DATE: 15-16 August 1984 SAMPLE: 49 DK box dredge
CRUISE ID: SO 33
LOC: VI
AREA: D

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
ON BOTTOM =	0007	9°12.012	164°55.733	~ 400	1499
OFF BOTTOM =	0129				1335

RECOVERY WEIGHT = total 17 kg
crust
5 kg
10 kg basalt
2 kg breccia

CRUST THICKNESS = Veneer to 2 cm
Avg < 1 cm

SUBSTRATE = basalt

COMMENTS:

1 2

Rock Type: Basalt, massive, tholeiitic(?) → -do-

Color: (fresh break) Grayish-black (N2) | Dark brownish-gray (5YR 3/1)

Texture: Phyric; hyalopilitic, pilotaxitic | Subaphyric; intersertal, subtrachytic

Phenocrysts: glomerophyric and single euhedra
- Plagioclase ±10%, ±2 mm dia. avge → -do-, ±2 mm, ±1%
- Clinopyroxene ±5%, ±2 mm dia. avge → -do-, ±2 mm, ±1%
- Olivine (?) ±2%, ±1 mm dia avge ≠

Groundmass: Plagioclase - major; Clinopyroxene - -do-; Olivine ?; Glass; Opaques — not determined → -do-

Vesicles: absent (dense) → -do-

Alteration: penultimate (almost total replacement - leaching and skeletonizing of plagioclase, olivine?, phenocrysts; partial smectitization of interstitial glass?) ≠ | Superficial (oxidation, smectitization of glass?)

Remarks: Free (loose), angular, pebble-to-cobble-size clasts with almost no zone of weathering around the periphery; phenocrysts difficult to distinguish because of severe alteration; plagioclase (fresh) is glassy, yellowish, frequently glomerophyric with deep reddish-brown, glassy (looks black except on thin edges), virtually unaltered clinopyroxene. Rock appears vesicular at first glance on weathered surface, but cavities are merely hollows left by former phenocrysts; curious that rock should have well-developed flow structure and yet be absent of vesicles (very dry magma?); outer surface of clasts covered thinly (<< 1mm) first with $Fe(OH)_3$(?) or perhaps hematite, then ferro-manganese coating. → -do-

3 | 4

Rock Type: Plagioclase-phyric Basalt (Tholeiitic?) (weathered) | Basalt, massive, (tholeiitic?) flow

Color: Moderate brown (5YR 4/4) to Pale brown (5YR 5/2) → Moderate brown (weathered) (5YR 4/4) to Dark grayish-brown (5YR 3/1)

Texture: Phyric, hyalopilitic, pilotaxitic ≠ Aphyric, hyalopilitic, pilotaxitic

Phenocrysts: Plagioclase ±5%, ±2 mm dia (some glomerophyric, most single euhedra) Clinopyroxene <1%, ±1 mm dia. ≠ absent

Groundmass: Plagioclase, Clinopyroxene(?), Olivine?, Glass?, opaques? } not determined → -do-

Vesicles % <1%
Size: ±1 mm
Shape: round
Filling: lined with zeolites(?)
≠ absent (dense)

Alteration: extensive - almost complete; (oxidation, hydration, smectitization, zeolitization of glass, crystals) } -do-, but much more segregated into zones (less altered/more altered)

Remarks: ellipsoidal clasts (originally may have been oblate spheroids) found loose in dredge; ~~may represent volcanic bombs (palagonite?)~~ zones ±15 mm thick peripherally — may also simply be hydrothermal alteration aureoles — they are crystalline and appear to be continuous with the less-altered interior rock); serve as substrates for thin (<1 mm thick) ferromanganese deposits on surfaces exposed to seawater

not thinking this is more likely →

Giant (boulder size) clast (free?, dislodged from outcrop by dredge?) of flow basalt, curvilinear convoluted structure, including zones of ~~palagonitization~~ or hydrothermal alteration (oxidation, etc) brecciation (material similar to altered palagonite zones forms the matrix material, phosphorite & zeolites the cement), and is vesicular composed of clasts of various types of volcanic rocks & phosphorite, cemented by calcareous (foraminiferal ooze (chalk) (difficult to explain!) numerous veinlets of todorokite (dendritic penetration into chalk breccia); also serves as substrate for encrustation deposit (±3 mm) of knobby, warty ferromanganese oxides.

↔

(Probably same rock-type)

	5	6
Rock Type:	Volcanogenic Breccia	→ -do-
Color:	Light brown (5YR 5/6) (matrix), very pale Orange (10YR 8/2) (Cement)	Grayish brown (5YR 3/2) (general matrix color), white (N9) (Cement)
Texture:	Clastic	→ -do-
Matrix:	Basaltic rock fragments, ±75% phosphorite fragments, ±5%	→ -do-, ±30% → -do-, ±10%
Cement:	phosphorite, ± ±17% zeolites, ±3%	≠ phosphorized (±) chalk ±60%
Average grain size:	quite variable, ± 3 mm, avge (Range: sand size — small pebble size)	→ -do- → -do-
Grain Shape:	angular — subangular	angular — subrounded
Sorting:	very poorly sorted	→ -do-
porosity:	± 40%	± 80%
permeability:	± 5%	± 10%
Alteration:	extensive, See remarks on 49 DK 4	→ -do-
Remarks:	See	→ -do-

[related (derived from) to 49 DK 4]

Sample No: S0349 DK 7

Rock Type: Foraminiferal chalk

Color: White (N9) to medium dark gray (N4)

Texture: granular

Matrix: Globigerina(?) Globorotalia: foraminifers – ±0.25 mm, 0-50%
ferromanganese micronodules – ±0.20 mm, ±10%
manganese dendrites – variable size, ±250%

Cement: calcite, phosphorite(?) (not determined)

Average grain size: ±0.20 mm

Grain Shape: round, ovoid

Sorting: well-sorted

Porosity: ± 90%

Permeability ± 90%

Alteration: replacement of calcite with apatite? (superficial?)

Remarks: rounded, corroded (scalloped) pebble-to-cobble-sized clasts penetrated by manganese oxide dendrites (more numerous toward & at periphery); also penetrated by large pencil-like worm-tubes; very mottled appearance due to penetration of interior by dendritic manganese oxide; looks like worked; has thin veneer of ferromanganese oxide