DATE: 9 August 1984 SAMPLE:
CRUISE ID: SO 33 25 DS Chain-bag dredge
LOC: III
AREA: C

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
ON BOTTOM =	1238	6°30.1750	162°22.2244	2572	323
OFF BOTTOM =	1349	6°29.9396	162°22.5238	2347	267

time on the bottom = 71 min (1 hr 11 min)

RECOVERY WEIGHT = total 65 kg crust 1 kg
15 kg basalt
50 kg sediment

CRUST THICKNESS = Veneer to .5 cm
Avg .2 cm

SUBSTRATE = tuff, breccia, hyaloclastite, trachyt ash, vesicular basalt, carbonate

COMMENTS: Worm tubes in crust and tuffaceous material.
** Vesicular basalt for Clague to age-date

SO33 25DS1

Sample No: SO33 25 DS 1 (derived from DS 6 Volcanog. Breccia II)

Rock Type: Basalt (massive) (AOB?)

Color: Dark gray (N3) Grayish-black (N2) + dark brownish-gray (5YR 3/1)

Texture: Microphanitic, intersertal

Phenocrysts: Very small (± 0.60 mm avg.)

Plagioclase - ± 15%, ± 1 mm

Olivine - ± 15%, ± 0.5 mm

Groundmass: not resolvable, prob. glass + olivine + plagioclase? + opaques + clinopyroxene?

Vesicles: % - ± 35%
size - ± 1 mm-dia
shape - round
fillings: usually empty
[illegible] formed zeolites (± 50% of total vesicles)

Remarks: rather strong - complete alteration of olivine pos. by zeolitization of feldspar & glass matrix

Apparently [illegible] as clasts, [illegible], ranging in size from small pebbles to small boulders - appear to have been altered to transport [illegible] zeolitization [illegible] time [illegible] prior to deposition to hydrothermal activity. Though pieces are [illegible] with MnO_2? (< 1 mm - ± 3 mm) [illegible] are [illegible] coated in deposits and [illegible] oxide; [illegible] surfaces exposed to seawater at depth display weathered surfaces 4-5 mm deep, colored light yellowish-brown (10YR 6/4); a few pieces preserve ± 1 cm-thick palagonite rim (light brown 5YR 5/6). Much of this material (all?) is probably set, like many other rock types recovered, in cemented breccia

SO33 25 DS 2

Lachate Flow (derived from Volcanogenic Breccia)

Dark yellowish-brown 10YR 4/2 (fresh break)

Aphyric, pilotaxitic (subtrachytic) hyalopilitic

extremely rare sanidine? (<< 1%) ± 1 mm dia

~~sanidine (?)~~ - glass (shards) ~~amphibole (?)~~ } not determined - extremely fine grained

absent

oxidation, [illegible] - oxidized amphiboles (?) give brown color

as with the basalt — clasts of volcanogenic lapilli-size, subangular, set in a breccia. mottling due to flow structure detectable on examination; some pieces have ± deposit of MnO_2? and FeO_x; presence of hydrothermal activity [illegible] of [illegible]

Sample No: SO33 25 DS 6

Rock Type: Volcanogenic Breccia II

Color: Grayish-yellow (5Y 8/4)

Texture: Clastic

Matrix: Basaltic (AOB?) scoraceous cinders, ash ± 60%
Basaltic (Nephelinite?) cinders, ash ± 3%

Cement: Calcite, zeolites - ± 25%

Voids: ± 12%

Aggr. grain size: ± 1 mm (silt - coarse gravel)

Aggr. grain shape: subangular

Porosity: ± 80%

Permeability: ± 60%

Alteration: Nearly complete (smectitization from [illegible] hydration, zeolitization, oxidation, carbonatization [illegible] of the two, w/ AOB trait dominant [illegible]

Remarks: very like both 25DS-4 and 25DS5 [illegible]

Rock Type: ~~Vitric tuff (tractytic?)~~ (volcanogenic sil/stone?)

Color: Pale (reddish) brown (5YR 5/2) (4/2?)

Texture: Clastic

Constituents: None

Matrix: Smectite - ±85%
Hematite? ±1%
Glass - ±13%
Fossils - ±1%

Cement: Smectite - 100%

Avge Grain Size ≤ 0.01 mm

Sorting: fairly well sorted

Grain Shape: angular - rounded granules

Porosity: ±40%

Permeability: ±30%

Alteration: intense Smectitization, oxidation

Remarks: clasts, subangular, fairly bedded, intensely burrowed by rock drill clams(?) &/or worms - these serve as conduits and substrate for deposition of the Fe(OH)3 and α-MnO2(?) deposits (which also serve as cement for some of the breccias in this dredge.

SO33 25DS3

SO33 25DS4

Rock Type: ~~Tractytic~~ Hyaloclastic

Greenish-yellow (10Y 6/4)

Pyroclastic

Sanidine (?), zeolites (phillipsite?)

Glass shards - ±50%
Rock fragments - ±40%, ±1 mm dia.
Zeolite needles - ±10%
Manganese microsnodules - ±1%

Smectite, zeolite, ±60%
± 1 mm

moderately sorted
angular - subrounded
±30%

±25%

intense!
Smectitization
Zeolitization

clasts of widely varying size range (pebbles to boulders), subrounded - subangular bedding faintly apparent - tends to break into orthorhombic blocks; several grain-sizes of bedded material apparent; serves as "cement" for larger rock fragments in some of the breccia material; apparently reworked and winnowed by water currents; ultimately, outcrops of this and other fragmental rocks in the dredge were coated with ±3 mm-thick coatings of α-MnO2(?) (lobate, radial layers in thin

SO33 25DS5

Rock Type: Volcanogenic Breccia I

Color: (binding material - cement) Very pale orange (10YR 8/2)

Texture: Clastic

Constituents: Ubiquitous zeolites (phillipsite?) especially in hollows or along fractures

Matrix: mixed volcanic rock fragments (basalt, ~~trachyte~~ andesite) hyaloclastites

Cement: calcareous ooze(?) ±10%
zeolites ±50%
smectite ±40%

Avge grain size: fine gravel (range: clay - pebble size)

Sorting: Very poorly sorted

Grain Shape: Subrounded - angular

Porosity: ±20%

Permeability: ±15%

Alteration: All components subjected to intense hydrothermal alteration: esp. zeolitization, smectitization, oxidation, incrust.

Remarks: As above or and diversified both by rock types included and spread of grain, it would appear that this breccia was produced by a series of rapid events: volcanic eruption (tectonic displacements) (?), flow, rapid deposition, and no further disturbance - induration by means of percolating hydrothermal solutions with formation of smectites, deposition of zeolites, considerable staining with Fe(OH)3 along fractures, thin (<3 mm) layers usually <1 mm or coatings of α-MnO2(?) deposited on exposed surfaces. in contact w/ Volcanogenic Breccia I (SO33 25DS6) in one sample.