USGS DREDGE STATION LOG

Seamount 720

SHIP / LEG L9-84-CP

	on bottom	off bottom
LATITUDE	13°53.975	13°53.971
LONGITUDE	167°39.223	167°38.507

STATION NO. 14

LINE NO. Dredge 18

Depth ≈ 1600 m

DAY/MONTH/YEAR

DATE 5/8/84

TYPE OF STORAGE (check one)

☐ DRY ☐ COLD ☐ FROZEN

SAMPLE NO. TYPE & ID.	AGE OF BOTTOM

REMARKS: Total Recovery: 50 kg:

Volcanic breccia with highly altered volcanic clasts in phosphatized limestone matrix with thick Mn oxide crust (ranging from <1cm to 6 cm in size, ave. ≈4cm). Also well-rounded, heavily bioturbated chalk pieces with thin Mn coating. Surface texture knobby and mostly rough and porous. Those with smooth surfaces look abraded

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L9-84-CP

Sample Description

Cruise I.D: ~~L5-83-MW~~ Sample I.D: Sta: 14 D 18-1 Location: Seamount 720

Size: 20x15x15 cm Weight: 5 kg Depth = 1600 m

Mn crust thickness:

Total: min: 1½ cm max: 10 cm ave: ~5 cm

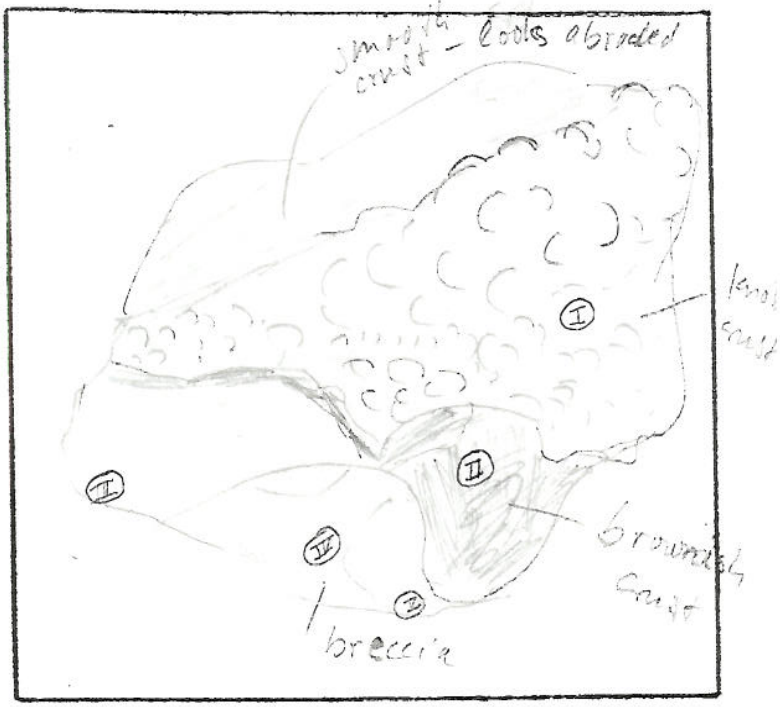
Inner crust: min: 1½ max: 3 ave: < 2 cm

Outer crust: min: 1 cm max: 3 cm ave: 2 cm

Surface texture: knobby, porous

Internal structure:

layered: ✓ 2 layers
laminated:
massive: ✓ inner layer - black + shiny
porous: ✓ outer layer - brown
dendritic:
other:



Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:
yellow-brown Fe oxide stains
phosphatized chalk matrix

Substratum:

Rock type: Volcanic breccia

Description: big angular basalt clasts in small amount of phosphatized limestone matrix
[illegible]
sparse [illegible] - no olivine (?)
or at least very rare
pretty radial [illegible] in vugs (zeolites ?)

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Samples to basalt for chem. + K/Ar	Janet Haggerty
piece for T.S.	A. Davis
	" "
Sampled for chem	C. Daniel
D18-1-a - Knobby sfc. (0-.7cm)	
-1-b - .7-2cm porous 1st layer	
-1-c - 2-5cm massive 2nd layer	
Sampled for XRD:	C. Daniel
D18-1-I - knobby sfc. 0-.7cm	
-II - outer, porous layer: 0-2.5cm	
-III - inner, massive layer 4-6 cm	
-IV - bulk substrate	
-V - radial xtls in vugs	
4-16-86 Resampled for chem for KFE	
D18-1-I: 0-10mm surface	
D18-1-II: 10-30mm outer Fe oxidized	
D18-1-III: 30-60mm inner massive	

do XRD on radial crystals in vugs

D18-1
L9-84-CP

L9-84-CP

Sample Description

Cruise I.D: ~~L5-83-HW~~ Sample I.D: Sta: 14 D 18 - 2 Location: Seamount 72

Size: 18x14x12 Weight: ~ 2.0 kg Depth = 1600 m

Mn crust thickness:

Total: min: ~1 cm max: 7 m ave: 4 cm

Inner crust: min: <1 cm max: 3 cm ave: 2 cm

Outer crust: min: 1 cm max: 4 cm ave: 2 cm

Surface texture: knobby smooth, rough + porous

Internal structure:

layered: ✓ 3 middle layer less dense
laminated:
massive: ✓ inner and outer layer
porous: ✓ mid-layer
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:
dendt. yellow Fe ox. stain

Substratum:

Rock type: volcanic breccia in phosphatized limestone matrix

Description:
volcanic and phosphorite(?) clasts in "chalky" matrix

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sampled for XRD	C. Daniel
D18-2-I knobby, ofc. 0-10 mm	
II - outer, porous layer 1-2 cm	
III - inner, porous 5-7 cm	
IV porous-underside	
V - bulk substrate	

L9-84-CP

Sample Description

Cruise I.D: ~~[illegible]~~ Sample I.D: Sta: 14 D 18-3 Location: Seamount 720

Size: 22x17x11cm Weight: ~2.5 kg

Depth = 1600 m

Mn crust thickness:

Total: min: ~1mm max: 4cm ave: 2cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: knobby, porous

Internal structure:

layered:
laminated:
massive: ✓ one side
porous: ✓ other side
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Fe ox. Stains

Substratum:

Rock type: breccia in phosphatized chalk matrix

Description:

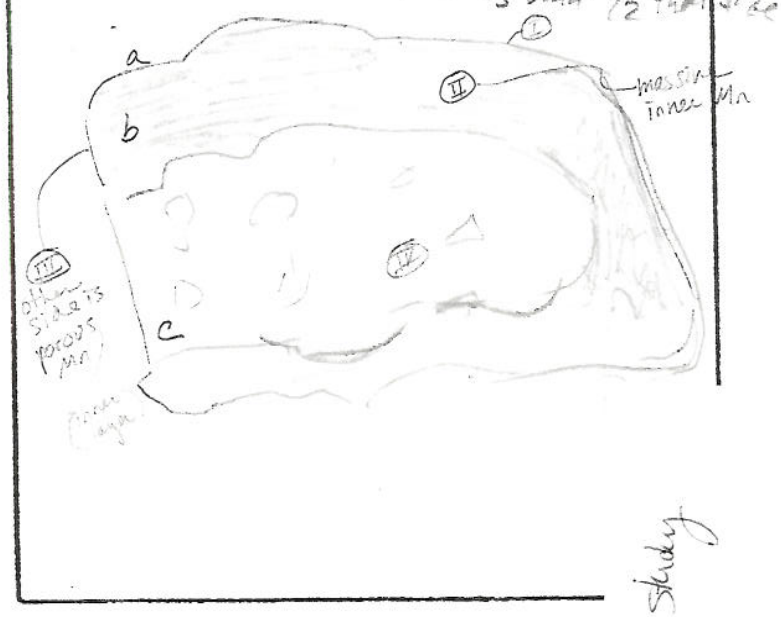
pinkish-brown phosphorite clasts and breccia clasts with their own Mn crust + altered volcanic clasts in chalky matrix.

Mineralogy (XRD):

Packed w/ 9 [illegible] CH
[illegible]-3

3 pieces similar to D18-2

biggest piece ~22x12x10cm
the other two about 1/3 and 1/2 that size



Phos study

Analyses and subsamples:

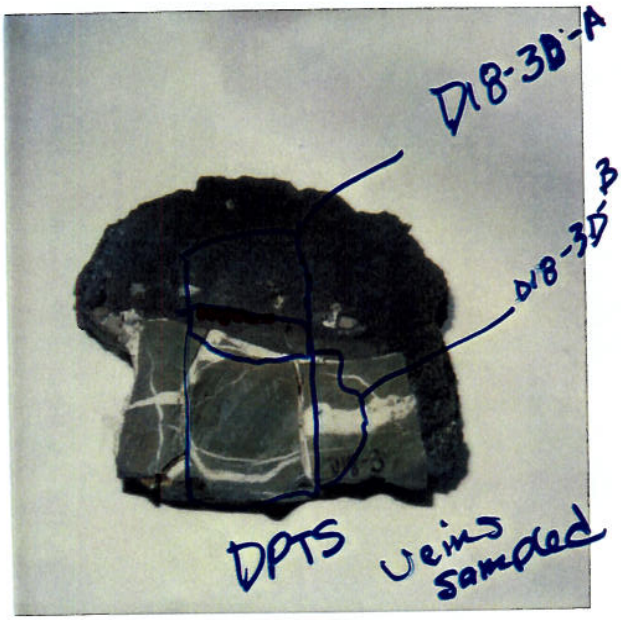
analysis:	analyst:
sample to	Janet Haggerty
Sampled for chem	C. Daniel
D18-3-a SFC (0-5mm)	
-b 0.5-3cm	
-c substrate	
Sampled for XRD:	C. Daniel
D18-3-I - knobby surface 0-3cm	
-II - massive inner Mn 3-1cm	
-III - porous inner Mn 1-2.5cm	
-IV bulk substrate	
D18-3-D-A + B	DPTS 2 crust, subst phos
D18-3 E	XRD [illegible] Sr
D18-3 F	" " "
D18-3 E	

redid sample 2.1g Sr Isotopes with the other half of rock see Photo J.W.

D18-3F
L9-84-CP

D18-3
L9-84-CP

D18-3
29-84-CP



29-84-CP
D18-3

Pourous to massive [illegible]

Pourous + w. cream (forams)

Dark brown / solid

Pourous L to D. cream - tests of forams present

Solid to pourous

will sample pink E

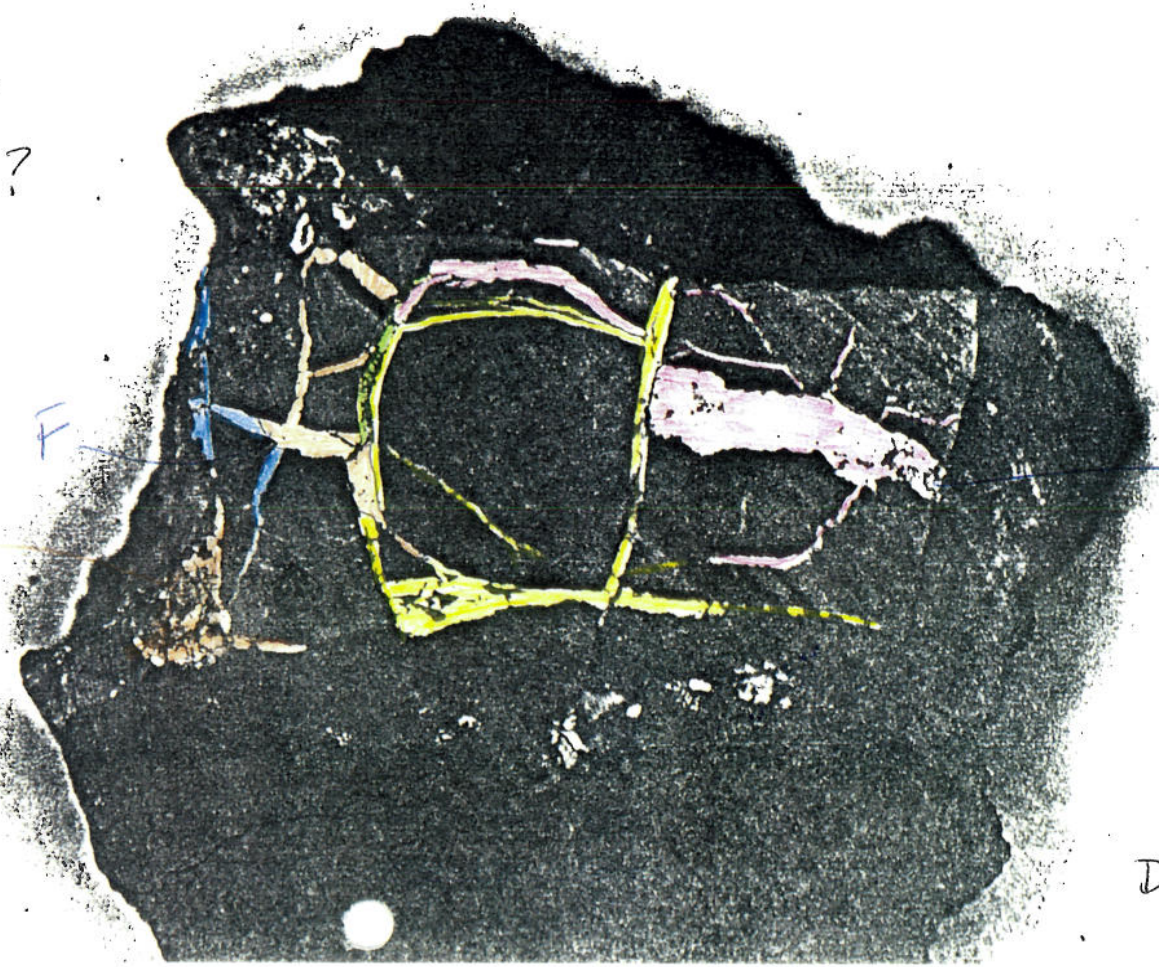
orange because of the quantity on other pieces

yellow younger then pink

blue is younger then orange

orange is " " green ?

not sure of relationship to pink + yellow



L9.84.CP
D18-3

L9-84-CP

Sample Description

Cruise I.D: ~~L5-83-MW~~

Sample I.D: Sta: 14 D 18 - 4

Location: Seamount 72

Size: 18x10x8cm Weight: < 1.5kg

Depth = 1600 m

Mn crust thickness:

Total: min: 3cm max: 4.5cm ave: 3cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Knobby

Internal structure:

layered: ✓ porous area

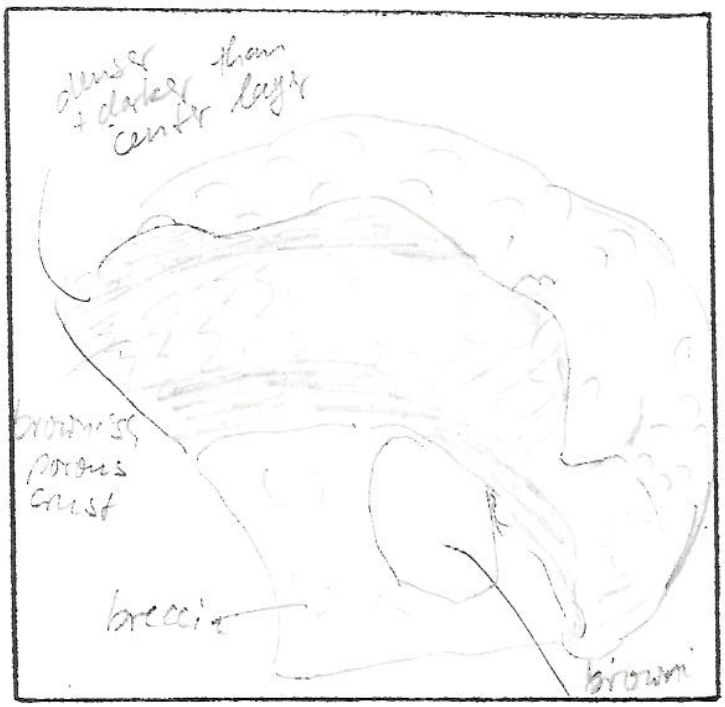
laminated:

massive: ✓

porous: ✓ middle

dendritic:

other:



Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: breccia in phosph. chalk matrix

Description:

same as D18-3

→ not much substrate on piece that's left. SLD

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sample to	J. H.
Sampled for XRD:	C. Daniel
D18-4-I - Knobby surface 0-3cm	
D18-4-II - porous inner 2-3.5cm	

D18-4
L9-84-CP

L9-84-CP

Sample Description

Cruise I.D: ~~[illegible]~~

Sample I.D: Sta: 14 D 18-5

Location: Seamount 720

Size: 15x8x5 cm Weight: 0.5 kg

Depth = 1600 m

Mn crust thickness: no Mn crust

Total: min: max: ave:

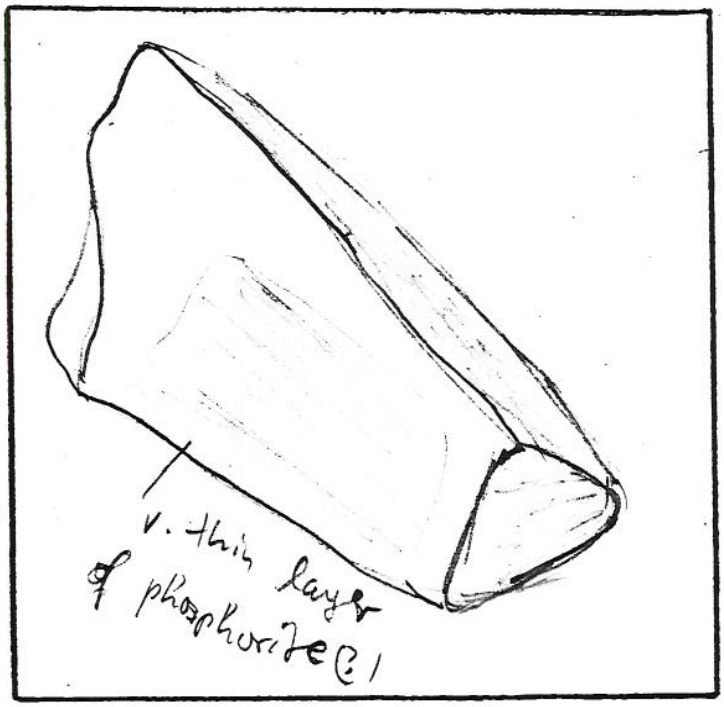
Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture:

Internal structure:

layered:
laminated:
massive:
porous:
dendritic:
other:



Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits: phosphatized chalk layer

Substratum:

Rock type: basalt (hawaiite ?)

Description: aphyric basalt dark-gray, aphyric fresh unaltered

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
piece for T.S.	A. Davis

L9-84-CP

Sample Description

Cruise I.D: ~~L5-80-MW~~

Sample I.D: Sta: 14 D 18-6

Location: Seamount 720

Size: _____ Weight: 0.3 kg

Depth = 1600 m

Mn crust thickness: ~~NONE~~ → 2 cobbles with Mn (CD)

Total: min: 0 max: 1.5cm ave: 1cm

Inner crust: min: _____ max: _____ ave: _____

Outer crust: min: _____ max: _____ ave: _____

bag of basalt pebbles ranging in size from 1 cm to 6 cm in diameter.

Surface texture: _____

Internal structure: _____

layered: _____
laminated: _____
massive: _____
porous: _____
dendritic: _____
other: _____

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: basalt pebbles

Description: dark-grey to brown basalt pebbles — some seem to be aphyric others have plag. phenos. (?) one looks vesicular

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sampled for XRD: D18-6-I-bulk Mn 0-1.5cm	C. Daniel

[need to cut sections]

L9-84-CP

Sample Description

Cruise I.D: ~~[illegible]~~

Sample I.D: Sta: 14 D 18-7

Location: Seamount 72C

Size: _____ Weight: 2.5 kg

Depth = 1600 m

Mn crust thickness:

Total: min: <1cm max: 5cm ave: 3.0 cm

Inner crust: min: _____ max: _____ ave: _____

Outer crust: min: _____ max: _____ ave: _____

Surface texture: Knobby

Internal structure:

layered: ✓ ~2

laminated:

massive: ✓ 1st layer

porous: ✓ 2nd layer - extremely altered Fe-oxides

dendritic:

other:

bag of broken pieces of Mn crust without substratum. Surface typically knobby, relatively smooth to porous. Usually at least 3 layers, sometimes more. Similar to D18-2 and D18-3.

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: NONE

Description:

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
~~piece to~~	Laurea M. (Scripps
" for XRF	Tim Ling
~~piece to~~	~~Henry Meyer~~
Sampled for chem.	C. Daniel
D18-7-a - Knobby sfc 0-.5cm	
-b - .5-1.5cm 1st layer	
-c - 2.5-4cm 2nd layer	
-d - bottom 40-45cm	
Sampled for XRD	C. Daniel
D18-7-I surface Mn 0-.5cm	
II outer layer .5-1.5cm	
III inner layer 2.5-4cm	
IV bottom 4-5cm	

L9-84-CP

Sample Description

Cruise I.D: ~~[illegible]~~ Sample I.D: Sta: 14 D 18-8 Location: Seamount 72

Size: 15x11x9 cm Weight: ~1.5 kg

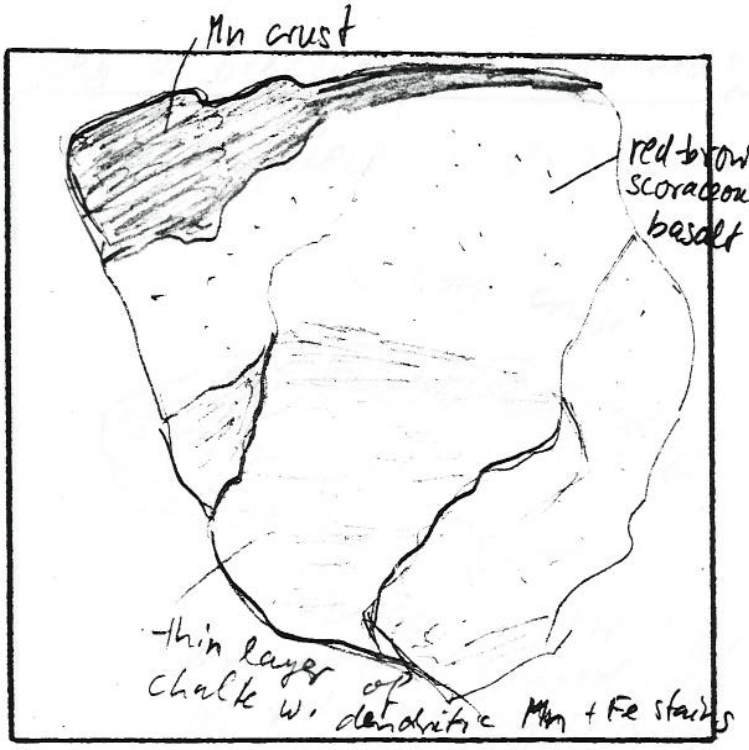
Depth = 1600 m

Mn crust thickness:

Total: min: <1cm max: 4cm ave: 1 cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:



Surface texture: smooth – looks spalled off

Internal structure:

layered:
laminated:
massive: ✓
porous:
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: "basalt" with thin layer of chalk + Mn crust

Description:

sparsely-phyr. + pyroxene (?) phyric basalt – similar to D18-1

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
slab to piece for T.S.	J. H. A. Davis

L9-84-CP

Sample Description

Cruise I.D: ~~L5-82-MW~~

Sample I.D: Sta: 14 D 18-10

Location: Seamount 72

1cm to 10cm DIA

Size: _____ Weight: ~3 kg

Depth = 1600 m

Mn crust thickness: thin Mn coating

Total: min: _____ max: _____ ave: _____

Inner crust: min: _____ max: _____ ave: _____

Outer crust: min: _____ max: _____ ave: _____

Surface texture: rough, ~~shiny~~ like underlying surface

Internal structure: _____

layered: _____

laminated: _____

massive: _____

porous: _____

dendritic: _____

other: _____

bag of rounded, heavily bioturbated chalk clasts with thin Mn coating on most.

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits:

Fe ox. stains

Substratum:

Rock type: chalk

Phosphatized limestone

Description: _____

Mineralogy (XRD): _____

Analyses and subsamples:

analysis:	analyst:
~~samples to~~	Janet Haggerty
Sampled for chem	C. Daniel
D18-10b-a-bulk Mn crust (0-2mm)	
10b-b - substate	
Sampled for XRD:	C. Daniel
D18-10b-I-bulk Mn 0-1mm	
10b-II- bulk Substrate	

Sample Description

Cruise I.D: L9-84-CP

Sample I.D: Sta: 14 D 18-11

Location: Seamount 72

Size: 15x8x1cm Weight: 0.2 kg

Depth = 1600 m

Mn crust thickness:

Total: min: 2mm max: 6mm ave: 4mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: knobby, porous

Internal structure:

layered:
laminated:
massive:
porous:
dendritic:
other:

Mineralogy (XRD):

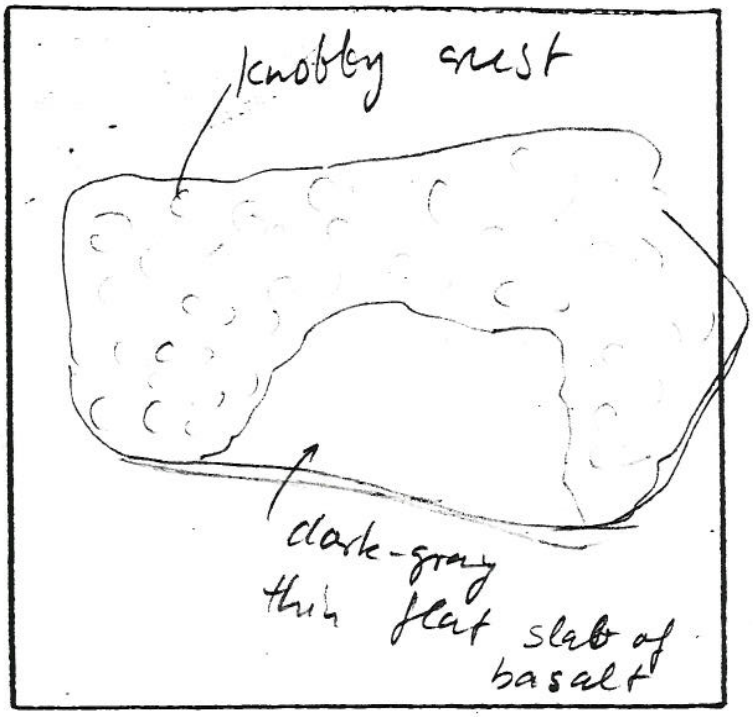
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: thin flat slab of "basalt"

Description: Altered gray-green basalt w/ yellow-orange very altered basalt on outside edge

Mineralogy (XRD):



Analyses and subsamples:

analysis:	analyst:
Sampled for bulk Chem Mn crust (0-6mm)	C. Daniel
Sampled for XRD:-- D18-11-I - bulk Mn 0-6mm	C. Daniel
-II- bulk substrate	
D18-11 Resubmitted For Hg Chem	

L9-84-CP

Sample Description

Cruise I.D: [redacted]

Sample I.D: Sta: 14 D 18-12

Location: Seamount 72

Size: 2cm DIA Weight: < 0.05 kg

Depth = 1600 m

Mn crust thickness:

Total: min: max: ave:

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture:

Internal structure:

layered:
laminated:
massive:
porous:
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type:

Description:

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sampled for XRD: D18-12-I-bulk Mn 0-2cm	C. Daniel

need to cut

SMEAR SLIDE DESCRIPTION

LOCATOR	SAMPLE NO.	SEC.	INTERVAL	STATION NO.	Dom. LITH.	Minor LITH.	OBSERVER
L9-84-CP	Box Core 2						A.D.

Sediment Name: Nannofossil-rich - foraminiferous ooze (foram. sand)

ABUNDANCE	TEXTURE	SPECIFIC DATA
90%	Sand	
8%	Silt	
2%	Clay	
	COMPOSITION	
	Quartz	
Tr ✓	Feldspar	
	Mica	
	Heavy Mnls.	
	Total Detrital	
R ✓	Clay Mnls.	
	Volc. Glass	
	Palagonite	
	Chlorite	
	Glauconite	
	Pyrite	
	Micro Nodules	
	Dolo. Rhombs	
	Zeolite	
	Auth. Carb. ?	
	Rock Frags.	
D ✓	Foraminifera	
C ✓	Calc. Nannos	coccolith coccolith
	Diatoms	
	Radiolarians	
R ✓	Sponge Spic.	
	Silicoflag.	
	Fish Remains	
	Plant Debris	

PERCENT	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)

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