SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): Pebbles Location: S.E Wall Fan trench ~~V3-91-NP~~

Sample Id: D6-30 Weight (kg): ~11 kg Depth (m): 2200-2000

Mn Crust Description

Surface Texture: Occational eroded rating

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-30

Comments and XRD Mineralogy:

Uncut pebbles

Substrate Description

Rock Type: Siltstones, sandstone turbidites, Breccia's Limestone

Description: Pebbles of similar lithologies to D6-1 through D6-9

Biology (?): None

Described by: G S.

Subsa

½ KORDI
½ USGS

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): Small boulder Location: S.E. West [illegible] [redacted]

Sample Id: D6-31 Weight (kg): ~15kg Depth (m): [illegible]

Mn Crust Description

Surface Texture: granulate

Sa[illegible] patina - Mn crust

Reddish orange oxidized coating

Mn Crust Thickness (mm):

Min:_____ Max: patina Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-31

Comments and XRD Mineralogy:

Sub

D6-31D DPTS - Glass - Alice hand Carried

D6-31A XRD Fe bathyrods from fracture

D6-31B XRD Blue Green [illegible] Alteration [illegible]

fracture [illegible]

Superficial [illegible]

D6-31C [illegible] Bulk Basalt

[illegible] ~

Substrate Description

Rock Type: Pillow Basalt

Description: Dense dark grey aphanitic groundmass - alteration rim with anaphanitic groundmass w/ dark - black vesicle fill - spotted appearance

Glass rim at the surface under Mn crust

Biology (?): encrusting forams with Mn [illegible]

Described by:

Subsampled by:

Fe-rich bathyrods in fracture [illegible]

fractures Calcite / Copper? sulfide coating

green coating. contains patches of pyrite(?) also a greenish blue coloring on the basalt associated w/ the green coating

D6-31

SAMPLE DESCRIPTION

Cruise Id: FZ-91-WP Size (cm): large cobble Location: S.E Wall Fans trough [redacted]

Sample Id: D6-32 Weight (kg): ~12 kg Depth (m): 2200-200

Mn Crust Description

Surface Texture: granular patina eroded, along fractured surfaces oxidized reddish yellow stain. along one fracture greenish white mineral ~ calcite w/ smectite

Mn Crust Thickness (mm):

Min:_____ Max: Patina Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				Black
2				
3				
4				
5				
6				

D6-32

Comments and XRD Mineralogy:

Subsample

D6-32 [illegible]

1 piece to [illegible]

Substrate Description

Rock Type: Basalt - pillow

Description: Dark grey aphanitic groundmass with ~1-2mm plagioclase. Chemo crusts light grey alteration rim - gradational boundary - some Rim - altered grey rim ~ 1cm

Biology (?):

Described by: JS

Subsampled by: [illegible]

Along fracture w/ calcite/smectite? [illegible] surfaces, pyrite in patches associated with green areas, along the edges of the white calcite. Crystalline calcite void fill.

D6-32 [redacted]

D6-32

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 12 x 15 x 29 cm Location: S.E Wall Fais rough [redacted]

Sample Id: D6-33 Weight (kg): ~10kg Depth (m): 2200-2000

Mn Crust Description

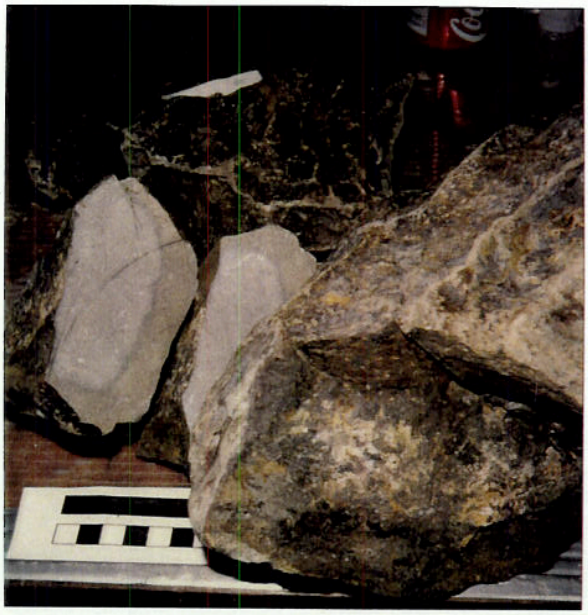
Surface Texture: Patina eroded

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				



D6-33

Comments and XRD Mineralogy:

Subs

Substrate Description

Rock Type: Basalt

Description: grey phaneritic ground mass with ~1% 2-3mm plag phenocrysts

Concentric → reddish brown alteration Rim with 1-3mm Black alteration rim. Some plag altered to smectite

Biology (?):

Described by: [signature]

Subsampled by:

DG-33

SAMPLE DESCRIPTION

SE Wall Fours trough

Cruise Id: EW-91-MP Size (cm): 5 x 18 x 35 Location: ~~V3-91-MP~~

Sample Id: D6-34 Weight (kg): ~ 4 kg Depth (m): 2200 - 2070

Mn Crust Description

Surface Texture: eroded patina

Mn Crust Thickness (mm):

Min:_____ Max: patina Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-34

Comments and XRD Mineralogy:

Subs

Substrate Description

Rock Type: Basalt

Description: Aphanitic basalt with ~5% 1mm plag. phenocrysts concentric ~ reddish brown alteration rim

Biology (?): None

Described by: M.S

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: EW-91-WP Size (cm): 40 X 30 X 20 Location: SE Wall Rift Trough [redacted]

Sample Id: D6-35 Weight (kg): 30 Depth (m): 2200 - 2000

Mn Crust Description

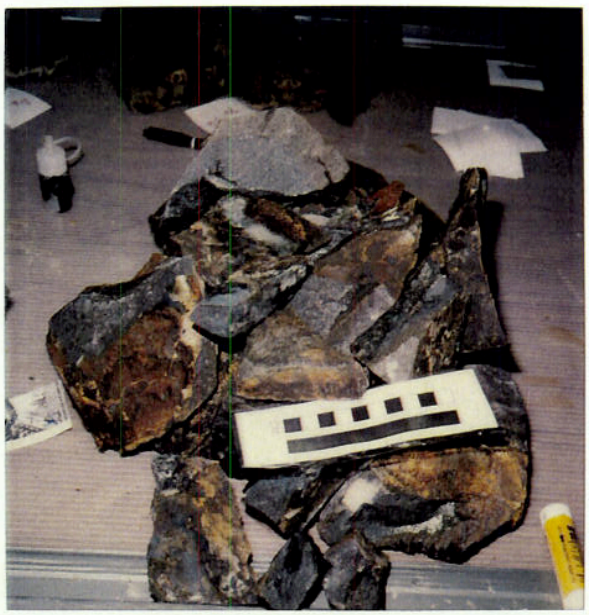
Surface Texture: patina

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				



D6-35

Comments and XRD Mineralogy:

Subsa

D6-35A XRD Fracture Fill/alteration greenish-blush white layer from fracture C+O isotopes 2.113 gm, pyrite, XRD logan

1 piece to KORDI ~10%

Substrate Description

Rock Type: Basalt

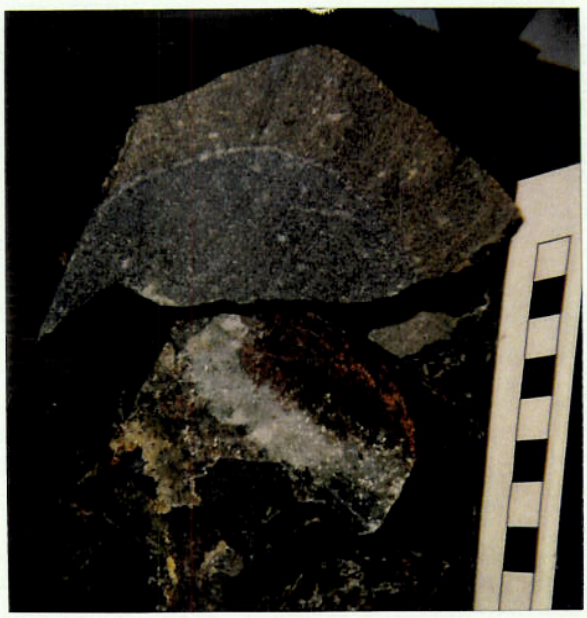
Description: Mostly aphyric fine grained, plagioclase basalt 15% thick oxidized margins + minor alteration along fractured surfaces

~~Biology (?)~~: (see no disseminated sulfides!)

Described by: ASD,

Subsampled by: JSS

Sulfides + Carbonate Fracture fill



D6-35

SAMPLE DESCRIPTION

S.E. Fairstrough [illegible]

Cruise Id: F7-91-WP Size (cm): Large cobble Location: [redacted]

Sample Id: D6-36 Weight (kg): ~10 kg Depth (m): 2200-2000

Mn Crust Description

Surface Texture: Patina [illegible]

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-36

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt

Description: phaneritic groundmass w/ ~5% 1-2mm plag. phenocrysts. Altered to reddish brown. Red alteration along fractures, alternating Red/Yellow concentric alteration [illegible] - glassy [illegible]

Biology (?): encrusting forams

Described by: [illegible]

Subsampled by:

D6-36

SAMPLE DESCRIPTION

S.E wall Fais trough

Cruise Id: FT-91-WP Size (cm): Cobble Location: ~~V3-91-WP~~

Sample Id: D10-37 Weight (kg): ~5 kg Depth (m): 2200-2000

Mn Crust Description

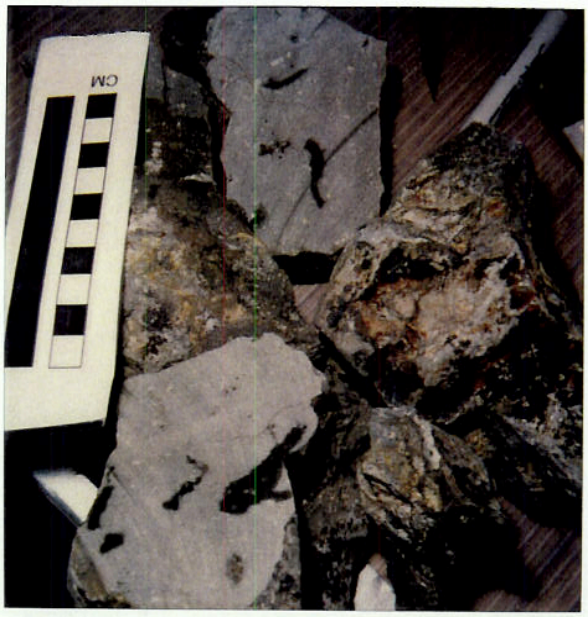
Surface Texture: eroded patina
Calcite lining older fractures.
Mn dendrites

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				



D6-37

Comments and XRD Mineralogy:

Su

~15%

Substrate Description

Rock Type: Basalt

Description: Mod. Grey phaneritic ground mass with 1-2mm plag. phenocrysts. Some alteration to smectite.

Biology (?):

Described by: J.S

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 13x13x15 Location: ~~V3-91-NP~~ S.E Fais trough

Sample Id: D6-38 Weight (kg): ~12kg Depth (m): 220 + 200

Mn Crust Description

Surface Texture: Patina, eroded surface covered with small + large Mn dendrites calcite + Redomorized stain

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-38

Comments and XRD Mineralogy:

Su

D6-38 TS XRD

1 piece to KORDI ~ 30%

Substrate Description

Rock Type: Basalt

Grey

Description: Phaneritic groundmass with 1-2mm plagioclase phenocrysts. 2 different + seperate alteration rims

① 1-2mm glass rim altered to greens + reds

② ~18mm, moderately altered basalt possible rim ① above 2.

Biology (?): None

Described by: A S.

Subsampled by: JSS + ASD

SAMPLE DESCRIPTION

SE Wall Fair Trough

Cruise Id: EW-91-WP Size (cm): 34 x 20 x 20 Location: [redacted]

Sample Id: D6-39 Weight (kg): 27 Depth (m): 2200 – 2000 m

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-39

Comments and XRD Mineralogy:

Su

D6-39 d/p TS, XRD

1 piece to XRD ~10%

Substrate Description

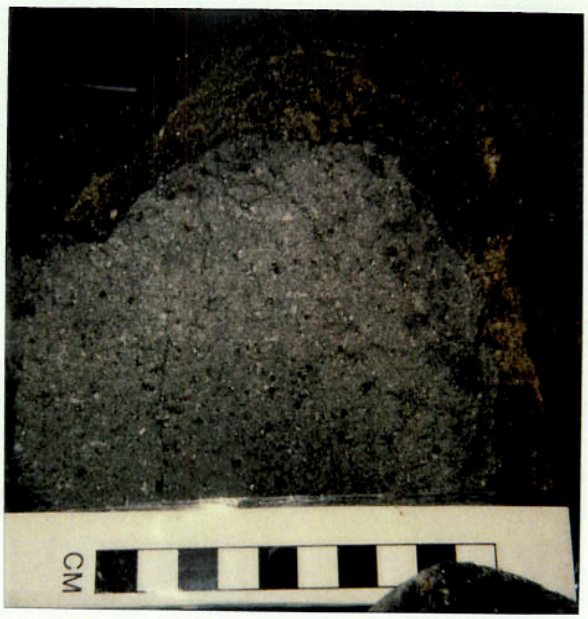
Rock Type: Basalt (or diabase)

Description: aphyric, fine to med. grained basalt or diabase. Thick "weathering" rind.

Biology (?):

Described by: ASD,

Subsampled by: JSS & ASD



D6-39

SAMPLE DESCRIPTION

SE Wall Face Top

Cruise Id: [illegible] Size (cm): [illegible] Location: [redacted]

Sample Id: D6-40 Weight (kg): 25 Depth (m): 2200 - 2000

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-40

Comments and XRD Mineralogy:

Sul

D6-40 DPTS XRD

1 slice for XRD ~10%

Substrate Description

Rock Type: Basalt (or diabase)

Description: aphyric, fine grained diabase with thin "weathering" rind. Same as D6-35

Biology (?):

Described by: ASO

Subsampled by:

SAMPLE DESCRIPTION

SE Wall Fairs Ridge

Cruise Id: F7-91-WP Size (cm): 20 x 16x10 Location: [redacted]

Sample Id: D6-41 Weight (kg): 25 Depth (m): 2200 - 2000

Mn Crust Description

Surface Texture: patina

v. fine botryoids

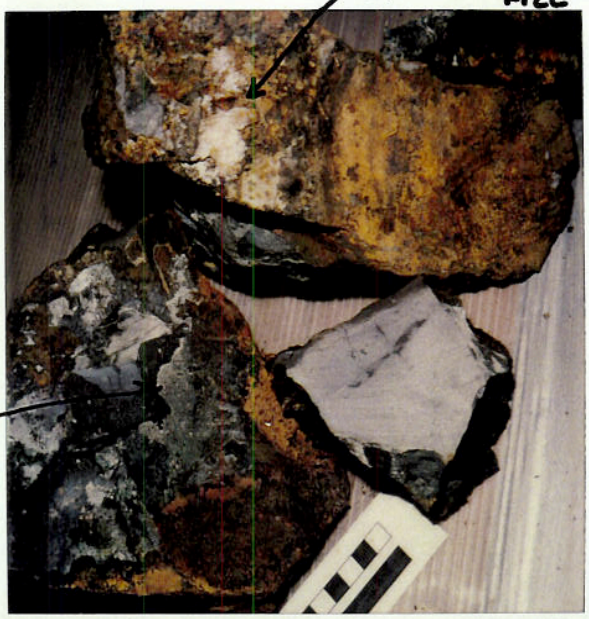
Mn Crust Thickness (mm):

Min: patina Max: 1 mm Ave:

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1	patina	1mm		
2				
3				
4				
5				
6				

Blue green fracture fill D6-41A



D6-41B

D6-41

Comments and XRD Mineralogy:

Subs

D6-41A XRD FRACTURE FILL blue-green & white layer

D6-41B XRD CALCITE FRACTURE FILL

O + C isotopes 2.248 gm, XRD (again)

1 piece to XRD ~15%

O + C isotop 0.968 gm

XRD (again

Substrate Description

Rock Type: Basalt

Description: Rare plag. glomerocrysts in fine grained phaneritic groundmass. Interior looks pretty fresh much alteration on

~~Biology (?)~~: surfaces

Described by: ASD

Subsampled by: JSS

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 55 x [illegible] Location: SE Wall Fas Ridge [redacted]

Sample Id: D6-42 Weight (kg): 40 Depth (m): 2200-2000

Mn Crust Description

Surface Texture: patina in rare spots

Mn Crust Thickness (mm):

Min: Max: Ave:

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-42

Comments and XRD Mineralogy:

Sub

1 piece to XRD! ~10%

Substrate Description

Rock Type: Diabase (or basalt)

Description: plagioclase phenocysts in fine grained phaneritic groundmass. Thick alteration rind

Biology (?):

Described by: ASD

Subsampled by:

SAMPLE DESCRIPTION

SE Wall Fais Trough

Cruise Id: EW-91-WP Size (cm): 30×30×2 Location: [redacted]

Sample Id: D6-43 Weight (kg): 30 Depth (m): 2200 – 2000 m.

Mn Crust Description

Surface Texture: patina in some areas

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-43

Comments and XRD Mineralogy:

Subsa

1 piece to XRD ~15%

Substrate Description

Rock Type: Basalt

Description: mod. plagioclase phyric with plag glomerocrysts in aphanitic groundmass. Rare vugs. Plag. lath chalky. Rock mod. altered.

Biology (?):

Described by: KSD

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): [illegible] Location: SE Wall Fall Trench [redacted]

Sample Id: D6-44 Weight (kg): ? Depth (m): 2200-2000

Mn Crust Description

Surface Texture: patina in some areas

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-44

Comments and XRD Mineralogy:

Subsa

D6-44A XRD - Calcite Fracture Fill (see back)

D6-44B XRD Fracture Fill w/ pyrolusite dendrites

O+C isotopes 1.527 gm

XRD (again)

O+C isotopes

1.704.

XRD (again

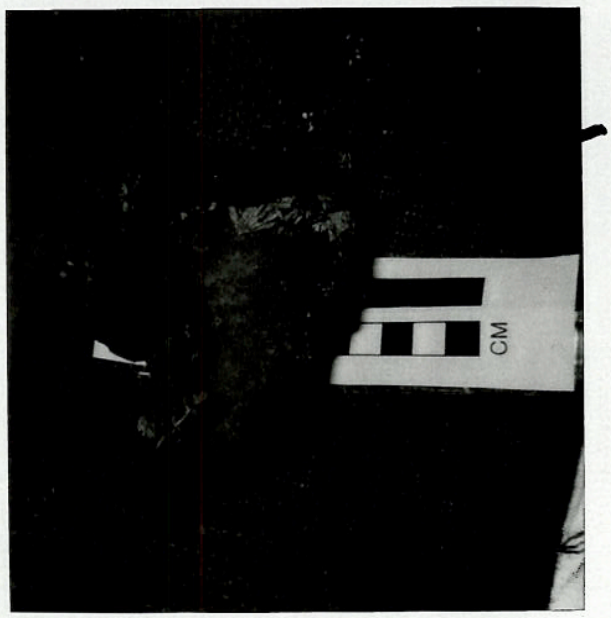
Substrate Description

Rock Type: Basalt

Description: Sparsely plagioclase phyric with glomerocrysts in aphanitic groundmass. Has glass rind. Area with tiny vesicles below glassy ~~Biology (?):~~ selvage. Basalt pretty fresh but much alteration on surfaces, ASD.

Described by:

Subsampled by: JSS



D6-44

D6-44A - Interesting rib, probably calcite
Reacts to HCl

SAMPLE DESCRIPTION

Cruise Id: EW-91WP Size (cm): lots of coffees Location: SE Vale Fais Trough

Sample Id: DG-45 Weight (kg): ~ 50 kg Depth (m): 2200 - 2000 m

Mn Crust Description

Surface Texture: —

Mn Crust Thickness (mm):

Min: — Max: — Ave: —

no photo

(8 boxes)

1 to KORDI

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

Comments and XRD Mineralogy:

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)

Substrate Description

Rock Type: Basalt

Description: plagioclase phyric basalt with phaneritic groundmass - moderately altered. Similar to DG-46 except coarser grained groundmass and more altered

~~Biology (?)~~:

Described by: A.D. (old?)

Subsampled by:

1

SAMPLE DESCRIPTION

Cruise Id: E7-91WP Size (cm): lots of cobbles Location: [redacted] SE Walls Fais Trough
Sample Id: D6-46 Weight (kg): ~ 40 kg Depth (m): 2200 - 2000 m

Mn Crust Description

Surface Texture:

no photo

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

(6 boxes)
1 to KORDI

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt

Description: Plagioclase phyric (mostly glomerocrysts) in aphanitic groundmass. No vesicles. Less altered than D6-45

Biology (?):

Described by: AD

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: EW-91WP Size (cm): lots of cobbles Location: [redacted] SE Wall Fais T.
Sample Id: D6-47 Weight (kg): ~ 15 kg Depth (m): 2200 - 2000 m

Mn Crust Description

Surface Texture:

no photo

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

(3 boxes)
1 to KORDI

Comments and XRD Mineralogy:

Substrate Description

Rock Type: Basalt

Description: plagioclase phyric (mostly glomerocrysts) in aphanitic to glassy groundmass. Sparsely vesicular, some have

~~Biology (?)~~: fresh glass rinds. Similar to D6-46

~~Described by~~: probably margin AD of flow

Analyses

Subsample No.	Analysis	Layer Thick.	Wt.(g)

Subsampled by:

SAMPLE DESCRIPTION

Cruise Id: F7-91-WP Size (cm): 5 x 3 x 3 Location: [redacted] SE Wall Fan Trough

Sample Id: D6-48 Weight (kg): 0.5 Depth (m): 2200 - 2000

Mn Crust Description

Surface Texture:

Mn Crust Thickness (mm):

Min:_____ Max:_____ Ave:_____

Outer to Inner Layers (mm)

	Min	Max	Ave	Texture & Color
1				
2				
3				
4				
5				
6				

D6-48

Comments and XRD Mineralogy:

Subsa

entire sample taken by ASD.

D6-48 DPTS } 54 gm
ICP-MS }

Substrate Description

Rock Type: Basalt glass top

Description: Rounded glass knob w. rare plag. microphenocrysts

Biology (?):

Described by: ASD.

Subsampled by: