DATE: 31 July 1984 SAMPLE:
CRUISE ID: SO 33 1 DK Box dredge
LOC: I
AREA: A (Cross Seamount)

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
ON BOTTOM =	0526	18°41.967	158°22.8049	3261	4876
OFF BOTTOM =	0744	18°40.685	158°23.2617	3544	3548

time on bottom = 2 hr 18 min

RECOVERY WEIGHT = Total: 150 kg Crust: 5-10 kg

135 kg large basalt boulders, rubble, calcareous sed
10 kg large-med size encrusted substrate
5 kg crust fragments and small nodules

CRUST THICKNESS =

Veneer to 1.5 cm
Avg = 0.3 cm

SUBSTRATE =

Basaltic boulders and cobbles
Phosphatic material, Calcareous sediment

COMMENTS:

* Smear slides of calc. sediment
* 2 microbio samples
* 3 bio samples

SO33 1DK1

Rock Type: Basalt (AOB?), massive

Color: Moderate yellowish-brown 10YR 5/4

Groundmass: Glass — 40%?
crystals (feldspar/olivine?) — 60%?
smectites? (related to glass)
Zeolites? }
goethite? }

Phenocrysts: Plagioclase ±1%, ±1 mm
Olivine ±2% ±1 mm

Texture: subaphyric, hyalopilitic — micaceous, subtrachytic

Vesicles: varies from 0 — ±25%, ±1 mm — ±10 mm round to cylindrical elongate

Clasts: not observed

Remarks: Basalt, massive (1DK1)
Very highly altered groundmass (glass only?)
most phenocrysts appear fresh, if skeletal, particularly plagioclase, most of the alteration appears to be smectitization and oxidation. the vesicles, when present generally empty, a few drusy linings of yellowish cubic-aspect zeolites? distinct flow orientation strongly in some samples; samples rare mostly sub rounded pebbles and cobbles set in matrix of brown hyaloclastite(?) ooze which bears a thin crust of δ-MnO_2(?) coated brown phosphorite(?) [This is actually description of basaltic component of 1DK2]

SO33 1DK2

Basalt hyaloclastite/Breccia

Grayish-brown (5YR 3/2) to moderate yellowish-brown (10YR 5/4)

glass
Smectite
zeolites?
goethite?

not observed

Aphanitic hyalopilitic to subtrachytic

not observed

angular to subangular fragments ranging from ±1 mm — ±2 cm dia

Basalt hyaloclastite: angular to subangular fragments of highly altered basalt set in cement composed of small rock fragments, smectite, zeolites?, very irregular upper surface coated with δ-MnO_2(?) layer ±1 cm thick; no vesicles observed; no phosphorite deposits

(1DK2)

	SO33 1DK3	SO33 1DK4	SO33 1DK5
Rock Type:	"Red clay"	- do, - ooze	Trachyte Breccia
Color:	Pale orange-brown (5YR 6/2)	yellowish-brown (10YR 5/2)	Pale yellowish olive (10Y 7/2) pale brown (5YR 5/2) to grayish-brown (5YR 3/2)
Texture:	Clastic	- do -	- do - (Subtrachytic - trachyte fragments)
Matrix:	Manganese crust fragments - ± 5% ≠		
	Mn-micronodules - ± 5%	± 5%	
	Foraminiferal tests - ± 15%	- do -	
	Basaltic glass fragments - ± 5%	± 5%	
	Basaltic rock fragments - ± 5%	± 5%	
	Total: ± 35%	± 30%	
Cement:	Smectite/zeolites(?) - ± 65% ≠	± 70%	Trachyte fragments 80-90%; feldspar (sanidine?) ± 93%, ± 0.2%; Biotite(?) ± 5%, ± 0; Fayalite(?) ± 2%, ± 0; Zeolites (phillipsite?) 10-20%
Avge grain size:	~ 20 μ	- do -	± 1 cm (fine gravel - small pebble size)
Avge grain shape:	angular - round (forams)	- do -	angular - subangular
Sorting:	moderately poorly sorted	moderately sorted	moderately poorly sorted
Porosity:	70+%	80-90%	< 5%
Permeability:	- do -	- do -	< 3%
Alteration:	moderate to intense (oxidation, hydration (basalt plugs) smectitization, zeolitization, phosphorization(?) (carbonate component)	- do -	intense to complete (smectitization [nontronite], oxidation, hydration, zeolitization [phillipsite?])
Remarks:	fine, pasty, consolidated ooze with large sand-to-gravel-size component, both biogenic and volcanogenic; forms a very large part of the substrate recovered in the dredge; contains Mn-micronodules and regular-size ones (up to 1 cm dia.) and Mn-crust fragments; impression is that this material represents red clay ooze that has consolidated by marine diagenetic process (probably once had a large ash component now completely altered to smectite, zeolite, etc.; generally covered by ± 1 cm-thick layer of knobby, warty δ-MnO_2 crust - no phosphorite layer observed - continuous crust - displaying evidence of current scouring and polishing from place to place on upper surface; clay gave (+) test for (PO_4) - phosphorization of calcareous component?	- do -, not consolidated; ≠; - do -; ≠	pebble-to-cobble-size subrounded to subangular clasts composed of gravel-to-pebble-size clasts of trachyte cemented rather tightly (some have ± 10% open spaces ± 3 mm avge dia) with well-crystallized, colorless, transparent acicular zeolite aggregate; impression is that trachyte fragments rolled short distance from eruption site, becoming submarine rubble slope-covering; subsequent submarine hydrothermal activity altered the fragments and finally cemented them tightly together into a breccia.; texture of the trachyte is quite directed with tiny black, shiny flakes of biotite and rusty, equidimensional silt-size grains interspersed between the feldspar laths.

Schiff	Fahrt-Nr.	Stat.-Nr.	Gerät	Lok.	Areal
S O	33	1	DK	I	A

Date
Datum: 31.07.1984 On watch Protokoll: Otten, Sattler

	Zeit (GMT)	N (Lat.)	W (Lon.)	Tiefe (Water D.)	Seil (m) (cable out)	Seilzug (t) (tension of cable)
Beginn Operation	03.17	18° 41.627	158° 26.288	4092	0	0.25
lowering Beginn Fieren	03.20	18° 41.613	158° 26.38	4077	0	0
on bottom 1. Bodenkontakt	05.26	18° 42.347	158° 23.104	3289	4876	5.7
off bottom Ende Bodenkont.	07.44	18° 41.056	158° 23.571	3532	3540	5.8
Hieven						
2. Bodenkontakt						
Ende Bodenkont.						
lift Hieven						
3. Bodenkontakt						
Ende Bodenkont.						
Beginn Hieven						
Ende Hieven					0	
Ende Operation	08.47	18° 40.515	158° 24.946		0	

Course of ship
Kurs Schiff: o Geschwindigkeit Schiff: kts

time on bottom
Gesamtzeit am Boden: 2h18min Länge des Dredgezuges: length of dredge m

Bodentopographie: bottom topography

Ergebnis:

Knollen nodule kg
Krusten crust
Basalt
Sediment
Sonstiges others
(Bims, Org. u.a.)

Echogramm:
Seil Ø : 18 mm
Winde: Fischer
Fotos:

Comments
Weitere Bemerkungen siehe Anlageprotokoll

Dredgezug von 3800 m - 3500 m

Tuffiges Makrial (schwach verfestigt) mit Basaltbreccien.
Dünne Krusten (3-10 mm) mit glatter Oberfläche.
Vereinzelt Polymonolle. Toniges Sediment mit Foraminiferen (leichtes Schäumen mit 10%iger HCl). ca. 150 kg

ANLAGEPROTOKOLL Seite: ..... von: .....

Zu: 1 DK

So 33 Fahrt: SO 33 Station: 1 Position:

Bearbeiter: Otten, Satt Datum: 30.07.84

Pinger 5Dom über Gerät

05.30	11.5 t
06.02	10.0 t
06.14	10.0 t
06.36	10.5 t, 11.0 t (Hänger)
07.32	Dredge [illegible]

1 DK