DATE: 11 August 1984 SAMPLE:
CRUISE ID: SO 33 29 DK box dredge
LOC: IV
AREA: C

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
ON BOTTOM =	0616	6°16.2587	162°52.5302	2957	3400
OFF BOTTOM =	0724	6°16.3652	162°52.3315	2414	2573

RECOVERY WEIGHT: total 20 kg crust < 1 kg
5 kg chalk
5 kg basalt
5 kg breccia
5 kg ash hyaloc

CRUST THICKNESS: Veneer to .2 cm very thin
Avg = veneer

SUBSTRATE: Basalt, breccia, consolidated white sediment; Nice contact of ash (hyaloclastite) with breccia, with crust.

COMMENTS:
Bioturbation - worm burrows, especially in the chalk.

* smear slides of consolidated sediment

29 DK

SO33 29DK1 | SO33 29DK2

Rock Type: Tholeiitic Basalt, | Alkali Olivine Basalt (?)

Color: (fresh break) Medium dark gray (N4) to olive gray (5Y4/1) | olive gray (5Y4/1) to dark yellowish orange (10YR 6/6)

Texture: subaphyric – phyric, intergranular | hyalopilitic – intersertal, holohyaline ↔ phyric

Phenocrysts: Olivine – ±1%, ±1mm (phyric to glomerophyric with olivine only) ↔ – do – ±2%, ±3mm dia

(microglomerophyric) { Plagioclase, Clinopyroxene } ±1%, ±0.5mm – 10%

Groundmass: Glass, Plagioclase, Olivine, Clinopyroxene, Opaques } not determined ↔ – do –

Vesicles: Size: ±1mm | 0 – ±50% (scoriaceous pieces)
Shape: elongate irregular | round to irregular
% ± ±50% (scoriaceous pieces) | ±2mm dia.
Infected, layered: filling: most are lined with mustard yellow smectite, sometimes zeolites | most are filled, often most lined with smectite, calcite

Alteration: superficial (smectitization, oxidation, hydration, zeolitization | moderate to complete (smectitization, zeolitization?, hydration, oxidation)

Remarks: flow rock clasts, highly angular, apparently not related to the breccias made of basaltic rocks dominating this dredge, as it has no remnant of this adhering to any of its surfaces. exposed surfaces coated with thin (±1mm) coating of caspate MnO_2 deposit on top of that. Olivine pxts are single, totally altered to smectite; pc/cpx microglomerocrysts are small, but visible with the naked eye; cpx is dark greenish-black and sparry. | angular to subangular basalt fragments ranging in size from coarse silt to large pebble size, set in calcareous (phosphorized?) ooze cement; the basalt displays varying degrees of vesicularity, crystallinity, alteration. represent AOB basalt fragments derived from several sources (flow units?), consolidated into a volcanogenic breccia

SO33 29DK — Same as V.B. II

Rock Type: AOB(?) Hyaloclastite – Volcanogenic Breccia
Color: Dusky yellow (5Y 6/4)
Texture: Pyroclastic
Matrix: AOB? Glass shards – ±80%. AOB? Palagonite fragments – ±10%.
Cement: Smectite, zeolites – ±10%.
Avge grain size: ±2mm (fine sand – gravel)
Avge grain shape: subangular
Sorting: poor
Porosity: ±20%
Permeability: ±7%
Alteration: Complete (argillation, zeolitization, oxidation, hydration) (nontronite?)
Remarks: rare; hyaloclastite w/ palagonite fragments(?)

Rock Type: Volcanogenic Breccia I

Color: Pinkish-gray (5YR 8/1)

Texture: Clastic

SO33 29DK3

Matrix: Predominantly AOB rock fragments, some tholeiitic basalt fragments (±5% ?)

Total: ±60%

Cement: ±40% – Calcareous ooze (?) (phosphorized (?))

Average grain size: ±5 mm (gravel size)

Sorting: extremely poor

Grain shape: Angular – subangular

Porosity: ±20%

Permeability: ±15%

Alteration: phosphorization? (cement)

Remarks: Disparity of grain size and angularity of fragments suggests rapid high-energy deposition of the components of this rock; also the preponderance of AOB basalt fragments over tholeiitic basalt fragments. Very thin (<1 mm) coating of Mn-oxide on exposed surfaces; Mn-micronodules observed in cement.

Basaltic (?) Glass Amygdaloidal / Scoria

Moderate yellowish brown (10YR 5/4)

Amygdaloidal, holohyaline

SO33 29DK4

(Groundmass) Glass

(Phenocrysts) —

(Vesicles) round ±0.5 mm, ±50% completely filled with smectite/zeolite (?) mixture

(Alteration) total hydrothermal smectitization, origin? Zeolitization?

(Remarks) Appears to be a basaltic (?) scoriaceous/amygdaloidal hydrothermally altered rock – very friable found incorporated in volcanogenic Breccia I and as loose fragments coated with thin layer (±1 mm) of cuspate MnO_2 amygdules appear to be of same composition and color as the host altered glass

Volcanogenic Breccia I

Light olive gray (5Y 6/1) to Dusky yellow (5Y 6/4)

Clastic

SO33 29DK5

Predominantly Tholeiitic basalt fragments (±10% AOB ?)

Total ±80%

Smectite, zeolite (?)

extremely poor

Subangular – subrounded

±35%

±25%

Smectitization, zeolitization

Again, great disparity of grain size as in Breccia I, but matrix components seem more rounded, weathered, curious that tholeiitic basalt fragments seem present in greater abundance than AOB fragments, much of the tholeiite seems weathered. Coated lightly, as in Breccia I with Mn-Oxide

SO33 29DK6

Rock Type: Foraminiferal Chalk

Color: white

Texture: granular

Matrix: Globigerinals, Globorotalia, other planktonic calcareous fossils.

Cement: Calcite (essentially uncemented)

Avge grain size: ±0.20 mm (?)

Sorting: fairly well-sorted

Grain shape: rounded

Porosity: ±50%

Permeability: -do-

Alteration: incipient phosphorization?

Remarks: extensively burrowed by rock-drill clamor worms – these serve as conduits for deposition of and substrate for thin Mn-Oxide & $Fe(OH)_3$ deposits (<1 mm thick)