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
ON BOTTOM =	2340	9°9.83	164°50.54	2350	232
OFF BOTTOM =	0059				232

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

1	2
Rock Type: Olivine Basalt (AOB?)	Tholeiitic(?) Basalt
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 Fling: 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.

[illegible] 3	[illegible] 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%
Corals? 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 fin (±2 mm) to fairly thick (±2 cm) wasty Mn-oxide layer; large grain size distribution, angularity of grains suggest deposition from high energy environment with rapid lithification	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 rework by water current (wave action?) prior to deposition and lithification; less evidence here for hydrothermal activity (see metal-oxide deposits and zeolites)