DATE: 22 August
CRUISE ID: SO33
LOC: VII
AREA: E

SAMPLE:
62 DK

box dredge

	time (GMT)	LAT (N)	LON (W)	water depth (m)	wire o
uncorrected ON BOTTOM =		15°32'22"	169°13'45"	1552	
uncorrected OFF BOTTOM =		15°33'01"	169°15'00"	1765	
mean dredge data (corrected):		15°32'38"	169°14'13"	1628 (890 fm)	

RECOVERY WEIGHT = total 10 kg, crust 2 kg
1 boulder

CRUST THICKNESS = 0.5 - 2 cm Avg = 1.5
knobby

SUBSTRATE = hyaloclastite
1 boulder

COMMENTS:

* bio sample

* confidential

62 DK

Sample Description

Cruise I.D: SO 33

Sample I.D: Sta: 62DK

Location: ("Kelt" Rid Johnston Seamount area 15°32'38"N 169°14'13"W (-)1628 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:

	2	3
Rock Type:	Tuffaceous(?) Phosphorite	Phosphorized(?) Chalk*
Color:	Yellowish-gray (5Y 7/2)	very pale orange (10 YR 8/2) to very light gray (N 8)
Texture:	granular	→ do -
Matrix:	unconsolidated phosphorite(?) smectitized tuff(?) } 50-90%; manganese micronodules 10-50%; dendrites (varies — deposit inhomogeneous)	calcareous foraminiferal tests; manganese micronodules } (variable proportions)
Cement:	— absent	calcite, phosphorite (francolite?) (minor) (variable proport
average grain size:	± 0.10 mm	± 0.75 mm
" grain shape:	(equidimensional)(?)	round
Sorting:	(not determined)	moderately well-sorted
porosity	(- do -)	90+ %
permeability:	(- do -)	70+ %
Alteration:	complete tuff(?) component completely altered to smectite(?) calcareous component completely altered to phosphorite.	partial, superficial (recrystallization of calcite incipient to extensive phosphorization superficial, local infiltration by $Fe(OH)_3$(?)
Remarks:	fragments (lumps) of discontinuously bedded, largely unconsolidated phosphorite sediment ± permeated with manganese micronodules, dendrites; probably a foraminiferal ooze with volcanic ash(?) component. Serves as substrate for deposition of ferromanganese crust (± 5 mm thick, knobby, warty surface topography)	pebble-size fragments of chalk deposit of unknown thickness, probably dislodged from outcrop doubtful by dredge; evidence of inhabitation by worms(?) (round, tubular sections penetrate the chalk, ± 8 mm dia); distribution of alteration discontinuous throughout the chalk, giving a mottled appear of various color tones; in some pieces, phosphorization is complete, the rock is dense, colored various shades of yellow by penetration $Fe(OH)_3$(?); This material is deposited between volcanic substrate and encrusting manganese oxide; various septae found loose in dredge, representing phosphorite fracture fillings in softer sediment. Serves as substrate for (external morphology) botryoidal, knobby ferromanganese oxide crust with finely nodose surface subtopography, with one generation of dendritic (internal morphology) structure up to 1 cm thick

* Go back 3 pages for 62 DK 1.

* Gives (+) test for phosphorus, does not react with HCl

* correlates with 50 37 46 DS 3

Sample Description

Cruise I.D: S033

Sample I.D: Sta: 62DK

Location: "Keli" Q.d
150.32'38" N
169°14'13" W
(–) 1628 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:

	4	5	6
Rock Type:	AOB(?) Hyaloclastite	Tuff, AOB(?)	Phosphorite Breccia
Color:	Moderate reddish-brown (10YR 4/6)	Grayish-orange (10YR 7/4) to very pale orange (10YR 8/2	Pale yellowish-brown (10YR 6/2) to pale orange-pink (5YR 9/4) (cement)
Texture:	Pyroclastic	clastic	clastic
Matrix:	Basaltic glass shards ±67%	Basaltic rock fragments ±25%	phosphorite clasts ± 75%
Framework Grains:	Basaltic rock fragments, ±3%	" Glass shards, ±65%, ferromanganese micro nodules ±5%	
Cement:	Zeolites, ±15%, Smectite, ±3%, calcite, ±12%	Smectite(?) Zeolites(?) (undiff) ±15%	phosphorite / Calcite, ±25%
Average grainsize:	± 1mm (range: fine silt-fine gravel)	± 0.20mm (fine sand - clay)	±5 mm (matrix) to ± 0.50mm (cement) (clay - coarse gravel)
" grain shape:	angular-subrounded	subrounded	angular (matrix) to round (cement)
Sorting:	moderately poorly sorted	moderately well-sorted	poorly-sorted (matrix) to well- (cement)
Porosity:	± 60%	± 40%	< 5%
Permeability:	± 50%	± 25%	< 2%
Alteration:	Complete (oxidation, zeolitization, hydration, argillization (smectite), carbonation)	Extensive - complete (argillation [smectite] zeolitization, oxidation, hydration)	-do- (phosphorization of chalk, oxidation of siderite(?) origin calci comp
Remarks.	Very similar to (probably same as) red hyaloclastites of previous dredges, Area E; interiors of framework clasts are highly altered, oxidized to $Fe(OH)_3$ (?), yielding a very reddish-brown color to the glass froth; thin rinds of yellow smectite / zeolite on most pieces, as in other material from Keli Ridge; serves as substrate for botryoidal (external morphology), dendritic (internal morphology) ferromanganese deposit (± 2mm thick)	rare rhombic pebble-size fragments (shape derived from joint pattern in rock unit?) covered with thin soot-like coating of ferromanganese oxide; faintly bedded, fairly-well-indurated; rock fragments are varicolored: black, brown, red, appear to have been water-worked; micronodules concentrated along certain bedding planes, fractures filled w/ calcite.	rare fragments of pebble. Composed of angular framework clasts of older generation phosphorite (Globigerina(?) chalk) set in your generation, less phosphorized ma (both are well-indurated, but the younger is more porous, lighter in color, the older is much more dense, darker in color (contains a small volcanogenic component - tu coated, as in 62DK4 & 5, with soot-like manganese oxide.