DATE: 14 August 1984 SAMPLE:
CRUISE ID: SO 33 41 DK box dredge
LOC: VI
AREA: D (near SP Lee Guyot)

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire
ON BOTTOM =	1520	9°8.386	164°47.364	~2500	31(
OFF BOTTOM =	1629				218

RECOVERY WEIGHT = Total 5-10 kg crust <1 kg

CRUST THICKNESS = 0.5-0.7 cm Avg = 0.5 cm
1 generation

SUBSTRATE = hyaloclastite, phosphorite

COMMENTS:

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Rock Type: Olivine Basalt (208?) scoriaceous	→ (vesicular)
Color: Brownish-black (5YR 2/1) +	Dark brownish-gray (5YR 3/1)
Texture: subaphyric; (Aphanitic) hyalopilitic, microlitic	Phyric, hyalopilitic/intersertal
Phenocrysts: extremely rare olivine (±1 mm; <1%) (single anhedra)	Olivine, ±10%, ±1mm dia.
Groundmass: Glass, Olivine?, Plagioclase?, Clinopyroxene?, Opaques? (not determined)	→ -do-
Vesicles: %: ±40%	± 15%
Size: ±0.75 mm	± 2 mm
Shape: round	round to irregular, coalesing
filling: variable those near surface are 100% filled with calcite, zeolites, those at depth 100% empty	calcite, zeolites ± 5% of total vesicles
Alteration: moderate to complete (Oxidation, [illegible] of olivine, hydration, Zeolitization, Smectitization) Original glassy rind now totally altered to zeolites?, $Fe(OH)_3$?	→ -do-
Remarks: pebble-to-cobble-size free and en matrix angular clasts broken from volcanic effusa and pyroclastic material; a few pieces are flow basalt but most were probably lapilli and bombs; some bore glassy rinds which are now completely altered to zeolites and $Fe(OH)_3$? or goethite; Mn-oxide crusts on surfaces exposed to seawater highly variable in thickness (<1mm – 5+mm); knobby, cuspate surfaces on encrustations	→ -do-

[illegible] DK 3	[illegible] DK 4	SO 3? 4 DK 5
Rock type: Basaltic Hyaloclastite Breccia	Basaltic Volcanogenic Breccia	Phosphorite / chalk
Color: Moderate reddish-brown (10 R 4/6)	Dark reddish-brown (10R 3/4)	yellowish-white (5Y 9/1) to yellowish gray (5Y 8/1)
Texture: pyroclastic	→ -do-	granular
Matrix: Basaltic glass fragments ±40%	→ ±65%	foraminiferal? ±90%
Basaltic rock fragments ±17%	→ ± 5%	→ -do-, ± 5%
Manganese micronodules ±3%		
Cement: calcite, zeolites(?) ±40% francolite?	→ ±30%, thin, loosely-bonded cementing by calcite around perimeter of clasts, much open space	francolite? ±5%?
Avge grain size: (± 10mm avge) varies greatly fine sand – cobble size	Varies, (± 5mm avge) Coarse sand – pebble size	±0.25 mm
" Grain Shape: angular – subangular	subangular – subround	round
Sorting: extremely poorly sorted	poorly sorted	well-sorted
Porosity: ± 30%	± 60%	90+%
Permeability: ±20%	± 60%	90+%
Alteration: extensive – complete oxidation, iddingsitization of olivines, smectitization, zeolitization?, carbonation, hydration	→ -do- rare pieces are fresh, unoxidized, like 41 DK 1	original calcite mostly replaced by francolite? (apatite)
Remarks: pebble to boulder-size clasts both free and dislodged by dredge from outcrop, composed of widely-varied sizes and types of olivine basalt cemented by calcareous ooze; [illegible] disparity of grain sizes, shapes, suggests rapid deposition from high-energy environment, rapid cementation and induration; serves as substrate for ferromanganese encrustation (dense, indurated, ± 5 mm thick, nodose, wardy surface topography)	→ -do- but most components are oxidized basaltic glass froth (lapilli ejecta); probably reworked to a degree by wave action subaerial (better sorting, rounded grains); graded bedding – larger components lower down smaller higher up; serves as substrate for thin (± 1mm) ferromanganese encrustation	small, subangular to subround clasts (pebble size) composed of foraminiferal tests; most of the original shell material appears to be leached, leaving a very spongy, open texture; superficial reaction with HCl solution – probably mostly replaced with apatite. Serves as substrate for a 1500 encrustation of ferromanganese deposit.

42 DK