SO 37 44 DS

44

Pinger on wire 300 m from dredge

	Time (GMT)	Lat N	Lon W	Water Depth	Wire Length	Tension
Begin Operation	11:14	15°36'68"	169°13'59"	1466	—	—
Begin Lowering	11:16	15°36'68"	169°13'65"	1507	0	0.2
+1 bottom contact	11:53	15°36'911"	169°13'624"	1498	1500	0.8
off bottom	13:33	15°37'218"	169°12'623"	1388	1270	1.8
Begin heaving	13:08	15°37'157"	169°12'535"	1345	1390	1.8
End heaving	13:50	15°37'287	169°12'445"	1375	0	0.8
End operation	14:10	15°37'29"	169°12'45"	1375	—	—

Ship course 201°

Total time of bottom contact 100 min.

Bottom topography: Gentle slope w/basin at lower part

Ship velocity: 1 kt

Length of dredge section 200 m

Total dredge recovery: 200 kg

Total nodules: 0

Total crusts: 50 kg

Total Substrate: 170 kg

100% crust coverage

100% talus

no nodules

Thickest crust – 6 cm

Thinnest " – 2 mm } ~ 3.5 cm average

Botryoidal surface

dendrititic internally

3 generations, middle one is densest (1-3 cm); upper is porous Fe-rich (a/co.

Lowest is phosphatic frequently (1-2 cm); no obvious boundaries between generations; no phosphorite hiatus

encrusting organisms: rare (a few tubular forams, bryozoan(?) holdfasts

Substrates: AoB

" Hyaloclastite

" Volcanogenic Breccia

...ock Type: Alkali Olivine Basalt	AOB Hyaloclastite	AOB Clast/Hyaloclast Volcanogenic Breccia
...lor: Grayish-orange (10YR 7/4) Light Brown (5YR 6/6)	Moderate Brown (5YR 4/4)	do, & Light brown, (5YR 5/4)
	White (N9) (framework) to (cement)	-do-
...ature: Intersertal-hyalopilitic, Microphyric	Pyroclastic	-do-
...enocrysts: olivine (iddingsite) ±20%, ±0.5 mm; Pyroxene, ±1%, ±1 mm (microphyric, single crystals)	(Framework grains): AOB Hyaloclasts, ±85%	-do-, ± 50%, ± 5 mm dia avge; AOB clasts, ±40%, ±5 mm dia avge.
	(Cement): Phosphorite/phillipsite(?) ±15%	do, ± 10%
...oundmass: Glass (undetermined)		
	(Average grain Size): (extreme variation)	± 5 mm dia.
...sicles: extreme variation	(range: ≤1mm – ±5cm)	(range: ≤1 mm – ±10mm)
size range: ≤0.20 mm – ±1cm, filling: lined with phillipsite(?) shape: round to ellipsoidal	(Average grain shape): angular	-do-
	(Sorting): extremely poor	poor
	(Porosity): very high	-do-
...eration: Penultimate (Smectitization (palagonitization) Oxidation -do- zeolitization)	(Permeability): high	-do-
	-do-, Total	-do-
...ks: Our sample is a small-cobble-size subrounded (dredge-abraded?) talus clast with one surface encrusted with ±1mm-thick deposit of dense, dendritic (internally), botryoidal (externally), 1-generation ferro-manganese oxide; the substratum is apparently a fragment of pillow lava which greatly resembles 43 DS 2, but lacks plagioclase phenocrysts altogether; glassy chill rind is missing but gassy, amygdular zone just below is present and grades downward into argillized microphyric olivine basalt	Our sample is a cobble-size, subangular clast probably broken from outcrop;	our sample is a fragment of a thick, tabular, large-cobble-sized, subangular talus clast which was completely enclosed in dense dendritic (internally), botryoidal (externally) one-generation ferromanganese oxide encrustation, thicker (±2cm on upper(?) surface, thinnest (±1mm) on lower(?) surface; substratum is penetrated by numerous veins of white phosphorite (usually ∥ or sub-∥ to the thickest manganese encrustation), strongly resembles material of 44 DS 1 & 2, like it were a mixture of the two lithologies; some open spaces between clasts infilled with material that fills the veins
	do, but very porous	
	do, may be derived from same eruption; rock is very unsorted, untransported suggests that it is rubble from outer margins of pillow lava flow	

ock Type: AOB Hyaloclastite	→ -do-	→ -do-
lor: Light brownish-orange (10YR 6/4)	≠ Moderate brown (5YR 4/4) (large grain material) to grayish-orange (10YR 7/4) small grains material to Dusky yellowish-brown (10YR 2/2) (Cement)	≠ Dark orange pink (general color) (5YR 7/4)
exture: Pyroclastic	→ -do-	→ -do-
amework rains: AOB Hyaloclasts, ±20%, ±2mm dia.	→ -do-, ±75% AOB Hyaloclasts	→ -do-, ±60%, ≤1mm dia.
Open space; ±20%, ≤1mm dia.	≠	→ -do-, ±10%, ≤0.25 mm dia.
ment: smectite (nontronite?) phillipsite(?), ±10%	≠ ±25 Phosphorite (dense)	≠ phillipsite(?), & (some layers) phosphorized chalk, ±30%
rage grain size: ±2 mm dia. range: ≤0.20 mm – ±5 mm)	≠, extreme variation (range: ≤0.25 mm – 5 mm)	≠ ±1mm (range: ≤0.10mm – ±2mm)
rerage grain shape: subangular	→, do, though many are angular	≠ angular
rting: poorly sorted	→ very poorly-sorted	≠ moderately well-sorted
rosity: extremely high	⇒ -do-, very high	→ high
meability: extremely high	≠ moderately low	≠ moderately high
teration: Total (smectitization, zeolitization, oxidation)	→ -do-, add phosphorization of original chalk cement	→ -do-
marks: Our sample is a small cobble-size subangular fragment of perhaps what was a small boulder of talus material, was completely enclosed in dense, dendritic (internally) botryoidal (externally), ±2 mm thick ferromanganese encrustation; the substratum displays faint bedding structure, with coarser, more porous, open-textured material alternating with finer, more condensed material (cemented)	Our sample is a fragment of a tabular, subrounded, cobble-size talus clast, which was once completely enclosed in dense... → ±4mm → -do- but the upper(?) crust was of unknown thickness (several cm?), was removed before we could sample this material	≠ this material is almost identical to that recovered in 43 DS (43DS3) and is likely from the same deposit. ≠ →
	≠, unbedded, but not homogeneous (sectors exist in which grain size is frequently fairly uniform)	≠ !

Sample No:	5037-44DS3 (composite in smeared with 5037-44DS3)	5037-44DS7 (composite with a piece of 44DS7)	5037-44DS8 (Northstrome)
Rock Type:	AOB Hyaloclastite	AOB Volcanogenic Breccia →	-do-
Color:	(general) Grayish-yellow (5Y 8/4)	Dark yellowish-brown (10YR 3/2) (Grains) to Very pale orange (10YR 9/2) (cement)	-do- & (more often) Very pale yellowish-brown (10YR 7/2)
Texture:	Pyroclastic	clastic →	-do-
Framework Grains:	AOB Hyaloclasts, ±60%; Open space, ±20%	AOB clasts, ±25%, ±2cm dia; Ferromanganese crust clasts, ±10%, ±2cm dia; AOB hyaloclasts, ±5%, ±5mm dia	±15%; ±5mm dia; (none); ±9%, ±5mm dia; augite(?) crystal fragments, ±1%; ≤
Cement:	Smectite (nontronite?)/ Phillipsite(?), ±20%	phosphorized chalk, ±60% →	do, ±75% (probably carbonate-apatite)
Average grain size:	enormous variation	±1cm dia →	do-
Range:	≤1mm – ±2cm)	(range: ±2mm – 4cm)	(range: ≤1mm – ±4.5cm)
Average grain shape:	Subangular	angular →	subrounded (quite a few are subangular)
Sorting:	extremely poor (& inhomogeneously distributed)	→ -do-	→ -do-, displays a kind of coarse graded bedding, with clastic material more abundant down ward from the flat surface described below.
Porosity:	extremely high	high →	moderately low
Permeability:	very high	moderately high →	very low
Alteration:	total (Smectitization [nontronite?], Zeolitization [phillipsite?], oxidation)	extensive - penultimate -do- add phosphorization of original chalk cement	→ -do-
Remarks:	Several angular fragments of larger clasts (broken from outcrop?), bearing thin (often corroded, dissolved?) ±1mm-thick botryoidal (externally), dendritic (internally) ferromanganese crust, which penetrates down into the open spaces of the substratum to depths of often 1+cm: this material (substratum) has a "bleached" appearance (probably related to non-oxidative argillation) and is composed of hyaloclasts of widely-varying grain-size with enormous variation in grain size distribution.	angular fragment of a larger talus(?) clast forms a composite with 44DS-7 of which it may represent a capping deposit; dendritic deposits of Mn(O,OH)(?) penetrate down ward from this deposit into 44DS7, clearly defining the boundary between the two deposits, the individual AOB clasts within the chalk deposit often bear deposits of dense dendritic ferromanganese oxide from 1-4mm thick, from which diffuse outward into the surrounding chalk Mn(O,OH)(?) dendrites; perhaps represents dislodged AOB outcrop which rained down into foram. ooze on a deep sea floor.	our samples are clasts broken from a large, tabular (probably) talus boulder which was completely enclosed in ferromanganese oxide encrustation (probably) this deposit, almost in its entirety had been removed before we were allowed to sample – no information as to original thickness of the encrustation – from adhering remnants, it appears to have been dense laminar at its contact with the substrate, grading upward into dense dendritic; substratum is similar to 44DS8, but more dense and crystalline, riddled with worm tubes: mm in dia; one very flat surface from which Mn dep...