DREDGE 16

S.Johnston
Is Ridge

Sample #	CC	Pt + Au	REE	OC	DPTS	TS	35mm	Archive	Polar	XRD			
CD16 - 1	layers				whole cut slab			*					
CD16 - 2													
CD16 - 3													
CD16 - 4													
CD16 - 5	Top Bottom					Volc. Breccia				X			
CD16 - 6	vein			Volc. Breccia		" "							
CD16 - 7													
CD16 - 8													

SAMPLE DESCRIPTION

Cruise Id: F7-86-HW Size: 26x19x13 cm Location: S. Johnston Island Ridge

Sample Id: CD16-1 Weight: 12 kg Depth:

Mn Crust Description

Surface Texture: Rippling botryoids w/ lizard skin

Mn Crust Thickness:

Min: 9 Max: 11 Ave: 10.5 mm

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	30 mm	32 mm	31 mm	Massive to dendrite
2.	10	15	12.5	layer w/ large pores clay filled
3.	15	18	16.5	Colloform (Chrysanthemum)
4.	10	13	11.5	Porous w/ Fe stain
5.	33	40	36.5	Massive where slabbed [illegible]

CD16-1

Comments and XRD Mineralogy:

Layer 5 has phosphorite clasts and phosphorite in fractures and between layers

Substrate Description

Rock Type: Volcaniclastic Breccia/

Description:

yellow to red brown highly altered basalt clasts w/in altered tuffaceous matrix

ANALYSES

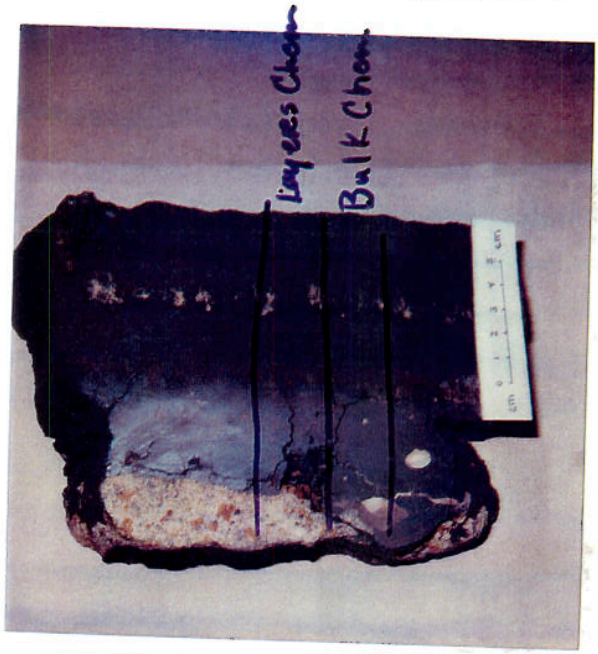
Subsample & Type	Analysis	Weight
CD16-1A Bulk	CC	105 mm 0-105 bulk
CD16-1B Layer 1	CC	30 mm 0-30 mm
CD16-1C Layer 2	CC	10 mm 30-40 mm
CD16-1D Layer 3	CC	16 mm 40-56 mm
CD16-1E Layer 4	CC	13 mm 56-69 mm
CD16-1F Layer 5	CC	33 mm 69-102 mm
1/2 of slab Archived		
CD16-1	DPTS	

CHEM NOTES - Layer 2 Clay cleaned out as much as possible

Layer 5 contains phos clasts - probably some in chem sample

Described By:

Subsampled By: JSM



CD16-1

Chemistry Slab

SAMPLE DESCRIPTION

Cruise Id: FT-86-HW Size: 31 x 22 x 12 cm Location: S. Johnston Island Ridge

Sample Id: CD16-2 Weight: 14 kg Depth:

Mn Crust Description

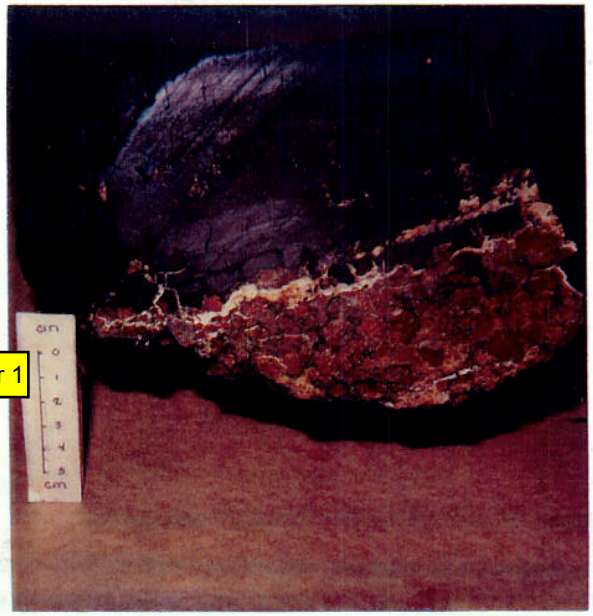
Surface Texture: smooth

Mn Crust Thickness:

Min: 70 mm Max: 80 mm Ave: 75 mm

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	10 mm	15	12.5	massive w/ fractures outer 5mm slightly more porous
2.	8 mm	10	9	massive-a little more porous than layer 1
3.	10 mm	15	12.5	layer has large clay filled pore
4.	12 mm	15	13.5	porous w/ Fe stain
5.	14 mm	17	15.5	massive in laminae w/ phos between laminae
6.				



CD16-2

Comments and XRD Mineralogy:

Layer 5 appears to have broken off in part of sample before deposition of layer 4. Layer 4 does a turn.

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ANALYSES

Subsample & Type	Analysis	Weight

Substrate Description

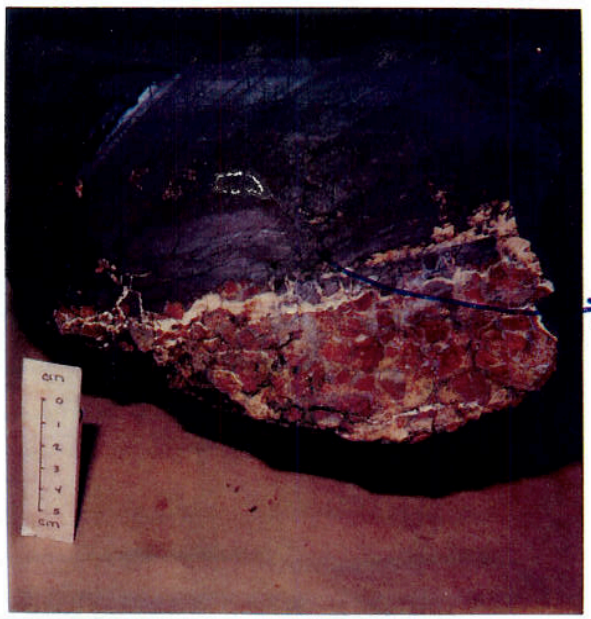
Rock Type: Volcanic Breccia

Description:

Green yellow to Red brown highly altered basalt breccia. Clasts range from 5cm to 0.5cm diameter. fine grained phosphorite(?) manganese rich altered matrix

Between substrate & crust ivory colored phosphorite, seems to be in fracture and between layers of crust, 3 to 5mm thick

Described By: JSM Subsampled By:



Part of Layer 5 or Lower part of Layer 4 seems to have broken off deposition of layer above broken off area does a bend here and is thicker

Part of Layer 5 or Lower part of Layer 4 seems to have broken off deposition of layer above broken off area does a bend here and is thicker

CD16-2

SAMPLE DESCRIPTION

Cruise Id: F7-96-HN Size: 27 x 17 x 7 cm Location: South Johnston Is Ridge

Sample Id: CD16-3 Weight: 5kg Depth: _____

Mn Crust Description

Surface Texture: smooth perfectly

Mn Crust Thickness:

Min: 63mm Max: 70 Ave: 66.5

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	10mm	15mm	12.5	massive
2.	6mm	8mm	7mm	dendritic
3.	7mm	10mm	8.5	dendritic w/ larger clay filled pores
4.	18mm	23mm	20.5	porous w/ Fe staining
5.	12mm	17mm	14.5	massive
6.				

CD16-3

Comments and XRD Mineralogy:

ANALYSES

Subsample & Type	Analysis	Weight

Substrate Description

Rock Type: Altered Volcanic Breccia

Description:

yellow orange highly altered basalt clasts within highly altered silt to clay sized tuffaceous matrix. Common Mn and phosphate veins along fractures

Described By:

Subsampled By:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 18 CD16-4 Location: S. Johnston I. Rage

Size: 24x20x11 Weight: 5 Kg

Mn crust thickness:

Total: min: 9.5 max: 11 ave: 10

Inner crust: min: (OVER) — max: — ave: —

Outer crust: min: (OVER) max: ave:

Surface texture: perfectly smooth abundant black granular 2° mn on sides & bottom.

Internal structure:

layered: 5 (+)
laminated:
massive: 5 (+)
porous:
dendritic:
other: several 0.5-1 mm thick phosphate lam laminations &/or lenses in bottom layer

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: None

Description:

Thick crust broken from substrate

Mineralogy (XRD):

CD16-4

Analyses and subsamples:

analysis:	analyst:

	Min	Max	Ave	Texture
Layer 1	11 mm	15 mm	13 mm	massive, outer portion Fe-stained
Layer 2	15 mm	20 mm	17.5 mm	dendritic w/ clay filled pores in ...
Layer 3	12 mm	25	18.5	colloform (ie climbing botryoidal layers) very irregular upper and lower surfaces
Layer 4	8 mm	16	12	porous w/ Fe staining
Layer 5	48 mm	58	53	massive w/ laminae dense

massive, outer portion Fe-stained

dendritic w/ clay filled pores in ... (?)

colloform (ie climbing botryoidal layers) very irregular upper and lower surfaces

porous w. Fe staining

massive w/ laminae dense

SAMPLE DESCRIPTION

Cruise Id: EW-96-HW Size: 40 x 37 x 13 cm Location: S. Johnston Is Ridge

Sample Id: CD 16-5 Weight: 23 kg Depth: _____

Mn Crust Description

Surface Texture: smoothed botryoidal black nodular 2 degree Mn on side & bottom surfaces

Mn Crust Thickness:

Min: 30 mm 70 mm Max: 48 mm 72 mm Ave: 39 mm UPPER 71 mm LOWER

Layers (Outer to Inner):

	Min	Max	Ave	Texture
1.	Over for layering details			
2.				
3.				
4.				
5.				
6.				

CD 16-5

Comments and XRD Mineralogy:

Common fine < 0.5mm phosphate lams w/in laminated Mn Layers

ANALYSES

Subsample & Type	Analysis	Weight
CD16-5A	CC - Top	39 mm
CD16-5B	CC - Bottom	71 mm
CD16-5B-1	XRD sample of clay & matrix	
T.S. of Substrate	interesting matrix	

Substrate Description

Rock Type: Volcanic Breccia

Description:

Highly Altered Red-orange brecciated clasts w/ phosphorite & Mn matrix

Described By: JSM Subsampled By: JSM

Top Layers:	Min	Max	Ave	Texture
Layer 1	10 mm	13 mm	11.5 mm	dendritic
Layer 2	10 mm	12	11 mm	porous w/ larger pores clay filled clay filled
Layer 3	8 mm	23 mm	17.5 mm	laminated

Bottom Layers:	Min	Max	Ave	Texture
Layer 1	7 mm	13 mm	10 mm	Massive outer - porous inner some pores clay-filled
Layer 2	20 mm	24	22 mm	Porous w/ Fe staining staining
Layer 3	35	45	40	massive laminated laminated

CD16-5 Bottom Chem Sample

From the look of these layers and in comparison with textures of other samples in this dredge:
Bottom layers are the oldest (compare w/inner layers of other dredge 16 samples)
then Rock disturbed (ie turnedover and Top layers laid down. JSM 12-29-87

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 18 CD16-6 Location: S. Johnston Is. Ridge

Size: 24 x 12 x 6 cm Weight: 1 Kg

Mn crust thickness:

Total: min: <1mm max: <1mm ave: <1mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Patchy surface coating of smooth to granular Mn.

Internal structure:

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

CD16-6

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Volcanic Breccia

Description: Orange to yellow green highly altered basalt clasts

(2-5cm diam) within altered green yellow, Mn rich toffacious matrix. Mn & Ph vein.

1-10 mm wide through sample. Mn coats vein walls (~1mm thick each) Phosphate vein from 1-7mm wide.

Ph

Mn

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
CD16-6A *Mn From Vein-CC	2 to 5mm 4.3gm
	21gm
CD16-6B substrate OC	
TS	

* Sample For crust chemistry very difficult to get "clean" Mn light phosphorite veins were ubiquitous there was also some Mn stain phosphorite which really couldn't be separated. XRD sample contains more contaminant than Chemistry sample.

*Sample for crust chemistry very difficult to get "clean" Mn light phosphorite veins were ubiquitous and there was also some Mn stain phorsphorite which really couldnt be separated. XRD sample contains more contaminant than

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 18 CD16-7 Location: S. Johnson Ridge

Size: 53 x 40 x 25 cm Weight: 45 Kg

Mn crust thickness:

Total: min: 8 max: 11.5 ave: 7

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: top. top subdued to smoothed botriodal side glassy botroidal & granular

side glassy botriodal & g

Internal structure:

layered: 6 (+)
laminated: 1
massive: 4
porous: 1
dendritic:
other:

CD16-7

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Altered Volc. Breccia

Description: Yellow to orange altered basalt clasts (5cm - 25mm diam) w/in yellow green altered tuffaceous matrix w/ common Mn.

Mineralogy (XRD):

Analyses and subsamples: Surface [illegible]

analysis:	analyst:
Kollman Monument shop cut in half	4/6/88
1/2 Archived	
35mm Slide Surface + X-sect.	JW
Grab in separate bags	
bag of misc crust in with sample	

CD16-7
F7-86-HW

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 18 CD16-8 Location: S. Johnston Ridge

Size: 72x50x3 Weight: _____

Mn crust thickness:

Total: min: 6 max: 9 ave: 7

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

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

Surface texture: Smooth, Granular 2° Mn common on [illegible]

Internal structure: _____

layered: 4(+)
laminated: _____
massive: _____
porous: _____
dendritic: _____
other: _____

F7-86-HW
CD16-8

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits: _____

Substratum:

Rock type: Altered Volc. Breccia

Description: Altered

Mineralogy (XRD): _____

Surface polaroid →

Analyses and subsamples:

analysis:	analyst:
Kellman Monument Shop cut in half 1/6/88	
35mm Slide JW	

F7-86-HW
CD16-8

F7-86-HW
CD16-8