Dredge 14

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D14-A-1

Location: Horizon

Size: 8 X 12 X 11 cm Weight: 3,952 kg

*cut for Alex

Mn crust thickness:

Total: min: 0 max: 1.0cm ave: 6mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth, flakey (ie bioturbated)

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

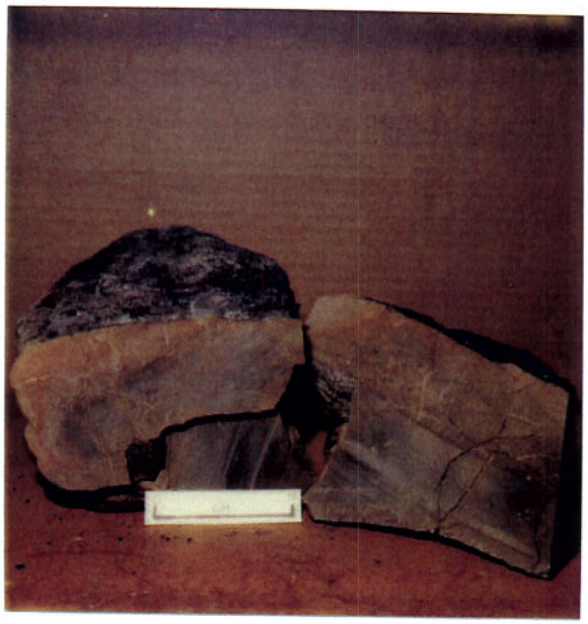
Fe oxide staining altered basalt

Substratum:

Rock type: altered fractured, basalt

Description: thin Mn crust covers 3/4 of one side. Basalt is gray to orange-brown aphanitic w/phenocrysts of plagioclase, & olivine?

Mineralogy (XRD):



L5-83-HW
D14-A1

Analyses and subsamples:

analysis:

analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D14-A2 Location: Horizon

Size: 22x17x8cm Weight: 3.36 kg *cut for Alice

Mn crust thickness:

Total: min: 3mm max: 15mm ave: 8mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Fe oxide staining in Mn crust

Substratum:

Rock type: Basalt

Description: Gray to orange-brown aphanitic basalt w/phenocrysts of plagioclase & olivine?. Has phosphorite veins running through middle

Mineralogy (XRD):

L5-83-HW
D14-A2

Analyses and subsamples:

analysis:	analyst:
XRD.	C. Daniel
I: bulk Mn crust (0-1.5cm)	
II: Substrate	
Doubly Polished Thin Section - petrographic petro.	
Chemistry: of bulk crust	
- Pt group (12/86)	Floyd Brown - Boston
- Au analysis (12/86)	Dave McKown - Denver

*A piece which was labelled D14-A2 hard also labelled ___-A1) was removed & added to D14-A1, which it more closely resembles to.

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-A3 Location: Horizon

Size: 23x12x6cm Weight: 2.18Kg * Cut for Alice

Mn crust thickness:

Total: min: 0 max: 1mm ave: 1mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-brown aphanitic basalt w/ phenocrysts of olivine? Tan silty sediment coating one side of rock. Three fractures through rock which are filled w/ phosphorite?

Mineralogy (XRD):

L5-83-HW
D14-A3

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D14-A4 Location: Horizon

Size: 11x10x7cm Weight: 855g

Mn crust thickness:

Total: min: ____ max: ____ ave: 1cm

Inner crust: min: ____ max: ____ ave: ____

Outer crust: min: ____ max: ____ ave: ____

Surface texture: Smooth

Internal structure: ____

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

Mineralogy (XRD): ____

Associated alteration, phosphorite, or hydrothermal deposits:

Fe oxide coated basalt

Substratum:

Rock type: Basalt

Description: Gray-brown very fine grained sparsely basalt w/ a few phenocrysts of altered olivine? Large fracture down middle of rock filled w/ phosphorite

Mineralogy (XRD): ____

- cut -

L5-83-HW
D14-A4

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D14-A5 Location: Horizon

Size: 12x5x5cm Weight: 250gr

Mn crust thickness:

Total: min: 0 max: 6mm ave: 3mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Abraded - smooth

Internal structure:

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

Mineralogy (XRD):

L5-83-HW
D14-A5

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Brown very fine grained w/ many plagioclase phenocrysts + altered yellow-green phenocrysts of olivine?

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I composite Mn crust (0-6mm)	
I substrat	

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-A6 Location: Horizon Guyot

Size: 8x8x5cm Weight: ~780g

Mn crust thickness:

Total: min: 4mm max: 14mm ave: 8mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Abraded Smooth

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray to altered orange-brown, aphanitic basalt w/ plagioclase & altered orange, olivine? phenocrysts. Fractured w/ 2 thin phosphorite veins.

Mineralogy (XRD):

L5-83-HW
D14-A6

Analyses and subsamples:

analysis:	analyst:
Doubly Polished Thin Section by Plano Petro.	

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-A7 Location: Horizon

Size: 11x11x10cm Weight: 1.81 Kg * Cut for Alice

Mn crust thickness:

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

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Abraded Smooth

Internal structure:

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

Mineralogy (XRD):

L5-83-HW
D14-A7

Associated alteration, phosphorite, or hydrothermal deposits:

Fe-oxide staining in crust
Small amount of calcareous, white & tan sediment coating crust

Substratum:

Rock type: Basalt

Description: Gray-brown aphanitic basalt w/altered orange, olivine? phenocrysts

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sampled for XRD	C Daniel
I. Composite Mn crust (0-1cm)	

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-A8 Location: Horizon Guyot

Size: 16x9x6cm Weight: ≈ 1.16 kg

Mn crust thickness:

Total: min: 3mm max: [illegible] ave: 5mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous

Internal structure:

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

Mineralogy (XRD):

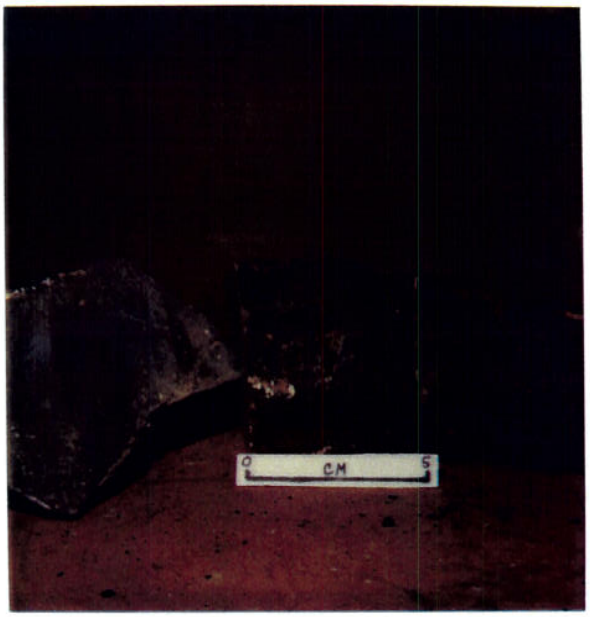
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-brown aphanitic basalt w/ [illegible]

Mineralogy (XRD):



L5-83-HW
D14-A8

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D14-A9

Location: Horizon

Size: 13x8x6cm Weight: 1.17 Kg

*cut for Alice

Mn crust thickness:

Total: min: 0 max: 1cm ave: 8mm

Inner crust: min: 0 max: 5mm ave: 5mm

Outer crust: min: 0 max: 4mm ave: 3mm

Surface texture: Smooth

Internal structure:

layered: ✓ not real obvious - part of outer layer has broken off

laminated:

massive:

porous:

dendritic:

other:

L5-83-HW
D14-A9

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-brown aphanitic basalt w/ plag & olivine (altered) phenocrysts. One fracture filled w/ phosphorite? Some white calcareous sediment coating outside

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-A10 Location: Horizon

Size: 20x17x11 cm Weight: 4.13 Kg *cut for Alice

Mn crust thickness:

Total: min: 0 max: 1cm ave: 6mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth

Internal structure:

layered:
laminated:
massive:
porous: ✓ filled w/ Fe oxides
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-brown, fractured aphanitic basalt w/ plag & olivine phenocrysts. Fractures are filled w/ phosphorite

Mineralogy (XRD):

L5-83-HW
D14-A10

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D14-B2

Location:

Size: 12/10/9cm Weight: 1.150 kg *cut for Alice

Mn crust thickness:

Total: min: 2mm max: 3 cm ave: 1 cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: botryoidal, porous with [illegible]

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

a [illegible] basalt with [illegible]

Substratum:

Rock type: Mn encrusted basalt

Description: Gray-brown aphanitic basalt w/ plag. & altered olivine phenocrysts. Basalt is brecciated in Mn crust w/ phosphorite matrix which is white & Fe-oxidized orange.

Mineralogy (XRD):

L5-83-HW

D14-B2

Analyses and subsamples:

analysis:	analyst:
XRD - composite	Rosemary ?

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 14-B3-1 Location: Horizon Guyot

Size: 14x9x6cm Weight: 755g

Mn crust thickness:

Total: min: 8mm max: 18mm ave: 12mm

Inner crust: min: max: ave:

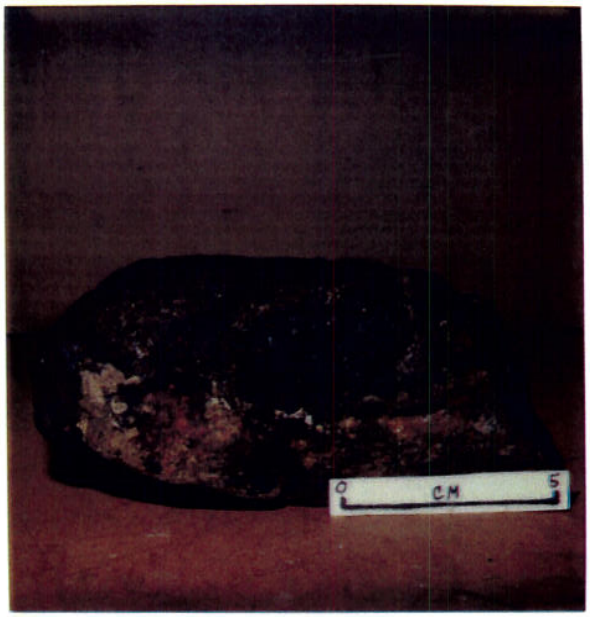
Outer crust: min: max: ave:

Surface texture: Smooth to porous (almost burrowed looking)

Internal structure:

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

Mineralogy (XRD):



L5-83-HW
D14-B3-1

Associated alteration, phosphorite, or hydrothermal deposits:

Forams on crust
Fe oxide staining in crust

Substratum:

Rock type: Basalt

Description: Large fracture down middle - seems like 2 rocks held together by the Mn crust. Gray brown altered granitic basalt w/ altered plag & olivine phenocrysts

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
XRD I: bulk Mn crust	C. Daniel

Sample Description

Cruise I.D: L5-83-HW **Sample I.D: Sta:** D14-B3-2 **Location:** Horizon Guyot

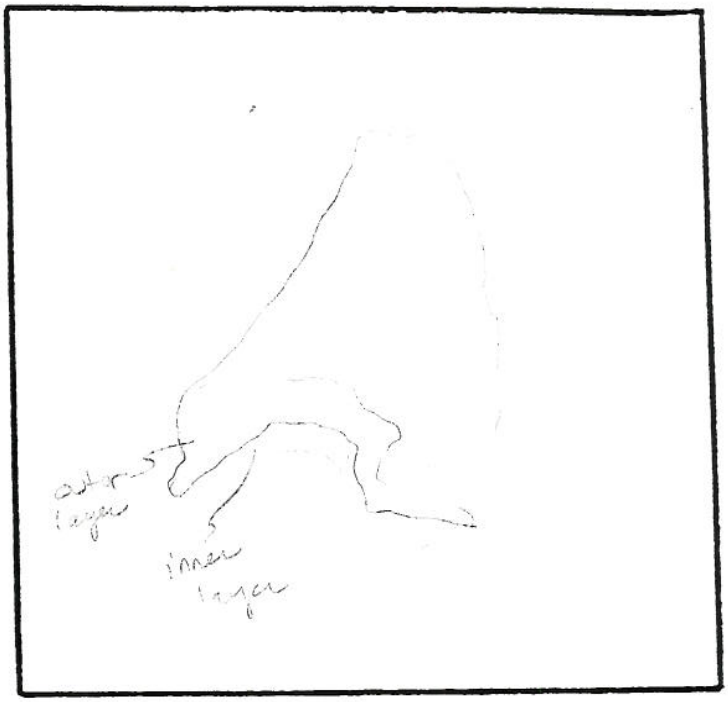
Size: 8.5x6.5x3cm **Weight:** 90 g

Mn crust thickness: Piece of crust broken off substrate

Total: min: 1cm max: 3cm ave: 2cm

Inner crust: min: 0 max: 2 ave: 1
(worn or broken off)

Outer crust: min: max: ave: 1cm



Surface texture: Smooth

Internal structure:

layered: ✓ ?
laminated:
massive: ✓ inner
porous: ✓ outer
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum: Almost none ≈ 2x1 cm patch

Rock type: Sandstone or whatsleft of matrix of breccia

Description: Yellow-orange, zeolitized? silty sandstone

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D14-83-3 Location: Hawaiian Swell

Size: 7x6x4cm Weight: 95g

Mn crust thickness:

Total: min: 2.5cm max: 4cm ave: 3cm

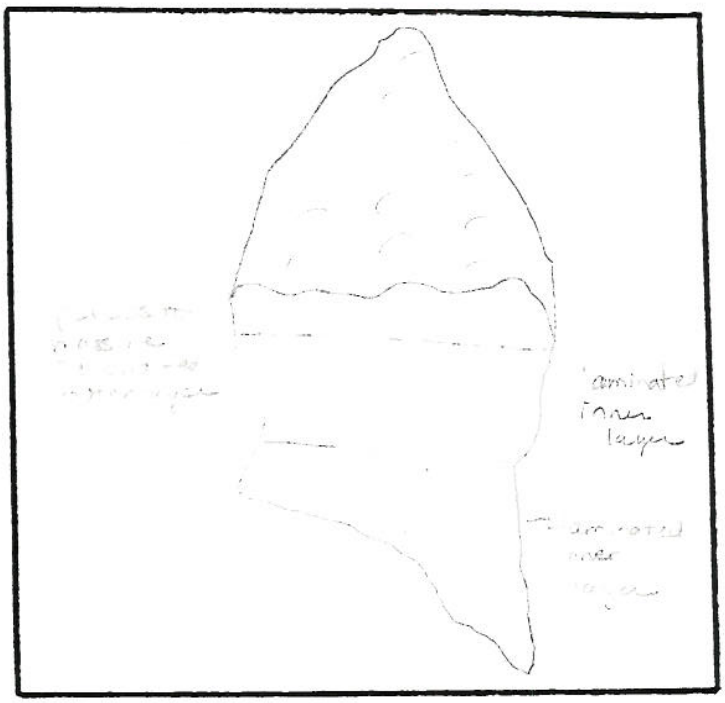
Inner crust: min: ___ max: ___ ave: 2cm

Outer crust: min: ___ max: ___ ave: 7mm

Surface texture: Botryoidal

Internal structure:

layered: ✓ ~3
laminated: ✓ inner
massive: ✓
porous:
dendritic:
other:



Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

1st layer is Fe-oxide

Substratum: None

Rock type:

Description:

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I sfc: Mn crust (0-8mm)	
II 2nd layer 8-18mm	
III 3rd layer (18-40mm)	
Polished Thin Section by Mann Petro.	

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D14-B3-4

Location: Horizon Guyot

Size: 12x7x5cm Weight: 300g

Mn crust thickness: * actually a cap on crab on one end

Total: min: max: 1.5 ave: 1cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-brown aphanitic basalt w/ plag & olivine phenocrysts

Mineralogy (XRD):

L5-83-HW
D14-B3-4

Analyses and subsamples:

analysis:	analyst: