DATE: 6 August 1984 SAMPLE:
CRUISE ID: SO 33 18 DK box dredge
LOC: II
AREA: B

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire
ON BOTTOM =	2151	9° 42.3206	162° 11.0440	1940	20
OFF BOTTOM =	~~0008~~	~~9° 44.0043~~	~~162° 10.1486~~	~~1482~~	
OR →	0038	9° 44.225	162° 9.821	1316	175
Median dredge data (corrected):		9° 42' 06"	162° 10' 57"	1755 (960 fm)	

time on bottom = 2 hr 47 min

RECOVERY WEIGHT: ~~total~~ 50 kg crust 2 kg

CRUST THICKNESS: .25 - 2 cm Avg = .5 cm

SUBSTRATE: hyaloclastite. Also pumice (white gray) Scoria (glassy brown porous)
2 large pieces of hyaloclastite (25 x 35 x 9 cm)

COMMENTS:
Much biota - little stars, coral,
2 small bivalves, whale ear bone

* 1 Bio sample
* smear slides made

*** Petrographische Daten Sediment

RV Sonne So 33 Midpac II 29.7 - 29.8.1984

Datum: 6-7.08.84 Areal: B Lokation: II Station: 18 DK

Probennummer: 18 DK Sediment

Längengrad, nk: 9° 44.71 → 9° 44.788 k:

Breitengrad, nk: 162° 10.05 → 162° 09.818 k:

Wassertiefe (m): 1943-1316 m Bereich (m):

Typ: foraminifera) ooze Farbe: light gray-brown

>63µm (Gew.%): <63 um (Gew.%): 95.0% $CaCO_3$
5.0% residue undissolv

Hpt. Bestd. Teile >63µm.:

Neb. Bestd. Teile >63µm.:

Hpt. Bestd. Teile <63µm.:

Neb. Best. Teile <63µm.:

H_2O-Gehalt (Gew.%):

Bemerkungen: (1-5% of Forams have orange Fe-staining)

7500 µ = Globorotalia 60%
Globogerina (sacculifer) 30%
Globigerinella (siphonifera) 10%

315-500 µ = Globogerina (sacculifer) 70%
Globigerinella (siphonifera) 18%
Globorotalia 10%
Lithics (Mn + phosphorite) 2%

200-315 µ = Broken Foram fragments 40%
Globigerinella (siphonifera) 30%
Globogerina (sacculifer) 20%
Globorotalia 8%
Lithic (Mn + phosphorite) 2%

125-200 µ =
Broken Foram fragments 60%
Globogerina (sacculifer) 15%
Globogerinella (siphonifera) 15%
Globorotalia 10%
Lithic (Mn + phosphorite) 1%

63-125 µ =
Broken foram fragments 60%
Globogerinella (siphonifera) 35%
Globorotalia 2%
Globogerina 2%
Lithics (Mn + phosphorite + altered volcanic) 1%

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 18DK

Location: "Sonne" Sm +
162°10'57" W
9°42'06" N
(~~4~~)755 m

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:

18DK4 | 18DK1

Rock Type:	~~Trachyte~~ Phosphorite ~~Spatter~~	Phosphorite ~~Trachyte flow breccia~~	Basalt, Massive
Color:	Grayish-orange (10YR 7/4)	Light brown (5YR 6/4) clasts; Pale brown (enclosing flow rock) (5YR 5/2)	pale-brown (5YR 4/2) + moderate yellowish-brown 10YR 5
Texture:	Vitrophyric	→ do =	Subaphyric, Intersertal
Phenocrysts:	Feldspar (K-Spar?) – ±10%, ±1.5mm; Amphibole (?) – ±5%, ±1mm	→ do –	Olivine(?) ±5%, ±1mm dia; Plagioclase(?) ±2%(?) ±1mm dia.
Groundmass:	Glass – ±82%	→ or more	– not resolved –
Vesicles:	shape – irregular elongate oval; Size – ±1mm – ±3mm dia.; % ±3 – ±30%; filling: most fine b/w ~~phillipsite~~ needles? Francolite	irregular; ±3 mm dia; ±1% – ±10% (some included clasts) (whole rx)	Pound – oval; ±2mm dia; ±25%; chalcedony, calcite, phillipsite usually open in interior
Alteration:	phenocrysts and groundmass appear to be totally altered, devitrified – probably the composition is now phillipsite/cristobalite/tridymite/Fe-Oxide	Similar more oxidation?	Intense alteration to zeolites (phillipsite, smectite, $Fe(OH)_3$(?)), vesicles all [illegible] with zeolite crystals; fragments more oxidized peripherally than in centers
Remarks:	Incorporates Volcanogenic material; Rare specimens in the dredge appear as lapilli retaining spatter shapes derived from being hurled, still molten, through air – most compelling evidence yet for subaerial eruption and exposure of this seamount.	Rare specimens in the dredge, pebble-size fragments subangular composed of phosphorite ~~trachytic~~ glass with incorporated fragments of ~~trachytic~~ basaltic glass; some of which is subscoriaceous, very altered – probably altered, completely to zeolites.	Rare specimens in the dredge, pebble size fragments subangular; vesicles vary greatly in size, suggest subaerial eruption; intense zeolitization, oxidation in all specimens suggests subjection to high degree of hydrothermal activity at some stage.

← appear to be coated thinly w/ $Fe(OH)_3$ or hematite →

Phosphorite

← halmyrogens →

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 18 DK

Location: Sonne Smt
162° 10' 57" W
9° 42' 06" N
(-) 1755 m

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:

18DK2

Rock Type	Basaltic ~~Trachyte~~ hyaloclastite I	Basaltic Hyaloclastite II
Color:	varied: various shades yellow-green gray (5Y 3/4, 7/2, 6/4, 7/6, 5/2, 5GY 2/1	Moderate brown (5YR 4/4) to very pale orange (matrix) (cement) (10YR 8/2)
Texture:	pyroclastic	Clastic (pyro?)
Matrix:	basaltic ~~Trachytic~~ aphanitic glass shards, rock fragments, in varying states of alteration, ± 70%, ± 0.5 mm dia.	Basaltic aphanitic ± 50%, ± 2 mm dia glassy debris Basaltic aphanitic ± 10% ± 2 mm dia rock fragments
Cement:	smectites (nontronite?) Zeolites? ± 30%	Calcite, phosphorized? Zeolite?? Smectite? ± 40%
Large grain size:	0.5 mm	± 2 mm dia
Sorting:	moderately sorted	moderately poor
Grain shape:	angular - subangular	angular to subround
Porosity:	± 25 %	± 25 %
Permeability:	20%	± 20 %
Alteration:	smectitization, zeolitization? hydration	extensive to total Zeolitization? Smectitization? oxidation, hydration
Remarks:	similar to other bridged hyaloclastites, but contains lighter-colored rock fragments, greenish-yellow nontronite? some pieces (pebble-size) bear ± 2 mm thick layers of α-MnO_2(?) on exposed surfaces in turn coated allovers with thin film of $Fe(OH)_3$(?)	Very much resembles other basaltic hyaloclastites from this seamount, thin coating of α-MnO_2(?) (± 2 mm thick) covers surface of rough, irregular outcrops; in some cases, the coating is ± 3 cm thick, considerably smoother (reniform) on exposed surfaces

Same - AOB

But different type of hydrothermal alteration and deposit

18DK3

Note: 18DK had some erratics(?) in it:

(18DK5) 1. small pebbles of very light-colored, water-logged pumice

(18DK6) 2. piece of scoriaceous very fresh, very recent basalt(?) with included angular fragments of trachyte(?) or similar silicic volcanic rx - certainly not from this seamounts effusa!