

64-70
vein, irreg.
non-oriented
calcite



81-84
vein, irreg., steep dip →
270

moderately
aligned

87-94
vein network,
irreg., non-oriented
calcite

As section 1

Some fragments
have fresh glass
(best seen on
back side)



29-34
vein, sub-
horizontal
→ 277
calcite

48-50
vein, sub-
horizontal
→ 277
calcite

74-74
vein
irreg.
non-dm

As section 1

76-77
vein with
irreg. non-
oriented
78-99
vein, irreg.
slight dip

medium
gray
fine
granular

100-
111
vein,
irreg.,
non-
dm
52-58 vein
sub-horizontal
calcite



end of Unit (15)

Unit (16)

thickly
plag-olivine-
angite-phyric
basalt

5% plag.
3% olivine
3% angite

olivine 3mm max
1.5mm modal
equant
subhedral

plag. 10mm max
2mm modal
elongate
euhedral
filled with inclusions

angite
6mm max
2mm modal
elongate
subhedral

slightly
altered
fresh glass
best seen
on back
side.

olivine
material
altered to
Fe-oxides

UNIT 16 Cont'd

1-3

0-44 cm

5% PLAGIOCLASE
ELONGATE
FRESH
5mm MAX
1.5mm MOD.

slight alteration

3% PYROXENE
ELONGATE
FRESH
4mm MAX
2mm MOD.
SUBHEDRAL

5% OLIVINE
Euhedral
MODERATELY ALTERED
10mm MAX
3mm MOD.

HIGHLY
PLAGIOCLASE-OLIVINE
-ANORTITE-PHYRIC
BASALT

MEDIUM GRAY
FINE GRAINED 0.1

BIT OF
SEDIMENT

NOT RECOVERED

44-70 cm

UNIT 17
PIECE 4a - 4b.
BRECCIA

SAME PHENOCRYSTS
AS ABOVE EXCEPT
OLIVINE 5mm MAX

HIGHLY
PLAGIOCLASE-OLIVINE
-ANORTITE-PHYRIC
BASALT BRECCIA

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0-29 vein
integ, steep dip

0-24 & 5 91
VESICLES 58-60
vein, integ.
non-orient.

0.1-0.9
1mm MAX
0.5 MOD.
LOW
SUBBLENDED

VESICULAR CLASTS

(10% WITHIN
BRECCIA 69-72
vein with
integ, steep
dip
70-72
vein curved
non-orient.
caliche
+ zeolite 71-80
vein, jagged
80-82 130

28-35
vein network, integ.
steep dip -> 142

79-89
vein with
curved,
steeply
dip
92-97
vein network,
integ, steep dip

CLASTS

48-50
vein, integ, non-orient.
caliche

medium
alteration



MOTTLED GRAY-ORANGE
FINE-GRAINED
6.1
WHITE-

BRECCIATED,
80% CLASTS
5mm MOD. SIZE
LOW, SUBANGULAR
POORLY SORTED.

TRANSITIONAL CONTACT
BETWEEN MASSIVE AND
BRECCIATED UNIT.

4b
70-103 cm - 4c

UNIT 18
LAVA FRAGMENT OR
LAVA LOBE?
ISCI, I.

SAME PHENOCRYSTS
AS BEFORE
EXCEPT OLIVINE
OLIVINE 8mm MAX

HIGHLY
PLAGIOCLASE-OLIVINE
-ANORTITE-PHYRIC
BASALT

MEDIUM GRAY
FINE GRAINED 0.1
MASSIVE
slight alteration

103 - ENO,
UNIT 19.

CONTACT
RECOVERED,
PIECE 4c

UNIT 19 CONT'D.

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0- END.
PIECE 1-26

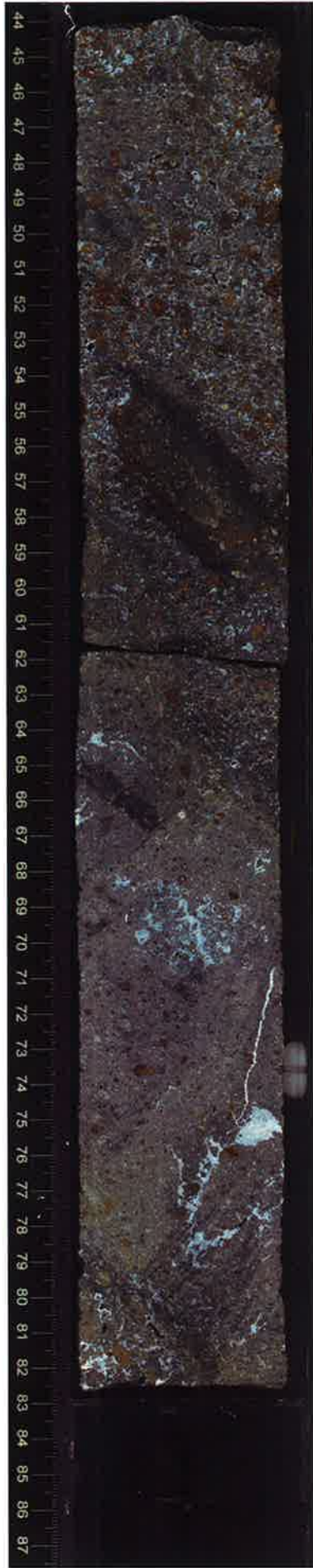
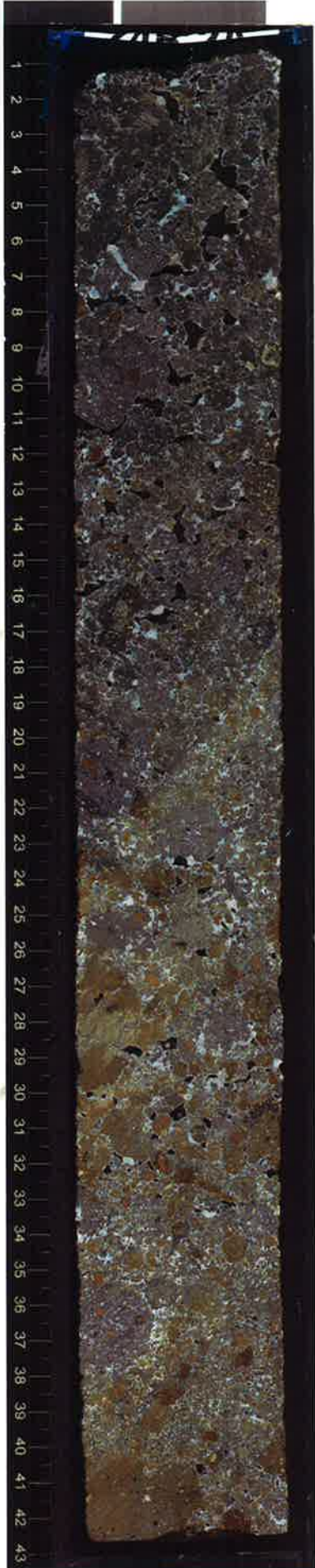
5% PLAG
ELONGATE
FRESH
10MM MAX
1MM MOD
INCLUSION FILLED.

3% PYROXENC
ELONGATE
FRESH
10MM MAX
2MM MAX

5% OLIVINE

5MM MAX
2MM MOD
SUBHEDRAL
MOD. ALTERED

HIGHLY
PLAGIOCLASE -
OLIVINE - ANKITE
- PHENIC BASALT
BRECCIA.



MOTTLED ORANGE
GRAY,

FINE GRAINED 0.1
MODERATELY PHENIC
BRECCIATED.

PERVASIVELY
ALTERED GLASS

VOLCANIC ATTRIBUTES

85%
5MM MAX
LOW ISOBANKUAK,
POOR.
BRECCIATED.

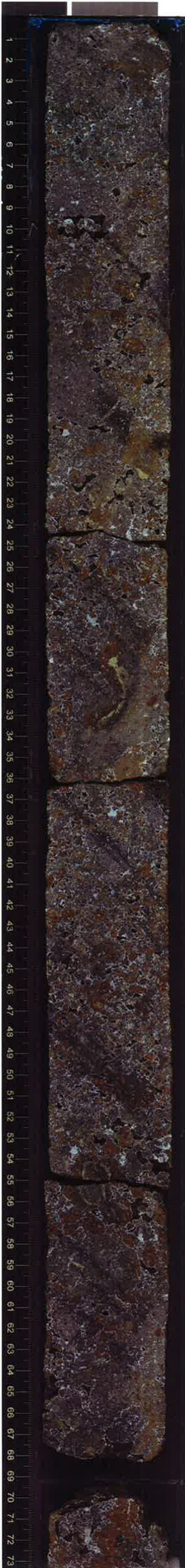
*Mottled appearance
some fragments
highly altered
some slightly*

70-78
ven. mts, steep dip \rightarrow
100

oliv = Fe. rich

UNIT 1
CONTD

PIECE 1a-6



Some fragments
highly oxidized
some slightly



THIS PIECE
IS FROM
WAY AROUND

clines =
Fe-oxide

UNIT 19
PIECE 1-2a
CONTD

ALTERED GLASSY MARGIN

END OF UNIT 19
@ 20 cm.
In Piece 2a.

UNIT 20 ISCI (1)
LAVA LOBE OR FRAGMENT

SAME PHENOCRYSTS AS BEFORE IN UNIT 19. EXCEPT:

- PLAG MAX 8MM
- INCLUSIONS NOT SEEN IN PLAG
- PX MAX 6MM.

- OLIVINE PERVASIVELY ALTERED.

HIGHLY PLAGIOCLASE

- OLIVINE - AUGITE - PHYRIC BASALT

MOTTLED ORANGE-GRAY FINE-GRAINED 0.1 COMP. ALTERED GLASS

calcite + zeolite

BECOMES BRECCIATED

END OF UNIT 20
@ 53.5
In piece 3b.

UNIT 21
53.5-85 cm
VOLCANIC BRECCIA

PLAG
50%. MOD. FRESH
5mm MAX
1mm MOD.
SOME INCLUSIONS.

PX
30%
3mm MAX
2mm MOD.

72-80
vein netw.,
irreg., non-
oriented

81-100
vein netw.
straight.
85-90

101-211
vein network,
irreg., 71-80

calcite

72-83
vein network,
irreg., non-oriented

103-105
vein netw.,
branched + reconnected

106-53
vein network
irreg., branched + reconnected

variable alteration from none to high

HIGHLY PLAGIOCLASE - OLIVINE - PHYRIC BASALT

OLIVINE
50%. 5mm MAX
2mm MOD.
MOTTLED GRAY-ORANGE FINE GRAINED 0.1 BRECCIATED, 80% CLASTS, 3mm MOD LOW, SUBANGULAR, POOR

TRANSITION FROM BRECCIA TO MASSIVE In piece 4a

UNIT 22 ISCI (1)
85-105 cm.
LAVA LOBE OR FRAGMENT

PLAG
50%. 13mm MAX
2mm MOD.
MOD ALTERED. SOME INCLUSIONS

PX
30% 5mm MAX, 3mm MOD.

OLIVINE
50% 5mm MAX 2mm MOD.
MOTTLED GRAY ORANGE, FINE GRAINED 0.1

HIGHLY PLAGIOCLASE - OLIVINE - AUGITE BASALT

BECOMES BRECCIATED In piece 4b.

UNIT 23 - end
105 cm - end of section 5,
VOLCANIC BRECCIA.

PLAG
50%, MOD. ALTERED,
3mm MAX, 0.1mm MOD.

PX
0.5% 2mm, 1mm

OLIVINE
50%, 3mm, 1.5mm

HIGHLY PLAGIOCLASE - OLIVINE - PHYRIC BASALT BRECCIA

MOTTLED GRAY-ORANGE-WHITE FINE GRAINED 0.1 BRECCIATED 85% 3mm MOD. LOW, SUBANGULAR POORLY SORTED.



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UNIT 23
CONTD.
PIECE 1-3



17-21
vein cutw.
mg. non-
oriented



zeolite
variable
alteration
from moderate to
high

UNIT 23
 CONTD. → VOLCANIC BRECCIA, FRAGMENTED
 PIECE 1a-4 LAVA
 0-98cm
 5% OLIVINE
 EUBEDRAL, COMPLETELY ALTERED
 3mm MAX, 1.5mm MODE

 0.5 PYROXENE
 SUBMEDIAL, FRESH
 2mm MAX, 1mm MODE

 5% PLAGIOCLASE
 ELONGATE, MODERATELY ALTERED
 3mm, 0.1mm

 ▷ HIGHLY PLAG-OLIVINE-PHYRIC
 BASALT BRECCIA
 MOTTLED ORANGE-GRAY
 FINE-GRAINED
 GLASS COMPLETELY ALTERED
 MODERATELY PHYRIC
 BRECCIATED

 VOLCANIC ATTRIBUTES
 85 CLAST VS MATRIX
 LOW, SUBANGULAR
 POORLY SORTED

 VESICLES
 0.5%
 MODERATE, SUBROUNDED
 1mm MAX
 0.5mm MODE
 10% VESICULAR CLASTS
 UNTIL 25R-5
 50cm



13-21
 vein cutwork
 w=5, (mm, avg)
 non-orient.

100-107
 vein, 3mm,
 stepped
 53 → 250

103-106
 vein cutwork
 w=3, 0.8mm
 avg, non-orient.

ALTERED GLASSY MARGIN



ALTERED GLASSY MARGIN AT CONTACT

UNIT 24 ISCI=0
 PIECE 4
 LAVA FLOW OR FRAGMENT
 LAVA LOBE OR CLAST
 OLIVINE
 7% SUBMEDIAL
 6mm MAX, 2mm MODE
 Pervasively ALTERED
 PYROXENE
 2%
 4mm MAX
 1.5mm MODE
 SUBMEDIAL, FRESH
 FELDSPAR
 7%
 EUBEDRAL, SLIGHTLY ALTERED
 3mm MAX, 1mm MODE
 114.5
 ▷ HIGHLY PLAGIOCLASE-
 OLIVINE-AUGITE PHYRIC
 BASALT
 MEDIUM GRAY WITH
 ORANGE RIMS
 FINE-GRAINED, 0.1mm
 COMPLETELY ALTERED GLASS

UNIT 25

PIECE 1a-4a
TOP NOT RECOVERED
BOTTOM ALTERED
GLASSY MARGIN

5% PLAGIOCLASE
Euhedral, slightly altered
3mm MAX, 2mm MODE

1% PYROXENE
Subhedral, FRESH
5mm MAX, 2mm MODE

5% OLIVINE
Euhedral, COMPLETELY ALTERED
5mm MAX, 2mm MODE

DIKILY PLAGIOCLASE -
OLIVINE-AUGITE-PHYRIC
BASALT BRECCIA

MOTTLED GRAY ORANGE
WHITE

FINE-GRAINED
COMPLETELY ALTERED

85% CLASTS v MATRIX
2mm MODE
LOW SPHERICITY
SUBANGULAR
POORLY SORTED
BRECCIATED



77-81
vein netw., irregular
non-orient.

81-84
vein netw.,
5mm max
irreg, non-orient.

84-88
3 vein, 0.6mm
straight,
step dip
bgo

88-91
vein netw.
w=8, irreg,
non-orient.

91-100
vein network,
irreg, steep
dip

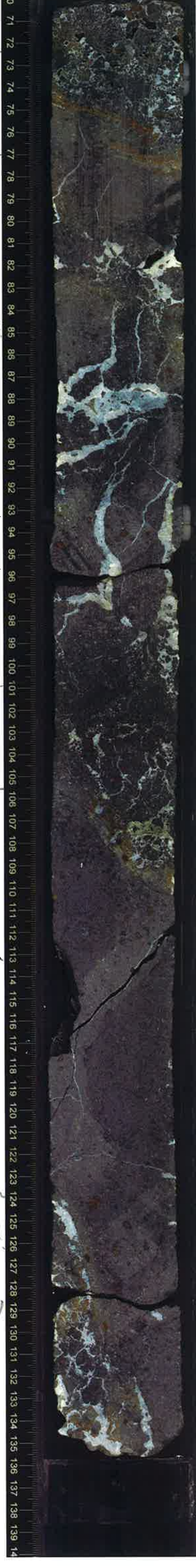
103-110
vein netw.
w=12 irreg,
non-orient.

112-116
vein, 0.2mm
straight
29-318

115-123
vein netw.
71-264

122-123
vein, 0.2mm
irregular,
non-orient.

126-129
vein netw.,
branching
0.2mm
step dip



GLASSY MARGIN
AT BASE
77cm
UNIT 26

PIECE 4a-4f
7% PLAGIOCLASE
Euhedral, slightly altered
3mm MAX, MODE 1mm

2% PYROXENE
Euhedral, FRESH

5mm MAX, 1.5mm MODE
7% OLIVINE
Euhedral, COMPLETELY ALTERED
5mm MAX, 2mm MODE
GRAY AND WHITE WITH
ORANGE RIM

FINE-GRAINED, 0.1mm
HIGHLY PLAGIOCLASE -
OLIVINE-AUGITE-PHYRIC
BASALT ISCI=0
COMPLETELY ALTERED
GLASS
WEAK RADIAL FRACTURES
98 BECOMES
BRECCIATED

UNIT 27 PIECE 4b

VOLCANIC BRECCIA
PNEUCRYSTS IS UNIT 26
HIGHLY PLAGIOCLASE -
OLIVINE-AUGITE-PHYRIC
BASALT BRECCIA
MOTTLED GRAY-ORANGE
FINE-GRAINED
COMPLETELY ALTERED
GLASS
80% CLAST/MATRIX
7mm CLAST MODE
LOW, ANGULAR, POORLY SORTED
ALTERED GLASSY
MARGIN

UNIT 28 PIECE 4g
-4d

III - 25R 3 11cm
HIGHLY PLAGIOCLASE -
OLIVINE-AUGITE-PHYRIC
BASALT ISCI=0

7% PLAGIOCLASE Euhedral,
slightly altered

3mm MAX, 1mm MODE
2% PYROXENE Euhedral,
FRESH

6mm MAX, 1.5mm MODE
7% OLIVINE Euhedral,
COMPLETELY ALTERED

8mm MAX ALTERED
2mm MODE

MEDIUM GRAY, ORANGE
FINE-GRAINED PATCHES
COMPLETELY ALTERED
GLASS

UNIT 28
PIECE 1



5-8 veins
irregular, non-oriented

10-11

PERVASIVELY ALTERED
GLASS (i.e. SOME GLASS!)

UNIT 29 11-84cm
PIECE 2-5
TOP NOT RECOVERED

PLAG: 10%
SUBHEDRAL,
SLIGHTLY ALTERED
3mm MAX, 1mm MODE
PYROXENE 3%
EQUEDRAL, FRESH
10mm MAX, 2mm MODE
OLIVINE 5%
EQUEDRAL,
COMPLETELY ALTERED
4mm MAX, 2mm MODE

HIGHLY PLAG-OLIVINE-
AUGITE-PHYRIC
BASALT BRECCIA
MOTTLED ORANGE GRAY
FINE-GRAINED, 0.1mm
COMPLETELY ALTERED

VOLCANIC ATTRIBUTES
CLASTS 85%
LOW, SUBANGULAR
POORLY SORTED
MODE 5mm

92-95
vein actw,
n=6, u2 →
145
94-103
vein actw.
n=9
long, non-
oriented

103-105
vein, straight
sub-horiz.
→ 156



84cm
UNIT 30 ALTERED GLASSY
PIECE 5 MARGIN

PLAG 7%
SUBHEDRAL, SLIGHTLY
ALTERED

3mm MAX, 1mm MODE
PYROXENE 2%
SUBHEDRAL, FRESH
3mm MAX, 1mm MODE

OLIVINE 5%
EQUEDRAL, COMPLETELY
ALTERED
6mm MAX, 1.5mm MODE
HIGHLY PLAG-OLIVINE-
PYROXENE PHYRIC BASALT
MOTTLED GRAY ORANGE
FINE-GRAINED, 0.1mm
COMPLETELY ALTERED GLASS

109cm
PIECE 6
UNIT 31 ALTERED GLASSY
MARGIN BASE
#30
TOP NOT
RECOVERED

PLAG 7%
SUBHEDRAL SLIGHTLY
ALTERED
MAX 5mm MODE 1.5mm

PYROXENE
2% SUBHEDRAL, FRESH
1.5mm MAX, 1mm MODE

OLIVINE
5% SUBHEDRAL
COMPLETELY ALTERED

MAX: 5.5mm - M-B 1.5mm

MOTTLED GRAY ORANGE
WHITE

FINE GRAINED 0.1mm
COMPLETELY ALTERED GLASS

HIGHLY PHYRIC
BRECCIATED

HIGHLY PLAG-OL-AUG
PHYRIC BASALT BRECCIA

VOLCANIC CLASTS.

85%

7 MM

LOW

SUBANGULAR

POOR

BRECCIATED

PIECE 1-8

UNIT 31

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22-34
vein network,
steep dip

50-56
vein, irregular,
steeply dipping



100-107
vein network,
irregular, con-
oriented

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UNIT 31
PIECE 1-3



B-16
vein network
irreg., non-oriented

50cm

UNIT (31)

PIECE 1-36

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CONTD.

▷ HIGHLY PLAGIOCLASE
-OLIVINE-AUGITE
PHYRIC BASALT
BRECCIA



UNIT (31)

PIECE 1a-1b

CONTD.



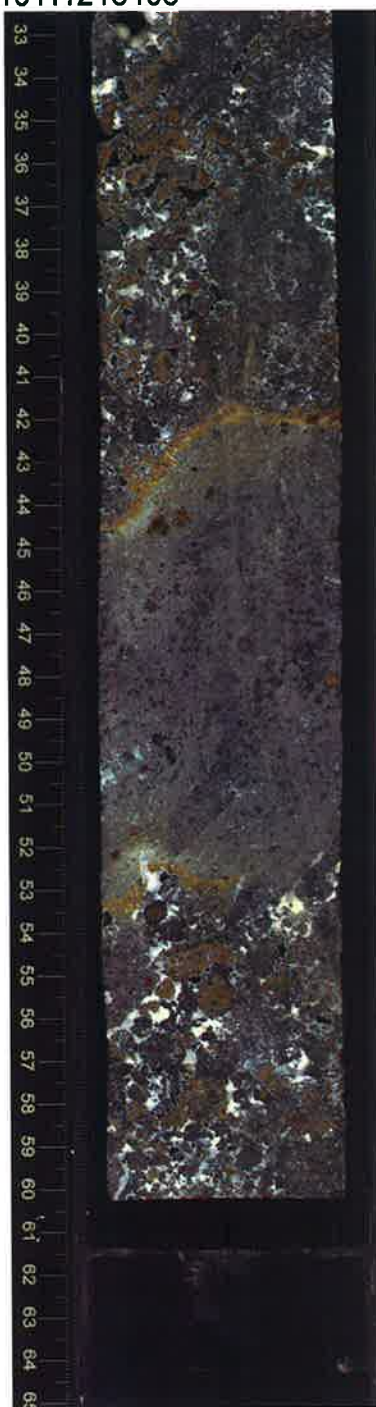
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UNIT 31
PIECE 1
CONTD



3-10 cm
vein n=3
1-2mm wide
irregular in chert

27-31cm
vein 1mm
irregular in chert



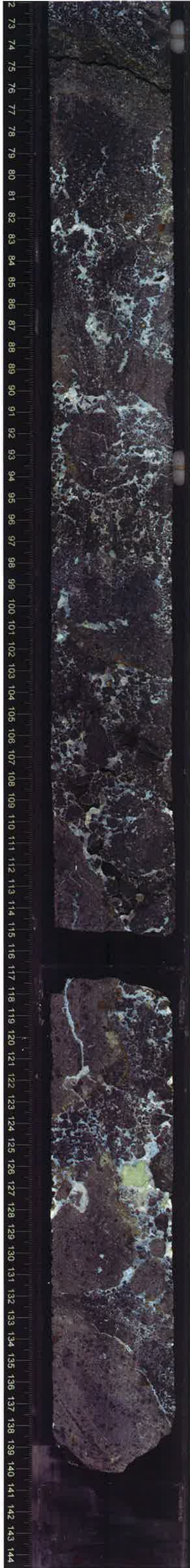
UNIT 3

PIECE 1a-2

CONTD



29-34 cm
 vein network
 2-5 mm
 irregular



112-115cm
 vein 2mm irregular, in clast

117.5-122cm vein 2mm
 curved, sharp dip, in clast