Johann Helgason

ICELAND RESEARCH DRILLING PROJECT
REYDARFJORDUR 1978

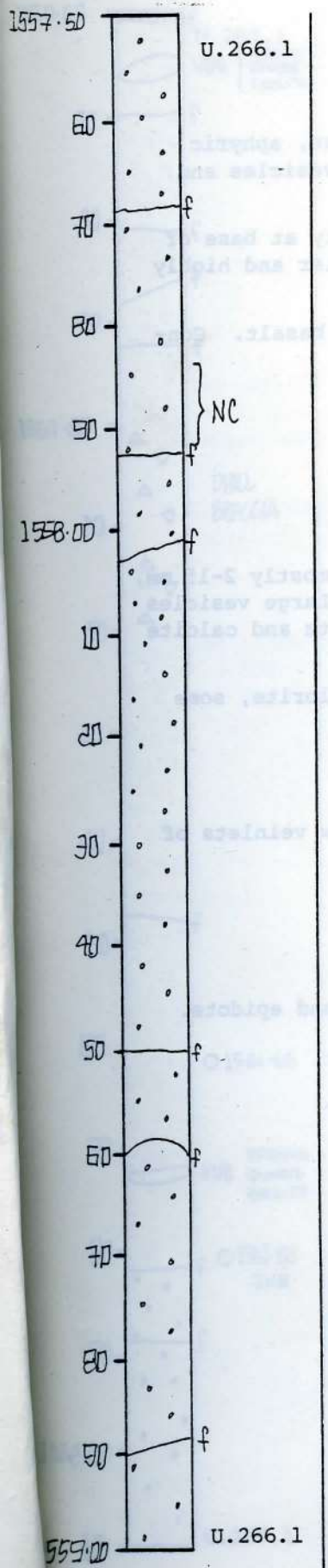
DETAILED CORE LOG
VOLUME V

Compiled and Edited by
the scientific staff at the Reydarfjordur Drill Site and by
the technical and secretarial staff of
the Department of Geology, Dalhousie University

Visual Core Description Observer PTR

Depth Interval 1557.53 cm to 1558.99 cm

Box 267, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.266.1

Grayish-green, moderately altered, moderately to highly vesicular, fine-grained aphyric basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles very abundant ∿ 30% in zone between about 1558.10 and 1558.90 m, mostly 2-4 mm, subround, filled with chlorite and minor zeolite. Above and below this zone vesicles are fewer, ∿ 5%, and larger, to 15 mm. These have both chlorite and zeolite.

FRACTURES - VEINS - BRECCIA

Fractures are subhorizontal, due to drilling. No veins.

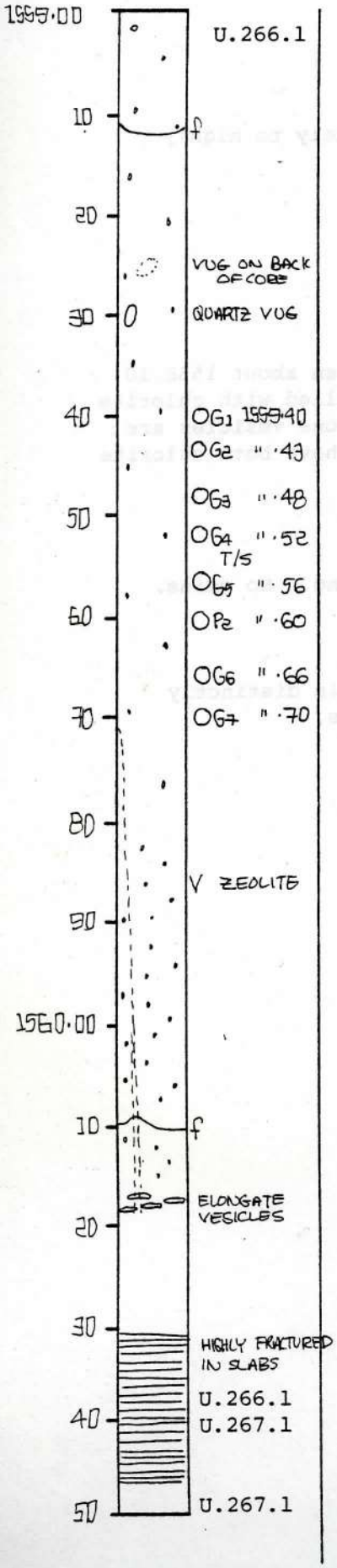
ROCK ALTERATION

Much alteration in vesicular zones. Rock is distinctly green due to growth of chlorite and epidote.

Visual Core Description Observer PTR

Depth Interval 1558.99 cm to 1560.55 cm

Box 267, Section 2



LITHOLOGY-PETROGRAPHY

Continues Unit 266.1

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Some banding defined by elongate vesicles and narrow patches of chlorite.

1560.40 Contact obscure. Drown arbitrarily at base of massive unit. Rock below is highly vesicular and highly altered.

U.267.1 Highly altered. Green, vesicular basalt. Considered flow top material.

STRUCTURE

Massive to slightly banded

VESICLES/AMYGDALES

U.266.1 Moderately to sparsely vesicular, mostly 2-15 mm, filled with chlorite, zeolite and quartz. Large vesicles or vugs partly filled with laumontite, quartz and calcite (?) occur @ 1559.30 and 1559.25.

U.267.1 5%, 2-10 mm, filled mostly with chlorite, some epidote.

FRACTURES - VEINS - BRECCIA

U.266.1 Fractures are subhorizontal. A few veinlets of zeolite dip 70-80°.

U.267.1 None

ROCK ALTERATION

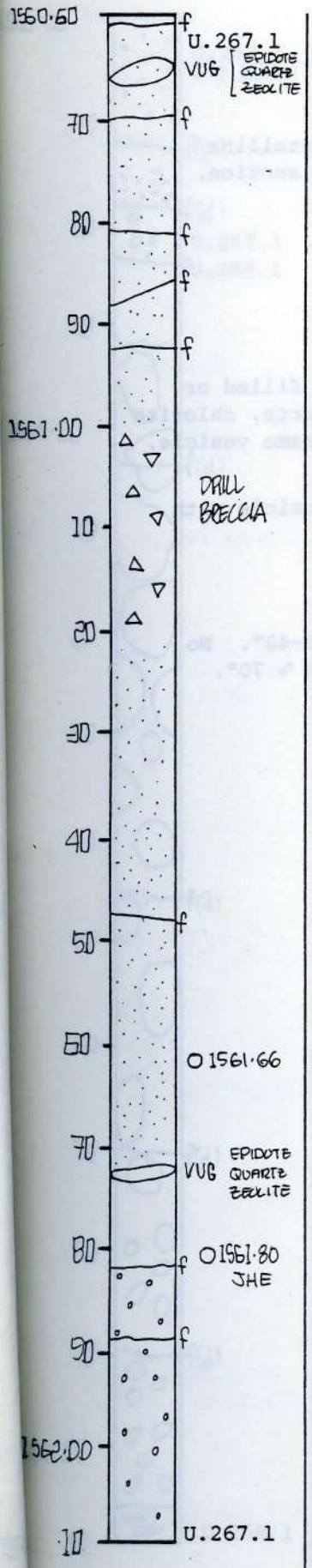
U.267.1 Green, crumbly rock with chlorite and epidote.

Graphic Representation | Sample

Visual Core Description Observer PTR

Depth Interval 1560.55 cm to 1562.10 cm

Box 267, Section 3



(LOOSE CRYSTALS OF CALCITE, QUARTZ & EPIDOTE)

LITHOLOGY-PETROGRAPHY

Continues Unit 267.1

Green to greenish-gray, highly vesicular, highly altered, fine-grained aphyric basalt.

This material is interpreted as the upper part of a lava flow.

1561.66 Loose crystals of calcite, quartz and epidote.

STRUCTURE

Massive, but rock is crumbly due to alteration.

VESICLES/AMYGDALES

Most vesicles 2-3 mm, subround, filled with chlorite and epidote. 3-4% in upper 30 cm and lower 10 cm, 15-20% elsewhere. Some to 10 mm.

Several large irregular vugs are partly filled with epidote, followed by quartz, followed by unknown zeolite?

FRACTURES - VEINS - BRECCIA

A few zones e.g. near 1561.50 - .80 appear to be somewhat brecciated but this may be due to alteration. Abundant silica appears to surround fragments of basalt.

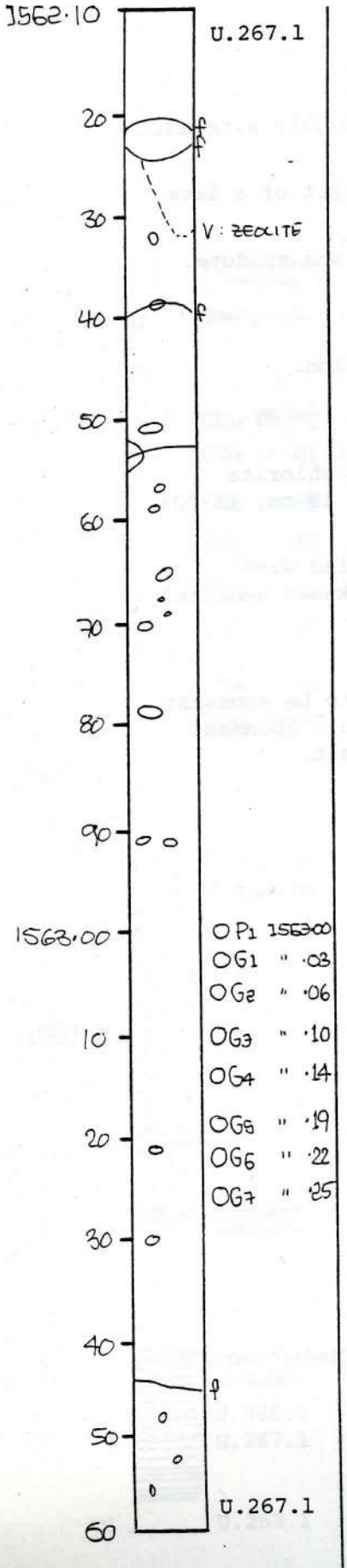
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR .....

Depth Interval 1 5 6 2 1 0 cm to 1 5 6 3 6 3 cm

Box 267, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 267.1

Gray to greenish-gray, fine-grained holocrystalline aphyric basalt. Grain size uniform through section.

STRUCTURE

Massive

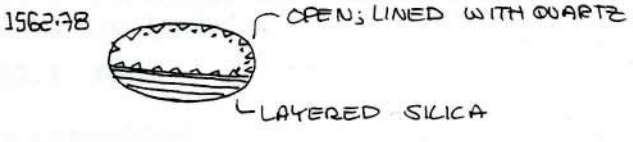
VESICLES/AMYGDALES

Vesicles 2-3%, large, 1-5 cm, usually oval, filled or partly filled with zeolite (laumontite?) quartz, chlorite and epidote, often with 2 minerals in the same vesicle. Some have calcite.

1562.78 m. There is a partly filled oval vesicle with layering which dips ∿ 2° from horizontal.

FRACTURES - VEINS - BRECCIA

Fractures mostly subhorizontal, a few dip 35-40°. No coatings. One hairline zeolite veinlet dips ∿ 70°.

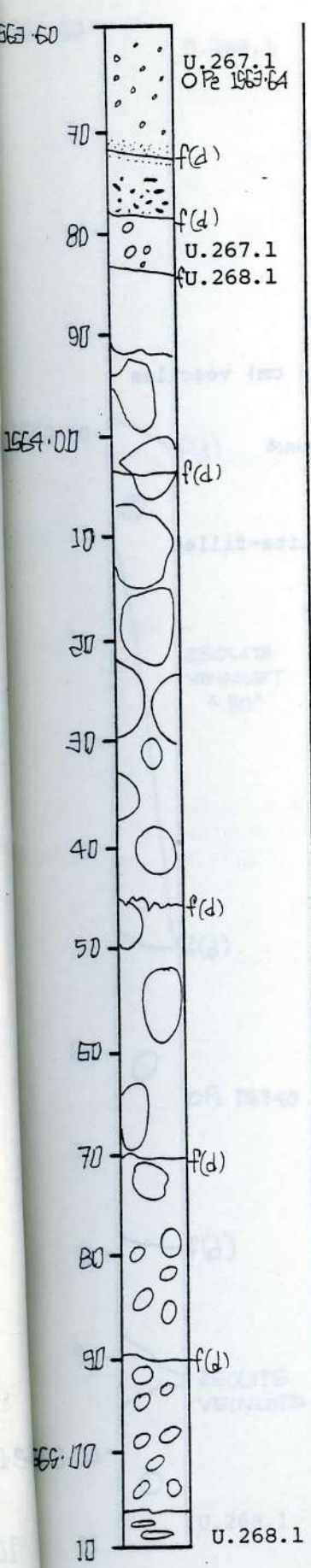


Visual Core Description Observer HUS

Depth Interval 156363 cm to 156513 cm

Box 268, Section 1

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 267.1

Top 12 cm = base of unit 267.1 - Vesicular gray-green basalt with drilled base, no breccia!

1563.73 5 cm "fused tuff"?

1563.78 feldspar, pyroxene phenocrysts. 4-5 cm coarse-grained, former glass now hematite-stained red whisps.

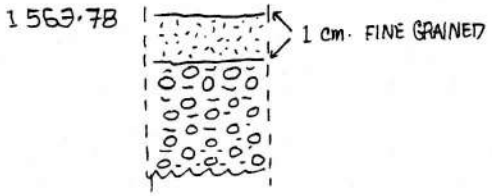
U.268.1 Flow top.

Main part of section: breccia, upper part reddish (oxidized), only moderately vesicular, lower part more greenish, quartz, chlorite, reddish phase, crumbly. Fragment size 0.5-10 cm ϕ. Few zeolites and carbonate.

1564.45 Crumbly zone

1564.63-1565.05 Highly altered "fine-grained" breccia structure poorly visible.

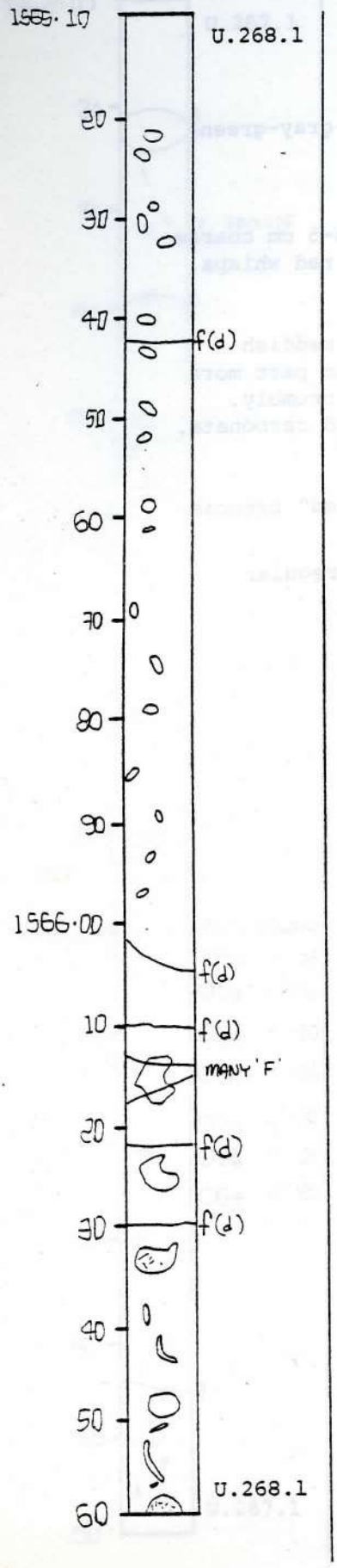
1565.05-1565.10 Solid part of flow with irregular chlorite-filled vesicles.



Visual Core Description Observer HUS

Depth Interval 1565.13 cm to 1566.61 cm

Box 268, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.268.1

STRUCTURE

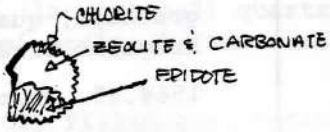
Top part of flow below top breccia.

VESICLES/AMYGDALES

1565.24 Highly vesicular = 4.5 vesicles/cm^2

1565.13-1566.10 Many irregular small (- < .5 cm) vesciles filled with chlorite and epidote.

Vesicles generally zoned.



1566.14-1566.60 Fewer, large (1-2 cm ϕ) zeolite-filled vesicles and few small vesicles.

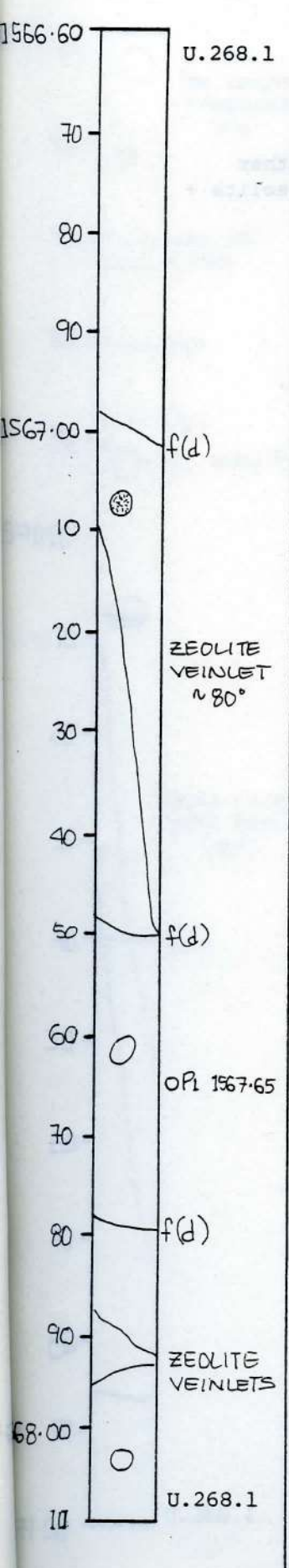
1566.42 and 1566.56 Irregular vesicle sheets

1566.61 Some partly open vesicles.

Visual Core Description Observer HUS

Depth Interval 156661 cm to 156809 cm

Box 268, Section 3



LITHOLOGY-PETROGRAPHY

Continues U.268.1

1567·08 Gray-green, massive basalt, aphyric, fine-medium-grained. Very few ~ 1 cm ϕ vesicles, filled with zeolite, only thin green outer lining of vesicle.

STRUCTURE

Massive

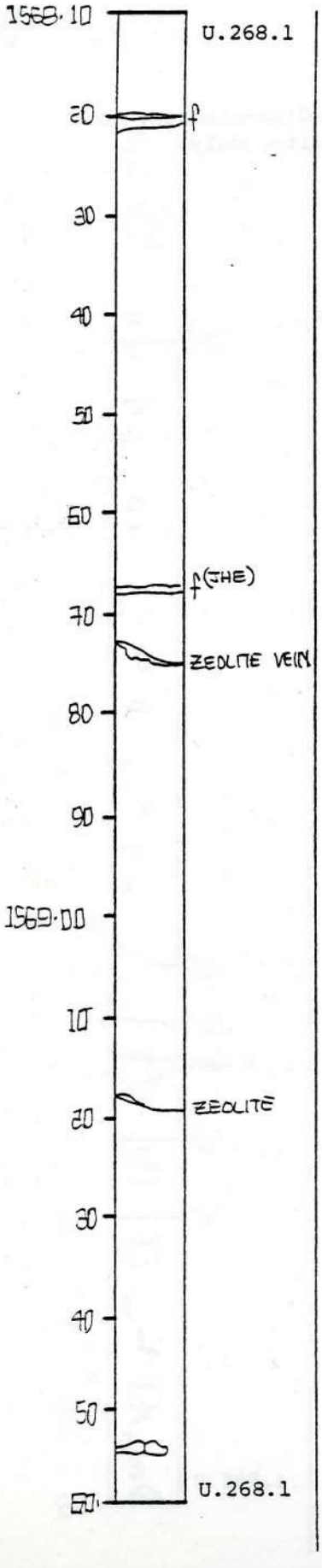
Central part of flow with few large vesilces.

Visual Core Description Observer HUS

Depth Interval 1 5 6 8 0 9 cm to 1 5 6 9 5 3 cm

Box 268, Section 4

Graphic Representation Sample

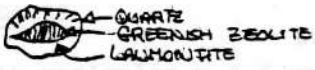


LITHOLOGY-PETROGRAPHY

Continues U.268.1

Gray, fine-medium grained, aphyric basalt, rather dense. A few large vesicles and veins with zeolite + carbonate and a little epidote.

1568.20



1568.66-1568.76 Loose crystals of laumontite.

1568.68 1 cm zeolite vein

1568.75 zeolite vein

1569.55 1 cm carbonate crystal.

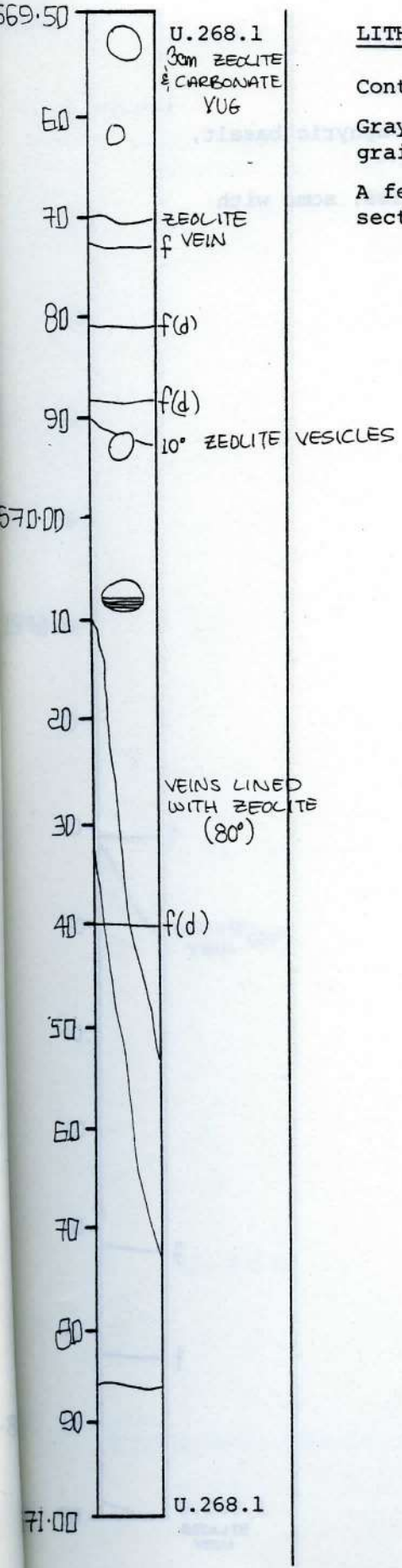
Central part of flow with few large vesicles.

Visual Core Description Observer HUS

Depth Interval 1 5 6 9 5 3 cm to 1 5 7 0 9 0 cm

Box 269, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.268.1

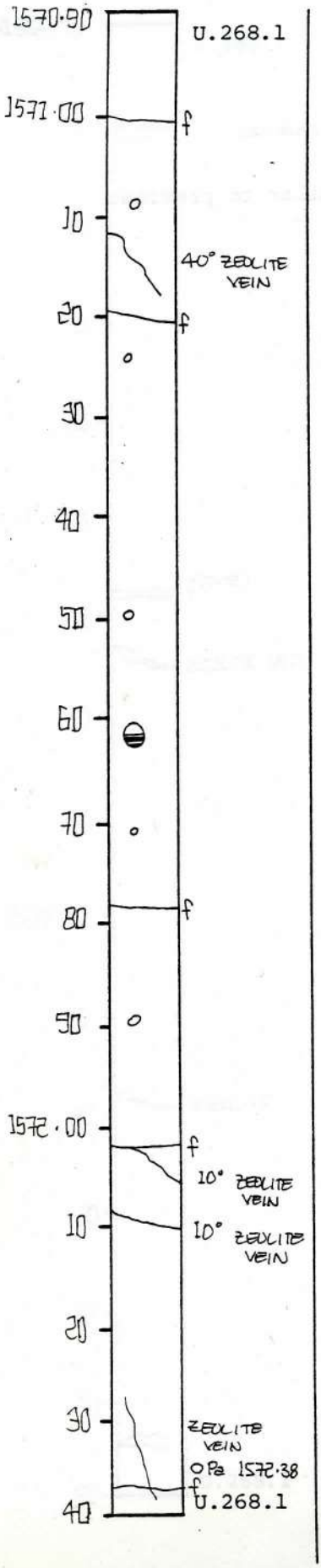
Gray, massive, dense basalt, aphyric, fine-medium grained.

A few → 1 cm ϕ zeolite filled vesicles, similar to previous sections.

Visual Core Description Observer HUS

Depth Interval 157090 cm to 157241 cm

Box 269, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.268.1

Gray, massive, fine-medium-grained, aphyric basalt, very similar to previous sections.

A few ∿ 0.5 cm zeolite filled vesicles, some with geopetal filling.

Fresh rock.

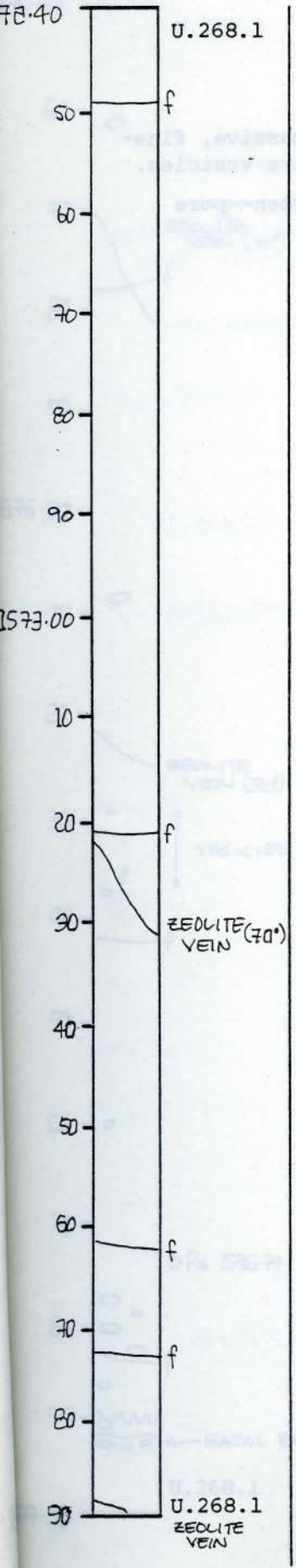
Dense central part of flow.

Visual Core Description Observer HUS

Depth Interval 157241 cm to 157395 cm

Box 269, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.268.1

Gray, massive, fine-medium-grained basalt, aphyric, very similar to previous sections.

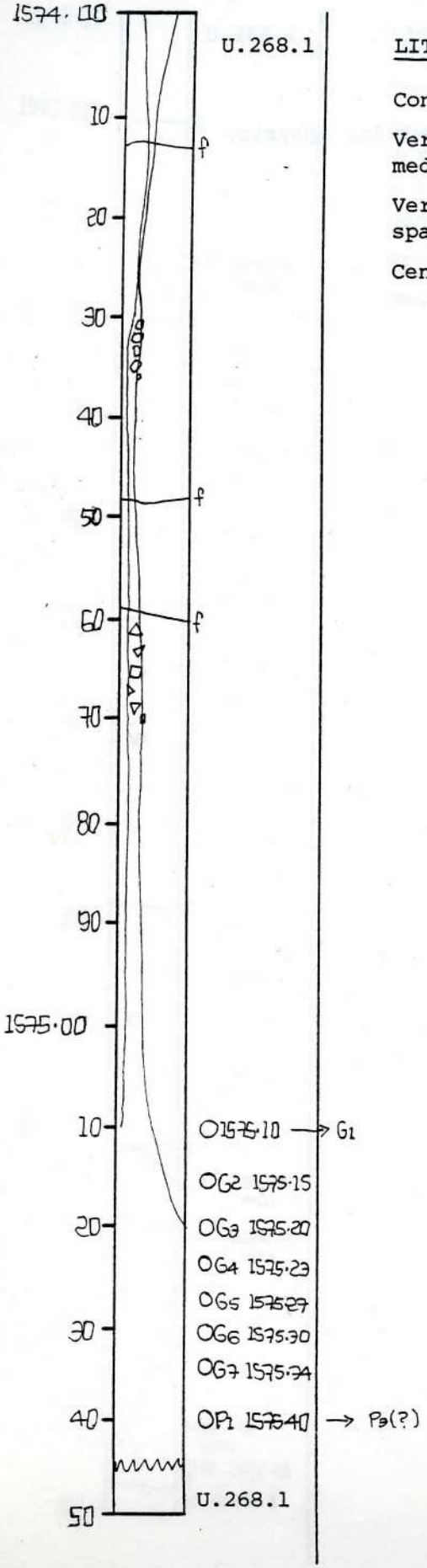
Central part of flow.

Visual Core Description Observer HUS

Depth Interval 1573.95 cm to 1574.45 cm

Box 269, Section 4

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.268.1

Very similar to previous sections. Gray, massive, fine-medium grained, aphyric basalt with very rare vesicles.

Vertical fractures with brecciation in between--pore space filled with zeolite.

Central part of flow.

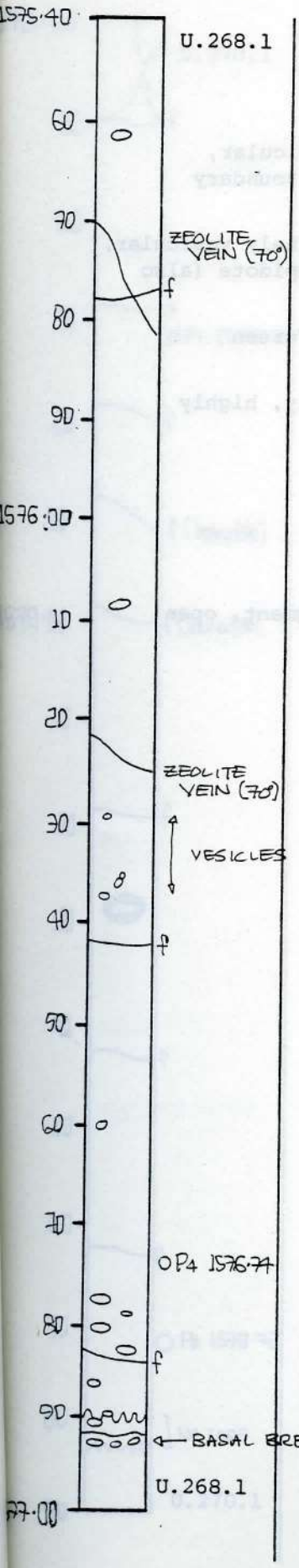
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer HUS

Depth Interval 1575.45 cm to 1576.90 cm

Box 270, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.268.1

Similar to previous sections: gray massive, aphyric fine-grained basalt with fewer and smaller vesicles than upper sections of flow. Vesicles flatter and more numerous toward fine-grained chilled base.

Carbonate (large) and epidote at very base.

1576.33-1576.36 Vesicles filled with dark material.

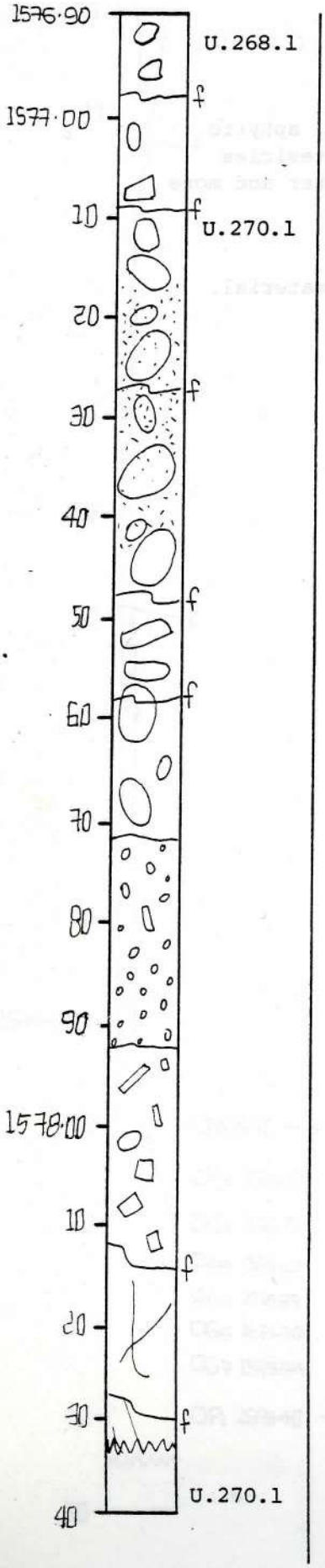
1576.91 Basal breccia 2 cm.

Basal section of thick lava flow.

Visual Core Description Observer HUS

Depth Interval 1576.90 cm to 1578.33 cm

Box 270, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.268.1

Basal breccia of 268.1 dark gray finely vesicular, intimately united with top breccia 270.1. Boundary difficulty to draw.

U.270.1 Lapilli breccia, fragments only finely vesicular, pore spaces filled with zeolite, abundant epidote (also in veins), carbonate belongs here!

1577.41-1577.45 Gray-dark gray with white/green (epidote) specks.

1577.45-1577.73 Buff, very soft and crumbly, highly altered part.

1577.95-1578.09 Reddish altered.

1578.10-1578.30 Green altered, fractured.

VESICLES/AMYGDALES

1577.73-1577.92 Large, very vesicular fragment, open vesicles.

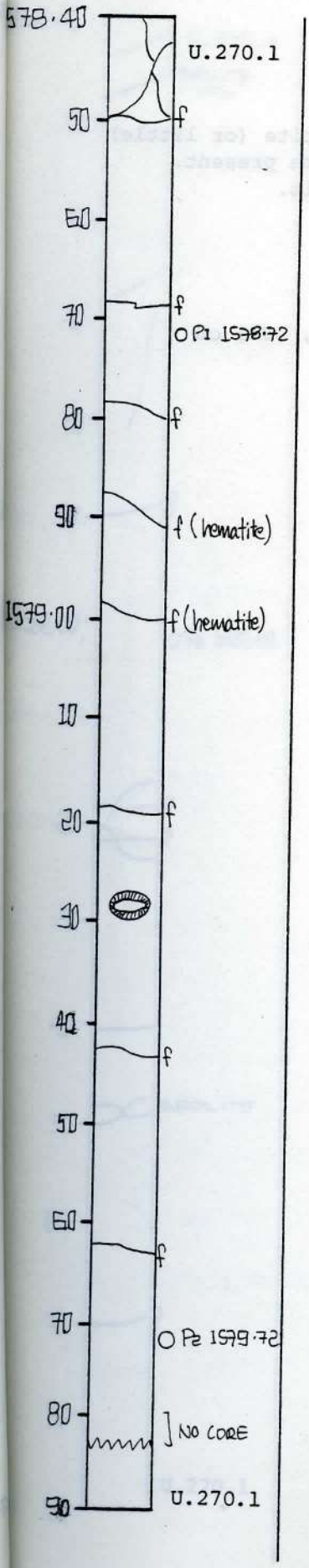
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer HUS

Depth Interval 1578.40 m to 1579.83 m

Box 270, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.270.1

Massive, green (top) to gray, fine-medium grained basalt. Fractures hematite stained and sparse red (hematite) olivine microphenocrysts. Very few vesicles. Sub-horizontal fractures filled with hematite or zeolite.

Upper part of lava flow below top breccia.

VESICLES/AMYGDALES

1578.85 "Hematite" filled vesicles.

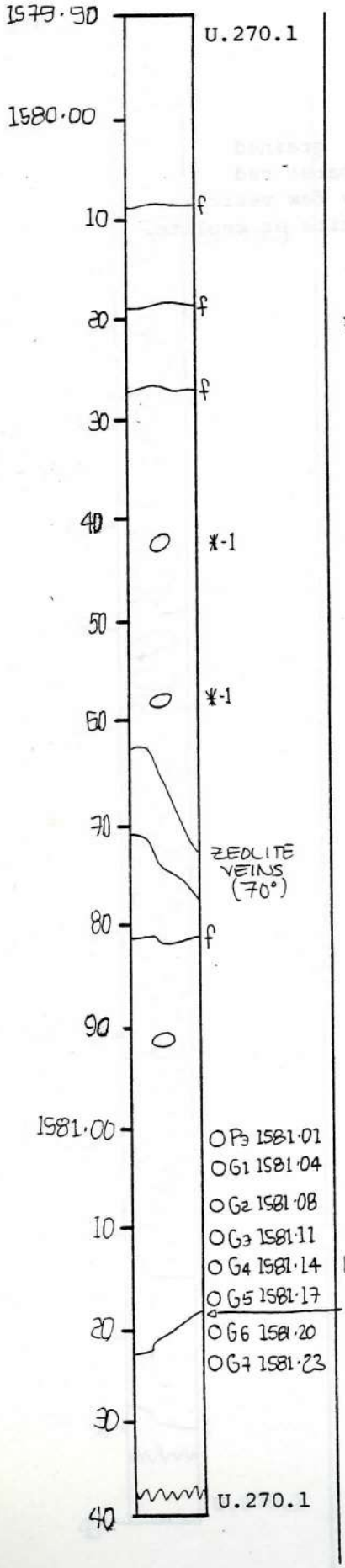
1579.28 Vesicle with central cavity.

Visual Core Description Observer HUS

Depth Interval 1579.83 cm to 1581.38 cm

Box 270, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.270.1

Similar to previous section except no hematite (or little) but remnants of fresh olivine (?) seem to be present. Otherwise rather dense, medium-grained basalt.

Central part of lava flow.

STRUCTURE

✱-1 1580.44 and 1580.57 Round sparse vesicles, .2-1 cm filled with zeolite.

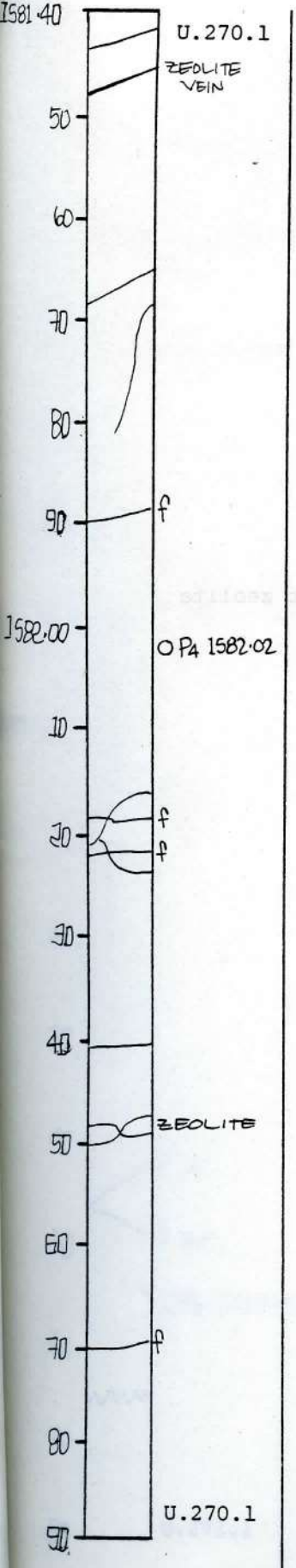
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer HUS

Depth Interval 1581.38 cm to 1582.90 cm

Box 271, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.270.1

Gray-green, fine-medium grained, aphyric basalt.

1581.40-1581.42 Zeolites abundant.

1582.19-1582.21 Zeolites abundant

1582.48-1582.50 Zeolites abundant

STRUCTURE

Massive to slightly brecciated

VESICLES/AMYGDALES

Small, irregular < 1 mm ϕ, < 10% filled with chlorite, the larger ones with zeolite.

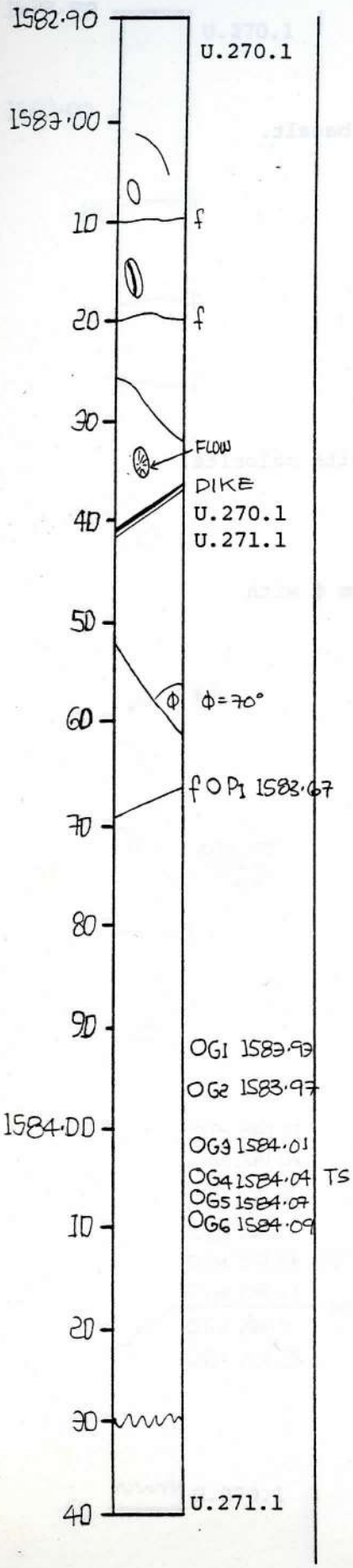
FRACTURES - VEINS - BRECCIA

Abundant irregular fractures, veins → 1 cm ϕ with zeolite/carbonate.

Visual Core Description Observer HUS

Depth Interval 15829 0 cm to 15843 0 cm

Box 271, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.270.1

Same as previous section.

1582.93-1583.30 Flow.

U.271.1 Gray, fine-grained basalt. Dike.

STRUCTURE

U.270.1 Slightly brecciated.

U.271.1 Massive

VESICLES/AMYGDALES

U.270.1 Irregular, chlorite, much zeolite.

FRACTURES - VEINS - BRECCIA

U.270.1 Irregularly fractured with abundant zeolite filling.

U.271.1 Very few.

ROCK ALTERATION

U.270.1 Moderate

U.271.1 Chlorite on fracture surfaces.

OTHER

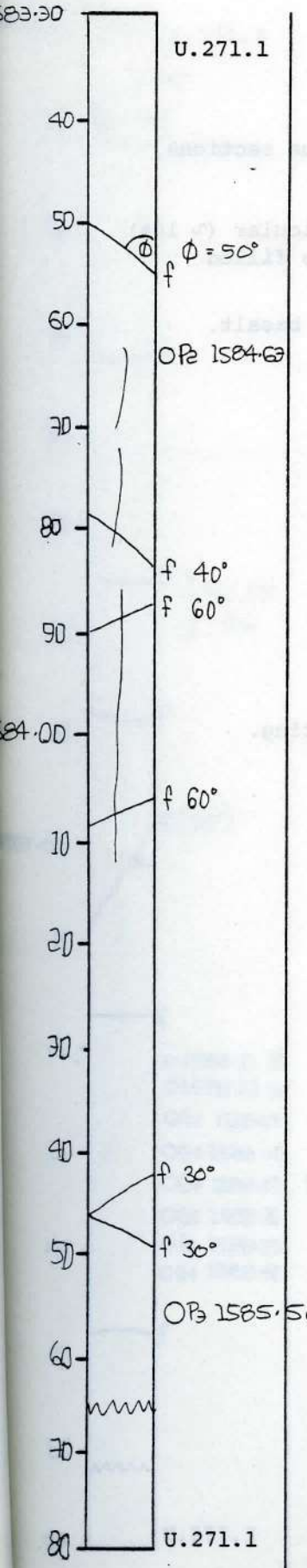
Upper part flow, below 1583.40 Dike.

Visual Core Description Observer HUS

Depth Interval 158330 cm to 158565 cm

Box 271, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.1

Similar to previous section. Grain size increasing from previous section.

STRUCTURE

Massive.
Dike.

FRACTURES - VEINS - BRECCIA

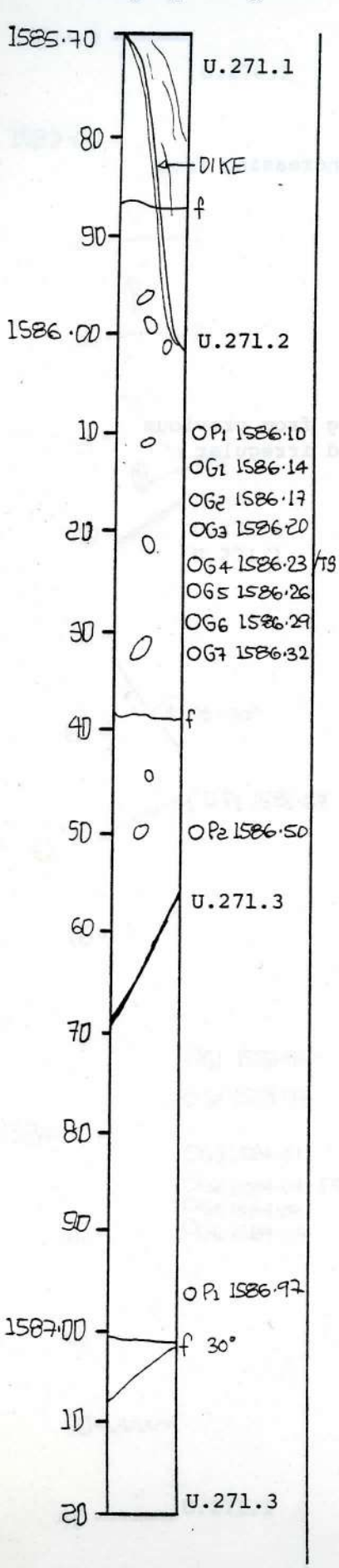
Chlorite coated steep fractures, increasing from previous section. Some very thin zeolite (?) filled irregular fractures.

Visual Core Description Observer HUS

Depth Interval 15 8 5 6 5 cm to 15 8 7 1 7 cm

Box 271, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.1

Dikes and flow probably part of the previous sections.

Fine-grained, aphyric gray basalt. Dike.

U.271.2 "Mottled", in part moderately vesicular (∿ 10%) (chlorite, some zeolite). > 0.2 cm zeolite filled vesicles throughout. Flow.

U.271.3 Dike. Fine-grained, gray aphyric basalt.

STRUCTURE

U.271.1 Massive

U.271.3 Massive

VESICLES/AMYGDALES

U.271.2 Small vesicles

FRACTURES - VEINS - BRECCIA

U.271.1 Fractures with chlorite coating.

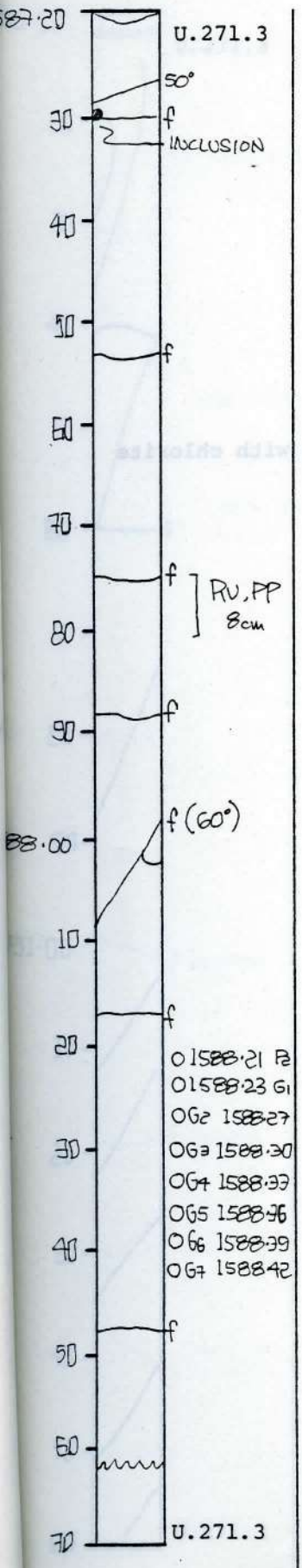
U.271.3 Moderatley fractured chlorite coating.

Graphic Representation | Sample

Visual Core Description Observer HUS

Depth Interval 1 5 8 7 1 7 cm to 1 5 8 8 6 2 cm

Box 272, Section 1



TS

LITHOLOGY-PETROGRAPHY

Continues U.271.3

Gray-green, massive, fine-medium-grained aphyric basalt.

STRUCTURE

Massive

FRACTURES - VEINS - BRECCIA

Fracturing moderate, increasing toward Sections 2, 3 and 4. Chlorite coating, slickensides.

ROCK ALTERATION

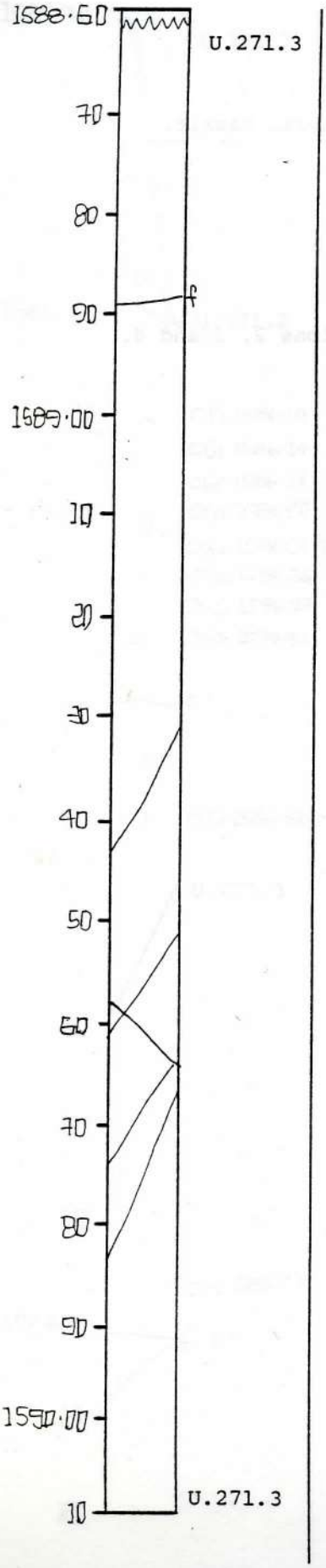
Moderate, groundmass greenish.

Visual Core Description Observer HUS

Depth Interval 15886.2 cm to 15901.2 cm

Box 272, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.3

Similar to previous section.

Dike.

STRUCTURE

Massive

FRACTURES - VEINS - BRECCIA

Fracture chlorite-coated, slickensides.

1589.58-1589.68 Many steep ∿ 70° fractures with chlorite coating.

ROCK ALTERATION

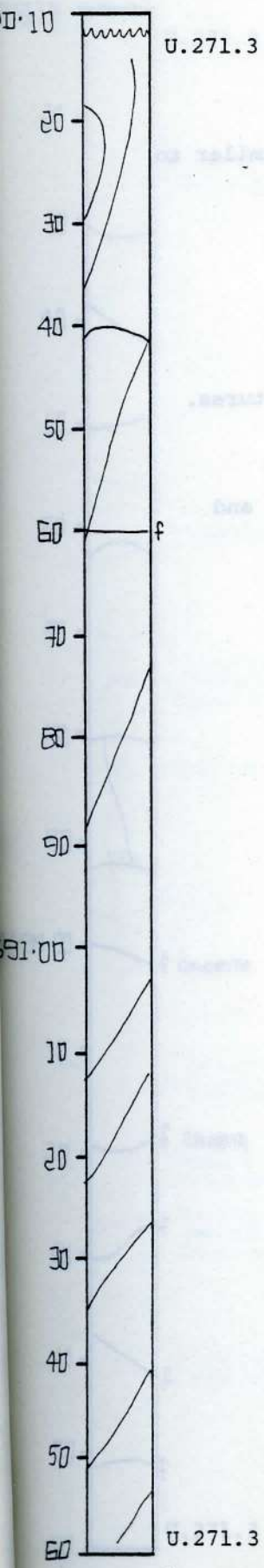
Moderate, groundmass greenish.

Visual Core Description Observer HUS

Depth Interval 159012 cm to 159160 cm

Box 272, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.3

Similar to previous section

STRUCTURE

Massive

FRACTURES - VEINS - BRECCIA

Mostly chlorite-coated 50-70° fractures with pronounced striations.

ROCK ALTERATION

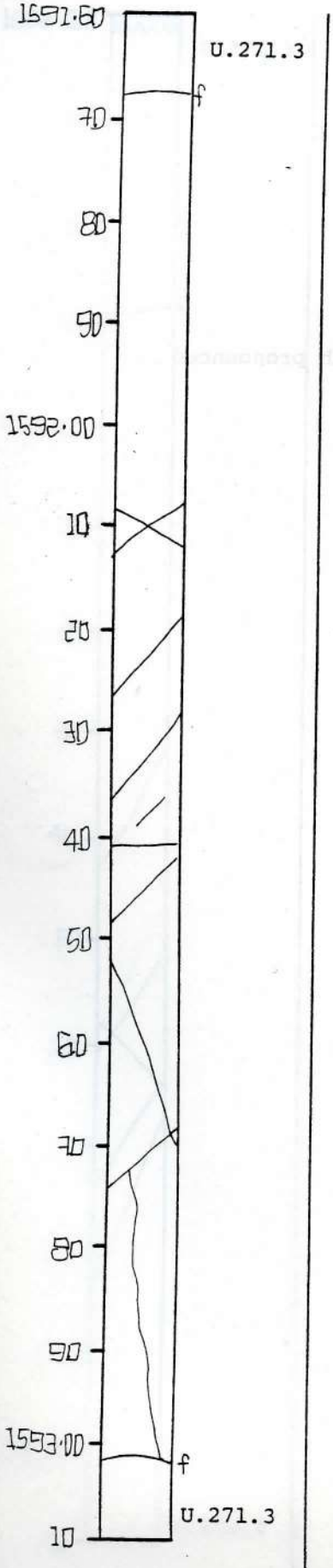
Groundmass greenish.

Visual Core Description Observer HUS

Depth Interval 159160 cm to 159314 cm

Box 272, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.3

Medium-grained gray basalt, equigranular. Similar to previous section.

STRUCTURE

Massive but much fractured.

FRACTURES - VEINS - BRECCIA

Abundant chlorite-coated 30-70° lineated fractures.

ROCK ALTERATION

Relatively fresh. Excellent for geochemistry and mineralogy. Much chalcopyrite (?).

OTHER

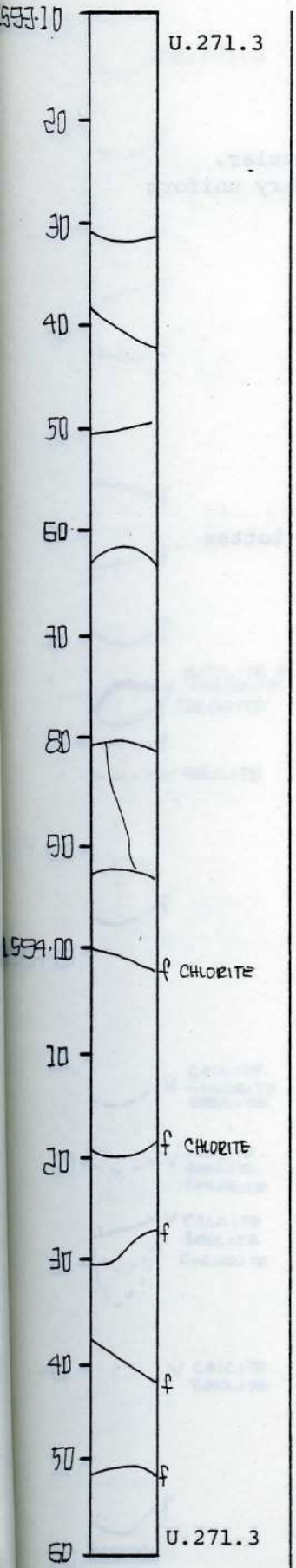
Coarse dike: fresh.

Visual Core Description Observer PTR

Depth Interval 159314 cm to 159463 cm

Box 273, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.271.3

Dark gray, fine- to medium-grained, holocrystalline, aphyric basalt. Very uniform throughout section.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

Fractures are subhorizontal or dip ∿ 30-45°. Latter are often coated with chlorite.

ROCK ALTERATION

Relatively fresh.

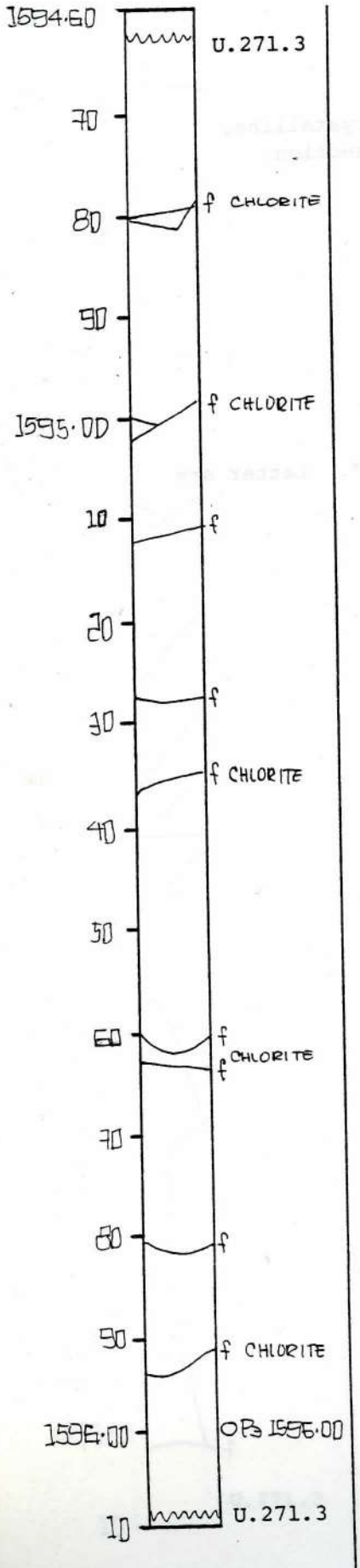
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR .....

Depth Interval 1 5 9 4 6 3 cm to 1 5 9 6 0 9 cm

Box 273, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 271.3

Dark gray, fine- to medium-grained, equigranular, holocrystalline, aphyric basalt. Rock is very uniform through section.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

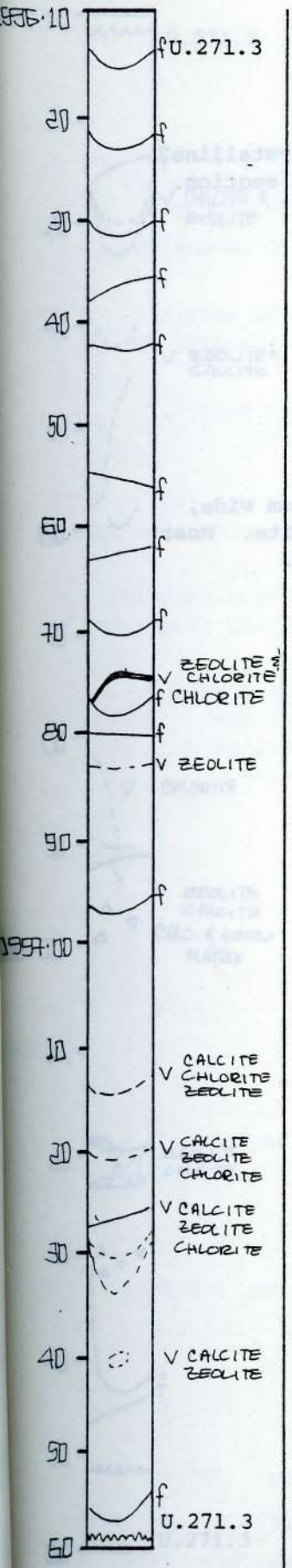
Fractures are subhorizontal or dip 30-45°. Latter are coated with chlorite. No veins.

Visual Core Description Observer PTR .....

Depth Interval 1596.09 cm to 1597.59 cm

Box 273, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 271.3

Dark gray to slightly greenish-gray, fine-grained, holocrystalline aphyric basalt. Grain size slightly less than previous section but appears nearly constant.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

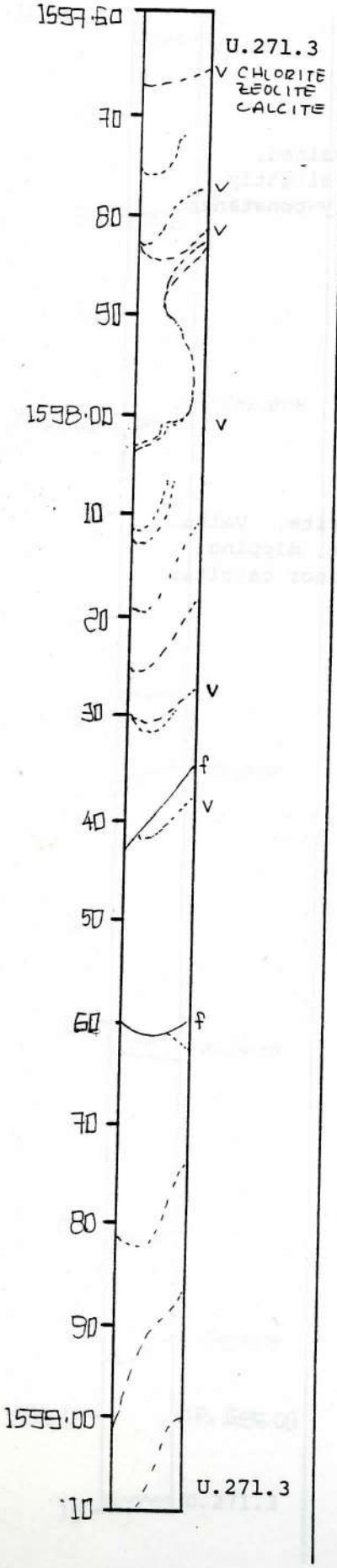
Most fractures dip 30-50°, coated with chlorite. Veins common in lower half of section, 1-5 mm wide, dipping 45-60°, filled with chlorite, zeolite and minor calcite.

Visual Core Description Observer PTR

Depth Interval 1597 59 cm to 1599 12 cm

Box 273, Section 4

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 271.3

Gray to greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size uniform through section.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

Numerous veins and veinlets, hairline to 1 cm wide, filled with chlorite, zeolite and some calcite. Most dip 60-80° and many have parallel fractures.

ROCK ALTERATION

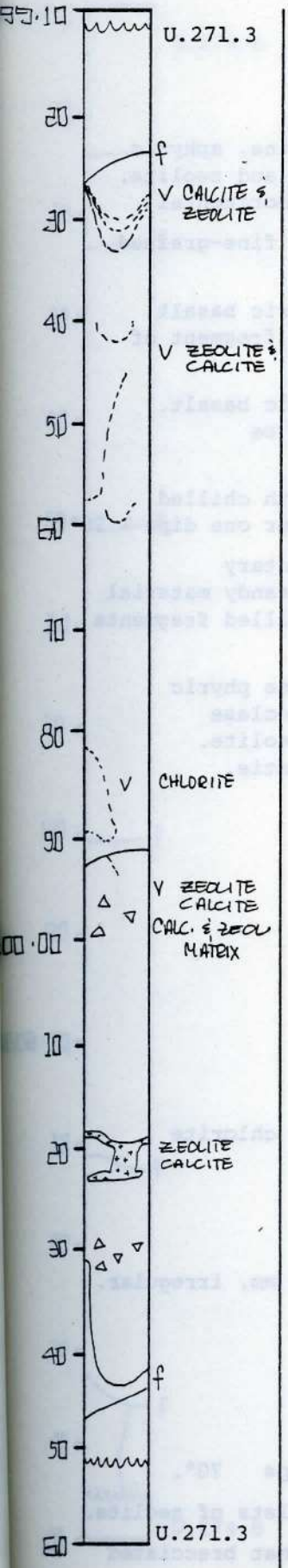
Slight except in veins.

Visual Core Description Observer PTR

Depth Interval 1591 12 cm to 1600 51 cm

Box 274, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 271.3

Faintly greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size decreases slightly toward bottom of section.

STRUCTURE

Mostly massive, but minor breccia at 1600.05 and 1600.27.

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

Numerous veins and veinlets of zeolite and calcite with minor chlorite. Most veins are hairline to 5 mm wide, dip 70-80° and often have parallel fractures.

Calcite and zeolite form the matrix of breccia at 1600.05 and 1600.27 m.

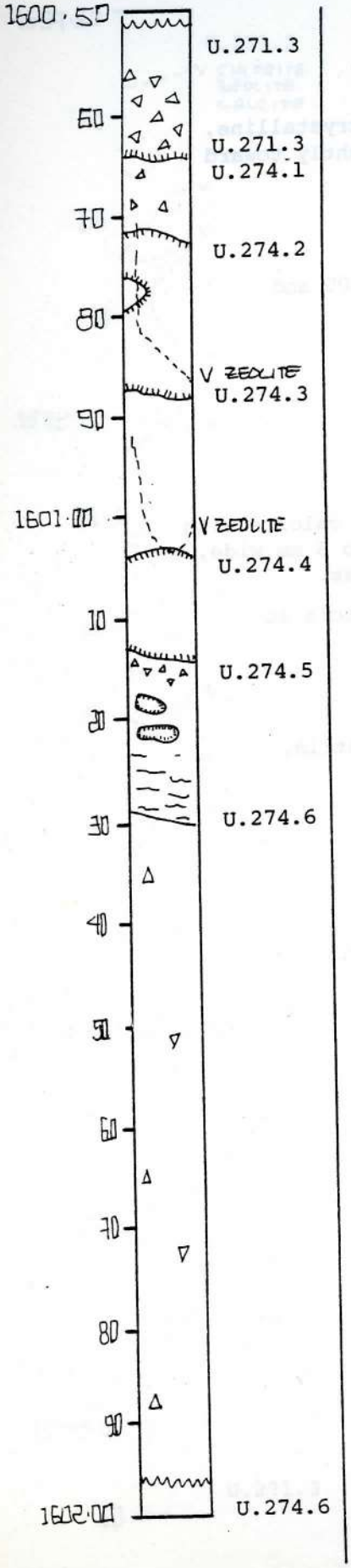
ROCK ALTERATION

Slight except for replacement of breccia matrix.

Visual Core Description Observer .....

Depth Interval 160051 cm to 160197 cm

Box 274, Section 2



LITHOLOGY-PETROGRAPHY

Continues Unit 271.3

Light gray, very fine-grained, holocrystalline, aphyric basalt. Breccia are near base with calcite and zeolite. Minor chilling at contact. Contact nearly horizontal.

U.274.1 Slightly brecciated greenish-gray, fine-grained aphyric basalt. Part of a flow.

U.274.2 Dark gray, very fine-grained, aphyric basalt with chilled contacts that dip 10-15°. One fragment of flow rock enclosed.

U.274.3 Greenish-gray, fine-grained, aphyric basalt. Slightly reddish color, near contacts--may be slightly baked.

U.274.4 Gray, aphonitic, aphyric basalt with chilled contacts--upper one nearly horizontal. Lower one dips ∿ 20°.

U.274.5 Gray to red, pyroclastic or sedimentary interbed, upper 2-3 cm breccia, lower part sandy material with a vesicular fragment enclosed. Two chilled fragments also encountered.

U.274.6 Reddish gray, moderately plagioclase phyric basalt with fine-grained groundmass. Plagioclase phenocrysts ∿ 5%, 2-3 mm long, altered to zeolite. Olivine 1-2%, 1-2 mm, altered to red iddingstie.

STRUCTURE

U.271.3 Slightly brecciated

U.274.4 Massive

U.274.5 Poorly bedded

U.274.6 Slightly brecciated

VESICLES/AMYGDALES

U.271.3 None

U.274.3 No clear vesicles. Some irregular chlorite patches in groundmass.

U.274.4 None

U.274.5 None

U.274.6 2-3% (?), hard to tell, small, 1-2 mm, irregular.

FRACTURES - VEINS - BRECCIA

U.271.3 No fractures or veins

U.274.3 Minor veinlets of zeolite.

U.274.4 One hairline veinlet of zeolite dips 70°.

U.274.5 No fractures. A few hairline veinlets of zeolite.

U.274.6 No fractures or veins. Rock somewhat brecciated with sub-angular, green framents in a reddish-matrix. Some fragments are vesicular

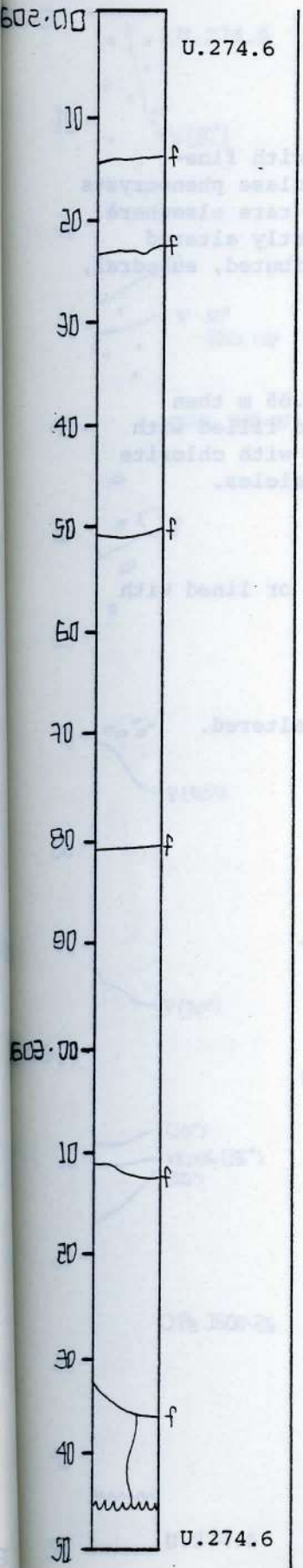
ROCK ALTERATION: U.274.6 Plagioclase altered to zeolite(?).

Visual Core Description Observer PTR

Depth Interval 160197 cm to 160346 cm

Box 274, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 274.6

Green, to grayish-green at base, moderately porphyritic basalt with fine-grained, holocrystalline groundmass. Olivine phenocrysts 1-2%, 1-2 mm, euhedral, altered to chlorite. Plagioclase phenocrysts ∿ 5%, 1-4 mm, subhedral, replaced by zeolite (?). Rock is fairly pervasively altered with much epidote. Rock appears slightly brecciated.

VESICLES/AMYGDALES

3-4%, 1-2 mm, subround, filled with chlorite and some epidote. A few clasts more vesicular.

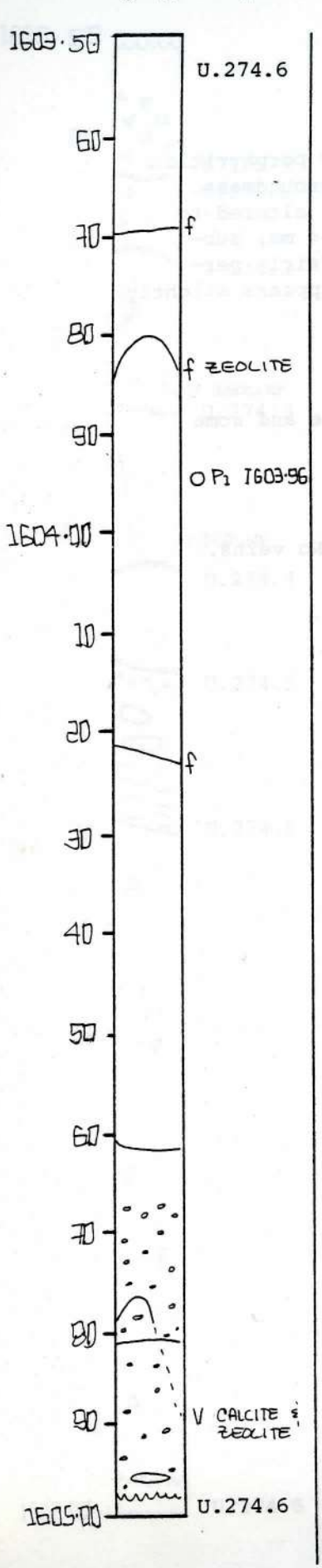
FRACTURES - VEINS - BRECCIA

Fractures subhorizontal, due to drilling. No veins.

Visual Core Description Observer PTR

Depth Interval 160346 cm to 160498 cm

Box 274, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.274.6

Greenish-gray, sparsely porphyritic basalt with fine-grained holocrystalline groundmass. Plagioclase phenocrysts ∿ 5% in zone between 1604.10 and 1604.65 m, rare elsewhere. These are 2-5 mm, subhedral to euhedral, partly altered to zeolite? olivine 1-2%, more evenly distributed, euhedral, altered to chlorite.

VESICLES/AMYGDALES

2-3% in upper part of section to about 1604.65 m then 7-8% below that, upper ones 2-3 mm, subround filled with chlorite. Others 4-40 mm, elongate, filled with chlorite and quartz slight alignment of flattened vesicles.

FRACTURES - VEINS - BRECCIA

Sparse fractures and veins dip ∿ 70° filled or lined with zeolite.

ROCK ALTERATION

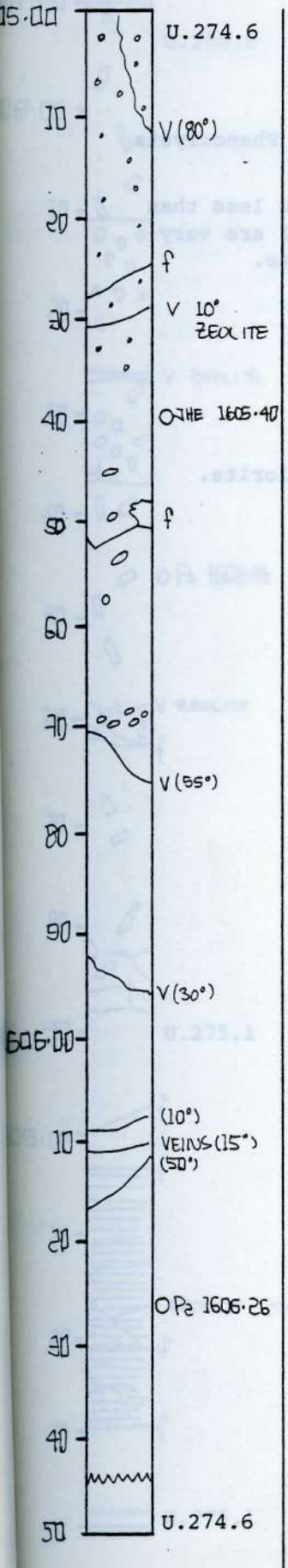
Phenocrysts are altered, groundmass weakly altered.

Visual Core Description Observer HUS/GW

Depth Interval 160498 cm to 160644 cm

Box 275, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.274.6

Greyish-green, fine-medium grained basalt with olivine < 5% replaced by chlorite (?) and plagioclase less than 5% (albitizised).

At 1605.55, 1605.70 and 1605.85 vesicle sheets, vesicles only ϕ up to 1 cm, subhorizontal flattened and filled with calcite and zeolites.

Vesicles filled dominantly by chlorite.

1605.90-1606.44 Vesicles only filled with chlorite.

STRUCTURE

Vesicular, moderately to highly.

VESICLES/AMYGDALES

Larger filled with calcite and zeolites, smaller ones - chlorite.

FRACTURES - VEINS - BRECCIA

Moderately fractured veins are very thin (maximum 2 mm).

ROCK ALTERATION

Phenocryst and groundmass are highly altered.

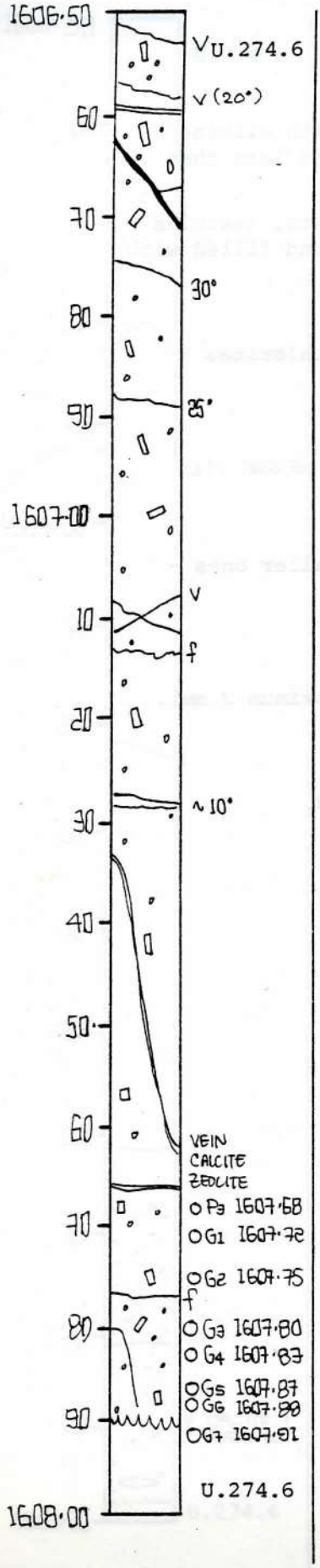
VESICLES ONLY FILLED WITH CHLORITE

Visual Core Description Observer HUS/GW

Depth Interval 1 6 0 6 4 4 cm to 1 6 0 7 9 0 cm

Box 275, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.274.6

Grey-green basalt, fine to medium grained. Phenocrysts similar to previous section.

Vesicularity decreases from less than 10% to less than 5% of 1607.30. Larger vesicles (ϕ > .5 cm) are very sparse, most of them are filled with chlorite.

STRUCTURE

Moderately vesicular.

VESICLES/AMYGDALES

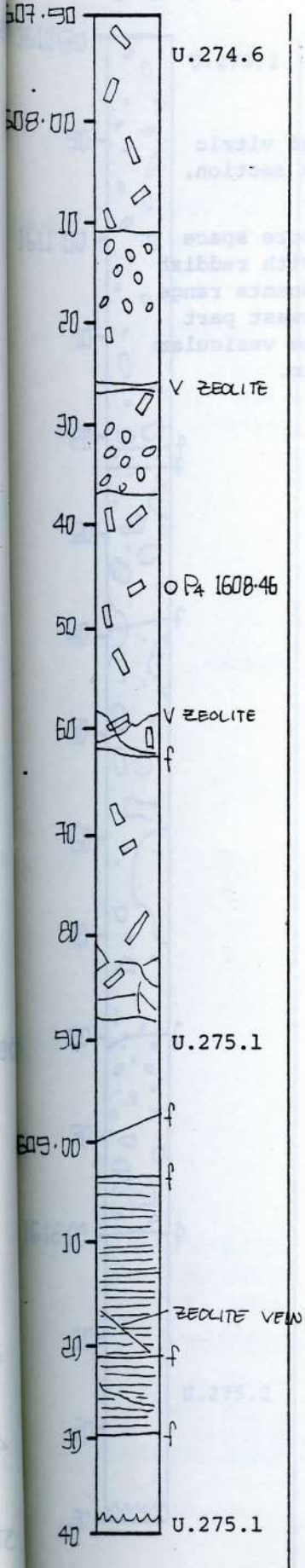
Maximum diameter: 4 mm, all filled with chlorite.

Visual Core Description Observer HUS/GW

Depth Interval 160790 cm to 160938 cm

Box 275, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.274.6

Porphyritic gray-green basalt with < 5% olivine + plagioclase. Slightly brecciated at base.

U.275.1 Vitric crystal tuff, excellent glass shards and pumice, pieces brown, fine-grained.

STRUCTURE

U.274.6 Massive, base brecciated

U.275.1 Bedded

VESICLES/AMYGDALES

U.274.6 Locally abundant (> 70%).

FRACTURES - VEINS - BRECCIA

U.274.6 Generally < 1 mm wide fractures.

U.275.1 Thin, irregular to subhorizontal, zeolite-filled.

ROCK ALTERATION

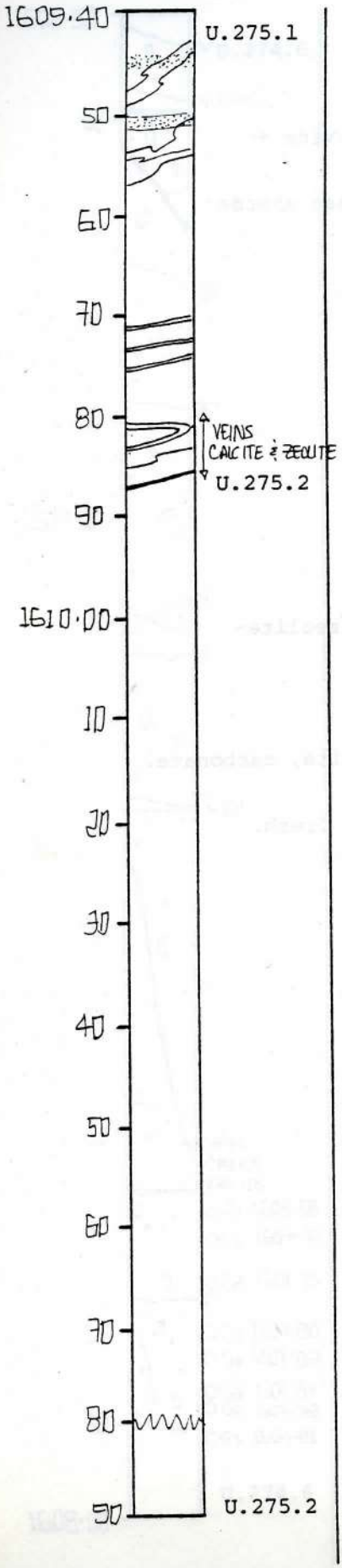
U.274.6 Pervasively altered chlorite, zeolite, carbonate. Abundant secondary minerals at base.

U.275.1 Matrix altered, phenocrysts partly fresh.

Visual Core Description Observer HUS/GW

Depth Interval 1609.38 cm to 1610.80 cm

Box 275, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.275.1

Greyish-brown to yellow-brown, poorly bedded vitric crystal tuff. Similar to U.275.1, previous section. Between 1609.82 and 1609.86 green coloured.

U.275.2 Highly brecciated top of a flow, pore space less than ∿10%. in the upper 20 cm, filled with reddish matrix; diameter of the mostly angular components range between 0.5 to 2 cm and are dense. In the lowest part of the section (1610.55-1610.80) appear some vesicular fragments with diameters between 8 and 11 cm.

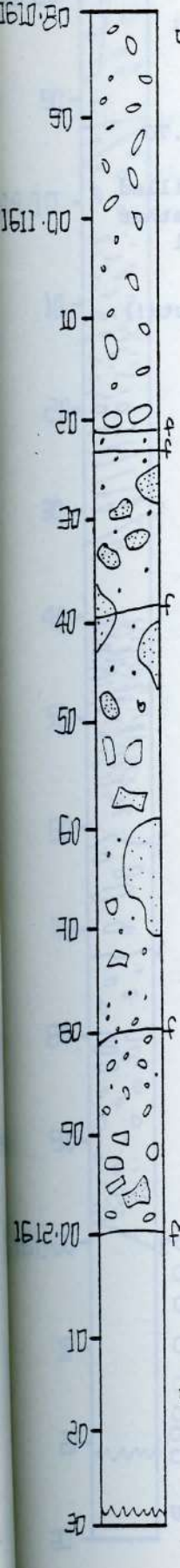
Central part of the flow.

Visual Core Description Observer HUS/GW

Depth Interval 1610.80 cm to 1612.80 cm

Box 276, Section 1

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.275.2

Lapilli breccia of mm → 10 cm sized finely vesicular basalt clasts.

Pore space between angular components is filled with epidote and calcite.

Coarser components show more and larger vesicles.

Due to alteration color changes from grey to greyish-green, esp. matrix material (epidote and chlorite).

STRUCTURE

Breccia

VESICLES/AMYGDALES

Generally filled

FRACTURES - VEINS - BRECCIA

No systematic fractures.

ROCK ALTERATION

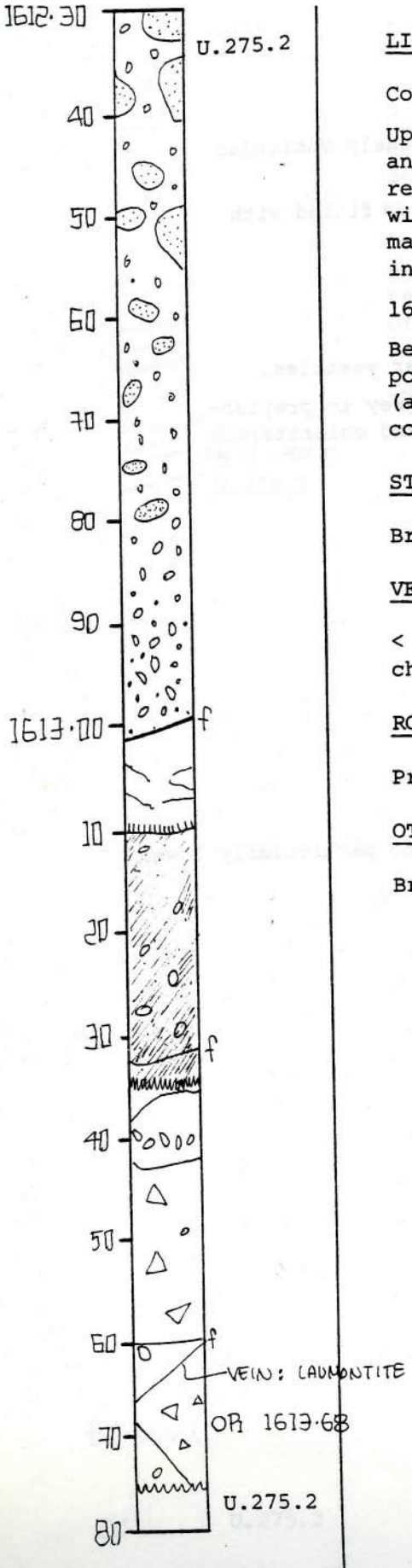
Pervasively altered epidote, throughout, particularly lower 2/rd.

Visual Core Description Observer ...HUS/GW.....

Depth Interval 1612.28 cm to 1613.76 cm

Box 276, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.275.2

Upper part similar to previous section between 1612.70 and 1613.00. Color of matrix changes from grey to reddish-brown, some vesiculars in the lapilli are filled with epidote. Lapilli are generally grey .60-.70 rather massive. Many fragments 1mm - 2 cm ϕ .35-.25, still internally brecciated but increasing more massive.

1613.05 Light green zone, not interpreted as contact(!).

Between 1613.20 and 1613.35 occurs a zone of higher porosity. Highly altered and light green-yellow (altered lapilli) to reddish-brown (altered matrix) colored.

STRUCTURE

Breccia

VESICLES/AMYGDALES

< 1 mm ϕ in fragments generally filled with epidote, chlorite, zeolite.

ROCK ALTERATION

Predominantly epidote, but some chlorite.

OTHER

Brecciated flow top.

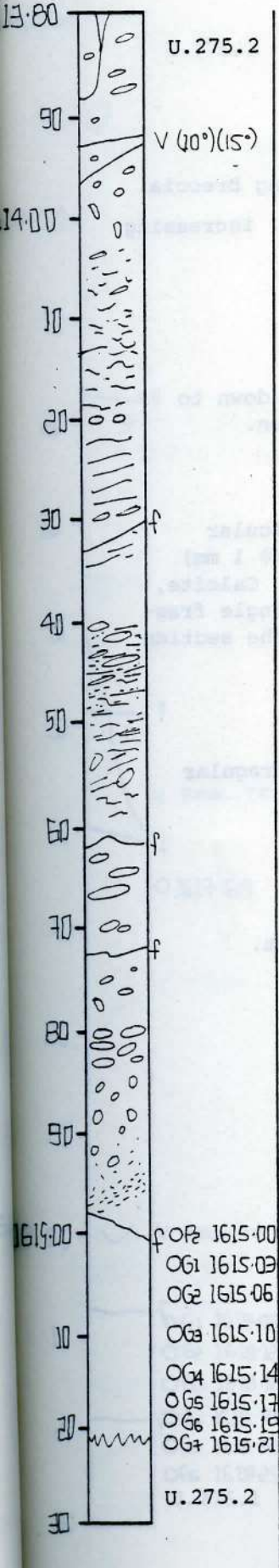
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer HUS/GW

Depth Interval 161376 cm to 161521 cm

Box 276, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.275.2

Fine-grained, grey-green aphyric basalt, "breccia", between 1614.30 and 1614.80 matrix "reddish-brown".

Vesicles less .5 mm, 1-2 vol.% filled with black material (chlorite, smectite ?).

1614.80 Core becoming more massive and fresh.

STRUCTURE

Compared to Section 1 and 2 this unit is rather massive. Breccia + mottled appearance (brecciation ? alteration ?).

VESICLES/AMYGDALES

Larger are sparse, but some at 1614.20 and 1614.40 filled with calcite.

FRACTURES - VEINS - BRECCIA

Irregular internal fracturing and brecciation throughout.

ROCK ALTERATION

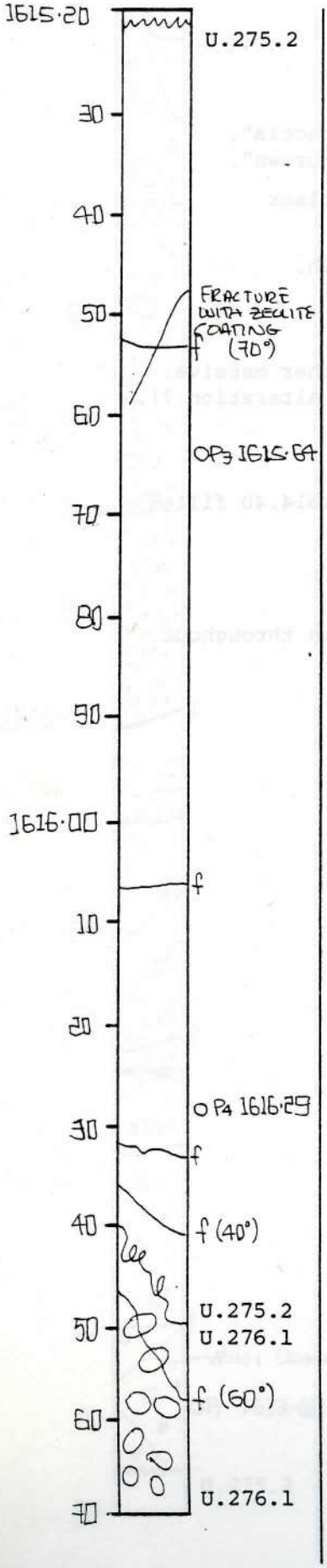
Moderately.

Visual Core Description Observer HUS/GW

Depth Interval 1615.21 cm to 1616.79 cm

Box 276, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.275.2

Grey-green aphyric, fine-grained basalt.

1616.48 Possibly flow bottom with underlying breccia.

1616.48 Diffuse contact to reddish breccia, increasing diameters of fragments.

U.276.1 Breccia

STRUCTURE

Generally massive except for fine fractures down to 1616.40. From up here increasing brecciation.

VESICLES/AMYGDALES

Less than 5% $\phi > 1$ mm. Irregular 1-2 cm vesicular patches (scoria fragments ?). Some larger (ϕ 1 mm) ones occur at 1616.50, filled with calcite. Calcite, epidote and zeolites (?) in voids between single fragments of the breccia in the lowest part of the section (1616.45 down to 1616.79).

FRACTURES - VEINS - BRECCIA

Internally fractured in several directions, regular abundant fine fractures and brecciation.

ROCK ALTERATION

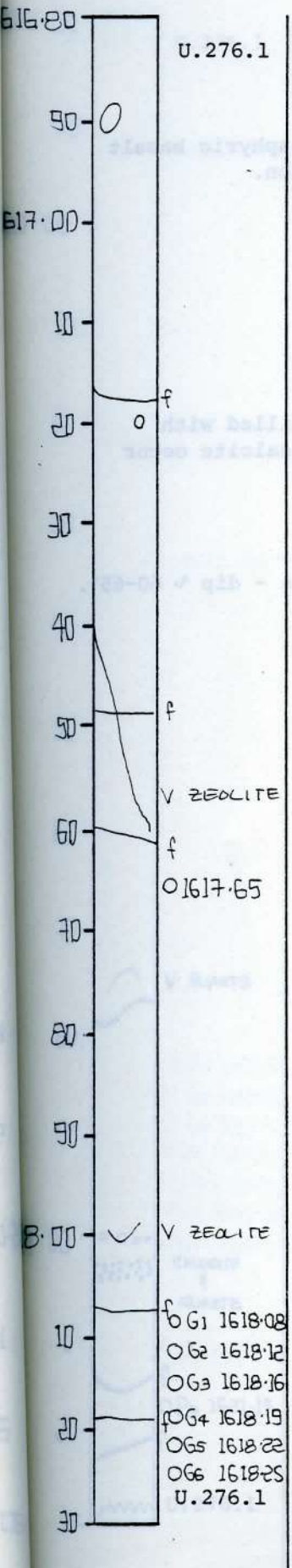
Moderate but pervasive.

1616.30 More pronounced in porous lower part.

Visual Core Description Observer J. Helgason

Depth Interval 1 6 1 6 7 9 cm to 1 6 1 8 3 3 cm

Box 277, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.276.1.

Fine-grained, aphyric, uniform unit with sparse vesicles mostly of elongated shape, up to 20 mm long and 5 mm wide.

1616.79-1617.40. Scoracious material disseminated with alteration products of epidote and pinkish clay. Sparse plagioclase phenocrysts partly altered to epidote. Reddish- to greenish-gray.

1616.90. An inclusion rich in plagioclase phenocrysts, 30 x 30 mm in size.

STRUCTURE

Massive

VESICLES/AMYGDALES

Sparse in upper part. 1-2%, 1-2 mm, irregular below about 1617.65 m. Filled with chlorite.

FRACTURES - VEINS - BRECCIA

Fractures are subhorizontal. Sparse veinlets of zeolite dip ∿ 70°.

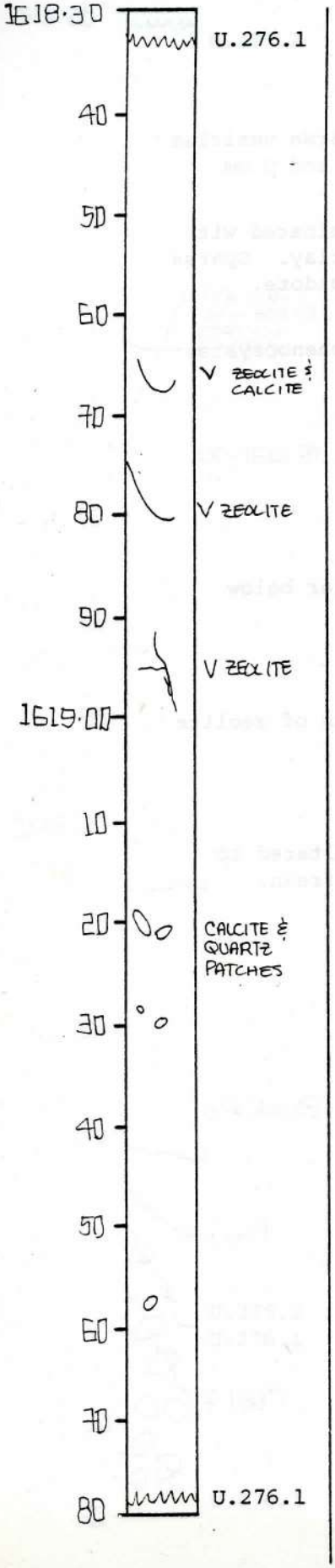
ROCK ALTERATION

Brecciated and slightly scoriaceous top is altered to epidote--remainder of section is relatively fresh.

Visual Core Description Observer J. Helgason

Depth Interval 1618.33 cm to 1619.78 cm

Box 277, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Very uniform, greenish-gray, fine-grained, aphyric basalt flow. Grain size constant throughout section.

Interpreted as a flow centre.

STRUCTURE

Massive

VESICLES/AMYGDALES

Sparse vesicles, a few 1-3 mm, irregular, filled with chlorite. Irregular patches of quartz and calcite occur at 1619.20 and quartz at 1619.57 m.

FRACTURES - VEINS - BRECCIA

A few veinlets of zeolite and minor chlorite - dip ∿ 60-65°.

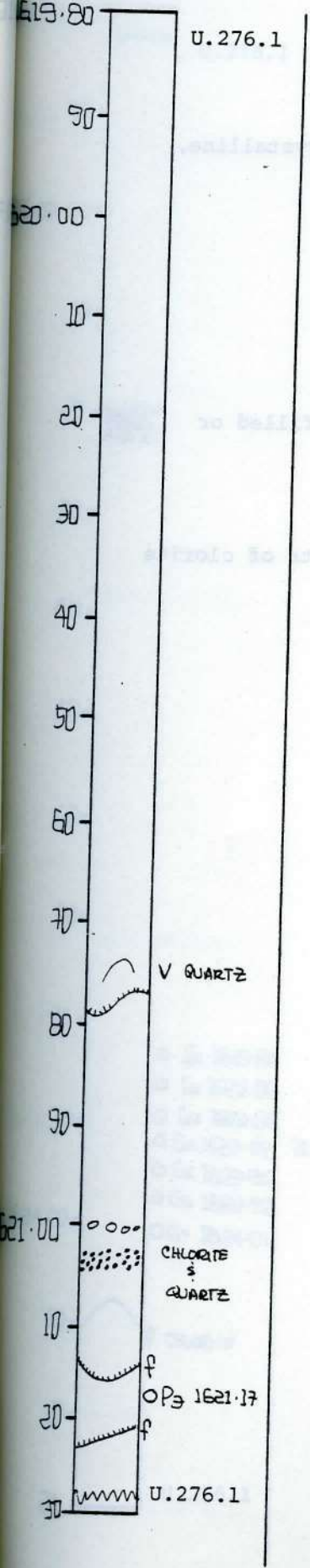
ROCK ALTERATION

Relatively fresh.

Visual Core Description Observer J. Helgason

Depth Interval 1619.78 cm to 1621.28 cm

Box 277, Section 3



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Very uniform, greenish-gray, fine-grained, holocrystalline, aphyric basalt. Two small clots at ∿ 1620.13 m are slightly coarser-grained and have minor quartz.

Interpreted as massive flow centre.

STRUCTURE

Massive

VESICLES/AMYGDALES

Sparse, < 1%, ≤ 1 mm round, filled with chlorite. 3-4% in a zone @ 1621.00 - 1621.05 m. These are 1-2 mm, slightly oval and filled with quartz.

FRACTURES - VEINS - BRECCIA

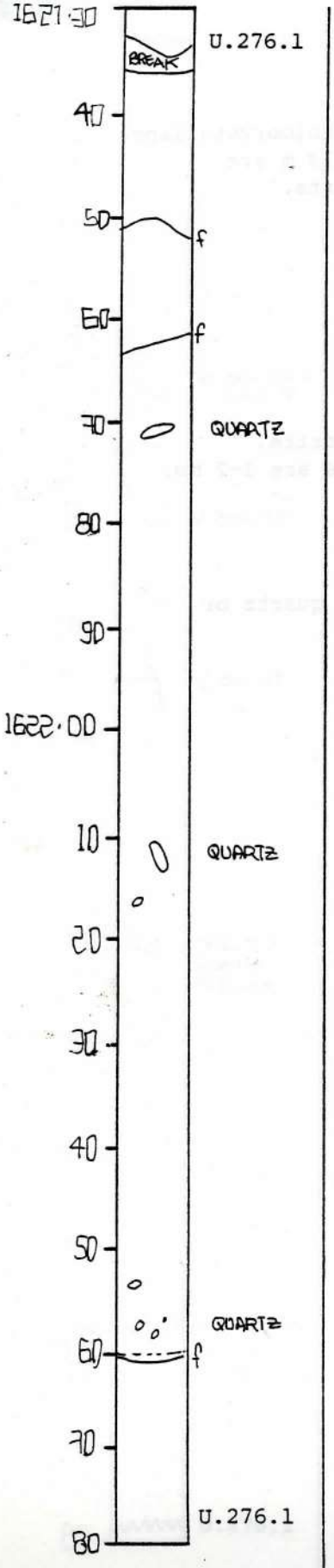
Fractures subhorizontal. A few veinlets of quartz or chlorite dip 60-70°.

Visual Core Description Observer J. Helgason & P

Depth Interval 1621 cm to 1623 cm

Box 277, Section 4

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Unoform greenish-gray, fine-grained, holocrystalline, aphyric basalt.

Interpreted as massive flow interior.

STRUCTURE

Massive

VESICLES/AMYGDALES

Sparse. A few subround vesicles 5-15 mm, filled or partly filled with quartz.

FRACTURES - VEINS - BRECCIA

Fractures subhorizontal. Incipient veinlets of clorite dip 60-70°.

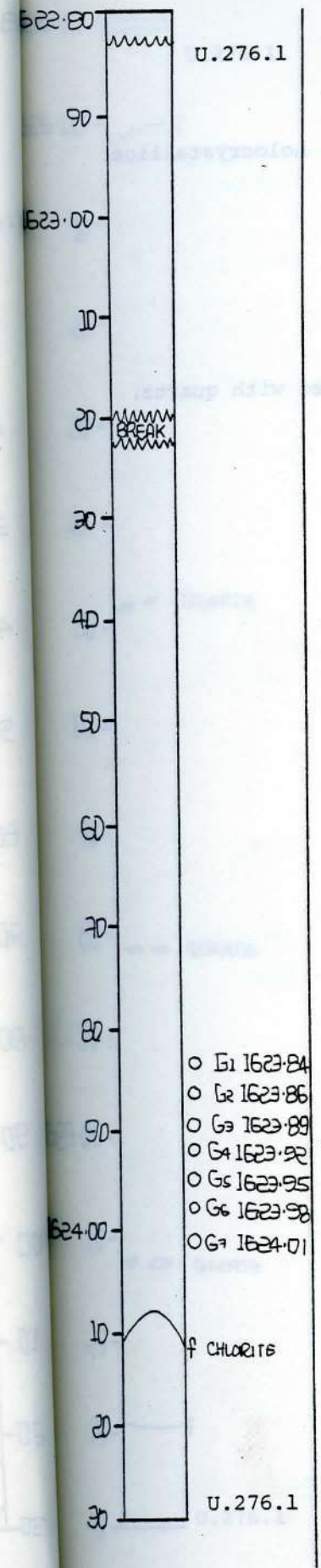
ROCK ALTERATION

Relatively fresh.

Visual Core Description

Depth Interval 162283 cm to 162437 cm

Box 278, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Uniform greenish-gray, fine-grained, holocrystalline, aphyric basalt.

Flow interior.

STRUCTURE

Massive

VESICLES/AMYGDALES

< 1%, mostly 5-10 m, subround, filled with quartz.

FRACTURES - VEINS - BRECCIA

One fracture, dips ∿ 70° coated with chlorite.

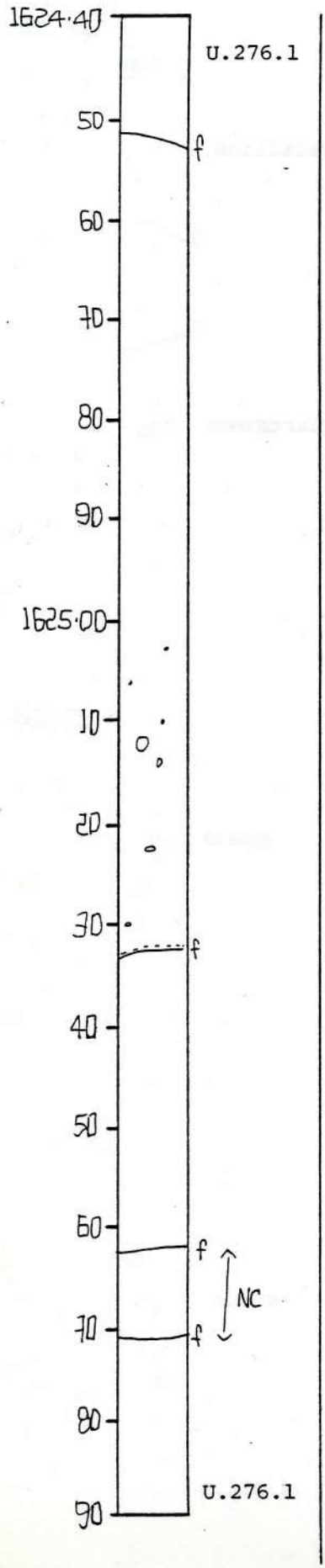
ROCK ALTERATION

Relatively fresh.

Visual Core Description Observer J. Helgason &

Depth Interval 16243 cm to 16259 1 cm

Box 278, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Very uniform, greenish-gray, fine-grained, holocrystalline aphyric basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

< 1%, 2-10 mm, subround to flattened, filled with quartz. Some partly open.

FRACTURES - VEINS - BRECCIA

Fractures subhorizontal. No veins.

ROCK ALTERATION

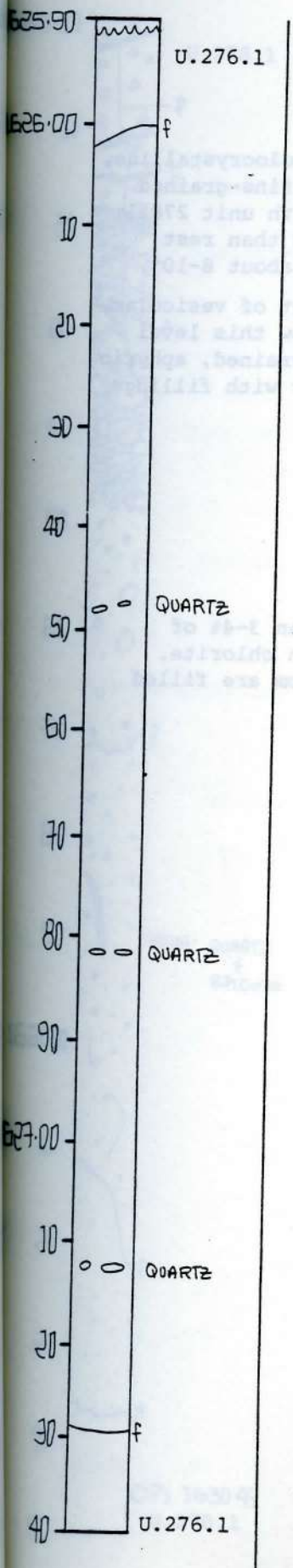
Relatively fresh.

Visual Core Description Observer J. Helgason & PTR

Depth Interval 1 6 2 5 9 1 cm to 1 6 2 7 4 8 cm

Box 278, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues Unit 276.1

Very uniform, greenish-gray, fine-grained, holocrystalline, aphyric basalt.

Massive flow center.

STRUCTURE

Massive

VESICLES/AMYGDALES

Sparse. A few elongate vesicles, 1-3 cm, filled with quartz.

FRACTURES - VEINS - BRECCIA

Fractures subhorizontal.

ROCK ALTERATION

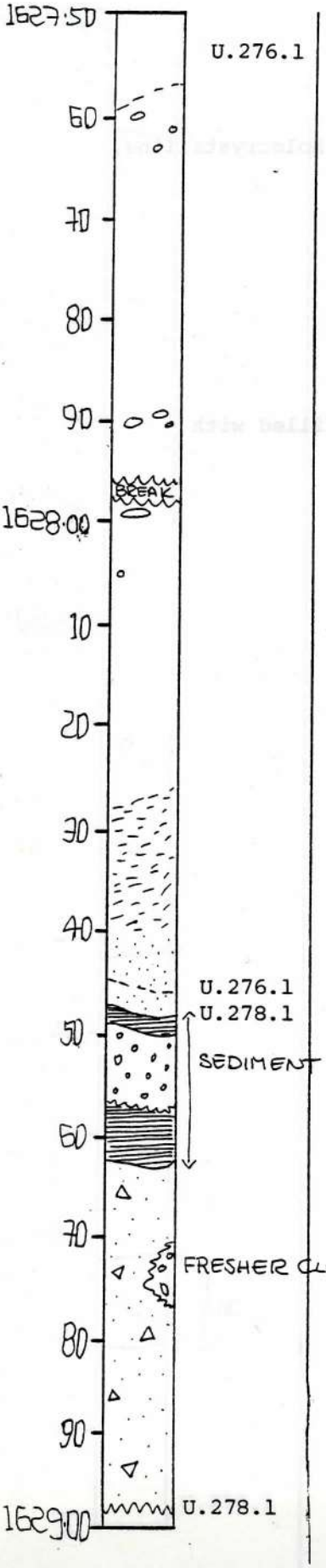
Relatively fresh.

Visual Core Description Observer J. Helgason & P

Depth Interval 1627.48 cm to 1628.98 cm

Box 278, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.276.1

Greenish gray, fine-grained to aphoretic, holocrystalline, aphyric basalt. Grain size decreases from fine-grained to aphyric in lower 10 cm toward contact with unit 278.1. Contact not chilled but it is finer grained than rest of unit. Contact is depositional and dips about 8-10°.

U.278.1 Sediment to 1628.61 m with fragment of vesicular, olivine bearing, fine-grained basalt. Below this level there is greenish- and reddish-gray, fine-grained, aphyric basalt breccia. Basalt is highly vesicular with fillings of chlorite and calcite.

STRUCTURE

U.278.1 Brecciated

VESICLES/AMYGDALES

Sparse in upper part to about 1628.25 m then 3-4% of small 1-4 mm, elongate vesicles filled with chlorite. In upper part a few elongate vesicles 2-3 cm are filled or partly filled with quartz.

FRACTURES - VEINS - BRECCIA

Fractures sparse--dip 30°. (U.276.1)

U.278.1 None

ROCK ALTERATION

U.276.1 Relatively fresh.

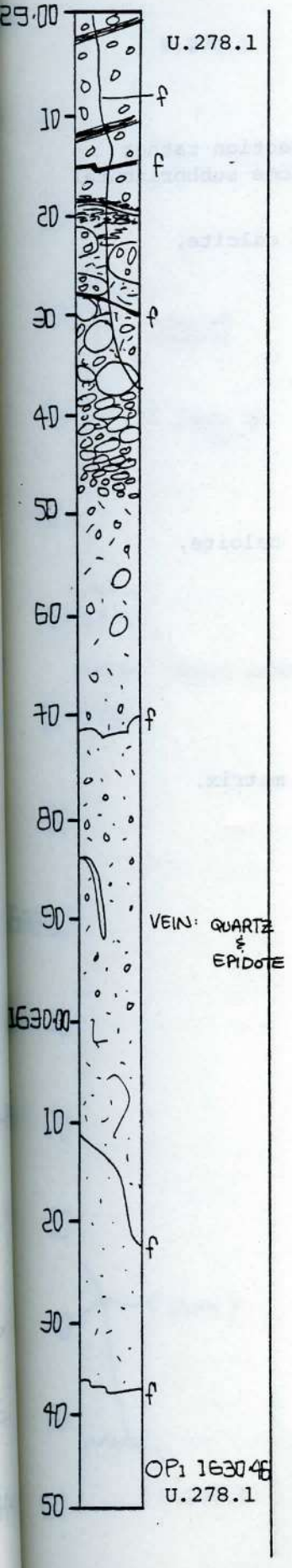
U.278.1 Highly altered.

HUS/GW

Visual Core Description Observer .....

Depth Interval 1628 98 cm to 1630 51 cm

Box 279, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.278.1

Grey-grey green scoria fragments with large vesicles up to 8 mm. Boundaries between clasts diffuse and red. Diameters of fragments 5 to 10 cm to 1628.40.

Below 1629.40 continuous change in color to mottled grey-green and diameter of breccia fragments with diffuse boundaries decrease to ∿ 1-3 cm.

From 1630.00 down no distinct fragments.

STRUCTURE

Breccia to 1630.00. Highly vesicular basalt to 1630.50.

VESICLES/AMYGDALES

Abundant, scale depending on diameter of single fragments generally filled with calcite and small amounts of epidote (upper part of sections) or epidote and chlorite and very sparse calcite, (lower part of section). No orientation even in the scoria fragments.

FRACTURES - VEINS - BRECCIA

Few

ROCK ALTERATION

Pervasively, moderate (low part) to high (brecciated middle part and scoriaceous upper part).

OTHER

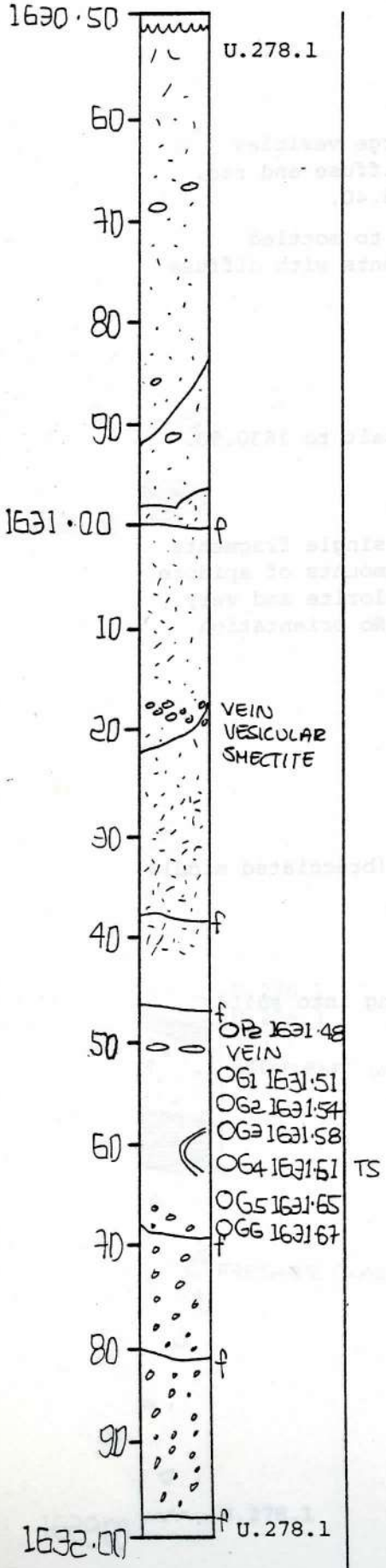
Scoriaceous and brecciated flow top grading into solid vesicular basalt.

Visual Core Description Observer HUS/GW

Depth Interval 1630.51 cm to 1632.08 cm

Box 279, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.278.1

Grey-green aphyric basalt (olivine ??). Section rather homogeneous. Vesicle sheet at 1631.18. Some subhorizontal veins, most of others dip 60-75°.

Vesicules $\phi \rightarrow 6$ mm larger ones filled with calcite, pyrite, chlorite, and quartz (?).

From 1631.70 increasing vesicle diameter.

STRUCTURE

Massive
Vesicular

VESICLES/AMYGDALES

Abundant (small ones filled with chlorite, calcite, quartz & pyrite.)

FRACTURES - VEINS - BRECCIA

Few

ROCK ALTERATION

Moderate but pervasive, pyrite even in the matrix.

OTHER

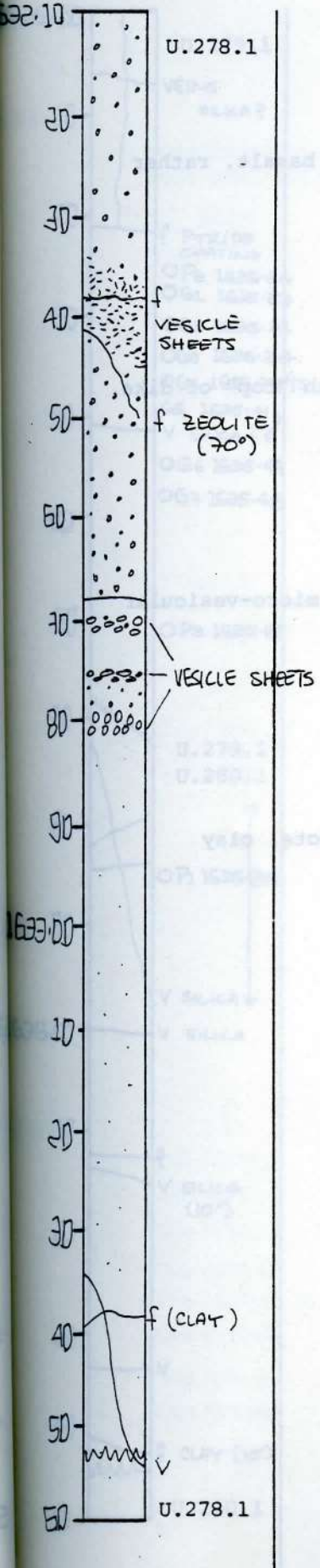
Vesicular basalt with few vesicule sheets.

Visual Core Description Observer HUS/GW

Depth Interval 163208 cm to 163353 cm

Box 279, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.278.1

Grey-green, partial high vesicular basalt with some vesicle sheets.

1632.08 to 1632.40 very similar to lowest part of last section.

Between 1632.38 and 1632.45 highly altered (green-grey) vesicle sheet (epidote & calcite, some chlorite).

Several vesicle sheets 1632.70 to 1632.80 (40-50 vol.% vesicles). Pore space filled with chlorite and epidote, latter coating the vesicle-walls between .74 and .78.

Below 1632.80 decreasing vesicularity with decreasing diameter, filled with chlorite.

VESICLES/AMYGDALES

Abundant in upper part, ϕ .5 mm → 1 cm (few).

FRACTURES - VEINS - BRECCIA

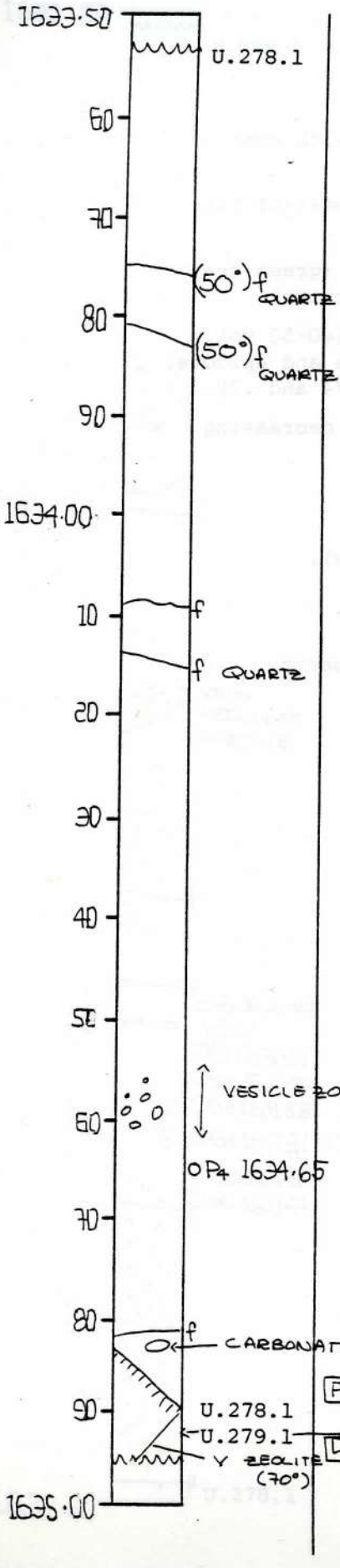
Some veins at end of section coated with quartz.

Visual Core Description Observer HUS/GW

Depth Interval 163353 cm to 163495 cm

Box 279, Section 4

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.278.1

Gray-green, aphyric, fine-medium grained basalt, rather homogeneous.

1634.55-1634.60 Vesicle zone

1634.83. Carbonate-silica vein.

1634.87 Flow

U.279.1 Dike

Central homogeneous part of lava flow with "top" of dike.

STRUCTURE

Massive

VESICLES/AMYGDALES

Except for vesicle zone (1-6 mm ϕ) only micro-vesicular $\sim$ < 10%.

FRACTURES - VEINS - BRECCIA

Rather limited fracturing.

ROCK ALTERATION

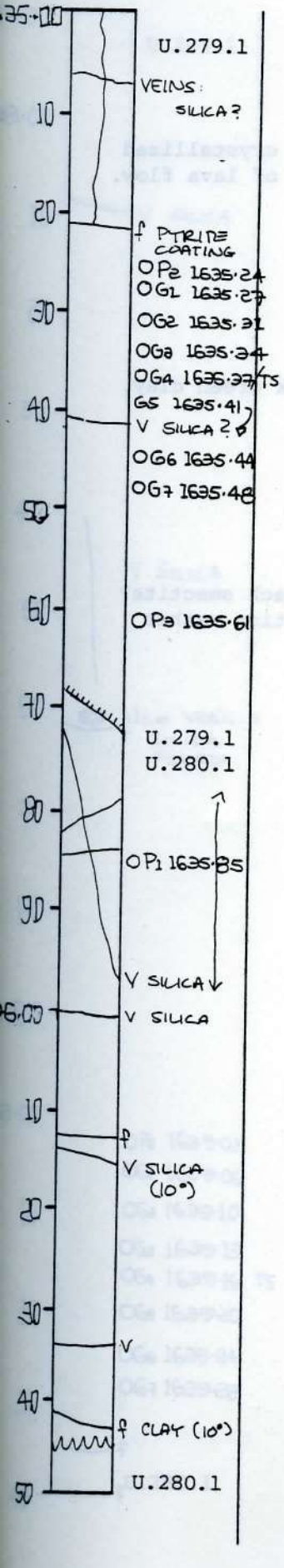
Pervasively, but moderately altered, epidote, clay chlorite (?), silica, zeolite, carbonate.

Visual Core Description Observer HUS/GW

Depth Interval 1 6 3 4 9 5 cm to 1 6 3 6 4 5 cm

Box 280, Section 1

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.279.1

Gray, very fine-grained, aphyric basalt.

U.280.1 Flow. Gray-green, medium-grained, holocrystalline basalt, uniform grain size.

Dike and flow (probably part of 80 + 279 = U.278.1).

STRUCTURE

U.279.1 Massive

U.280.1 Massive

VESICLES/AMYGDALES

U.280.1 < 1%, < 1 mm ϕ filled with green and blue smectite?

FRACTURES - VEINS - BRECCIA

U.279.1 Moderately abundant, very thin (< 1 mm) veins of white material (silica ?) both in dike and flow.

U.280.1 See above.

ROCK ALTERATION

U.279.1 Dike: pyrite.

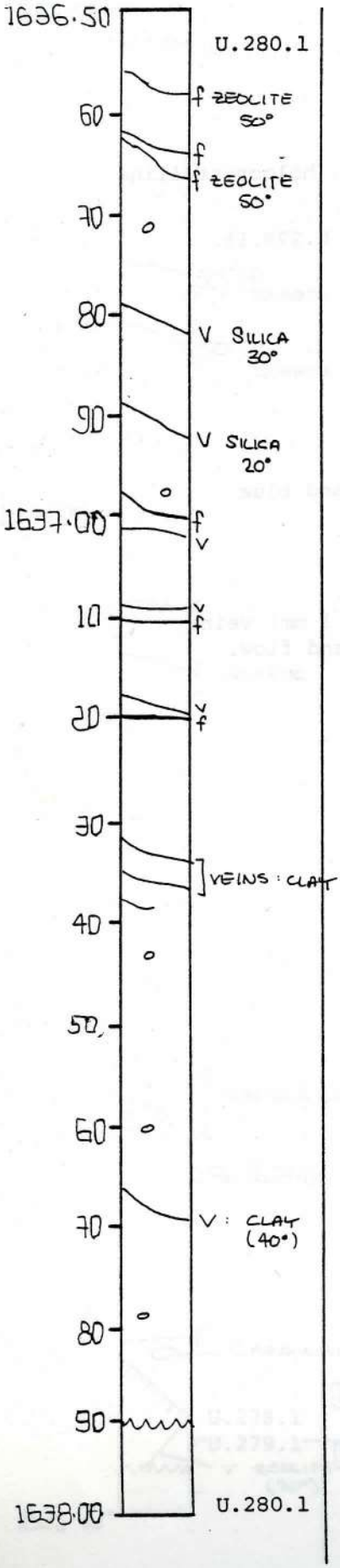
U.280.1 Moderately.

Visual Core Description Observer HUS/GW

Depth Interval 163645 cm to 163790 cm

Box 280, Section 2

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.280.1

Gray-green, aphyric, medium grained, well crystallized basalt, uniform grain size. Central part of lava flow.

STRUCTURE

Massive

VESICLES/AMYGDALES

∿ < 1%, round, zonal, all filled with dark green clay.

FRACTURES - VEINS - BRECCIA

Thin (< .5 mm) silica filled fractures.

ROCK ALTERATION

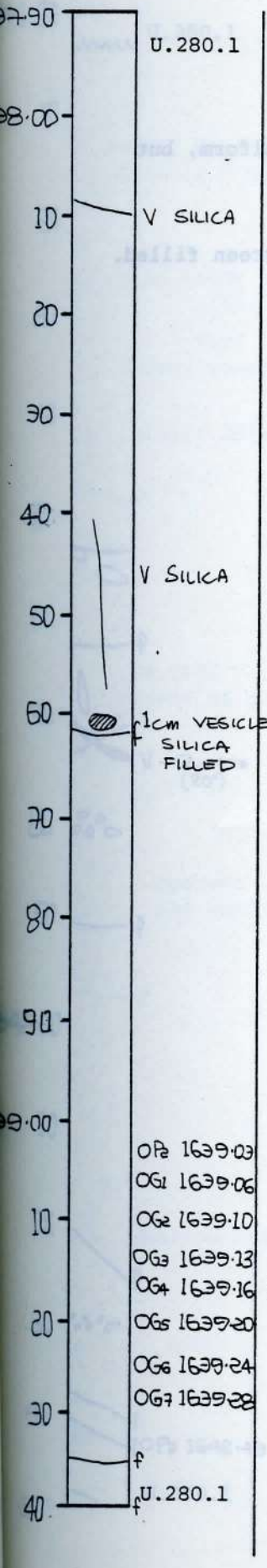
Abundant silica in veins dark green to black smectite? in vesicles and veins. Groundmass alteration rather moderate.

Visual Core Description Observer HUS/GW

Depth Interval 16379 0 cm to 16394 5 cm

Box 280, Section 3

Graphic Representation Sample



LITHOLOGY-PETROGRAPHY

Continues U.280.1

Gray-green basalt, even and medium-grained, uniform grain size.

Similar to previous section.

Central part of lava.

STRUCTURE

Massive

VESICLES/AMYGDALES

Very few (< 1%), small (→ 1 mm) filled with green smectite, larger with silica - banded.

FRACTURES - VEINS - BRECCIA

Very little.

ROCK ALTERATION

Rather fresh, while vesicle and vein filling material mostly silica.