Dredge 12

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: 19 D 12 A-1 Location: Horizon

Size: _____ Weight: ~0.8kg.

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): _____

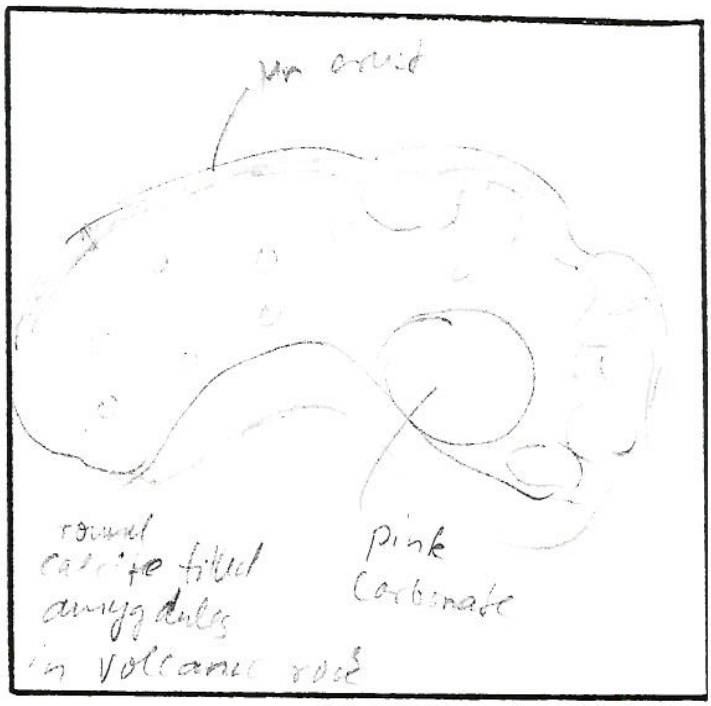
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: _____

Description: _____

Mineralogy (XRD):



fine has phdo

Analyses and subsamples:

analysis:	analyst:
Whole rock	Jane Taggart

Sample Description

Cruise I.D: L5-83-HW **Sample I.D: Sta:** D12-A2 **Location:** Horizon Guyot

Size: 6X4X6cm **Weight:** 110g

Mn crust thickness:

Total: min: ____ max: ____ ave: ≈ 1mm

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:

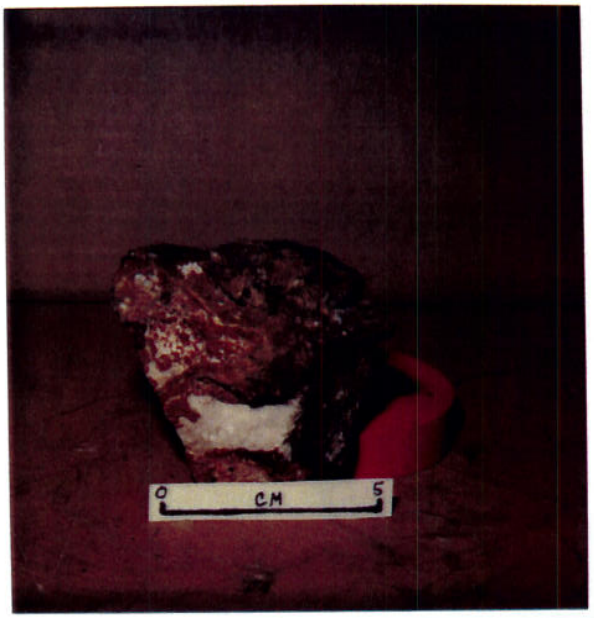
Fe oxide staining on Mn crust

Substratum:

Rock type: Basalt or Breccia

Description: Gray angular vesicular clasts (or basalt that is highly fractured) cemented (or fractures filled with) with calcite in veins & crystal form. Some vesicles are filled w/ calcite too.

Mineralogy (XRD): ____



L5-83-HW
D12-A2

Analyses and subsamples:

analysis:	analyst:
partial sample to	J. Haggerty
oxygen & carbon isotopes on calcite void fill	
make calcite only grad	[illegible]
XRD - Calcite	[illegible] 9/5/91

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A3

Location: Horizon Guyot

*Size: 12X10X6cm Weight: 440g

Mn crust thickness:

Total: min: max: ave: 0-2mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous & slightly botryoidal (made up of tiny botryoids)

Internal structure: —

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Extremely altered red-orange vesicular (vesicle size 2-24mm) basalt. Many vesicles are filled w/calcite pockets of dogstooth calcite & white calcareous sediment coating on one side

Mineralogy (XRD):

L5-83-HW
D12-A3

Analyses and subsamples:

analysis:	analyst:
*Rock has been out partial sample to:	??

Sample Description

Cruise I.D: L5-83-HW **Sample I.D: Sta:** D12-A4 **Location:** Horizon Guyot

Size: 18X14X6cm **Weight:** 1.67Kg

Mn crust thickness:

Total: min: 4mm max: 5mm ave: 4mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Very smooth & shiny

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray to red-brown basalt with abundant yellow altered feldspar? phenocrysts. Phenocrysts are very rounded - could be sediment filling vesicles?? Also some olivine? phenocrysts. Rock is covered with tan calcareous sediment & a little white calcareous sediment.

Mineralogy (XRD):

L5-83-HW
D12-A4

Analyses and subsamples:

analysis:	analyst:
XRD: composite crust	L. Morgenson
Doubly Polished Thin Sec.	Mann Petrographics

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D 12-A5 Location: Horizon Guyot

Size: 20X13X7cm Weight: 1.3 kg

Mn crust thickness:

Total: min: 0 max: 8mm ave: 6mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: very porous

Internal structure:

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

Mineralogy (XRD):

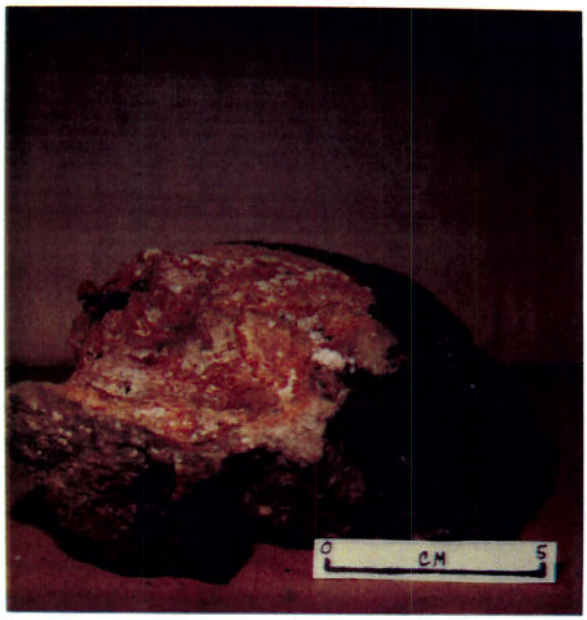
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt & Sandstone?

Description: Appears to be a gray-brown vesicular basalt rock cemented with calcite to a red, highly altered, calcified sandstone. There are numerous cavities in the sandstone & a couple in the basalt that are filled with dogstooth calcite crystals

Mineralogy (XRD):

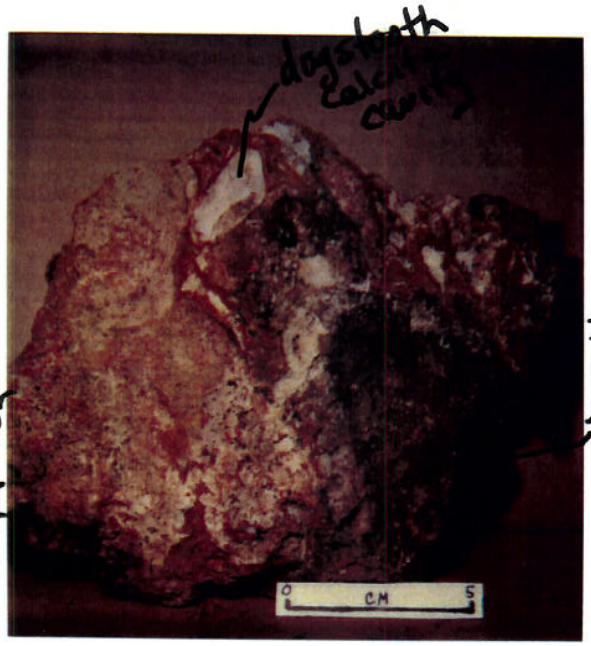


L5-83-HW
D12-A5

See picture on back

Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I substrate composite	
Chemistry - substrate	U.S.G.S
Density	
Mn crust chem (Reston) bulk 10gm (from submittal sheet)	Jung-Keuk Kang 6/88 Job # BZ88



L5-83-HW
D12-A5 underneath side

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D12-A6 Location: Horizon

Size: 28x14x8cm + smaller broken pieces Weight: ~3.6 Kg. * cut for Alice

Mn crust thickness:

Total: min: ____ max: ____ ave: ~1-2mm

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

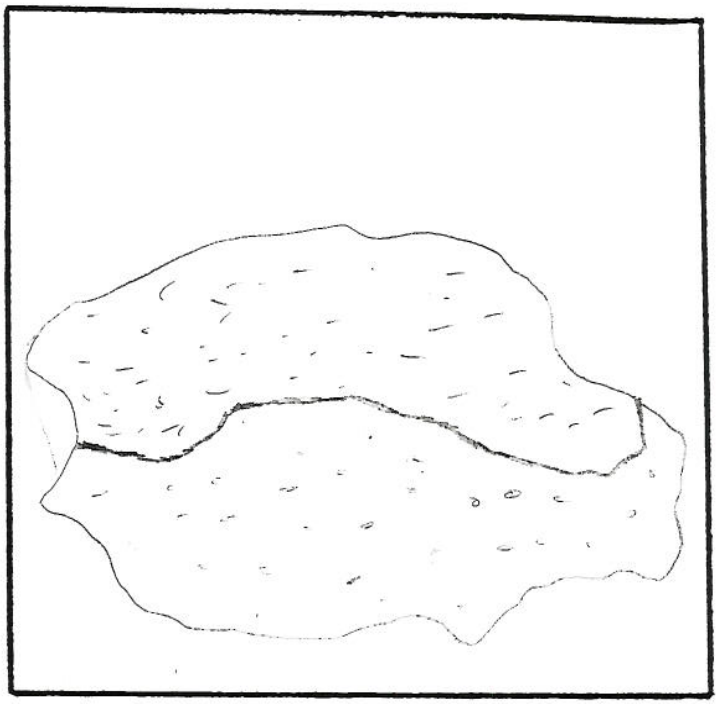
Outer crust: min: ____ max: ____ ave: ____

Surface texture: Smooth

Internal structure: —

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

Mineralogy (XRD):



Associated alteration, phosphorite, or hydrothermal deposits:

minor Fe-oxide staining on one side

Substratum:

Rock type: Basalt

Description: Gray-green altered basalt w/vesicles filled w/phosphorite? large white phosphorite vein thru basalt. Thin coating of white & tan calcareous sediment on one side. Small calcite veg. or yellowish tan sediment

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D12-A7 Location: Horizon

Size: 22x18x18cm Weight: ≈ 5.8 kg * cut for thin

Mn crust thickness:

Total: min: ____ max: ____ ave: 1-2mm

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

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

Surface texture: rough & porous

Internal structure: —

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

Mineralogy (XRD): ____

Associated alteration, phosphorite, or hydrothermal deposits: ____

Substratum:

Rock type: volc. (?) breccia

Description: Highly altered red-orange breccia graded (?) poorly sorted (clasts size (1mm-2cm) White calcareous cement in some places. Chalcedony (?) clasts & vein

Mineralogy (XRD): ____

L5-83-HW

D12-A7

Analyses and subsamples:

analysis:	analyst:
XRD:	C. Daniel
Substrate	
Chemistry	U.S.G.S.
Density	

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A8

Location: Horizon Guyot

Size: 16x8x6cm Weight: 435g

Mn crust thickness:

Total: min: 0 max: 5mm ave: 2mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: porous to botryoidal

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Limestone ?? Scoraeous basalt
Burrowed Sandstone ??

Description: Completely altered to red orange Fe-oxides with orange-yellow calcite? filling cavities & coating outer surfaces. Has a scoraeous texture.

fizzes in HCL

Mineralogy (XRD):

L5-83-HW
D12-A8

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A9

Location: Horizon

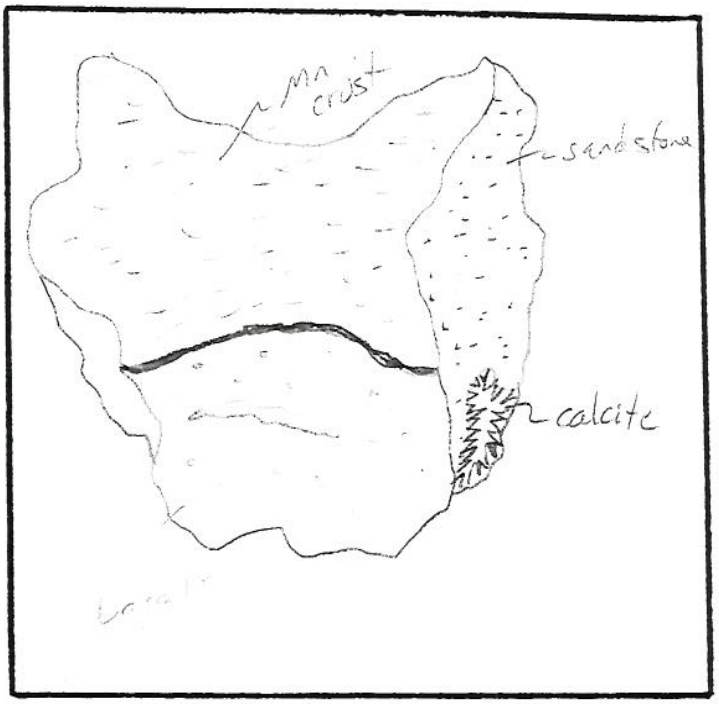
Size: 14x10x8cm Weight: 1.05 kg * cut for Alice

Mn crust thickness:

Total: min: max: ave: 3-5mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:



Surface texture: rough & porous

Internal structure: —

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Fe oxide staining

Substratum:

Rock type: Basalt & sandstone

Description: Gray altered basalt w/ vesicles filled w/ calcite. Basalt grades into breccia w/ 2 large vugs of dogstooth calcite which grades into fine grained, sub-angular, well sorted sandstone (non-calcareous)

calcite cemented

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A10

Location: Horizon Guyot

Size: 22x15x9cm Weight: 1.7Kg

Mn crust thickness:

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

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Slightly botryoidal (moderately botryoidal)

Internal structure:

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

L5-83-HW
D12-A10

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Fe oxide staining; speckled w/ calcite

Substratum:

Rock type: Sandstone

Description: Highly altered red-orange fine to coarse grained tightly packed well cemented calcified silty sandstone. Cavities are filled w/ dendritic calcite. Mn is speckled throughout some areas of the sandstone.

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
Sampled for XRD:	C. Daniel
I: bulk Mn crust	
II: bulk substrate	

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A11

Location: Horizon Guyot

Size: 15x6x5cm Weight: 360g

Mn crust thickness:

Total: min: 3mm max: 1cm ave: 6mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth to porous

Internal structure:

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

Mineralogy (XRD):

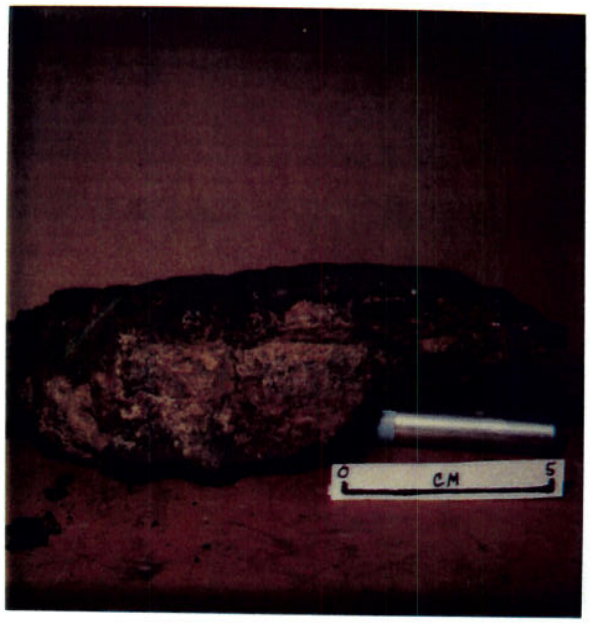
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray-green altered vesicular basalt w/ some vesicles filled w/ yellow soft sediment & some filled w/ Mn. Tan, silty, sediment coating in some areas.

Mineralogy (XRD):



L5-83-HW

D12-A11

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A12

Location: Horizon Guyot

Size: 12x6x8cm Weight: 370g

Mn crust thickness:

Total: min: 0 max: 1cm 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:

Fe oxide staining in Mn crust

Substratum:

Rock type: Basalt

Description: Gray aphanitic altered volcanic basalt vesicles are filled w/ Mn & white? green, calcareous sediments.

Mineralogy (XRD):

L5-83-HW

D12-A12

Analyses and subsamples:

analysis:	analyst:
XRD	
D12 A12-I: bulk Mn (0-1cm)	
D12 A12-II bulk substrate	

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A13

Location: Horizon Guyo

Size: 10X5X5cm Weight: 185g

Mn crust thickness:

Total: min: 0 max: 6mm ave: 4mm

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: Altered gray to red-brown aphanitic slightly vesicular basalt. Has some Fe oxide staining? a little tan sediment coating in a few places. A few white, non-calcareous, phenocrysts? (or filling vesicles since very well rounded) of ?

Mineralogy (XRD):

L5-83-HW

D12-A13

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A14

Location: Horizon Guyot

Size: 11X7X3cm Weight: 135g

Mn crust thickness:

Total: min: 1 max: 7mm ave: 4mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous & slightly botryoidal

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum: SAME AS D12-A8

Rock type:

Description:

Mineralogy (XRD):

L5-83-HW
D12-A14

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D12-A15 Location: Horizon

range 6-12cm ?
Size: 4-10cm ? Weight: ≈ 5.42Kg large bag of small rocks
* cut for Alice

Mn crust thickness:

Total: min: ____ max: ____ ave: 1-2mm

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

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

Surface texture: rough & porous

Internal structure: ____

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

Mineralogy (XRD): ____

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt & Fe-oxidized sandstone ?
& coarse ? like D12-A8

Description: ____

Mineralogy (XRD):

L5-83-HW
D12-A15

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D12-A16

Location: Horizon Guyot

Size: 9cmx18cmx18cm Weight: 8.3kg

Mn crust thickness:

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

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous

Internal structure:

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

L5-83-HW
D12-A16

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Basalt

Description: Gray aphanitic basalt w/ plagioclase & altered orange olivine? phenocrysts. Outer surface of rock is calcified & has large pockets of calcite crystals. Basalt is massive on bottom & becomes "brecciated" towards the top & the surface in contact w/ the Mn crust is altered & stained w/ Fe oxides. One side of the rock is completely altered to orange Fe oxides & looks like a breccia w/ a calcite matrix

Mineralogy (XRD):

See picture on back

Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I: Bulk Mn crust + (0-6mm)	
Chemistry: of bulk crust	
- Pt group (12/86)	Floyd Brown - Reston
- Au analysis (12/86)	Dave McKown - Denver

L5-83-HW

D12-A16