DREDGE 41
Syowa Ridge Sect.

SAMPLE ID	Mn CHEM	Pt & Au	REE	Si Chem	P.Sect.	35mm Pho	Archive	Paleo	XRD
D11-1A									
D11-2A									✓
D11-2B	✓	✓	✓						
D11-2C									
D11-3A									
D11-3B									

4-21-87

D41 - [illegible]

There are several Mn morphologies in this dredge.

1) [illegible] these laminae w/ porous columnar Mn between the laminae [illegible] like Tongo Law samples

2 Chaotic hydrothermal can contain wavy laminations, not continuous, porous areas, dense areas, can have sediment incorporated but not as a main component. Seems as if Mn deposition very quickly or sample is moved, disturbed during Mn accumulation

3 Mn cemented conglomerate

4 Stratabound layer w/in conglomerate.

D41-3A, 41-3B, 41-3C:

D41-3B has clasts that may have been better consolidated before Mn deposition as Mn not between the grains in many areas. The other 2 samples have clasts floating in Mn matrix, giving the appearance that the Mn mineralization forced the clasts apart?

Mariana Islands

Sample Description

Cruise I.D: TT-192

Sample I.D: Sta: D D41-1A & 1B

Location: [illegible] Seamount

Size: (A) [illegible] (B) [illegible] **Weight:** [illegible] 1.30 Kg

2 ROCKS: 1st piece is [illegible] water depth: 137[illegible] - 600m

Mn crust thickness: Patchy, thin coating

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

D41-1A
TT192

MARIANA ISLANDS
D41-1A (1/2 of orig. rock) 1st piece

Substratum:

Rock type: [illegible]

Description: [illegible]
volcanic [illegible]
[illegible]
packed volcanic clasts [illegible]
The second piece is similar to the first
except [illegible] (coated [illegible])
[illegible] in clast size.

D41-1A Mn hydrogenetic crust up to 2mm thick

Mineralogy(XRD):

Analyses and subsamples:

analysis:	analyst:
35mm D41-1A	

MARIANA ISLANDS 2nd
D41-1B (1/3 of orig. rock) piece

D41-1B TT192

Mariana Islands
Cruise I.D: TT-192

Sample Description

Sample I.D: Sta: D41-2A Location: Sykes Ridge

Size: Weight:

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:

Substratum:

Rock type:

Description:

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
XRD:	C. Fletcher

Sample Description

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

Sample I.D: Sta: D41-2B

Location: Sayo Ridge

Depth: 600-1371 m

Size: 10x8x7 cm Weight: 483 gms (dry)

Mn crust thickness:

Total: min: 34 max: 45 ave: 34 mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Granular - porous

Internal structure: Dense hydrothermal

layered:

laminated: ✓

massive:

porous:

dendritic:

other: thin lense (2mm thick) of Mn-SST 15mm below surface

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

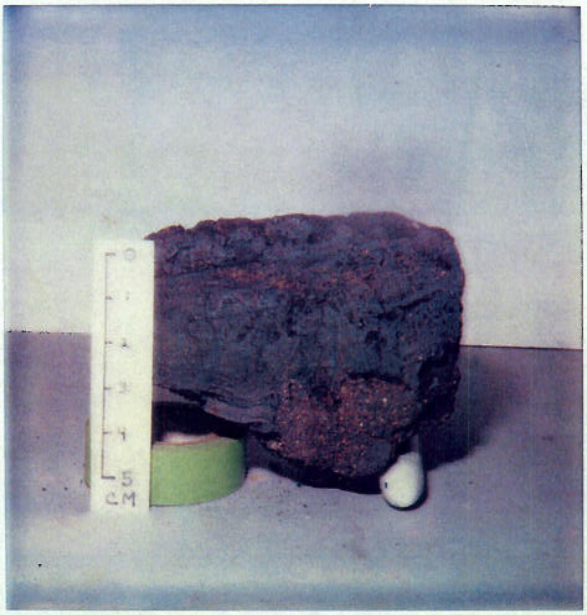
Substratum:

Rock type: Mn-SST

Description: Plug of fine grained manganiferous sandstone in tone corner of underside of mn crust

Mineralogy (XRD):

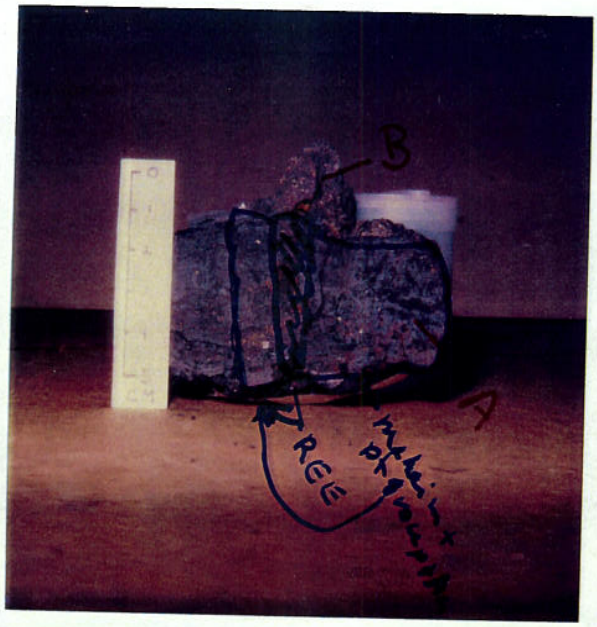
Hydrothermal



MARIANA ISLANDS
D41-2B

Analyses and subsamples:

analysis:	analyst:
Chem: D41-2B-A Dense hydrothermal crust sent to [illegible] + Pt group [illegible] (see photo on back)	L. Morrison 7/81
XRD: of crust sample sent to chem	
D41-2B-A [illegible] for Hg Chem	



Mariana Is. Boxed area sent for chem. 7/86
D41-2B

Sent blocked area (big blocked area) for chem.
Did not send the sandy part above the blocked area (in the middle on top). Also there was a few [illegible] thick, several mm long, red-metal inches on that I removed before submitting sample.
It was near bottom of sample.

Mariana Islands

Cruise I.D: TT-192

2 Small pieces

Size: [illegible] Weight: 210g

7x6x5.50m

Sample Description

Sample I.D: Sta: D41-2C & 2D

Location: Sysa Ridge

Depth: 600-1371m

Mn crust thickness:

Total: min: max: ave:

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Granular - porous

Internal structure: Dense hydrothermal

layered:

laminated: ✓

massive:

porous:

dendritic:

other: a little sediment & fine grained tot interspersed in crusts

MARIANA ISLANDS
D41-2C & 2D

Mineralogy (XRD):

ssociated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type:

Description:

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

Mariana Islands

Cruise I.D: TT-192

Sample Description

Sample I.D: Sta: D D41-3A

Location: Suyo Ridge

Depth: 600-1371m

Size: 11x13x8cm Weight: 865g

Mn crust thickness: mn nodule - no a cobble

Total: min: 15 max: 32 ave: 20mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous & lightly botryoidal

Internal structure: Dense hydrothermal

layered:

laminated: ✓ in places

massive:

porous:

dendritic:

other:

MARIANA ISLANDS
D41-3A

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum: nucleus

Rock type: Mn cemented volcanic breccia

Description: Yellow brown, but unsuitable to subrounded loosely packed altered volcanic clasts in a mn-sst matrix

Mn cemented

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:
XRD:	C. Freshman
D41-3A-I: bulk Mn	

D41-3A
TT192

Mariana Islands

Cruise I.D: TT-192

Sample Description

Sample I.D: Sta: D41-3B 3C

Location: Sluys Ridge

Depth: 600-1371m

Size: 9x8x5cm 9x6x4cm Weight: 440g

Mn crust thickness: nodules

Total: min: 8 max: 20 ave: 12mm

Inner crust: min: max: ave:

Outer crust: min: max: ave:

Surface texture: Porous

Internal structure: dense, hydrothermal

layered:

laminated: ✓ in places

massive:

porous:

dendritic:

other:

Mineralogy (XRD):

Associated alteration, phosphorite, or hydrothermal deposits:

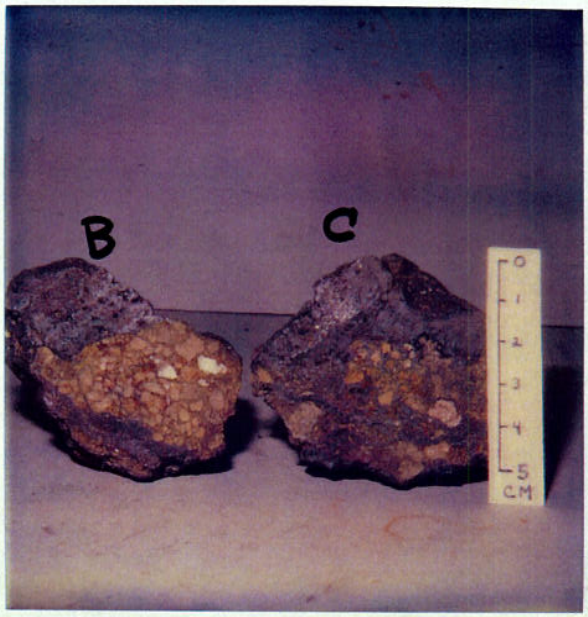
Substratum: nucleus

Rock type: Volc breccia w/ Mn cement

Description: One rock is very similar to D41-3A. The other has a more solid nucleus w/ closely packed clasts in a sandstone matrix with little Mn cement (much less than the other 2 D41-3 rocks)

D41-3C has Hydrogenetic Crust w/ 12-[illegible]

Mineralogy (XRD):

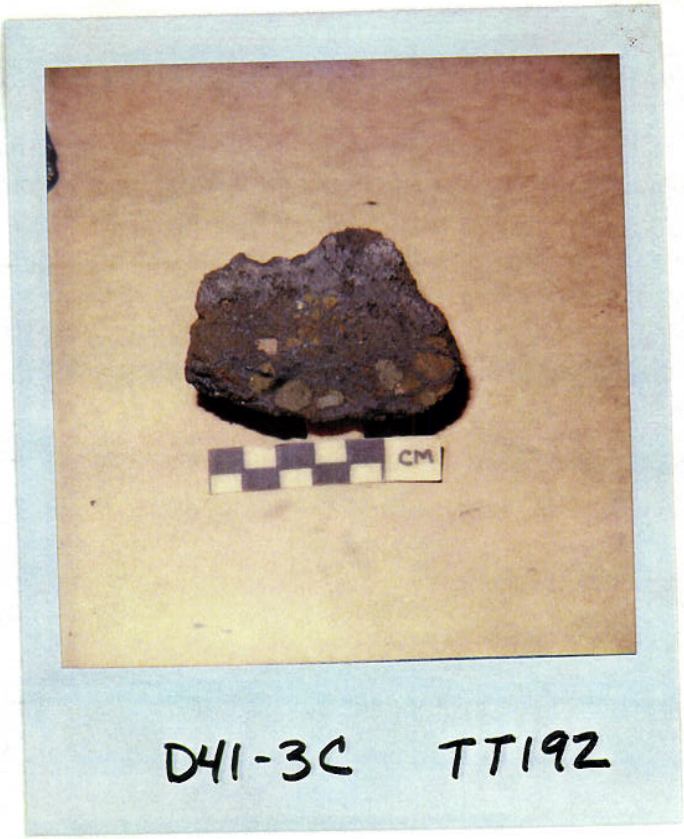


MARIANA ISLANDS
D41-3B & C

Analyses and subsamples:

analysis:	analyst:
D41-3C DPTS	

D41-3C
TT192



D41-3C TT192