DATE: 22 August 1984 SAMPLE: 63 DK

CRUISE ID: SO 33

LOC: VII

AREA: E

box dred

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
(uncorrected) ON BOTTOM =		15°29'30"	169°14'54"	2929	
OFF BOTTOM =		15°30'28"	169°15'25"	2700	
mean bridge data (corrected):		15°30'00"	169°15'09"	2905 (1589 fm)	

RECOVERY WEIGHT: ~ 50 kg

CRUST THICKNESS: 1-4 cm Avg = 3 cm
2 generations

SUBSTRATE: hyaloclastite, vesicular basalt w/ flow vesicles (stretched + large), 1 clast of nearly ~~pure green montmorillonite~~ w/ Mn dendrites

COMMENTS: no; montmorillonitized trachyte (somewhat)

* confidential

63 DK

Sample Description

Cruise I.D: 5033

Sample I.D: Sta: 63 DK

Location: "Keli" Ridge
15° 30'00" N
169° 15'09" W
(-) 2905m.

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:

Sample No.: 50 [illegible] 1

Rock Type: Alkalic Basalt (?)

Color: Pale brown 5YR 5/2 (fresher)
to
pale greenish-yellow (10Y 8/2) (more altered)

Texture: Aphyric, Subtrachytic

Phenocrysts: Rare Plagioclase (?) <1%
Pyroxene (augite?) <<1%

Groundmass: Plagioclase ?
Pyroxene ?
Opaques ?
Glass ?
(not determined)

Vesicles: %:

range ±0.10 mm to ±40 mm) Size: (avge) ±5 mm (extremely variable)
shape: round, irregular elliptical
filling: Calcite, Zeolites, Smectite (Phillipsite?) (Nontronite?)
(± 3% of total vesicle contents)
(varies greatly from place to place)

Alteration: extensive (zeolitization, smectitization, hydration, oxidation),

Remarks: clasts of varying size (pebble to boulder) of trachyte flow rock probably already broken and rubble before the dredge collected them. flow structure is quite evident in every piece; hydrothermal alteration (greenish-yellow bleaching effect displayed in many sections - transition between fresher and more altered rock) Serves as substrate for thick (± 50 mm) (dendritic internally, 2 generations, lowest most prominent) laminar to nonfoam ferromanganese crust with finely nodose superstopography

* Tholeiitic (?) basalt porphyry xenolith observed in one piece of basalt

Sample No.: 50 [illegible] 2

Trachyte Breccia (leucotrachyte)

Pale greenish yellow (10Y 8/2) to moderate greenish yellow (10Y 7/4) to grayish-olive (10Y 4/2)

→ -do-, trachytic

Phenocrysts rare
(biotite occasional visible)

(Matrix:) fragmental trachyte

→ -do-

(Cement:) Zeolites, Fe(OH)3(?) to doroskite?
(very loosely (often), but firmly cemented)

%: (variable: dense to ±5%)
± 1 mm (avge) elliptical, elongate
usually empty, or lined with zeolites
(often vuggy)

(Sorting:) extremely poorly-sorted
(avge grain size:) extremely variable (fine gravel - cobble size)
(" grain shape:) angular

→ -do-

(porosity:) extremely variable (huge open space to completely tight)
(permeability:) (≈ porosity)

clasts of sizes varying from pebble to large cobbles (usually flattened slabs in larger pieces) of fine-grained (glassy?), highly altered trachyte cemented loosely, but firmly (sometimes intimately) with zeolites (phillipsite?), may represent vent breccia erupted prior to main flow. flow structure distinct, serves as substrate for laminar, nodose, and arborescent, cuspate Mn-oxide encrustation (± 1 cm thick); fractures, open space penetrated, lined, studded with doroskite dendrites

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 63 DK

Location: "Kelli" Ridge
15° 30'00" N
169° 15'09" W
(-) 2905 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:

	3	4
Rock Type:	Basaltic / Hyaloclastite Breccia I	Basaltic (AOB?) Hyaloclastite Breccia II
Color:	Grayish-yellow 5Y 8/4 ("cement") & light brown (5YR 5/6) ("matrix")	→ -do-
Texture:	clastic	→ -do-
Matrix:	Basaltic AOB? hyaloclastite ± 70% fragments ± 20%, ± 5 mm dia	Basaltic AOB hyaloclastite fragments ± 70%. Trachytic rock fragments ± 20%.
Cement:	trachytic glass shards, zeolites (intimate mixture); manganese micronodules ± 5%, ± 0.75 mm dia.	zeolites, $Fe(OH)_3$, todorokite? (intimate mixture) ± 10%
Average grain size:	(matrix) ± 5 mm; (cement) ± 0.5 mm	great variability (± 4 mm avge.)
Average grain shape:	angular	→ -do-
Sorting:	(matrix) very poorly sorted; (cement) moderately well-sorted	→ -do-
Porosity:	± 60% (some large, vuggy openings)	→ ± 70% → -do- (± 20%)
Permeability:	± 35%	→ ± 50%
Alteration:	Complete (?) (zeolitization, smectitization, hydration, oxidation)	→ -do-
Remarks:	clasts of hyaloclastite (doubtful) probably eroded from outcrop by bedge. Fine discontinuous bedding apparent. No manganese encrustations observed (probably a substrate, but no such sample recovered). basaltic hyaloclastic fragments appear to be fairly penecontemporaneous with the trachyte	Similar to 63 DK 2 in many ways, but made up largely of AOB(?) hyaloclastite fragments mixed in with some trachytic fragments, cemented by zeolites, $Fe(OH)_3$(?). serves as substrate for reniform ferromanganese encrustation (± 5 mm thick) with finely nodose surface topography → -do-

Very like 5037 4 DS 6

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 63 DK

Location: "Kel. Ridge
15° 30'00" N
169° 15'09" W
(-) 2905 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:

5 15/13

503563DK5a3

Rock Type: Trachyte Flow

Color: Light yellowish Olive gray (5Y 7/1) to Light gray (N7)

Texture: Subtrachytic, "Spotted"

Phenocrysts: Aphyric (?)
(Biotite?) (clots of crystals about size of rest of groundmass.)

Groundmass: Sanidine (?), - ± 80%
Biotite (?), - ± 10%

Vesicles:
- ± 10%
- ± 1mm (range: 0.5 – 3 mm)
- irregular
- lined w/euhedral phillipsite (?)
- flow-oriented

Alteration: Extensive (argillation [smectite?]) zeolitization (phillipsite?), hydration, oxidation [of biotite?])

analcimization, phillipsitization (?)

Remarks: Large cobble-to-boulder size subangular clast of trachyte displaying distinct marmatose flow structure (flow banding), may be one of the fresher trachytes recovered, but all cavities are lined w/phillipsite (?), so, ???. remarkably phenocryst free (<1% nodal biotite (?) occurs as clusters of folia throughout the groundmass), serving as substrate for ± 3 mm-thick deposit of corroded (?) cuspate- to finely nodose surface topographied, dendritic (internal structure) ferromanganese oxide deposit, lug 63DK2 material adhering to some surfaces.

Zircon: 1
I/m: 11 (Subtract for glass total)

Albite (Gxt/Ab) (Gxt/Sad) (Olk/Sad)
Aegirite-Augite (Gxt/Ab) (Gxt/Sad) (Gxt/Ab) (Pxt) = aeg!
Sanidine (Gxt/Ab)

~~Magnetite (?) ..... 2~~
Nephelite 30
Glass/Analcite 546
Sanidine 213
Albite 162
Aegirite-Augite 38 40
Zircon 1
Analcite 8

Vesicles 39
Amygdules [phillipsite 43, analcite 16]
rounded irreg. - angular
lined w/analcite, filled w/phillipsite

Totals		6-30-85
Magnetite	2	= <1%
Nephelite	19	= 2%
glass	546	= 55%
Sanidine	213	= 21%
Albite	162	= 16%
Aegirite-Augite	40	= 4%
Zircon	1	= <1%
Analcite	19	= 2%
Vesicles	39	= 4%
phillipsite/amyg.	43	= 4%
analcite/amyg.	16	= 2%

Benmoreite?

albite displays combination of carlsbad & very fine albite twins, occasional pericline
aegirite-augite needles in glass/analcite matrix