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 out
ON BOTTOM =	1238	6°30.1750	162°22.2244	2572	3230
OFF BOTTOM =	1349	6°29.9396	162°22.5238	2347	2670
mean dredge data (corrected):		6°30'15"	162°22'08"	2619 (1432 fm)	

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, trachyte ash, vesicular basalt, carbonate

COMMENTS: Worm tubes in crust and tuffaceous material.
** Vesicular basalt for Clague to age-date
(Bad choice!!!)
(Very altered)

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 25 DS

Location: Kingman K

162° 22' 08" [illegible]
6° 30' 15" [illegible]
(-) 2619 m

Size: _____ Weight: _____

Mn crust thickness:

Total: min: _____ max: _____ ave: _____

Inner crust: min: _____ max: _____ ave: _____

Outer crust: min: _____ max: _____ ave: _____

Surface texture: _____

Internal structure: _____

layered: _____
laminated: _____
massive: _____
porous: _____
dendritic: _____
other: _____

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: _____

Description: _____

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

25DS1

Rock Type: Basalt massive (HOB?) from DS 6 Volcanog. Breccia II

Color: (fresh break) Grayish-black (N2) to Dark brown to dark gray (5 YR 3/1)

Texture: Microphyric, intergestal

Phenocrysts: Very small (± 0.60 mm average)

Plagioclase - ± 15%, ± 1 mm

Olivine - ± 15%, ± 0.5 mm

Groundmass: not resolved, prob.

glass?
olivine?
plagioclase?
opx?
cpx?

Vesicles: % - ± 30%
size - ± 1 mm in dia
shape - round
fillings usually empty
- locally zeolites (± 50% of total exposed rock)

Alteration: Either a strong - complete addmassitization of primary phases & zeolitization of feldspars & glass matrix

Remarks: Appears to be clastic? Varying in size from small pebbles to small boulders - appears to have been eroded & transported before it was deposited. Zeolitization has clearly acted on these fragments prior to deposition & hydrothermal activity - though pieces are coated thinly with δ-MnO2? (< 1 mm - ± 3 mm) Some fragments are locally concentrated in depressions with phenocrysts exposed on weathered surface. Some fragments exhibit to 5 mm depth of displayed broken surfaces 4-5 mm deep, colored light yellowish-brown (10 YR 6/4); a few pieces preserve ± 1 cm thick pale orange rim. (Light brown 5 YR 5/6) Much of this material (all?) is probably altered like many other rock types recovered, in cemented breccia

Sample No: S033 25 DS 2

Tachyte Flow (derived from Volcanogenic Breccia)

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

Aphyric pilotaxitic hyalopilitic (subtrachytic)

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

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

absent

oxidation, zeolitization? - oxidized amphiboles (?) give brown color as with the basalt — clasts (usually large volcanogenic) felsic-one, subangular, set in a breccia. Trachytic due to flow structure detectable on examination; some pieces bear thin deposits of δ-MnO2? and FeOOH?; evidence of hydrothermal activity (iron stain, zeolitization of rare phenocrysts)

Sample No: S033 25 DS 6

Rock Type: Volcanogenic Breccia II

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

Texture: clastic

Matrix: Basaltic (HOB?) scoriaceous cinders, ash ± 60%
Basaltic (Nephelinite?) cinders, ash ± 3%

Cement: Calcite, zeolites - ± 25%

Voids: ± 12%

Avge grain size: ± 1 mm (Silt - coarse gravel)

Avge grain shape: subangular

Porosity: ± 90%

Permeability: ± 60%

Alteration: Nearly complete (stratification fronts of hydration, zeolitization, oxidation, carbonatization)

Remarks: Very like both 25 DS-4 and 25 DS-5 but is a mixture of the two, w/ HOB frags dominating. Contacts with 25 DS-5 are gradational

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 25 DS

Location: [illegible]
162°22'08"W
6°30'15"N
(-) 2619 m

Size: _____ Weight: _____

Mn crust thickness:

Total: min: ____ max: ____ ave: ____

Inner crust: min: ____ max: ____ ave: ____

Outer crust: min: ____ max: ____ ave: ____

Surface texture: _____

Internal structure: _____

layered: _____
laminated: _____
massive: _____
porous: _____
dendritic: _____
other: _____

Mineralogy (XRD): _____

Associated alteration, phosphorite, or hydrothermal deposits:

Substratum:

Rock type: _____

Description: _____

Mineralogy (XRD):

Analyses and subsamples:

analysis:	analyst:

25DS3

Rock Type: ~~Vitric tuff (trachytic?)~~ (Volcanogenic Siltstone?)

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

Texture: clastic

Crystals: None

Matrix: Smectite – ±35%
Hematite(?) – ±1%
Glass – ±13%
fossils – ±1%

Cement: Smectite – 100%

Avge Grain Size ≤ 0.01 mm

Sorting: fairly well sorted

Grain Shape: angular – rounded granular

Porosity: ±40%

permeability ±30%

Alteration: intense Smectitization, oxidation

Remarks: clasts, subangular, faintly bedded, intensely burrowed by rock drill clams(?) &/or worms – these serve as conduits and substrate for deposition of thin $FeOOH_3$ and $\mathcal{L}$-MnO_2(?) deposits (also serves as cement for some of the breccias in this dredge.

25DS4

Basaltic ~~Trachytic~~ Hyaloclastic

Greenish-yellow (10Y 6/4)

Pyroclastic

Sanidine (?), zeolites (phillipsite?)

Glass shards – ±50%
rock fragments – ±40%, ±1 mm dia.
zeolite needles – ±10%
manganese micronodules – ±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 grade-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 $\mathcal{L}$-MnO_2(?) (lobate, reniform in the layers)

SO33 25 DS5

Rock Type: Volcanogenic Breccia I

Color: (Binding material – "cement") Very pale orange (10YR 8/2)

Texture: clastic

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

Matrix: mixed volcanic rock fragments (basalt, ~~trachytic~~ nephelinite?) 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, hydration

Remarks: As angular and diversified both by rock types included and spread of gra[illegible] it would appear that this breccia was produ[illegible] by a series of rapid events: volcanic eruption, tectonic displacements, (turbid) 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 $\mathcal{L}$-MnO_2(?) deposited on exposed surfaces. in contact w/ Volcanogenic Breccia I (SO33 25 DS6) in one sample.