



Vesicles

21-27.5 cm

15%

high sphericity
rounded.

2 mm max
1 mm modal.

20/cm²
60% filled.

28-149 cm.

2%

high sphericity
rounded.

22 mm max
2 mm modal

1/cm²
99% filled

88-88
vein network,
crosscut, steeply
dipping

Groundmass of
entire section
is moderately
altered

106-
108
branching vein
network

72-72
branched vein,
network, non-oriented

42-52
joint network
non-oriented

56-62
vein network
branching non-
oriented

65-73
vein, straight
293/70

Fe oxy
hydroxide
vein



Fe oxyhydroxide
vein

116-126
steeply dipping vein,
2x0°

100-142
vein, 1, 0.5m
single slab, 156/82

Vesicles

0-9 cm.

10%

3 mm max

2 mm modal

moderate sphericity

rounded

10/cm²

80% filled

9-56 cm

0.1%

low sphericity

subangular

3 mm max,

1 mm modal.

0.1/cm²

100% filled.



5.5
vein straight,
18/82

moderate
alteration

18-21
irregular vein
network, steeply
dipping

26-30
set of veins, isolated
steeply dipping, 150°



45-46
irregular
single vein

44-51
vein network
non-oriented

veins of Fe-oxhydroxide
± calcite

UNIT 29
 38-42 ign. contact
 ATT. TO RIM
 1-3

UNIT 28
 DESCRIPTION: PILLOW LOBE
 INTERPRETATION: PILLOW BRECCIA
 PHENOCRYSTS
 PYROXENE: 1%
 MAX 1mm SLIGHTLY ALTERED
 MOD 0.5mm SUBHEDRAL
 FELDSPAR: 0.5%
 MAX 0.5mm SUBHEDRAL
 MOD 0.5mm SLIGHTLY ALTERED
 OCCASIONALLY OCCUR AS GLOMEROCRYSTS
 PYROXENE PHYRIC BASALT
 MEDIUM GRAY
 FINE-GRAINED 0.1mm
 GLASSY RIM COMPLETELY ALTERED

igneous contact

BOUNDARY NOT RECOVERED 22cm

UNIT 29 PIECE 4a-4b
 DESCRIPTION: BRECCIA
 INTERPRET: PILLOW BRECCIA
 NO PHENOCRYSTS
 DAPHYRIC BASALT
 GROUND MASS
 FINE-GRAINED 0.2mm
 FELDSPAR LATHS
 ALTERED MARGINS, GLASS?
 VOLCANIC ATTRIBUTES
 SHAPE = ROUNDED TO SUBANGULAR
 PARTICLE NAME = CLAST
 PART. VS MAT = 80%
 PART. SIZE = 5mm
 PART. = poor

BOUNDARY NOT RECOVERED 36cm

UNIT 30 PIECE 5-6d
 DESCRIPTION: PILLOW LOBE
 INTERPRET: PILLOW BRECCIA
 PHENOCRYSTS
 PYROXENE: 0.2%
 MAX 0.5mm
 MOD 0.5mm
 FRESH, SUBHEDRAL
 FELDSPAR 0.5%
 MAX 0.5mm
 MOD 0.5mm FRESH, SUBHEDRAL
 SPARSELY PHYRIC BASALT
 MEDIUM GRAY
 FINE GRAINED 0.1mm

42.5-54
 2 veins, network
 incg.

65-67
 very irregular
 steeply dipping

DRILLING
 RUBBLE

VESICLES: 3.5-7.2cm
 0.5%
 HIGH SPHERICITY
 ROUNDED
 1mm MAX
 0.5mm MOD

WITH ALTERATION RIM, GLASS?
 -> HOT EMPLACEMENT

ALTERATION RIM FROM G.MASS
 -> POST-EMPLACEMENT

VESICLES 36-46cm
 3%
 LOW SPHERICITY
 SUBROUNDED
 6mm MAX
 0.5mm MOD

VESICLES 46-66
 3%
 ELOBATE
 SUBANG.

Max 2mm
 Mod 2mm

130-132 ign. contact
 UNIT 36
 NO PHENOCRYSTS
 P VESICULAR PHYRIC BASALT
 DARK GRAY
 FINE-GRAINED
 0.2mm, FP LATHS

132-133 ign. contact
 UNIT 37
 VESICLES 132.5-139.5cm
 15%
 6mm MAX
 2mm MOD
 HIGH SP
 ROUNDED

107
 Mod. Sphe
 SUBROUNDED
 Max. 7mm
 Mod: 1mm
 UNIT 37
 AS UNIT 35
 INCLUDES ONE LARGE SUBROUNDED CLAST
 VESICLES 0%

128-128
 cherted con.

UNIT 33
 MEDIUM GRAY
 FINE-GRAINED
 GRAYE RIM
 ALTERED GLASS?

VESICLES 105-128.5cm
 1%
 MODERATE SPH.
 ROUNDED
 MAX 0.5mm
 MOD 0.2mm
 UNIT 34
 MEDIUM GRAY
 FINE-GRAINED
 CONCENTRIC BANDS
 FP LATHS

UNIT 35
 AS UNIT 31
 EXCEPT BLACK ALTERATION BAND ON CONTACT

UNIT 36
 NO PHENOCRYSTS
 P VESICULAR PHYRIC BASALT
 DARK GRAY
 FINE-GRAINED
 0.2mm, FP LATHS

UNIT 37
 AS UNIT 35
 INCLUDES ONE LARGE SUBROUNDED CLAST
 VESICLES 0%



90.5cm BOUNDARY NOT RECOVERED
 UNIT 31 PIECE 7-8
 DESCRIPTION: BRECCIA
 INTERPRET: PILLOW BRECCIA
 NO PHENOCRYSTS DAPHYRIC BASALT
 MOTTLED, FINE-GRAINED
 0.1mm
 VOLCANIC ATTRIBUTES:
 CLASTS: SUBANGULAR
 PART. MATRIX: 80% SORT MODERATE
 PART SIZE 2.5mm

105cm BOUNDARY: SHARP CONTACT BETWEEN CLAST AND BRECCIATED MATERIAL
 UNIT 32 PIECE 8
 DESCRIPTION: ROUNDED CLAST
 INTERPRET: MORE EXTENSIVELY REWORKED CLAST
 PHENOCRYSTS:
 PYROXENE: 0.5%, 0.5mm MAX
 SUBHEDRAL, FRESH 0.5mm MODAL
 SPARSELY PHYRIC BASALT

114cm BOUNDARY NOT RECOVERED
 UNIT 33 PIECE 9
 DESCRIPTION: PILLOW LOBE
 INTERPRET: PILLOW BRECCIA
 PHENOCRYSTS:
 PYROXENE: 10%, 1mm MAX 0.5mm
 SUBHEDRAL, SLIGHTLY ALTERED
 PYROXENE PHYRIC BASALT

120cm
 UNIT 34 PIECE 10
 DESCRIPTION: PILLOW LOBE
 INTERPRET: PILLOW BRECCIA
 PHENOCRYST:
 PYROXENE 3% 1mm, 0.5mm
 SUBHEDRAL, FRESH
 PYROXENE PHYRIC BASALT

128.5cm IN CONTACT WITH VESICULAR PILLOW LOBE

UNIT 35 PIECE 11
 DESCR.: BRECCIA

132.5cm
 UNIT 36 PIECE 11
 DESCR.: VESICULAR PILLOW LOBE
 LOWER BOUNDARY SHARP CONTACT WITH BRECCIA

piece rotated

139.5cm UNIT 37 PIECE 11
 DESCR.: BRECCIA

141cm NOT RECOVERED
 UNIT 38 PIECE 12
 DESCRIPTION: PILLOW LOBE
 INTERPRET: PILLOW BRECCIA
 OLIVINE 0.5%, MAX 4mm MOD 2mm
 ALTERED
 FP 0.5%. MAX 2mm MOD 2mm
 ALTERED
 SPARSELY PHYRIC BASALT
 MED GRAY
 0.1mm FINE-GRAINED

146cm NOT RECOVERED

very irregular 147-148

NOT RECOVERED

UNIT 39 (CE)

DESCRIPTION: BRECCIA

INTERPRETATION: PILLOW BRECCIA

NO PHENOCRYSTS
APHYRIC BASALT
MOTTLED BLACK, GREEN, BROWN

FINE-GRAINED
0.1mm

TRANSITIONAL
BOUNDARY WITH PILLOW
LOBE UNIT 40

9cm

UNIT 40 PIECE 1-3B

DESCRIPTION: PILLOW
LOBE

INTERPRETATION: PILLOW
BRECCIA

NO PHENOCRYSTS
EQUIGRANULAR
BASALT

MEDIUM GRAY
FINE-GRAINED
0.3mm

VESICLES

9-78

10%

HIGH SPH.
ROUNDED.

OCCURS IN PATCHES.

2.5MM MAX
1MM MOD.

*Moderate
alteration*

*Moderate
alteration
than
pillow
interior*

VOLCANIC
ATTRIBUTES:

CLASTS
70% CLAST/60MASS
MOD: 3mm
LOW SPH.
SUBANGULAR
POORLY SORTED

UNIT 41
NO PHENOCRYSTS

APHYRIC
BASALT
MOTTLED
GREEN
FINE GRAINED
0.1mm
VOLCANIC
ATTRIBUTES
CLASTS
70%
1.5mm
MODERATE SPH
SUBROUNDED
MODERATELY
SORTED

*-5-8
curved vein
steeply dip
8-10%
ig. contact
strongish*

*83-89
single vein,
steeply dip, 130°*

*-81-88
straight vein,
steeply dipping 160°*

*116-119
igneous contact
steeply dip, 150°*

*125-127
vein, non anal.*

*127-129
igneous
contact
157°*

*128-128
curved vein?*

*64.5-66
single straight vein
160°*

*-66-70 igneous straight
contact 250°*

ORANGE
ALTERED BANDS:

NOT RECOVERED

70cm UNIT 41 PIECE 4
DESCRIPTION: BRECCIA
INTERPRETATION: PILLOW
BRECCIA

82cm NOT
RECOVERED

UNIT 42 PIECE 5-
DESCRIPTION: PILLOW
LOBE
INTERPRET: PILLOW BRECCIA

NO PHENOCRYSTS
APHYRIC BASALT
SAME AS EQUIGRANULAR
BASALT
MED. GRAY
FINE GRAINED 0.3

VESICLES

82-115

10%

ELONGATE
SUBROUNDED
3MM
0.5MM

ORANGE
ALTERED BANDS.

115cm NOT RECOVERED

UNIT 43 PIECE 6
DESCRIPTION: PILLOW LOBE
INTERPRET: PILLOW BRECCIA
50% PYROXENE
SUBHEDRAL
FRESH BUT RIMMED W/ ORANGE
BAND
MAX 1MM
MOD 0.5MM

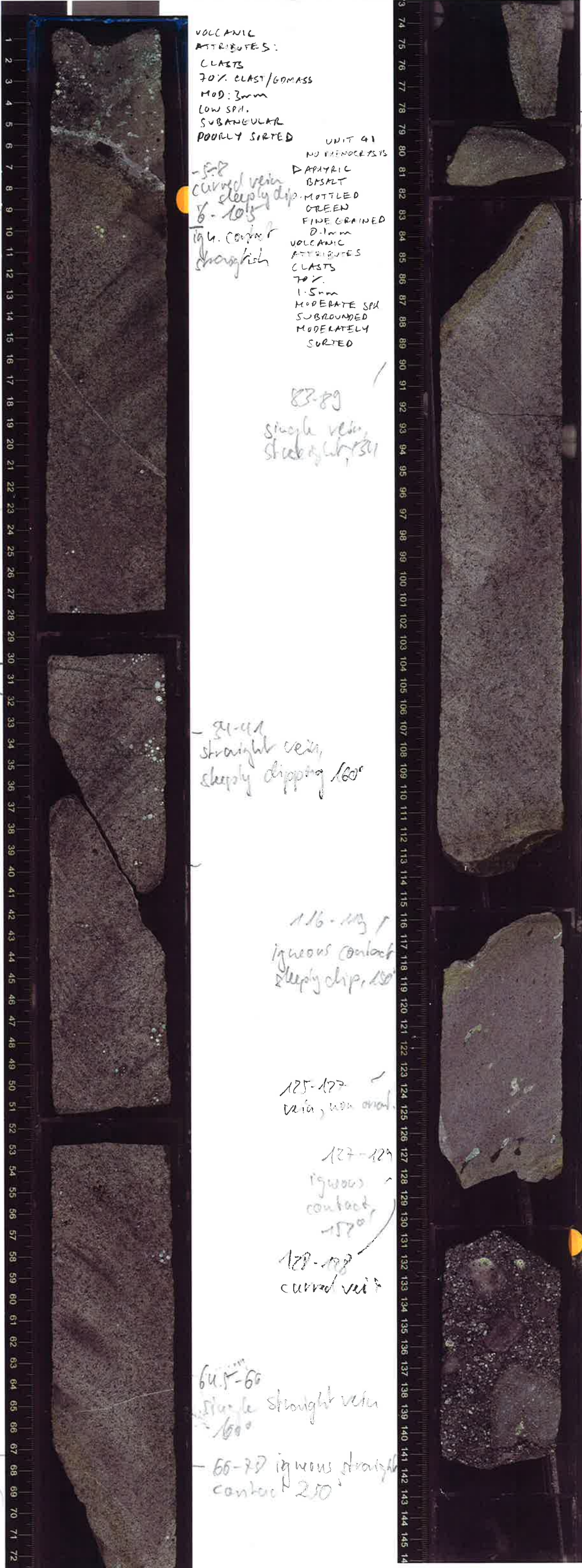
PYROXENE-PHYRIC BASALT
MED GRAY
FINE GRAINED 0.1MM
VESICLES 5%
1.5MM MAX MOD 0.5MM
ELONGATE SUBROUNDED
ALTERED ORANGE BAND
GLASSY RIM?

130cm NOT RECOVERED

UNIT 44 PIECE 7
DESCRIP: BRECCIA
INTERPRET: PILLOW BRECCIA
POCANTIC
50% PLAGIOCLASE, SUBHEDRAL
MAX 2MM, 1MM MOD
FRESH
10% PYROXENE, SLIGHTLY ALTERED,
SUBHEDRAL, 1MM MAX, 0.5MM MOD
MOTTLED BLACK GREEN DARK GRAY
FINE GRAINED 0.2MM ORANGE

ORANGE ALTERATION BAND
GLASSY? ENRICHED HOT.

142cm
POORLY SORTED
SUBANGULAR
LOW SPH.
60% CLASTS
2MM SIZE



UNIT 45

PIECE 1

PILLOW LAB. NOT RECOVERED BOUNDARIES

10% PYROXENE
SUBHEDRAL ALTERED
2 MM MAX D. TAN MOD.
SPARSELY PHENOCRYSTIC
MEDIUM GRAY
FINE GRAINED 0.1 MM

ORANGE ALTERATION BANDS - EX GLASS?



VESICLES
10%
0.5 mm MAX
0.1 mm MOD.
ELONGATE
SUB-R

UNIT 46 21 →

PIECE 2-13

21cm - end of Core 12
18R 3A 149cm
NOT RECOVERED BOUNDARIES
BRECCIA
→ HYALACLASTIC!

100% PLAGIOCLASE
CIRCULAR
FRESH
4 MM MAX
2 MM MOD

~~10% PX & OL~~

Px-PLAGIOCLASE-PHYRIC
BASALT BRECCIA

MOTTLED BLACK-GREEN
-GRAY-BLUE

FINE GRAINED 0.1 MM

GROUNDMASS GLASS ALTERED
MANGANESE?
FRESH GLASS FRAGMENTS
THROUGHOUT

10% PX
SUBHEDRAL
FRESH
3 MM MAX
2 MM MOD

05% OLIVINE
SLIGHTLY ALTERED
SUBHEDRAL
2 MM MAX
1 MM MOD

PLAG-PX-BASALT

VOLCANIC
ATTRIBUTES:
60% CLASTS/GROUNDMASS
4 mm
LOW SPH.
SUBANGULAR
MODERATE SORTING



POORLY SORTED
AT BOUNDARY
COARSENING
UPWARDS
GRADED
TDP



VOIDS, NOT
DESCRIBED IN
HYALACLASTITE
AS 'VESICLES',
VESICLES IN
PARTICLES NOT
DESCRIBED AS
VARIABLE ON A
MM-PARTICLE
SCALE.

UNIT 46

Piece
1-19

DESCRIBED
IN 1723A

BITS OF
FRESH GLASS
THROUGH OUT

vein network
26-39cm
0.5mm wide
30-315

TAKE
THIN SECTION
OF THIS!

66-71cm fractured
66cm

GOOD EXAMPLE
OF FRESH
GLASS

71cm
71.5-74cm
fractured



70-100cm
fractured x8

122cm
fracture
steeply dipping

126-149cm
fractured x11
steeply dipping

UNIT 46

Piece
1-22

0-16cm
fractured
x6
steeply dipping

fracture 21-21.5cm
steeply dipping → 128



UNIT 46

Piece 1-18

3.5-17.5cm fractured



UNIT (46)

Continued

UNIT (47)

vitric-tuffic volcanic sand with centimeter-size volcaniclastic graded layers.

Some froths glass.



(46) 6-6.5cm contact has orientation of (47) 80-7310

13 to 13.5cm fracture curved steeply dipping

38.5-39cm sediments bedding 85-7010



Unit (47)

Continues.

vitric - ortho
volcanic
sand - gravel

Some fresh
glass



UNIT (47)
(continued)

vitric-lithic
volcanic
sand and
gravel.

Some
fresh glass.

42-46cm
vein 80-150

end of Unit (47)

UNIT (48)

Volcanic
breccia



21-23cm
vein
80-100

residues

20%
high sphericity
rounded
2mm max
1mm nodal
20/cm²
70% fill

pillow
fragments



clasts
contain about
10% plag. phenos.

end of
Unit (48)

L = lithic clasts (20-60 mm)
with lobate margins

UNIT (49)
0-26cm

Aphyric basalt

no phenos.
fine grained
vesicles

1% (20%
in patch in
center of piece)

elongate
Subangular
5mm max.
0.5 mm modal.
0.5/cm² (50/cm²
90% filler in patch)

26-33 cm UNIT
Volcanic breccia (50)
angular clasts (50%)
(30 mm max
10 mm modal)

in vitric-
lithic
volcanic
sand
matrix
Some
fresh
glass

UNIT
(51)

33-127cm

Aphyric basalt

fine grained
no phenos.
vesicles

0.5%
elongate
Subangular
10 mm max.
2 mm modal.
0.5/cm²
100% filler



41-45cm
Fracture
85 → 300

46-465
Fracture, straight
80 → 004

60-72cm
Vein network
0.5mm wide
irregular



70.5-73cm
Vein
0.5mm wide
68 → 154
straight

78-83cm
vein
0.5mm
straight
85 → 7080

97.5-102cm
Vein
0.5mm
straight
70 → 40°

104.5-107cm
vein 0.5mm wide
56 → 232°

108.5cm
vein
0.5mm
86 → 7360

109-117cm
vein
3 to 6mm wide
sigmoidal
steeply dipping

119-124.5cm
vein
straight
2mm wide
85 → 260

Unit (51)

124-126cm
vein
0.5mm wide
straight
80 → 122°

UNIT (51)

(continued)

Pieces 1-10

Aphyric basalt

No phenos

medium gray

Medium gray
Fine grains

15.5 to 16cm vein 1mm branch

Vesicles

0.1% elongate angular

more affected than other pieces almost white

4mm max
1mm modal
0.5/cm²
100% filled

39-43cm fracture 25-352 (on opposite side) moderately affected

44.5-47cm fracture curved steeply dipping

50.5-52cm fracture 60-180

54-67cm fractured

UNIT (52)

Hyaloclastite breccia

Dark green, medium gray clasts
Aphyric basalt

UNIT (53)

Pieces 12-19

6-8.5cm vein straight 1mm (on rotated piece)

79-86cm fracture 85-720

drilling debris

8-85.5 vein 2mm wide curved steeply dipping

hyaloclastite breccia on upper corners of core

101-103cm vein 1mm wide straight 64-708

Unit (53)

is fine-grained but with 2% plagioclite glomerocrysts (2mm)

(possibly segregation patches)

113.5-115.5 vein 2mm straight 86-7208

119-121.5cm vein 1mm straight 60-7128

123.5-127 vein 3mm straight 85-7050

127-131cm vein 1mm straight 40-7160

breccia matrix highly affected fragments moderately affected

Vesicles in clasts

2% low sphericity subangular 2mm max
0.5mm modal
10/cm²
20% filled

131-135cm vein network branched 3mm

138-141cm vein network branched 3mm

70-77cm fracture curved steeply dipping

UNIT (53)

(continued)

Aphyric basalt

No phenos

Medium gray

fine grains
2 breccias - black glass matrix

Vesicles

67-99cm

0.1% high sphericity rounded

1mm max
0.5mm modal
0.5/cm²
100% filled
97.5-101cm geophel 176° dip dir

102-104.5cm geophel 174° dip dir moderately affected

110-113cm vein straight 88-7208

99cm - 108cm 15%

elongate subangular 50mm max
50mm modal (3 large vesicles seen on reverse side)

0.3/cm²
50% filled

108 - Section 2, 11cm

0.1% high sphericity rounded
1mm max
0.5mm modal
0.5/cm²
100% filled

Many calcite but on base side some chalcocite some magnetite

UNIT (53)
(continued)

2-9 veins, curved
non-oriented

UNIT (54)

black spots
in matrix

19-22
veins and fract
on chert, network

28-30
vein network,
branching, non-ori

UNIT (55)

37-41
vein, straight
65 → 148

moderately
aligned

49-50
fracture, 103

51-56
fracture, irregular
113

57-59
fracture, straight
62 → 013

57-58
vein network, 82 →
024

61-63.5
vein, pub. opaly
steep dip → 161

63.5-66 vein irregular
steep → 101

1-3
vein, (mm
non-oriented
(rotated)

fragments
moderately
aligned

Vesicles in
clasts

0.5%
moderate sphericity
rounded
1 mm max
0.5 mm modal
2/cm²
100% filled.

Vesicles 30-104 cm

0.5%
high sphericity
rounded
0.5 mm max
0.2 mm modal
4/cm²
100% filled.

Vesicles 104
- 113 cm

15%
elongate
subangular
50 mm max
50 mm modal

0.3/cm²
50% filled

Vesicles
113 - Section 3,
14.5 cm

0.5%
moderate sphericity
rounded
1 mm max
0.5 mm modal
2/cm²
100% filled

76-82

vein
89-124

81-81.5

vein
82-176

83-84

vein
80 → 012°

81-85
vein, 80 → 052°

86-82 vein 79 → 015°

86.5-88 vein 80 → 013°

96-100
irreg. vein, non-oriented

calcite w/
bitumens, brown
matrix (chalcidite?)

MB10

121.5-127
vein, non-oriented
(rotated?)

130-130.5
steep dip. → 124°

UNIT (55)
(Continued)

moderately altered



4-8
vein netw.
40 → 130°

UNIT (56)

black glass in matrix moderately altered fragments



16-19
non-oriented UNIT (57)
vein netw.

Vesicles
in clasts
0.5%
moderate spherulite
rounded
1 mm max
0.5 mm modal
2/cm²
100% filled

black glass 09-23.5
vein latite
steeply dipping

24-25
vein network
steep-dip, non-orient.

29-30
vein straight, non-oriented (colored?)

32-34.5
vein netw.
irreg.

41-48
vein netw., steeply dip.

46-52
vein network, branch.
steep dip



moderate alteration

Vesicles
55-74 cm.
0.2%
high spherulite
rounded
2 mm max
0.2 modal
1/cm²
100% filled