DATE: 13 August 1984 SAMPLE:
CRUISE ID: SO 33 37 DK box dredge
LOC: VI
AREA: D (near SP Lee Guyot)

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire ou
ON BOTTOM =	2340	9°9.83	164°50.54	2350	2326
OFF BOTTOM =	0059				2326
mean dredge data (corrected):		9°09'57"	164°50'43"	2366 (1294 fm)	

RECOVERY WEIGHT = total 20 kg crust 1 kg

CRUST THICKNESS = Veneer to 2 mm
Avg = Veneer

SUBSTRATE = Basalt, Breccia

COMMENTS: crust has some smooth scour surfaces

37 DK

Gesamtmenge 20 kg
davon 1 kg Krusten

Basaltische Breccie, carbonatisch - phosphatisch zementiert
- Hangrutschungsprodukt (debris flow (?))
- dünn überkrustet - 2 mm -, Oberfläche (surface) knollig (nodose) bis (or) flatt (flat),
teilweise (sometimes) korrodiert (corroded), teilweise (sometimes) Strömungsschliff

37 DK 1 basaltische Breccie, carbonatisch bis phosphatisch zementiert, 2 mm Fe-Kruste, knolig

37 DK 2 s.o. Kruste mit Strömungsschliff und Korrosionsbereichen

Sample Description

Cruise I.D: 5033

Sample I.D: Sta: 37DK

Location: SP Lee Smo area
9° 09' 57" N
164° 50' 43" W
(-)2366 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:

Rock Type: Olivine Basalt (AOB?) 1	Tholeiitic(?) Basalt 2
Color: Brownish-gray (5YR 4/1 to dark brownish-gray (5YR 3/1) — more oxidized — shades of yellowish to grayish-brown	Dark brownish-gray (5YR 3/1)
Texture: Subaphyric to Aphyric hyalopilitic pilotaxitic (microphenocrysts)	Aphanitic, Aphyric hyalopilitic-pilotaxitic
Phenocrysts: Olivine, 0-5%, ± 0.50 mm	Plagioclase? Augite? } (may be zeolite only concentrations)
Groundmass: Glass, Microlites? (not determined)	-do-
Vesicles: absent	%: ± 5% Size: ± 1 mm Shape: irregular elongate filling: zeolites (lining)
Alteration: extensive — complete(?) (Oxidation, smectitization, zeolitization, iddingsitization, hydration) (Olivine crystals are complete iddingsitized)	-do-
Remarks: pebble to small cobble-size angular clasts set in coarse sand-size volcanogenic breccia and in pebble-cobble-size volcanogenic breccia cemented with phosphorized calcareous ooze; generally very "layered" appearance on fractures ⊥ to flow direction ("stairsteps")	-do-

* One pebble is very glassy — mostly palagonitized — but appears to retain zones of unaltered, black glass; also apparently completely aphyric.

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 37 DK

Location: SP Lee Smt area 9°09'57" N 164°50'43" W (-) 2366 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:

	3	4
Rock Type:	Volcanogenic Breccia I	→ -do- (Volcanogenic Breccia II)
Color:	Very pale orange (10YR 8/2)	Light olive gray (5Y 5/2)
Texture:	clastic	→ -do-
Matrix:	Basaltic rock fragments ±40%	→ ±50%
	Calcareous fossils (?) ±15% (mostly dissolved, leaving molds in the phosphorite cement)	(shell fragments (?)) ±20%
	Manganese micronodules ±5%	→ -do- ±5%
Cement:	Calcareous ooze (foraminiferal?) (largely replaced with apatite) (phillipsite?) ±40%	→ -do- ±25%
Avge grain size:	extremely variable (±5mm avge) (Sand size to cobble size)	
Grain shape:	Angular - subrounded (more)	→ subangular - subrounded (more)
Sorting:	very poorly - sorted	Variable; but in general, moderately sorted
Porosity:	75+%	→ -do-
Permeability:	±60%	→ -do-
Alteration:	extensive: $Fe(OH)_3$ (?) leached from ferromanganese surface coating (?) or of hydrothermal origin (more likely) penetrates everything for several mm below the manganese coating; calcareous fossil constituents have been leached out (?) in most cases; calcareous ooze cement between basaltic rock fragments and fossil (?) components appears to have been phosphorized; zeolitization (phillipsite?) is also extensive (ubiquitous euhedral crystals)	→ Similar, but much less so
Remarks:	cobble to boulder size pieces and slabs broken from out crop by dredge (?), also, loose pebble - boulder size fragments apparently much altered by hydrothermal solutions and coated with a thin (±2 mm) to fairly thick (±2 cm) warty Mn-oxide layer; large grain size distribution, angularity of grains suggest deposition [illegible]	apparently a different generation than the breccia described at left: rock is darkened by greater abundance of rock fragments less cement, abundant light-colored shell fragments and greater roundness of grains, better sorting suggest reworking by water current (wave action?) prior to deposition and lithification, less evidence here for hydrothermal activity (less metal-oxide deposits and zeolites

Corals? (wave [illegible])