SAMPLE DESCRIPTION

Cruise Id: L5-83-HW   Size: 18 x 15 x 9 cm   Location: S.P. Lee Guyout

Sample Id: D23-A1   Weight: ~ 2 kg   Depth: 1900 - 1850 meters

Mn Crust Description

Surface Texture: Botryoidal

L5-83-HW
D23-A1

Mn Crust Thickness:

Min: ______ Max: ______ Ave: ______

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	8mm	10mm	10mm	Massive w/slight porosity
2.	10 mm	12 mm	10mm	Massive [illegible]
3.				
4.				
5.				
6.				

mments and XRD Mineralogy:

Crust is broken off making description difficult

ANALYSES

Subsample & Type	Analysis	Weight

Substrate Description

Rock Type: Basalt, highly altered w/ a cooling rind (also altered) which is fractured and has what looks to be white/brown colored

Description: phosphate filling the fractures

Described By: J. Schulz   Subsampled By:

L5-83-HW

D23-A1

SAMPLE DESCRIPTION

e Id: L5-83-HW Size: 26x24 x 10 cm Location: S.P. Lee Crest

Sample Id: D23-A2 Weight: ~5 kg Depth: 1900-1850 m

Mn Crust Description

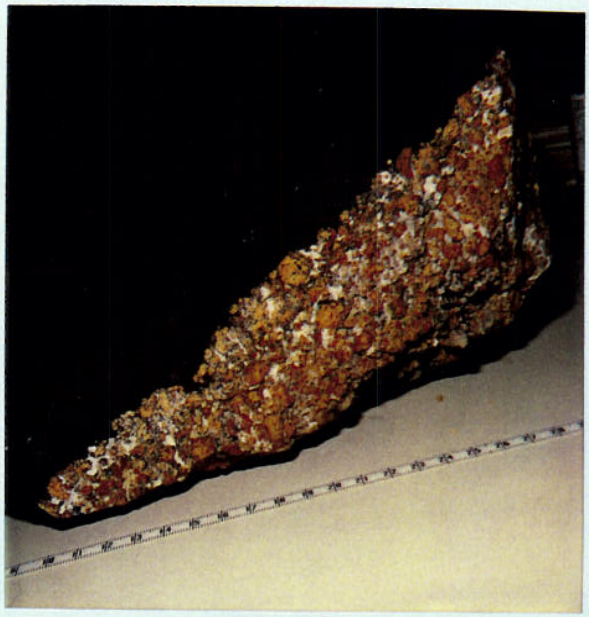
Surface Texture: Botryoidal to smooth w/micro botryoids; No layers in crust, dense and uniform

Mn Crust Thickness:

Min: 15 mm Max: 20 mm Ave: 15mm

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				



L5-83-HW

D23-A2

nents and XRD Mineralogy:

Substrate Description

Rock Type: Altered, Volcaniclastic Breccia, Poorly sorted, very porous w/calcite cement and fracture fill

Description:

Mn staining in many of the pores

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J. Schulz Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: L5-83-HW Size: 13x9.5x8 cm Location: S.P. Lee Guyot

Sample Id: D23-A3-1 Weight: <1kg Depth: 1900-1850

Mn Crust Description

Surface Texture: Botryoidal, very porous

Mn Crust Thickness:

Min:_____ Max:_____ Ave:_____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	<2mm	10mm	~5mm	Botryoidal
2.				
3.				
4.				
5.				
6.				

L5-83-HW

D23-A3-1

omments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt w/ hyaloclastic

Description:

Basalt Cobble w/ coating of altered hyaloclastic (1 to 1.3 cm).

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J. Schulz Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: L5-83-HW Size: _____ Location: S.P. Lee Guyot

Sample Id: D23-A3-2 Weight: _____ Depth: 1900 - 1850

Mn Crust Description

Surface Texture: Botryoidal and porous

Mn Crust Thickness:

Min: palina Max: 1cm Ave: 0.5cm

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

L5-83-HW

D23-A3-2

Comments and XRD Mineralogy:

2 samples one with basalt [illegible] one without.

Basalt cobble has cooling rind (altered) and cemented to it by phosphorite in vacanidiorite breccia or hyaloclastite

Basalt cobble has thicker crust [illegible] ~3mm at thickest

Substrate Description

Rock Type: Basalt & Hyaloclastite both very altered

Description:

Basalt cobbles have phenocrysts (olivine?) that are completely replaced w/ Fe oxides

One piece of hyaloclastic without basalt cobble very porous with some calcite cement (white) as well as clay and iron oxide cements

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J Schulz Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: L5-83-HW Size: _____ Location: S.P. Lee Guyot

Sample Id: D23 - A3 - 3 Weight: _____ Depth: 1900 - 1850 m

Mn Crust Description

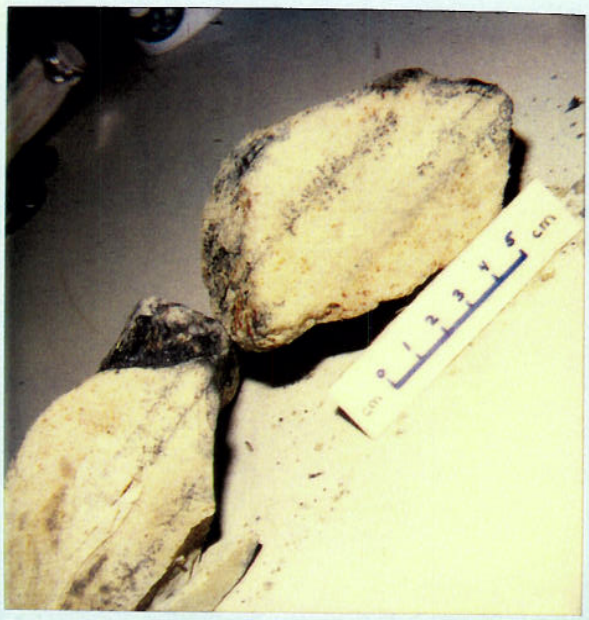
Surface Texture: Smooth - a patina of Mn on all sides of [illegible]

Mn Crust Thickness:

Min: _____ Max: _____ Ave: _____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				



L5-83-HW

D23-A3-3

Comments and XRD Mineralogy:

ANALYSES

Subsample & Type	Analysis	Weight

Substrate Description

Rock Type: Altered, poorly lithified [illegible] silt stone pale green in color with clasts (sand size) altered to Fe oxides. (Altered Ash or Tuff?)

Description:

There is some bedding. The [illegible] often are Mn [illegible]

The crust appears to have stuffed [illegible] some areas.

Described By: J. Schulz Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: L5-83-HW Size: 18 x 115 x 5 cm Location: S.P. Lee Guyot

Sample Id: D23-D1 Weight: ~2 kg Depth: 1900 - 1850

Mn Crust Description

Surface Texture: Smooth patina and [illegible] 2mm thick

Mn Crust Thickness:

Min: patina Max: 2mm Ave: 1mm

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

L5-83-HW

D23-D1

Comments and XRD Mineralogy:

ANALYSES

Subsample & Type	Analysis	Weight

Substrate Description

Rock Type: Several pieces of sandy siltstone pale green in colors, poorly lithified (Altered Tuff) Cream colored thin phosphorite in

Description:

Fractures and on top" below Mn Crust.

Some altered clasts (or oxides) bedding is delineated by Mn stainings and lack of larger clasts. Mn also stains fractures.

Dried sample [illegible] through [illegible] are rejected the stuff apart

Described By: J. Schulz Subsampled By:

SAMPLE DESCRIPTION

se Id: L5-83-HW Size: 22 x 18 x 5 cm Location: SP Lee Guyot

Sample Id: D23-D2 Weight: ~2 kg Depth: 1900 - 1850 m

Mn Crust Description

Surface Texture: Smooth, thin patina of Mn on most surfaces.

Mn Crust Thickness:

Min: ______ Max: ______ Ave: ______

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

Altered clasts

Mn stain in fracture that rock broke along

L5-83-HW

D23-D2

This face is a broken one that shows bedding

ments and XRD Mineralogy:

Substrate Description

Rock Type: Similar lithology to D23-D1, Sandy siltstone pale green color, poorly lithified; this sample not as much glauconite

Description: as D23-D1, does have clasts altered to Fe-oxides in one bed (layer)

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J. Schultz Subsampled By:

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D23-D3 Location: S.P. Lee Guyot

Size: 18x4.5 cm Weight: 4 [illegible] kg [illegible]

Mn crust thickness:

Total: min: Patina max: 1 mm ave:

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture:

Internal structure:

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

Mineralogy (XRD):

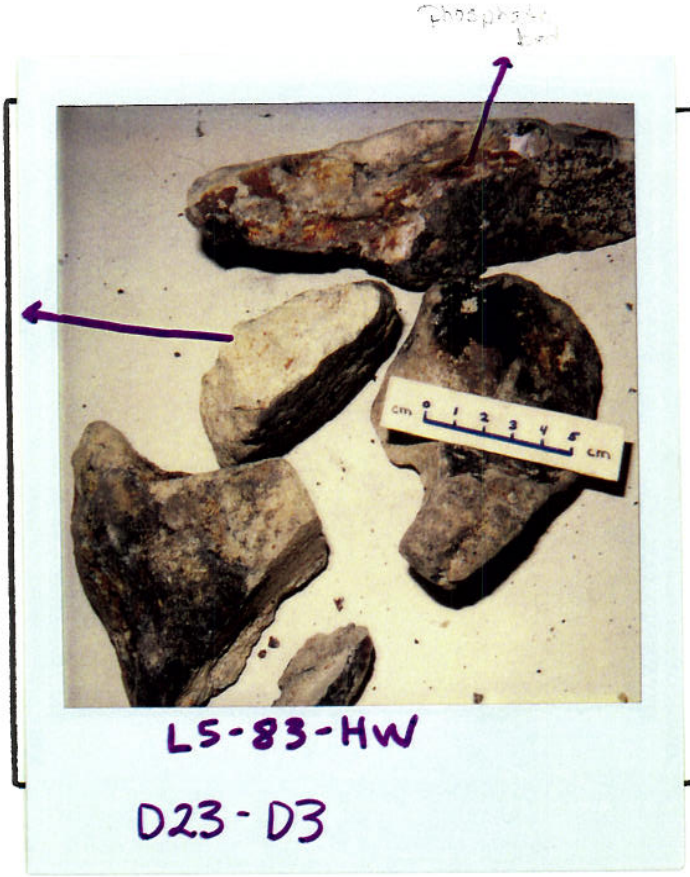
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Pale green poorly lithified Sandy Siltstone (altered clasts)

Description: Fe and Mn Staining on all pieces. Phosphorite layer 5mm thick on largest piece. Bedding is apparent. This lithology is the same as D23-D1 & D2.

Mineralogy (XRD):



Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I: substrate	
Chemistry: bulk substrate	

desc - J. Schulz -

Sample Description

Cruise I.D: L5-83-HW Sample I.D: Sta: D23-D4 Location: S.P. Lee Guyot

Size: 15x14x5.5cm Weight: 1kg

Mn crust thickness:

Total: min: ____ max: ____ ave: ____

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

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

Surface texture: Patina of Mn in small patches of the largest piece

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Altered Volcaniclastic breccia, clasts are very altered vesicular basalts. White cement is calcite. The pores are coated with microvils of calcite

Description:

Mineralogy (XRD):

L5-83-HW

D23-D4

Analyses and subsamples:

analysis:	analyst:
XRD:	C. Daniel
I: Substrate	
Chemistry for substrate	O.S.G.S.
Density	C. Daniel

SAMPLE DESCRIPTION

se Id: L5-83-HW Size: 19 x 9 x 12 cm Location: SP Lee Guyot

Sample Id: D23-D5 Weight: 6 kg Depth: 1900 - 1850

Mn Crust Description

Surface Texture: Smooth, patina to 1mm thick

Mn Crust Thickness:

Min:_____ Max:_____ Ave:_____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

L5-83-HW
D23-D5

ments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt - Two large cobbles of green gray basalt, Mn stains to crust 1mm thick along with Fe staining on surface

Description:

ANAL

Subsample & Type	Analysis	Weight

Described By:

Subsampled By:

SAMPLE DESCRIPTION

:e Id: L5-83-HW Size: 14x9x8 cm 12.5x8x7 cm Location: S.P. Lee Guyot

Sample Id: D23-6 Weight: 5kg Depth: 1900-1850

Mn Crust Description

Surface Texture: Patina of Mn

Mn Crust Thickness:

Min:_____ Max:_____ Ave:_____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

L5-83-HW

D23-6

nents and XRD Mineralogy:

Substrate Description

Rock Type: 2 Basalt Cobbles, both have thin coating of carbonaceous mud on one side both are iron stained and

Description:

have some patina of Mn

Tiny Shark tooth found in sediment [illegible]

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J. Schulz Subsampled By:

SAMPLE DESCRIPTION

se Id: L5-83-HW Size: 25 x 19 x 17 cm Location: S.P Lee Guyot

Sample Id: D23-3D-7 Weight: ~10 kg Depth: 1900-1850

Mn Crust Description

Surface Texture: Patina of Mn, especially thick in moody and crevices.

Mn Crust Thickness:

Min:_____ Max:_____ Ave:_____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

D23-[redacted]-7

nents and XRD Mineralogy:

AN

Subsample & Type	Analysis	Weight

Substrate Description

Rock Type:

Description:

Basalt, green gray similar to others in this image. Carbonate mud on crevices.

Described By: J. Schultz Subsampled By:

SAMPLE DESCRIPTION

se Id: L5-83-HW Size: _____ Location: S.P. Lee Seamount

Sample Id: D23-8, 9, 10, 11 Weight: _____ Depth: [illegible]

Mn Crust Description

Surface Texture: Patina to 1mm thick smooth surface texture

Mn Crust Thickness:

Min: _____ Max: _____ Ave: _____

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.				
2.				
3.				
4.				
5.				
6.				

D23-8, 9, 10, 11

nents and XRD Mineralogy:

Substrate Description

Rock Type: Gray basalt cobbles to boulders, with Fe and Mn stains several pieces have

Description:

carbonate sediments and one D23-9 has a carbonate mud up to 1cm thick

ANALYSES

Subsample & Type	Analysis	Weight

Described By: J. Schulz Subsampled By: