt — entire surface coated with brown stuff (phosphor rich?) can't see anything thru brown stuff. (could be highly altered glass?) extremely thin Mn crust.

Dredge 11 To Contour

Necker Ridge Dredge 001

AND CORE

USGS DREDGE STATION LOG

SHIP / LEG 15-83-HW

LATITUDE 22° 10.87' to 22° 12.173'

LONGITUDE 166° 48.57' 166° 47.081'

STATION NO. 001- Necker Ridge

DREDGE/CORE NO D-1

DEPTH (m) 3950 to 4200 m (TOPR chart)

DAY/MONTH/YEAR DATE 1/11/83

TIME 1928 to 2109

TYPE OF STORAGE (check one)

DRY ☐ COLD ☐ FROZEN ☐

SAMPLE NO. TYPE & ID.	UNCORRECTED	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	Wt
A Crusts on	altered	basalt	gray-brown, and Black		~4.9
with phenocrysts, to 8 cm.			1-3 mm crusts		crusts
A1→A8					0.1 kg
B Crusts on	indurated	brown	sediments		~0.1
3-4 mm	on top, scrojular, pitted on bottom				Crusts
B1 & B2 manganese on sides of	5-6 cm	plate			~0.05
Appears	broken	off substrate			
wheareas	basalts	not broken off			

REMARKS:

Sediment-rock contact 4550 m

Top of ridge 1970 C

total est 5 kg ~ 12 lbs

For analysis:

Doris 3 volcanics + sediment 2 cm. → D1-B2

Frank Scrapings of D1-A1 + 3 cm sediment + crust (in water)

Alicia : chip of each volcanic Rx. D1-A1→A8

Vesna ÷

Jim ÷ remainder

D1-A1: olivine + plagioclase phyric basalt w. tradiytic texture

D1-A2: olivine phyric basalt

D1-A3: olivine + plagioclase phyric basalt w. tradytic text

D1-A4: olivine phyric basalt

D1-A5: olivine phyric basalt

D1-A6: olivine phyric basalt

D1-A7: olivine and plagioclase phyric basalt w. tradyt texture

D1-A8: highly altered basalt with abundant vesicles

	Pt%	Fe%	Ni%	Co%	Cu%	Zn%
1D1 A	17.3	~~21.5~~ 20.0	0.15	0.44	0.14	-

Necker Ridge Dredge 002

AND CORE NO Recovery

USGS DREDGE STATION LOG

0107
0220

S.P. Lee

SHIP / LEG L5-83-HW

J. Dow

DATE DAY/MONTH/YEAR 306/0107 TIME 0107 to GMT 0220

LATITUDE 22° 11.553' to 166° 50.875'

LONGITUDE 22° 12.246' to 166° 52.243'

STATION NO. 002

UNIT NO. DREDGE/CORE NO D2

TYPE OF STORAGE (check one)

DRY COLD FROZEN

DEPTH (m) 3100 to 2400

SAMPLE NO. TYPE & ID.	UNCORRECTED DEPTH (m)	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	Wt(wt(lbs)

REMARKS: No Large bits - few possible nibbles - total cut -

dredge // To Contours -

// never on bottom?? - Burlap sack ripped -

NSB00

Necker Ridge Dredge 3-D3

AND CORE

USGS DREDGE STATION LOG

SHIP / LEG S.P. Lee LS-83-HW

LATITUDE 22° ~~11.300~~ to 166° 50.00' W

LONGITUDE 22° 12.480 to 166° 52.307' W

STATION NO. 003

~~LINE NO.~~ DREDGE/CORE NO D3

DEPTH (m) 3700 to 2300 m

DAY/MONTH/YEAR TIME

DATE / NOV 83 0600 to 0750

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	~~UNCORRECTED DEPTH (M)~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	wt(lbs)

REMARKS: No Recovery but did hit bottom total cut —

Dark mud on dredge

NEBCO

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
LS-83-HW	D1-B2	—	—	001[redacted]			Hein/

Sediment Name: _____

ABUNDANCE	TEXTURE	SPECIFIC DATA	
TR	Sand		
A	Silt		
A	Clay		
	COMPOSITION		
?o	Quartz		
C	Feldspar		
	Mica		
	Heavy Mnls.		
	Total Detrital		
A	Clay Mnls.		
A	Volc. Glass		
C	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
TR	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
R	Rock Frags. Volc		
TR	Apatite		
	Foraminifera		
	Calc. Nannos		
R	Opaques — prob Mn + Hematite		
	Diatoms		
	Radiolarians		
?,TR	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PERCENT	DETAILED MINERALOGY

REMARKS:

Mudstone from Dredge - Coated on 3-sides by Mn-Crust ≈ 3-5 mm -

V. fine grained, angul[ar] no apparent microfossil pelagic clay, or glassy volcanic sed

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

AND CORE

USGS DREDGE STATION LOG

SHIP / LEG L5-83-HW

LATITUDE ~~22°11.608'N~~ TO 22°10.866' on bottom

LONGITUDE ~~166°51.104'~~ TO 166°57.659'W

STATION NO. 004

DREDGE/CORE NO. DREDGE/CORE NO PC1

DEPTH (m) 3403 m +o

DAY/MONTH/YEAR TIME

DATE 02/10/04/83 1722

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	UNDISTURBED	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	wt (lbs)

REMARKS: 1 m of white to white-brown nannofossil total ost mud - stiff - darker at surface

Frank Has: Top + 60-75 subsamples ~ 5cc each

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	PC1		Top	4	Nannos		Herm

Sediment Name: Nannofossil Ooze

ABUNDANCE	TEXTURE	SPECIFIC DATA	
	Sand		
Common	Silt		
Dominant	Clay		
	COMPOSITION		
	Quartz		
	Feldspar		
	Mica		
Tr-	Heavy Mnls.- MR		
	Total Detrital		
	Clay Mnls.		
Tr	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
	Rock Frags.		
Tr	Apatite		
	Foraminifera		
98%	Calc. Nannos – Coccoliths + discoasters		
Tr	1° order gray & Spun grains – nanno plates? – Fish debris		
	Diatoms		
	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PERCENT	DETAILED MINERALOGY

REMARKS:

Some discoasters are overgrow

Age Date

DATA CODE LEGEND

Fossil preservation
G = good
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P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
LS-83-HW	PC 1		60-75cm	4	Nannos	Forams	Hein

Sediment Name: Dirty Nannofossil ooze / Foraminiferal-

ABUNDANCE	TEXTURE	SPECIFIC DATA
C	Sand	
C	Silt	
A	Clay	
	COMPOSITION	
	Quartz	
R	Feldspar - large grains >20μm	
	Mica	
	Heavy Mnls.	
	Total Detrital	
C	Clay Mnls.	
Tr	Volc. Glass	
	Palagonite	
	Chlorite	
	Glauconite	
	Pyrite	
	Micro Nodules	
	Dolo. Rhombs	
	Zeolite	
R	Auth. Carb. - anhedral >10μm	
R	Rock Frags.	
C	Foraminifera -	Planktic & Benthic
D	Calc. Nannos	
R	Diatoms	
Tr	Radiolarians -	Fragments
R	~~Sponge~~ Spic.	
	Silicoflag.	
	Fish Remains	
	Plant Debris	

PER-CENT	DETAILED MINERALOGY

REMARKS:

Maybe a Turbidite or Debris flow of some sort

Age date

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	PC1		75-90cm	4	Nannos		Hein

Sediment Name: Nannofossil ooze

ABUNDANCE	TEXTURE	SPECIFIC DATA	
	Sand		
C	Silt		
D	Clay		
	COMPOSITION		
	Quartz		
	Feldspar		
	Mica		
Tr	Heavy Mnls.		
	Total Detrital		
	Clay Mnls.		
Tr	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
	Rock Frags.		
	Foraminifera		
98	Calc. Nannos	Coccoliths & discoasters	
Tr	1st order gray < 5μm grains - fish debris		
Tr	Diatoms		
	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PER-CENT	DETAILED MINERALOGY

REMARKS:

overgrown discoasters

Age date -

more discoasters than Top of core

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	PC1	HCl	Residue	4	Nannos		Hein

Sediment Name: Nannofossil ooze

ABUNDANCE	TEXTURE	SPECIFIC DATA	
	Sand		
	Silt		
	Clay		
	COMPOSITION		
	Quartz		
	Feldspar		
	Mica		
	Heavy Mnls.		
	Total Detrital		
	Clay Mnls.		
R	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
	Rock Frags.		
	Foraminifera		
D	Calc. Nannos		
	Diatoms		
	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
C	Fish Remains		
	Plant Debris		

PER-CENT	DETAILED MINERALOGY

REMARKS:

Acid Leach not complete
Still mainly nannos - but
Fish debris more concentrated
Than in other 3 Slides -

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

Necker Ridge Piston Core ___ (missing info)

USGS DREDGE AND CORE STATION LOG

SHIP / LEG L5-83-HW

LATITUDE ~~22°12.60'~~ to 22°12.483 N on bottom

LONGITUDE ~~166°52.71'~~ to 166°52.897 W

STATION NO. 005

DREDGE/CORE NO PC 2

DEPTH (m) 2402 m to

DAY/MONTH/YEAR TIME

DATE 2 Nov 83 2050

TYPE OF STORAGE (check one)

DRY COLD FROZEN

	SAMPLE NO. TYPE & ID.	UNCORRECTED	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	W+(
PC-2A -	Nod. 4cm X 4.5 X 2 -	botry. upper	surface & irregular bottom	Clay or phos. Core -		w/ 4mm crust
PC-2B -	Nod 4 X 3.5 X 2.5 -	Smooth Surface -	Phosphate	Core - Crust 1cm		
PC-2C -	Nod 3 X 3 X 4 -	Botry. Surface -	Phosphate	Core - crust - 2 -		12mm
PC-2D -	Nod 4 X 2 X 1.5 -	Phosphate w/ 0.8 mm	Crust on one	surface - fin		
PC-2E ~	8 Fragments of	crusts + phosphate - fin				
PC-2F -	Foraniferal Sand w/ mixed Mn Fragments					

REMARKS:

total at -

PC-2A - XRF

PC-2B - Part Hein + part in H_2O + part to Frank

PC-2F - Half to Frank + ½ fin

Composit of ooze put Through 63 μm screen - > 63 μm fraction saved - PC-2F1

PC 2 9A 15.8 ~~25.8~~ 0.25 0.53 0.20 0.104

18.0

PC 9A	15.8	18.0	0.25	0.53	0.20	0.104

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	PC 2F			5	Foram	mn grains	Hein

Sediment Name: Foraminiferal Sand

ABUNDANCE	TEXTURE	SPECIFIC DATA	
D	Sand		
C	Silt		
R	Clay		
	COMPOSITION		
	Quartz		
	Feldspar		
	Mica		
C	Heavy Mnls. — Manganese grains		
	Total Detrital		
	Clay Mnls.		
R	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
	Rock Frags.		
D	Foraminifera		
R	Calc. Nannos		
R	Diatoms		
R	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PER-CENT	DETAILED MINERALOGY

REMARKS:
mostly Foraminifera That were crusted during slide preparation

Age Late

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

Necker Ridge Piston Core - PC3

AND CORE

USGS DREDGE STATION LOG

L5-83-HW

SHIP / LEG S.P.Lee/Leg

DAY/MONTH/YEAR Time 2353

LATITUDE ~~22°15.428'~~ to 22°15.346'W

LONGITUDE ~~-166°51.472~~ to 166°51.234'W

or bottom

DATE 2 NOV. 83

TYPE OF STORAGE (check one)

DRY COLD FROZEN

STATION NO. 006-

Dredge/Core ~~LINE NO.~~ PC 3

DEPTH (m) 1970 m

SAMPLE NO. TYPE & ID.	UNCORRECTED DEPTH (M)	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM
6-PC-3A Mn crust 6x5x 2cm - botry. upper surface on clay and foram. sand - on hyaloclastic pebble				
6-PC-3B foram. sand with small frags. of Mn crust - To menlo				

REMARKS:

6-PC-3A - XRF
- In water
- Rest To Jim

NEBCO

PC 3A 17.5 ~~23.5~~ 18.5 0.23 0.6 0.070 0.115

PC 3A	17.5	18.5	0.23	0.6	0.070	0.115

Necker Ridge Dredge D4 -

USGS STATION LOG

SHIP / LEG SP Lee L5-83-HW

LATITUDE 22° 14.180N to 22° 14.261

LONGITUDE 166° 52.206 W to 166° 52.787 W

STATION NO. 007

LINE NO. D4

DAY/MONTH/YEAR

DATE 2 Nov 83 0256-0318

TYPE OF STORAGE (check one)

DRY COLD FROZEN

[illegible] - 1985 ; South Side Ridge depth 2100m to 2050m

SAMPLE NO. TYPE & ID.	UNCORRECTED DEPTH (M)	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM
Foramiferal Sand				

REMARKS: Large chain dredge was empty

small pipe dredge w/ canvas bag contained sand

NEBCO

Necker Ridge Dredge 5

AND CORE

USGS DREDGE STATION LOG 8-D5-

SHIP / LEG L5-83-HW

LATITUDE 22°18.976' to 22°18.296'N

LONGITUDE 166°53.928' to 166°54.124'W

STATION NO. 008

DREDGE/CORE NO D5

DEPTH (m) 2350m to 2100m

DAY/MONTH/YEAR

DATE NOV. 2. 83

TIME 0659-0807

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	UNCORRECTED	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	WT (lbs)
D5-A1 manheim	30x20x11cm boulder covered by Mn crust all around -				manheim
D5-A2 Hein	27x17x19cm " " " " "				~~has broken pillow breccia~~ ingrid
D5-A3	pieces covered by crust on both sides, pebble to small boulder size				
D5-B1 (XRF)	very massive (thick crust ~ 2.8 cm)				put in water
D5-B2	very porous				
D5-B3	flat pieces of crust, crust on one side substratum on other (pebbles to big cobbles)				crust max. 4.10M size
D5-C1	nodules - 2 for Hein; 1 for XRF;				
D5-D1 Alice	bag of pieces of rocks without crust ~90% breccia ~10% scoraceous ba				
D5-B4 Hein	30x18x10cm flat piece with ave. ~3 cm thick crust				
D5-B5 Hein	30x25x2½cm flat piece freshly broken off substratum 2½cm is all crust				

Maximum crust [illegible] 4.1 cm
Average fractures of crust is 2.5 to 3 cm

REMARKS: Large majority of haul is Fe-Mn Crusts and nodules, most other material is highly altered pillow breccia + glassy volcanic debris - ~70% Mn crust broken off substratum, ~30% boulders + cobbles covered on both sides with Mn.

total at - 300 lbs

minimum - Could be as high as 400 lbs

~30 lbs. of broken pieces of type A and B bagged for BM

8-D5-AX - XRF -

8-D5-BX → XRF → (Also labled D5-B1 above)

8-D-CX - XRF - Nodule w/ mud Center + 1-5mm Thick Crust

D	5	Bx	18.2	~~25.8~~	0.24	0.72	0.072
D	5	Cx	20.0	~~26.2~~ 20.0	0.21	0.68	0.052

0.120
0.120

D5 BX 18.2 14.7 (missing info)

8 - D5D : pyroclastic rock with rounded pebble and cobble sized pieces of basalt. Greenish-gray to brown depending on degree of alteration. Are highly vesicular (~30-45%), some show alignment of vesicles, diverse phenocrysts (v. small) completely altered to Fe ox / lig. ox. in aphanitic groundmass, trachytic texture observed in some,

Necker Ridge Dredge 9-DG

AND CORE

USGS DREDGE STATION LOG

SHIP / LEG L5-83-HW-SP Lee.

LATITUDE 21° 43.102 to 21° 43.324 N

LONGITUDE 167° 34.657 to 167 35.216

STATION NO. 009

[illegible]. DREDGE/CORE NO D6

DEPTH (m) 2400 to 2100

DAY/MONTH/YEAR

DATE 3 NOV 83

TIME 0428 0617

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	UNCORRECTED [illegible]	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM
9-D6 A1 - 36 cm	x 18 x 7 -	Crust = 3.5 cm -		Largest Rx
9-D6 A2 - 33	x 25 x 1-8 cm	= Crust	= 0.5 cm	Largest Rx
9-D6 A3 - 20	x 11 x 10 cm	Crust	= 4-5 cm =	Thickest Crust = 5.0 cm
9-D6 B1 - 30 x	19 x 15.5 cm -	Crust	- V. Thin	- Largest Rx
9-D6 B2 - 32 x	20 x 11 cm	- Crust	≈ 0.5 cm	Largest Rx
9-D6 D1 28 x	20 x 14 -	Largest Volc Rx. =		Volc. Breccia
9-D6 AX Thin	Crust for	XRF		
9-D6 AY Thick	4 cm Crust	for XRF		
9-D6 A4 - Crust immersed in H_2O.				
9-D6 E - Foraminiferal		Sand + other debris from pipe dredge		

wt(lbs)

REMARKS: Full Dredge

0.5-15 cm crusts
2 [illegible] crusts
2-4 cm

D6 A5 - At least one Rx surface - rest Mn-Crust = 50%.

D6 B3 - Rock Coated w/ Crust Completely - (mostly v Thin) 25%

D6 C - Nodules - Very Few - < 1%

D6 D - Volc. Rxs, Breccias, pyroclastics } - 25%

D6 E - Stiff to indurated Sedimentary Rxs } = < 1%

white claystone - maybe completely altered Volc. debris? - Ash?

3 small Fragments of chert (?)

total wt. About 1000-1200 lbs

9-D6D : volcaniclastic breccias –

2 types of basaltic clasts (1) rounded, highly vesicular (~30 to 45%), small olivine phenocrysts in aphanitic groundmass all altered to Fe ox./hydrox. and (2) angular to subrounded, massive basalt with olivine and small amount of plagioclase phenocrysts, trachytic texture.

	Mn%	Fe%	Ni%	Co%	Cu%	Zn%	Pb
9D6 AYx 2 BoH	20.0	~~20.5~~ 15.5 20.3	0.27	0.52	0.17	0.068	0.102
9D6 AYx 1 Top	19.5	~~26.0~~	0.18	0.55	0.07	0.050	0.102
9D6 AU Top	17.0	19.4 ~~25.3~~	0.15	0.65	0.04	0.044	0.120
9D6 A2 BoH	23.0	15.8 ~~21.2~~	0.26	1.24	0.05	0.044	0.115

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	D6	—	—	009			Hein

Sediment Name: Nannofossil Mudstone
Called white mudstone or Altered Ash in Log.

ABUNDANCE	TEXTURE	SPECIFIC DATA	
Tr	Sand		
C	Silt		
D	Clay		
	COMPOSITION		
	Quartz		
	Feldspar		
	Mica		
R	Heavy Mnls. –	mn	
	Total Detrital		
	Clay Mnls.		
	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
R	Auth. Carb.		
	Rock Frags.		
R	Foraminifera	Poor Pres	
D	Calc. Nannos	Mod. Pres	
	Diatoms		
	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PERCENT	DETAILED MINERALOGY

REMARKS:

Has undergone diagenesis

Age Data

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

Necker Ridge Dredge 10-D7

AND CORE

USGS DREDGE STATION LOG

SHIP / LEG L5-83-HW

LATITUDE 21°47.894 to 21°48.011

LONGITUDE 167°37.413 to 167°36.921

STATION NO. 010

~~[illegible]~~. DREDGE/CORE NO D 7

DEPTH (m) 2100 to - - - - - - -

DAY/MONTH/YEAR TIME

DATE 4 Nov 83 1043-1303

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	~~UNCORRECTED~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	wt(lbs)
150+ lbs — 10-D7A1	95 cm x 49	x 22 ; crust = 2 to		4.5 - smooth surface	
10-D7A2	62 cm x 30	x 14 ; crust = 4 cm		- smooth surface	
10-D7A3	36 cm x 36	x 8 ; "	" 4 cm	" "	
10-D7A4 ?	40 cm x 22	x 18 ; "	" 7 cm	" "	
10-D7A5	34 cm x 31	x 10 ; "	" 2 cm	- Botryoidal surface	
10-D7FX -	massive crust 4 cm thick				
10-D7AX -	V. Porous crust 2.5 cm thick - could be to 3 cm				
10-D7A6 -	Porous crust for water				
10-D7A7 -	Massive crust for water				

REMARKS: Bag contained 5 V. large samples of crust w/ altered Volc. on one side -

total wt - 280 lbs

Total =

10 - D7A - 70% - Rx on one side - Crust on rest

10 - D7F - 10% - Crust Fragments

10 - D7D - 20% - Altered Volc. Rx & Breccia -

crust thickness 1 to 4.5 cm average thickness about 2.7 to 3 cm.

KEBCO

10-D7 D: volcanic clasts are angular to subrounded, brownish-gray to brown in color due to abundant Fe ox. alteration, low in vesicularity, all have olivine phenocrysts (1 to 5mm) completely altered to Fe ox./hydrox., some have also plagioclase (~2%) to 0.8mm in size.

	Mn%	Fe%	Ni%	Co%	Cu%	Zn%	Pb%
		16.0			0.05	0.045	0.119
10D7 porous	23.5	~~22.5~~ 23.1	0.21	1.15			
					0.06	0.061	0.115
10 D7	16.5	~~27.5~~ 19.2	0.16	0.54			
					0.04	0.045	0.133
10 D7 5mm top	16.8	~~26.8~~	0.14	0.64		,048	

Necker Ridge Core11-PC 4

-CORE

USGS DREDGE STATION LOG

SHIP / LEG 15-83-HW

LATITUDE ~~S 21° 51.318 to~~ 21° 50'480 N

LONGITUDE ~~167° 40.189 to~~ 167° 39.986 W

STATION NO. 011

location may be off

~~LOCATION~~ DREDGE/CORE NO. PC4

DEPTH (m) 4123 to ——— (CTD CHART)

DAY/MONTH/YEAR TIME*

DATE 4 Nov 1983 2080 off bot

TYPE OF STORAGE (check one)

DRY COLD FROZEN

SAMPLE NO. TYPE & ID.	~~UNCORRECTED DEPTH (m)~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	weight lb
SUBSAMPLES A (DESCR.) TOP		28cm	brown clayey mud		
Hein	presumably representative of 5' penetrated				
(eg) → B (Descr) Hein	(~~Core~~ see below.				
	5 cm rubbly mud claystone, firm				
etc)	texture: mixture of volcanic				
	pebbles and finer material (consol.)				
	and semi-lithified sed. fragments + some w/ mn-coating				
C Davis 10 cm + core catcher & nose					
	~~Conglomerate~~ Gravel with mudstone				
	cobbles to 11 cm diameter				

REMARKS: and mixture of altered, volcanic rocks, very hard to soft; same substrates as represented in earlier samples & some small manganese encrusted pebbles

Total wt

Manheim took manganese crusts for analysis

Note: Corer 2 cm buried to weight stand (5 1/2')

* ~~XX~~ OFF BOTTOM unless otherwise noted

XX NOTE SPITS TAKEN AND BY WHOM; ARROW FOR ONBOARD ANALY.

missing info

1835 [illegible] 1725
on track 1812
on Sta 1544

Mn %	Fe %	Ni %	Co %	Cu %	Zn %	Pb %
10.3	24.0	0.34	0.47	0.34	0.087	—

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	PC4	—	—	11	Clayz	Carbonate	Hein

Sediment Name: Brown Silty mud

ABUNDANCE	TEXTURE	SPECIFIC DATA	
Tr	Sand		
C	Silt		
D	Clay		
	COMPOSITION		
R ?	Quartz		
C	Feldspar		
	Mica		
R	Heavy Mnls. —	Mn, hematite	
	Total Detrital		
D	Clay Mnls.		
R	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
C	Auth. Carb. —	Maybe Foram Fragments	
R	Rock Frags.		
	Foraminifera		
	Calc. Nannos		
	Diatoms		
	Radiolarians		
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PER-CENT	DETAILED MINERALOGY

REMARKS:

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

Necker Ridge Dredge 12-D8

AND CORE

USGS DREDGE STATION LOG

1700 o B

off Bot. T11

SHIP / LEG L5-83-HW

DAY/MONTH/YEAR

LATITUDE 20°12.567N TO 20°11.883' N

DATE 5 NOV 83 20

LONGITUDE 169°30.362 TO 169°31.148' W

TYPE OF STORAGE (check one)

STATION NO. 012

DRY COLD FROZEN

~~[illegible]~~. DREDGE/CORE NO D8

DEPTH (m) 4500 + 4800 → The Big Bite at 1809 hrs -

W-

SAMPLE NO. TYPE & ID.	~~UNCORRECTED [illegible]~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM
12-D8A1 - 27 cm x 16 x 7; Crust = 0.5 To 1 [cut into 5 pieces				1 Doris 1 Frank 1 Vesna 2 Hein
12-D8A2 - 28 cm x 8 x 9; Crust = 0.5 To 1 [Hein]				
12-D8A3 - 24 cm x 13 x 4.5; Crust = 0.5 cm - Knobby porous surface [Hein]				
12-D8B1 - Part of Crust all Mn - Knobby + Porous in H_2O -				
Doris: 12-D8A1 part; A w/ nobby surface, Large nodule, Pancake, Large Pancake				
Frank: 12-D8A1 part; small nodules ≈ 15; half of pancake				
Alice: tiny nodule + Large nodule				
Vesna: 12-D8A1 part; Large nodule -				
Larger pancake crusts are thicker on one side (eg.) 0.7 cm vs 1.1 cm - whereas Nodules are more even all around -				

3 largest samples

REMARKS: Thickest Crust = 4.5 cm; Mn in porous To massive - Porous Variety most common.

total at 20 lbs

40% 12-D8A = 5 pieces w/ Sed. on one side [3 listed above - rest To Hein] + One massive Coaly Frag. unlike rest in dredge - Hein + piece for XRF = 4 cm Thick

30% 12-D8B = Pancake form, porous w/ nobby surfaces - Mn all sides, have Nucl. of soft Sed. = Altered Volc. Debris? XRF Top + Bottom; 9 w/ thin form, Crust 1 mm To 3 cm Thick

30% 12-D8C = Nodules Type 1! ≈ 50 small ones from pipe dredge - < 1 To 4 cm in diameter. XRF on some. Large Nodules = 10 in number.

Nuclei of Soft Sediment (Altered Volc. debris) + Hard Volc. Rx.

NEED

	Mn %	Fe %	Ni %	Co %	Cu %	Zn %	Pb %
12 D 8 Rich crust	14.2	20.4 ~~24.8~~	0.10	0.38	0.10	0.055	0.09
12 D8 B top	11.0	18.6 ~~24.4~~	0.10	0.34	0.13	0.050	0.08
12 D8 B both	13.8	16.1 ~~22.2~~	0.16	0.42	0.16	0.055	0.01 0.08
12 D8 C Nodules	12.3	19.2 ~~26.0~~	0.12	0.36	0.16	0.065	0.09

D8E: one Mn nodule (~ 5cm DIA) had volcanic clast inside. clast is brown, non-vesicular with olivine (pseudomorphs) and plagioclase phenocrysts in aphanitic groundmass.

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L5-83-HW	D8B			12	mudstone	—	Hein

Sediment Name: Silty mudstone - Volcaniclastic

ABUNDANCE	TEXTURE	SPECIFIC DATA	
Tr	Sand		
C	Silt		
A	Clay		
	COMPOSITION		
C ?	Quartz		
A	Feldspar		
	Mica		
Tr	Heavy Mnls.	Hematite - Magnetite	
	Total Detrital		
A	Clay Mnls.		
	Volc. Glass		
	Palagonite		
	Chlorite		
	Glauconite		
	Pyrite		
	Micro Nodules		
	Dolo. Rhombs		
	Zeolite		
	Auth. Carb.		
Tr	Rock Frags.		
Tr	Pyroxene		
Tr ?	Foraminifera	replaced by Silica ? P	
R	Calc. Nannos	replaced by Silica ? P - fragments	
Tr	Diatoms	P	filled w/
Tr	Radiolarians	P	Silica
	Sponge Spic.		
	Silicoflag.		
	Fish Remains		
	Plant Debris		

PERCENT	DETAILED MINERALOGY

REMARKS:

Sediment from Center of Large pancake Nodule

Age Date?

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO

Necker Ridge Dredge 13-D9

-CORE

No Recovery

USGS DREDGE STATION LOG

WRONG LOCATION OFFSET 7.6 MILES

SHIP / LEG 15-83-HW

LATITUDE 20° 20.894 N to 20° 21.467 '

LONGITUDE 169° 33.198 to 169° 34.194 '

STATION NO. 13

LOC NO. DREDGE/CORE NO D9

DAY/MONTH/YEAR TIME*

DATE 5 NOV 83 2347

0045

TYPE OF STORAGE (check one)

DRY ☐ COLD ☐ FROZEN ☐

DEPTH (M) 2500 to 2600 (CTD CHART)

SAMPLE NO. TYPE & ID.	~~UNDESCRIBED DESCRIBED~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM	weight lb
SUBSAMPLES A (DESCR.)					
(eg) → B (DESCR)					
(etc)					

REMARKS: Bag Tangled

Total wt ___

* OFF BOTTOM unless otherwise noted

XX NOTE SPITS TAKEN AND BY WHOM; ARROW FOR ONBOARD ANALY,

Necker Ridge Dredge 14-D10

USGS DREDGE AND CORE STATION LOG

SHIP / LEG L5-83-HW

LATITUDE 20°20.117' TO 20°19.980' N

LONGITUDE 169°34.524 TO 169°34.304 W

STATION NO. 014

~~HOLE NO.~~ DREDGE/CORE NO D10

DEPTH (m) 2400 to 2400

DAY/MONTH/YEAR TIME

DATE 5 Nov 83 0606

TYPE OF STORAGE (check one) 0637

DRY COLD FROZEN

W+(

SAMPLE NO. TYPE & ID.	~~UNCORRECTED~~	CORE LENGTH	BASIC LITHOLOGY	AGE OF BOTTOM
14-D10A1 -	23 X 18 X 17	crust 3 To 4 cm -		Jim
14-D10A2 -	24 X 15 X 12 cm;	Crust 3 To 4 cm		Part To Frank Jim Part To Vesna
14-D10A3	crust 3.5 cm - Little Volc Rx			Doug has 3/3 Jim
14-D10B1 -	12 x 8 x (4 Thick)	crust only,		half To Frank XRF Jim
14-D10B2	9 x 9 x (4 Thick)	crust only		Jim
14-D10B3	- Small crust Frag in water			- Frank
14-D10D -	2 Volcanic Breccia	Rxs -		Both To Alice

REMARKS: 8 Samples Freshly broken from outcrop, (3) with Altered Volcanic Rx 38% + Crust; (3) just Crust; (2) just Volcanic Rx. 38% 25%

total at 15 lbs

NEBCO

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
LS-83-HW	D10	-	-	14			Hein

Sediment Name: Zeolite

ABUNDANCE	TEXTURE	SPECIFIC DATA
	Sand	
R	Silt	
D	Clay	
	COMPOSITION	
	Quartz	
	Feldspar	
	Mica	
	Heavy Mnls.	
	Total Detrital	
C	Clay Mnls.	
	Volc. Glass	
	Palagonite	
	Chlorite	
	Glauconite	
	Pyrite	
	Micro Nodules	
	Dolo. Rhombs	
D	Zeolite	minute euhedral grains
	Auth. Carb.	low Birefringence
	Rock Frags.	
	Foraminifera	
	Calc. Nannos	
	Diatoms	
	Radiolarians	
	Sponge Spic.	
	Silicoflag.	
	Fish Remains	
	Plant Debris	

PER-CENT	DETAILED MINERALOGY

REMARKS: white veins in Altered Volcanic Rock — Uniform, fine-grained Zeolite w/ rare larger Fragments of Feldspar & other volcanic debris —

DATA CODE LEGEND

Fossil preservation
G = good
M = moderate
P = poor

Abundance code
1% = TR (trace)
1-5% = R (rare)
5-25% = C (common)
25-75% = A (abundant)
75% = D (dominant)

NEBCO