Ridge

AMPLE ID	Mn CHEM	Pt & Au	REE	Si Chem	DP.Sect.	35mm Pho	Archive	Paleo					
CD30-1	Bulk	Bulk											
CD30-2	Bulk												
CD30-3													
CD30-4													
CD30-5													
CD30-6													
CD30-7													
CD30-8													
CD30-9													
CD30-10	Layers	Layers	Layers		DPTS				XRD				
CD30-11								X	XRD				
CD30-12													

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD-30-1 Location: [illegible]

Size: 26x22x10 cm Weight: 7 kg

Mn crust thickness:

Total: min: 3mm max: 15mm ave: 12mm

Inner crust: min: — max: — ave: —

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

Surface texture: Abraded Botriodal

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Phosphate Cement

Substratum:

Rock type: Volc Breccia

Description: Fresh angular, poorly-sorted, grain-supported volc. clasts in orange-cream phosphate matrix. Larger clasts [illegible] 9 cm² [illegible] blue-gray [illegible] basalt. Smaller frags (1-2mm) [illegible] & basalt & [illegible] some fresh phenocrysts plag in basalt

Mineralogy (XRD):

CD 30-1

Analyses and subsamples:

analysis:	analyst:
CD30-1 Bulk (CC, Au, Pt XRD)	0-12 mm 12 mm (43g)

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD 30-2 Location: [illegible]

Size: [illegible] Weight: 1.5 kg

Mn crust thickness:

Total: min: 10mm max: 15mm ave: 15 mm

Inner crust: min: — max: — ave:

Outer crust: min: max: ave:

Surface texture: Abraded [illegible] Common [illegible]

Internal structure:

layered: 1
laminated:
massive: ✓
porous:
dendritic:
other:

CD30-2

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Volc Breccia

Description: See CD 30-1
Note that clasts are much larger (up to 6x5x4 cm diam)

Clasts are gray vesicular basalt with white infillings of [illegible] phosphorite content, off white clay on bottom)

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
CD30-2 Bulk CC	30gm 0-12mm 12
PALEO on clay from bottom of sample	

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: Sta 32 CD 30-3 Location: S [illegible]

Size: 10x14x7 cm Weight: 1.5 kg

Mn crust thickness:

Total: min: 8 max: 20 ave: 15

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Abraded botryoidal w/common [illegible] 2° Mn on [illegible]

Internal structure:

layered: ✓

laminated:

massive: ✓ porous

porous:

dendritic:

other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

phosph. cement

Substratum:

Rock type: Volc breccia

Description: Sta CD30-1 grain-supported

Mineralogy (XRD):

CD 30-3

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD 30-4 Location: S Karin Ridge

Size: 19x12x8 cm Weight: 1 kg

Mn crust thickness:

Total: min: 10 max: 25 ave: 20

Inner crust: min: — max: — ave: —

Outer crust: min: — max: — ave: —

Surface texture: Abrased [illegible] common granular [illegible]

Internal structure:

layered: 1
laminated:
massive: —
porous: in places
dendritic:
other:

30-4

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Volc Breccia

Description: See CD 30-2
basalt clasts, grain supported
v. crumbly - little cement or
matrix -

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: [illegible] Location: [illegible]

Size: [illegible] Weight: [illegible]

Mn crust thickness:

Total: min: [illegible] max: 10 ave: 5

Inner crust: min: — max: — ave: —

Outer crust: min: — max: — ave: —

Surface texture: [illegible]

Internal structure:

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

Mineralogy (XRD):

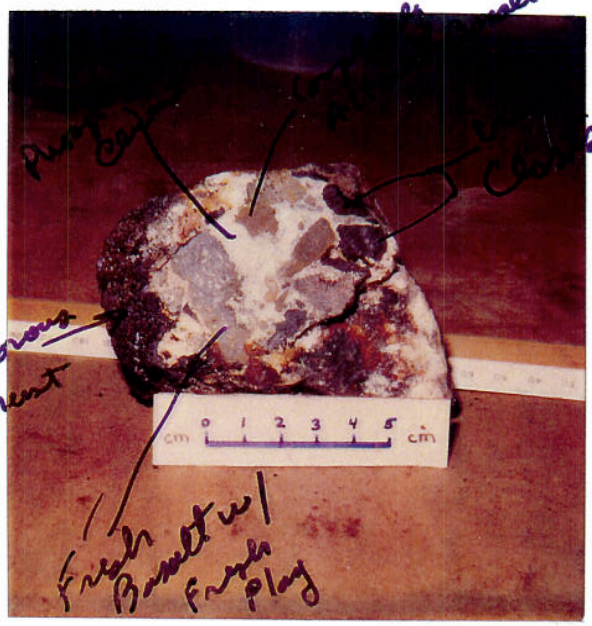
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: Volc. Breccia

Description: Angular volcanic Mn crust clasts poorly sorted & loosely packed in phosphatic ground mass. Basalt clasts largely altered [illegible] fresh 3x1 cm. [illegible] clast w/ fresh plag —

Mineralogy (XRD):



30-5

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD-30-6 Location: S Kaiser Ridge

Size: 20 x 13 x 10 Weight: 2 kg

Mn crust thickness: NONE

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: Volc. breccia

Description: Blue black to yellow brown black sub angular plag porphyritic basalt (2cm² - 1mm²) bimodally sorted with possible subhedralled alignment of grains. Rock is grain supported w/ phosphate cement. Possible hydrothermal alteration — red alteration patches more common

Mineralogy (XRD): ____

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD30-8 Location: [illegible]

Size: 23x18x9cm Weight: 4 kg

Mn crust thickness:

Total: min: 1mm max: 10mm ave: 3

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Irregular porous & [illegible]

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Thick discontinuous layer of phosphorite [illegible]

Substratum:

Rock type: Volc. Breccia

Description: See CD30-6

large (3-4cm) basalt clasts in matrix of mm basalt clasts floating in phosphorite cement - phosph- decreases away from cement -

phosphorite cream brown & gray

Mineralogy (XRD):

CD30-8

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD30-9 Location: S Nazca Ridge

Size: 19x14x8 Weight: ≈1.5 kg

Mn crust thickness:

Total: min: 4 max: 20 ave: 12

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous to [illegible] [illegible]

Internal structure:

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

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

phosphorite veins in Mn crust

Substratum:

Rock type: Basalt-Phmph. Breccia

Description: Basalt + phosphorite fragments (to 3 cm) in phosphorite & Mn Cement

Mineralogy (XRD):

CD 30-9

Analyses and subsamples:

analysis:	analyst:

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD30-10 Location: S. Karin Ridge

Size: 32x22x11cm Weight: 8 Kg

Mn crust thickness:

Total: min: 10 max: 85 ave: 7.0

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: [illegible]

Internal structure:

layered: 3
laminated:
massive: ✓
porous:
dendritic:
other: many phosphorite veins [illegible] lower crust

(1) Pillar (2) botryoidal (3) dense massive to laminated

Mineralogy (XRD):

layer 1 has 2 sublayers that easily part -

Associated alteration, phosphorite, or hydrothermal deposits:

[illegible]

Substratum:

Rock type: Breccia

Description: Volcanic + phosphorite fragments in phosphorite + Mn cement, some phosph. veins - phosph. veins + lamina in lower crust

Some clasts look like wood-grain texture - XRD

Same as in CD30-9

Mineralogy (XRD):

CD30-10

Analyses and subsamples:

analysis:		analyst:	
CD30-10A Bulk Crust	(CC) XRD 5 PTS	0-75 mm (39g)	75 mm
CD30-10B layer 1	(CC, Au, PT) (REE, XRD)	0-25 mm (64g CCt)	25 mm (15g REE)
CD30-10C layer 2	(CC, Au, PT) (REE, XRD)	25-39 (39g CCt)	14 mm (10g REE)
CD30-10D layer 3	(CC, Au, PT) (REE, XRD)	39-70 (66g CCt)	31 mm (17g R
CD30-10E	XRD	wood-grain clasts phosph.	

layer 3
layer 2

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD30-11 Location: S Karin Ridge

Size: [illegible] Weight: 4.5 kg

Mn crust thickness:

Total: min: 10 max: 50 ave: 30

Inner crust: min: max: ave:

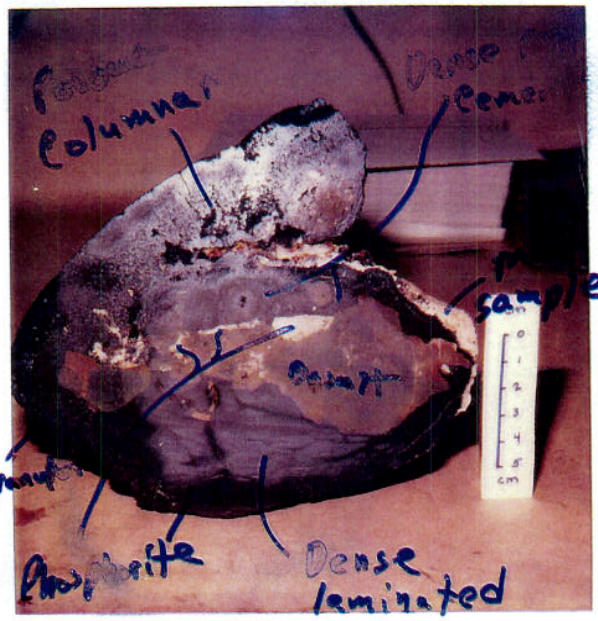
Outer crust: min: max: ave:

Surface texture: Granular/porous [illegible]

Internal structure:

layered:
laminated: Dense, Bottom
massive:
porous: Columnar - TOP
dendritic:
other: Columnar, porous

Mineralogy (XRD):



CD30-11

Associated alteration, phosphorite, or hydrothermal deposits:

Fe-oxide [illegible]
phosph-cement, Mn cement

Substratum:

Rock type: Basalt - [illegible]

Description: Thin coating of [illegible]

Fresh Plag in some basalt [illegible]

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
CD30-11 (Poles) XRD	mud and Mn dendrit

Sample Description

Cruise I.D: F7-86-HW Sample I.D: Sta: 32 CD30-12 Location: S. Karin Ridge

Size: 11.5X10X7cm Weight: ≈1Kg

Mn crust thickness:

Total: min: 2.5 max: 20 ave: 15

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Slightly botryoidal

Internal structure: Smooth to ↗

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

Mineralogy (XRD):

ssociated alteration, phosphorite, or hydrothermal deposits:

Some forams & worm tubes on the surface of the crust

Substratum:

Rock type: Basalt

Description: Grey-brown altered Fe oxide stained in places, very fine grained basalt clast

Mineralogy (XRD):

CD30-12

Analyses and subsamples:

analysis:	analyst: