Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D32-A1

Location: S.P. Lee Guy

Size: 32x20x12cm Weight: ~2 kg dry

Mn crust thickness:

Total: min: palin max: [illegible] ave:

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: porous granular to porous [illegible]

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum: Highly altered

Rock type: Layered/bedded volcanic [illegible] sandstones, breccias & mudstones

Description: If crust is up these are inversely graded; beds are they turbidite like flows?

One very fine layer near top (?) of [illegible] is a greenish yellow [illegible] mudstone; maybe an ash fall?

Uppermost breccia is porous w/ Mn precipitation between clasts. This layer has phosphorite [illegible]

Mineralogy (XRD):

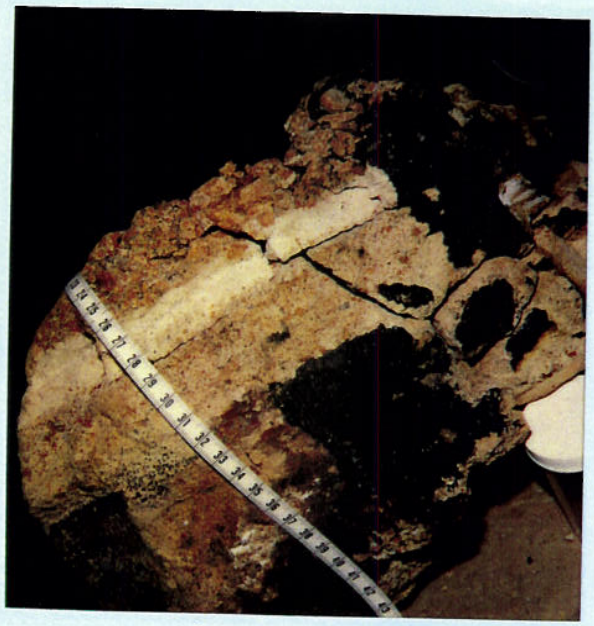
L5-83-HW

D32-A1

Analyses and subsamples:

analysis:	analyst:
XRD	C. Daniel
I substrate	
Composite Mn:	Rosemary ?
Chemistry bulk substrate	USGS
Chemistry: bulk crust	
- Pt group (12/86)	Floyd Brown - Reston
- Au anal.	Dave Mt Kown - Denv

D32



LS-83-HW

D32-A1

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D31-10

Location: S.P. Lee Guyot

Size: _____ Weight: _____

Mn crust thickness:

Total: min: [illegible] max: [illegible] ave: _____

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: _____

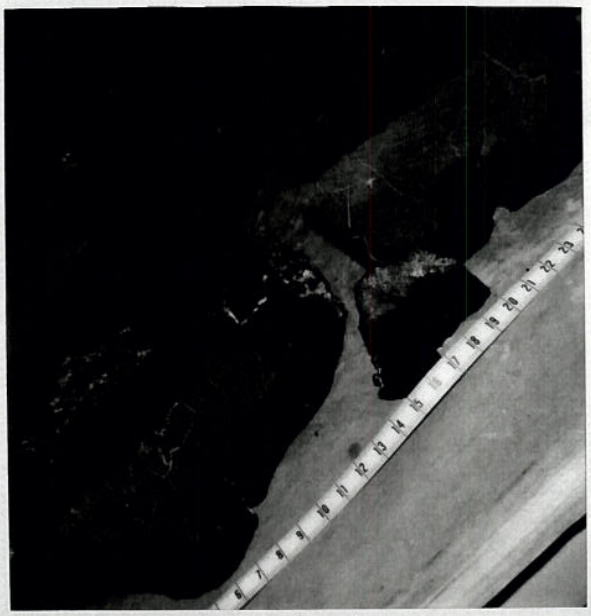
Substratum:

Rock type: Very Altered porphyritic basalt

Description: with hyaloclastite pieces cemented to outer surfaces. Hyaloclastite is cemented by phosphorite replaced carbonate (reacts mildly w/ HCL)

1 Small piece vesicular basalt - fresh w/ altered volcaniclastic above

Mineralogy (XRD): _____



L5-83-HW
D31-10

Analyses and subsamples:

analysis:	analyst:
XRD	C Daniel
I-substrate	
Chemistry - bulk substrate	U.S.G.S.
Density	C Daniel

SAMPLE DESCRIPTION

Cruise Id: LS-83-HW Size: ______ Location: S.P. Lee Guyot

Sample Id: D32-A1 Weight: ______ Depth: ______

Mn Crust Description

Surface Texture: ______

Mn Crust Thickness:

Min: ______ Max: ______ Ave: ______

Layers (Outer to Inner):

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

Comments and XRD Mineralogy:

ANALYSES

Subsample & Type	Analysis	Weight
Bulk Mn crust	CC (Reston)	6g 6/88 Job # BZ89
		← (from submittal sheet)

Substrate Description

Rock Type: ______

Description:

Described By: Jung-Keuk Kang 6/88 Jung-Keuk Kang 6/88

Sample Description

Cruise I.D: L5-83-HW

Sample I.D: Sta: D32-A2

Location: S.P. Lee Guyot

Size: Weight:

Mn crust thickness:

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

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: botryoidal mimics substrate texture (botryoids develop over pebbles)

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type:

Description: Volcaniclastic Breccia w/ altered and unaltered clasts. From the orientation of Mn crust to sedimentary beds I would guess this was broken off side of an outcrop or wall of a canyon. The other explanation is that rocks were tilted before Mn deposition. 2 cements 1) white carbonate, yellow-brown phosphate

Mineralogy (XRD):

Encrusting Sponge

D32-A2 Mn side

L5-83-HW

Analyses and subsamples:

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

LS-83-HW OTHER SIDE

D32-A2

SAMPLE DESCRIPTION

Id: L5-83-HW Size: 29x14x4 (cm) Location: S.P. Lee Guyot

Sample Id: D32 - A3 Weight: 1 kg (kg) Depth: 1800 (m)

Mn Crust Description

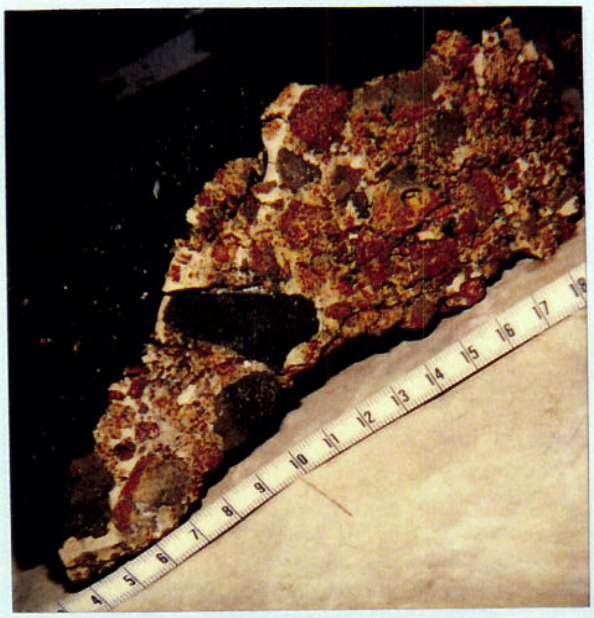
Surface Texture: Botryoidal

Mn Crust Thickness (mm):

Min: mm Max: 4mm Ave: 2mm

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.				
2.				
3.				
4.				
5.				



L5-83-HW
D32-A3

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Volcaniclastic Breccia cemented w/ phosphate cement

Description: poorly sorted w/ some very fresh clasts and very altered clasts. The altered clasts are soft clayey stuff now.

gy ?:

ANALYSES

Subsample Number	Analysis	LayerThickness-Explanation

J. Schulz

SAMPLE DESCRIPTION

Id: L5-83-HW Size: Varied (cm) Location:

Sample Id: D32-A1, D32-A2, D32-A3, D32-A4, D32-A5, D32-A6, D32-A7, D32-A8, D32-A9, D32-A10, D32-A11, D32-A12, D32-A13, D32-A14, D32-A15, D32-A16, D32-A17, D32-A18, D32-A19, D32-A20, D32-A21, D32-A22, D32-A23, D32-A24, D32-A25, D32-A26, D32-A27, D32-A28, D32-A29, D32-A30, D32-A31, D32-A32, D32-A33, D32-A34, D32-A35, D32-A36, D32-A37, D32-A38, D32-A39, D32-A40, D32-A41, D32-A42, D32-A43, D32-A44, D32-A45, D32-A46, D32-A47, D32-A48, D32-A49, D32-A50, D32-A51, D32-A52, D32-A53, D32-A54, D32-A55, D32-A56, D32-A57, D32-A58, D32-A59, D32-A60, D32-A61, D32-A62, D32-A63, D32-A64, D32-A65, D32-A66, D32-A67, D32-A68, D32-A69, D32-A70, D32-A71, D32-A72, D32-A73, D32-A74, D32-A75, D32-A76, D32-A77, D32-A78, D32-A79, D32-A80, D32-A81, D32-A82, D32-A83, D32-A84, D32-A85, D32-A86, D32-A87, D32-A88, D32-A89, D32-A90, D32-A91, D32-A92, D32-A93, D32-A94, D32-A95, D32-A96, D32-A97, D32-A98, D32-A99, D32-A100, D32-A101, D32-A102, D32-A103, D32-A104, D32-A105, D32-A106, D32-A107, D32-A108, D32-A109, 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Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):
Min: Max: Ave:

Layers (Outer to Inner)(mm):

	Min	Max	Ave	Texture & Color
1.				
2.				
3.				
4.				
5.				

Comments and XRD Mineralogy:

Substrate Description

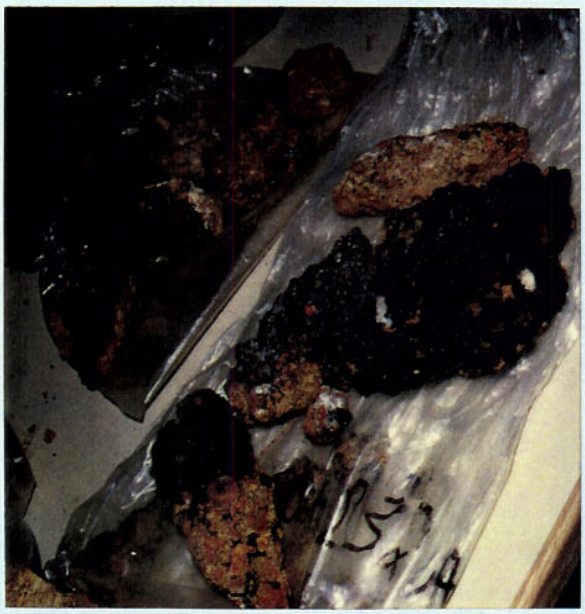
Rock Type: Similar to D32-A2 and D32-A3 Volcaniclastic Breccia w/

Description: fiberglass fragments, some have bedding, all have [illegible] up to 1/2mm

gy ?: Carbonate Forms, silica Opaque

ANALYSES

Subsample Number	Analysis	LayerThickness-Explanation



L5-83-HW

SAMPLE DESCRIPTION

Cruise Id: L5-83-HW Size: [illegible] Location: S.P. Lee Guyot

Sample Id: D32-A15 Weight: [illegible] Depth: _____

Mn Crust Description

Surface Texture: [illegible]

Mn Crust Thickness:

Min: [illegible] Max: [illegible] Ave: [illegible]

Layers (Outer to Inner):

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

L5-83-HW

D32-A15

Comments and XRD Mineralogy:

ANALYSES

Subsample & Type	Analysis	Weight
Bulk mn crust	CC (Reston)	2g 6/88 BZ89 (from submittal sheet)

Substrate Description

Rock Type: Volcaniclastic Breccia similar to [illegible] white [illegible]

Description:

Calcareous [illegible] and clay [illegible] going to phosphate

Altered and [illegible] clasts

Encrusting Forms

Described By: Jung-Keuk Kang 6/88 Jung-Keuk Kang 6/88

LS-83-HW
D32-A15