(k) = KANG

AMPLE ID	Mn CHEM	Pt & Au	REE	Si Chem	P.Sect.	35mm Pho	Archive	Paleo	Mn min	Si min			
CD17-1													
CD17-2													
CD17-3													
CD17-4	Layers	Layers			DPTS (k)				Layers (k)				
CD17-5													
CD17-6													
CD17-7													
CD17-8									Layers (k)				
CD17-9					DPTS (k)				Layers (k)				
-10													

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-1 Location: S. Central Johnston Island

Size: 15 cm Weight: 1.0 kg

Mn crust thickness:

Total: min: 2 max: 6 ave: 4.5

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: bulbous perfectly smooth

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Tuffacious siltstone

Description: light yellow green overlain

highly altered tuffacious siltstone overslain by cream colored, silty calc sediment ?□
□
w/ light brown phosphorite vein running through.

Mineralogy (XRD):

CD17-1

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD 17-2 Location: S. Central Gorda Esc.

Size: 15x16x9 Weight: 6.0 Kg

Mn crust thickness: Nodule (?)

Total: min: 2mm max: 21 mm ave: 15 mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: partially smooth

Internal structure:

layered: 2 (?)
laminated:
massive: 2 (?)
porous:
dendritic:
other:

CD17-2

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Phosphatized Volcanic Breccia

Description: Very angular volcanic breccia fragment containing small angular volc. fragments (1mm² to 75mm²) and rounded phosphatized fragments (1/cm²) with central Mn encrusted (2-4mm) well rounded, blue gray aphanitic vesicular basalt fragment (3 cm²) with abraded, rounded, cream-colored phosphatized fragments. The poorly sorted breccia fragments are suspended in a cream-colored phosphatized calc. sediment matrix.
Angular volc. breccia frag. acts as nucleus for Mn nodule

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CO17-3 Location: S. Central Johnston I.

Size: 9x10x12 cm Weight: 0.75 Kg

Mn crust thickness:

Total: min: 2 cm max: 3.75 cm ave: 2.5 cm

Inner crust: min: — max: — ave: —

Outer crust: min: — max: — ave: —

Surface texture: smooth

Internal structure:

layered: 2.
laminated:
massive: 2.
porous:
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Highly altered volc. breccia

Description: Orange-red, highly altered basalt fragments with yellow green tuffaceous matrix. Common infilling of cracks with yellow phosphate. Discontinuous phosphate zone 2 cm - 1 mm thick between crust & substrate.

Mineralogy (XRD):

CO17-3

Analyses and subsamples:

analysis:	analyst:
Half of Rock given to B. Mineos	

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-4 Location: S. Central Johnston Is.

Size: 28x8x11 cm Weight: 12 Kg?

Mn crust thickness:

Total: min: 40 max: 45 ave: 43

Inner crust: min: — max: — ave: —

Outer crust: min: — max: — ave: —

Surface texture: reflects smooth w/abundant granular pits on sides from him

Internal structure:

layered: 2
laminated:
massive: 1
porous:
dendritic: 1 aggregate
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

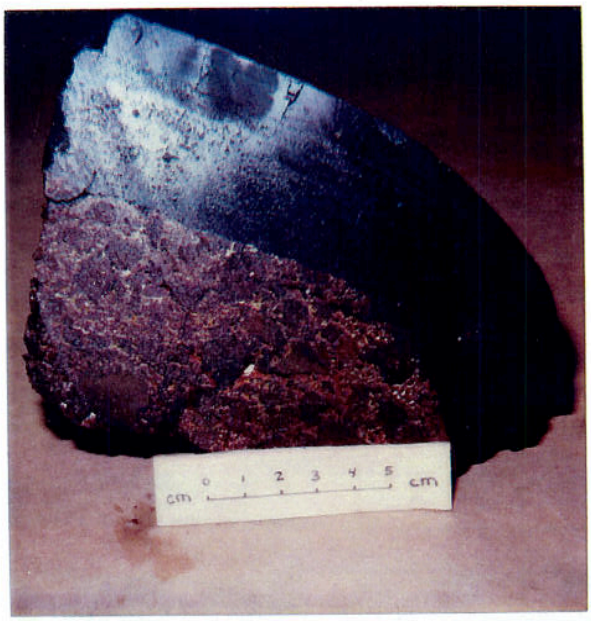
Substratum:

Rock type: Highly altered volc. breccia w/ phosphorate cement

Description:

Basalt clasts ranging in size from 25mm to sand sized has vuggy porosity. Mn stain around some grains run along some fractures (Same as CD17-6)

Mineralogy (XRD):



CD17-4

Analyses and subsamples:

analysis:	analyst:
CD17-4A CC, Pt, Au Layer 1	0-12mm 12mm 54gm
CD17-4B CC, Pt, Au Layer 2	12-45mm 33mm 65gm
CD17-4C CC, Pt, Au Bulk	0-45mm 228gm
Mineralogy	
CD17-4-I (0-10 mm)	CHN: May-17/22
CD17-4-II (10-20 mm)	
CD17-4-III (20-30 mm)	
CD17-4-IV (30-40 mm)	
CD17-4-V (40-50 mm)	
DPTS (crust + sub)	

CD17-4

CD17-4

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-5 Location: S. Central Johnston Island

Size: 19x10.5 Weight: 5Kg ?

Mn crust thickness:

Total: min: 15 mm max: 35 mm ave: 25 mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: perfectly smooth, completely covers substrate (nodular)

Internal structure:

layered: 3-4
laminated: 2
massive: 1
porous:
dendritic:
other: Inner layer contains phosphate lams along fractures. Middle & outer layers separated by 2 Ph lenses 0.5-4 mm thick

CD17-5

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Altered Volcanic Breccia

Description: Well rounded, yellow-orange volc. breccia fragment loosely packed, poorly sorted (0.5-9 mm²) angular orange-red palagonite fragments (some with thin 1-2mm thick Mn crusts) and small (1mm²) Mn fragments w/in blue grey phosphatic matrix. Possible 2 episodes of phosphitization as clasts are surrounded by thin (<1mm) white to cream colored phosphite.

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Well rounded, yellow-orange volc. breccia fragment loosely packed, poorly sorted (0.5-9 sq. mm) angular orange- red palagonite fragments (some with thin□
1-2mm thick crusts) and small (1 sq. mm) Mn fragments w/in blue grey phosphatie matrix. Possible 2 episodes of phosphitization as clasts are surrounded by thin (<1mm) white to cream colored phosphite.

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-6 Location: So. Central Johnston Is.

Size: 15x12x11 cm Weight: 1.3 kg

Mn crust thickness:

Total: min: 7 max: 25 ave:

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth to porous on the side

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Volc. Breccia

Description: Very altered red brown sub-angular to sub-rounded aphanitic, poorly sorted (4-22mm) basalt clasts (some are vesicular) in a phosphatized volc. breccia matrix consisting of well sorted (1-2 mm) tightly packed volcanic clasts. it appears that the original matrix dissolved away and is being filled in w/ phosphorite. there are many gaps in the matrix.

Mineralogy (XRD):

CD17-6

Analyses and subsamples:

analysis:	analyst:
Part of rx to	Bu Mines

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-7 Location: So Central Johnston Isl

Size: 8x8x4 Weight: ~2.5kg

Mn crust thickness:

Total: min: 18 max: 33 ave: 30mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: smooth

Internal structure:

layered: ✓ ??
laminated:
massive: ✓
porous: in places
dendritic:
other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum: Mn Nodule

Rock type:

Description: Has two nucleus - one is all Mn; the other appears to be same thing completely phosphatized w/ a little yellow & red Fe oxidized material surrounding it

Has two nucleus - one is all Mn; the other appears to be same thing completely phosphatized w/ a little yellow & red Fe oxidized material surrounding it.

Mineralogy (XRD):

CD17-7

Analyses and subsamples:

analysis:	analyst:
CD17-7A Mn-Nucleus Bulk	CC
CD17-7B Crust Bulk	CC

-B-This sample taken from a slab, the whole crust used, sides, top, & Bottom Is

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 CD17-8 Location: So-Central Johnston Isl

Size: 10x12x8cm Weight: ≈ 1.5kg

Mn crust thickness:

Total: min: 35 max: 46 ave: 40 mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Smooth

Internal structure:

layered: faintly ?
laminated:
massive: ✓
porous: ✓ in places
dendritic:
other:

CD17-8

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: ✓ Volc. Breccia (Nodule?) (Nodule?)

Description: Larger (2.5 & 4.5cm) gray aphanitic vesicular basalt clasts whose vessels are filled w/ phosphorite as are the fractures in them. These 2 clasts are separated by Mn and are surrounded by Mn. The larger clast is connected to a volc breccia which is fairly sorted & loosely packed w/ sub-rounded basalt clasts in varying stages of alteration all in a white phosphatic matrix.

Larger (2.5 & 4.5 cm) gray aphanitic vesicular basalt clasts whose vessels are filled w/ phosphorite as are the fractures in them. these 2 clasts are separated by Mn and are surrounded by Mn. The larger clast is connected to a volc breccia which is fairly sorted & loosely packed w/ sub-rounded basalt clasts in varying stages of alteration all in a white phosphatic matrix.

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
½ rx to	Bur Mines
Mineralogy	KANG May 12/88
D17-8-I (0-5 mm)	
D17-8-II (5-10 mm)	
D17-8-III (15-25 mm)	
D17-8-IV (25-bottom)	
DPTs	

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: CD17-9 Location: So Central Johnston Isl.

Size: 14X8X10 cm Weight: ≈ 1.5 kg 2 small [illegible] 227 kg boulder!

small pieces from a 227kg boulder!

Mn crust thickness:

Total: min: 20 max: 22 ave: 20mm

Inner crust: min: — max: ave:

Outer crust: min: — max: ave:

Surface texture: Smooth and granular

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: BASALT

Description: Somewhat unaltered gray aphanitic vesicular basalt. some vesicles are filled w/ phosphorite. also some patchy white & tan, thin, carbonate sediment coating

Somewhat unaltered, gray, aphanitic vesicular basalt. some vesicles are filled w/ phosphorite. also some patchy white & tan, thin, carbonate sediment coating

Mineralogy (XRD):

CD17-9

Analyses and subsamples:

analysis:	analyst:
Davis has other pieces of this boulder	
CD17-9 CC - Bulk	0-22 mm
took crust off 1 piece, knocked off side pieces and homogenized	
Mineralogy	
D17-P-I (0-5 mm)	KANG 5/17/88
-II (5-10 mm)	
-III (10-bottom)	
DPTS (crust + substrate)	

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 19 - CD17-10 Location: So. Central Johnston Isl

Size: 7x5x3cm Weight: ~500g

Mn crust thickness: 5 mm nodules

Total: min: ____ max: ____ ave: ____

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

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

Surface texture: slightly botryoidal to abraded smooth

Internal structure: ____

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

Mineralogy (XRD): ____

Associated alteration, phosphorite, or hydrothermal deposits: ____

Substratum:

Rock type: Each nodule has different nucleus, basalt, volcanic breccia, phosphorite and broken Mn crust.

Description: ____

Mineralogy (XRD): ____

CD17-10

Analyses and subsamples:

analysis:	analyst: