DREDGE 73
Kita
Io-Jima

SAMPLE ID	Mn CHEM	Pt & Au	REE	Si Chem	P.Sect.	35mm Pho	Archive	Paleo				
D73-1A	✓											
1B												
1C												
1D												
1E												
D73-1F	✓	✓	✓									
D73-2	✓											

TT 192

Dredge 73

Two Sandstone types
Very coarse grained w/rounded clasts
green [illegible] to fine grained w/mineral grains

Maybe some sedimentary structures in D73-1A

Photograph mineralization of D73-1A & D73-1A

Maybe good dredge to illustrate relationship between stratiform and M. Sstnes

Mariana Is

Sample Description

Cruise I.D: ~~L5-83-HW~~ Sample I.D: Sta: D73-1A Location: Kita Io-Jima

Size: 17x12.5x9cm Weight: 1.75 kg (wet) Depth: 1240-1620m

Mn crust thickness:

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:

Dense hydrothermal layer deposited along bedding plane intersecting structures visible along this bed in the Mn

Substratum:

Rock type: Manganiferous Sandstone

Description:

Coarse grained sandstone, fairly well sorted clast angular volcanic cemented by Mn and many clasts completely coated with MN

Are structures primary sed structures or are they related to the mineralization

Mineralogy (XRD):

D73-1A

Mariana Islands

Analyses and subsamples:

analysis:	analyst:
Chem: Bulk sample (Manhan)	L. Morgenson 7/86
XRD: Bulk (from sample sent for chem) (D73-1A-I)	
DPTS	

D73-1A

TT192

D73-1A

TT192

SAMPLE DESCRIPTION

Cruise Id: TT192 Size: _____ (cm) Location: _____

Sample Id: D73-1B Weight: _____ (kg) Depth: _____ (m)

Mn Crust Description

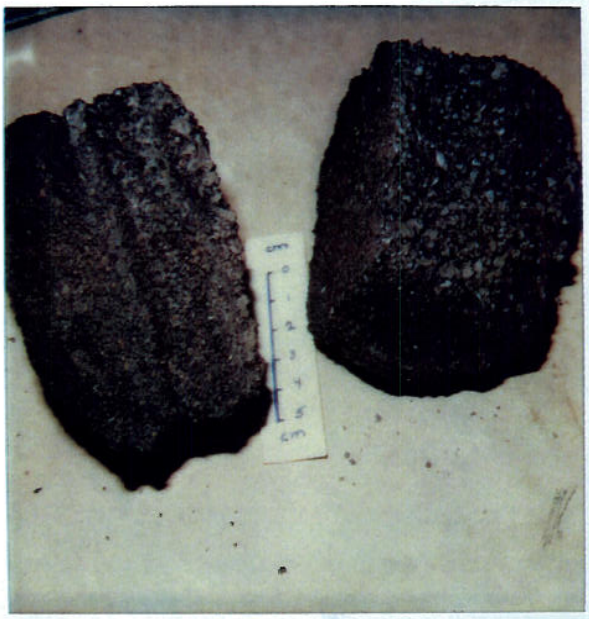
Surface Texture: _____

Mn Crust Thickness (mm):

Min: _____ Max: _____ Ave: _____

Layers (Outer to Inner)(mm):

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



TT192
D73-1B

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Coarse Grained Sandstone with manganese cement

Description: Stratified Sandstone, bottom has brown gray dense hydrothermal Mn, broken off botryoids.

Biology ?: _____

ANALYSES

Subsample Number	Analysis	LayerThickness-Explanation

Described By: JSM Subsampled By:

SAMPLE DESCRIPTION

Cruise Id: TT192 Size: _____ (cm) Location: _____

Sample Id: D73-1C Weight: _____ (kg) Depth: _____ (m)

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.				

TT192
D73-1C

Comments and XRD Mineralogy:
Dense Brown Green hydrothermal layer on the bottom botryoidal

Substrate Description

Rock Type: Sandstone
Euhedral clasts in sstne

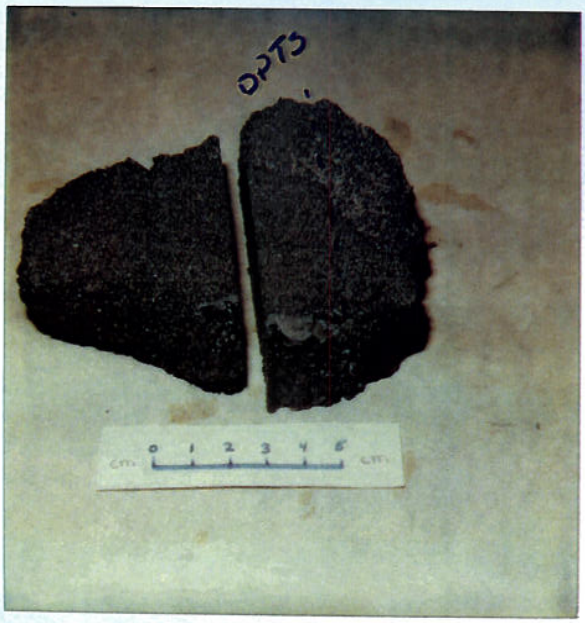
Description:
medium to fine grained sandstone, same green as the other finer grained samples in this dredge Mn cemented, top layer is foraminiferous and may have more Mn cement.

ology ?: _____

ANALYSES

Subsample Number	Analysis	LayerThickness-Explanation
D73-1C	PALEO	(BOTH LAYERS TOGETHER)
D73-1C-A	XRD	Sstn green layer
D73-1C-B	XRD	Foraminiferal layer
DPTS		

Described By: JSM Subsampled By:



TT192

D73-1C

SAMPLE DESCRIPTION

Cruise Id: TT192 Size: _____ (cm) Location: _____

Sample Id: D73-1D Weight: _____ (kg) Depth: _____ (m)

Mn Crust Description

Surface Texture: Dense brown argy hydrothermal Mn layers between bedding of sandstone and area of hydrothermal Mn along side of sample. Mn on side is dense botryoidal and layered.

Mn Crust Thickness (mm):

Min: _____ Max: _____ Ave: _____

Lay

1.

2.

3.

4.

5.

TT192 - D73-1D

TT192

D73-1D

Cor

NALYSES

bsample Number	Analysis	LayerThickness-Explanation
73-1D-A	XRD	Sandstone - avoiding strata
73-1D-B		Mn - Dense hydrothermal

DPTS

2 Sem Samples of hydrothermal Mn - dense botryoidal

Substrate Description

Rock Type: Sandstone with Mn Cement

Description:

Graded sandstone green w/ many grains of volcanic glass (very fresh)

The coarser sand look like some clasts maybe Mn clasts (probably XRFs)

ogy ?: Some forams in sand

Described By: JSM Subsampled By:

Sample Description

Cruise I.D: ~~L5-83-HW~~ Mariana Is.

Sample I.D: Sta: D 73-1F

Location: Kita Io-Jima

Size: 6X5.5X3 cm Weight: 93 gms (wet)

Hydrothermal

Depth: 1240-1620 m

Mn crust thickness:

Total: min: 1.0 cm max: 3.0 cm ave: ~2.2 cm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: tiny botryoids

Internal structure: lwr layer consists of dense, hydrothermal layers (~bottom 2/3). TPX 1/3 is granular, more porous near top

layered: ✓

laminated:

massive:

porous:

dendritic:

other:

Mineralogy (XRD):

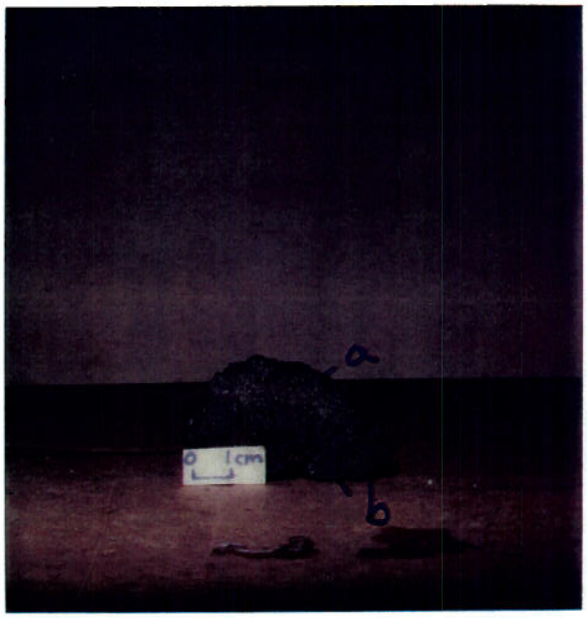
Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: None

Description:

Mineralogy (XRD):



Mariana Is. D73-1F same piece as photo ①. This piece sent for bulk chem. ②

Analyses and subsamples:

analysis:	analyst:
Chemistry: bulk sample: Sent 1/3 of rock for "manheim", pt group & Au, REE	L Morgenson 7/86
XRD: I = upr, porous 1/3	
D73-1F-II lwr 2/3, dense mn see photo	
D73-1F Bulk Resubmitted for Hg Chem	

Mariana Is.

D73-1F ①

SAMPLE DESCRIPTION

Cruise Id: TT192 Size: _____ (cm) Location: _____

Sample Id: D73-1H Weight: _____ (kg) Depth: _____ (m)

APPAR[illegible] look like stor[illegible]

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.				
6.				

TT192
D73-1H

Comments and XRD Mineralogy:
Hydrothermal Mn w/scattered clusts Very good textural

Substrate Description

Rock Type: _____

Description: _____

[illegible]ology ?: _____

ANALYSES

Subsample Number	Analysis	LayerThickness-Explanation

Described By: JJSM Subsampled By:

Sample Description

Cruise I.D: ~~L5-83-HW~~ Mariana Is.

Sample I.D: Sta: D73-2

Location: Kita-Io Jima

Depth: 1240-1620 m

Size: _____ Weight: 2.8 kg (barely damp)

Mn crust thickness:

Total: min: Ø max: 8 mm ave: 3 mm

Inner crust: min: _____ max: _____ ave: _____

Outer crust: min: _____ max: _____ ave: _____

Surface texture: botryoidal

Internal structure: _____

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

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits: _____

Substratum:

Rock type: Andesite

Description: _____

Mineralogy (XRD): _____

D73-2

Analyses and subsamples:

analysis:	analyst:
Chem: Bulk crust "mawheim"	L. Murgansen #186
XRD: " " (from sample sent for chem) (D73-2-I)	
D73-2 - Bulk resubmitted for Hg chem	