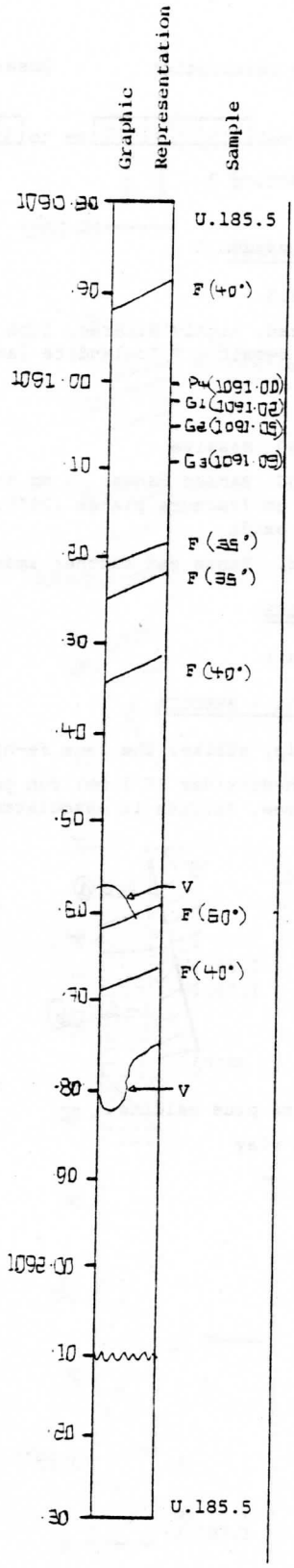
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer .....K. Hattori.....

Depth Interval 1090 80 cm to 1092 10 cm

Box 187, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.185.5

Gray-greenish blue colour. Very fine-grained aphyric, glassy basalt.

? Icelandite lava flow.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - ($\phi \sim 1$ mm up to 3 mm). Round shape occupy < 1%, filled with green clay.

FRACTURES - VEINS - BRECCIA

Fault - dip (50 - 35°), the same strike. Fault planes are covered with small amount of calcite and green clay. The fault at 1091.7 meters; Fe-hydroxides.

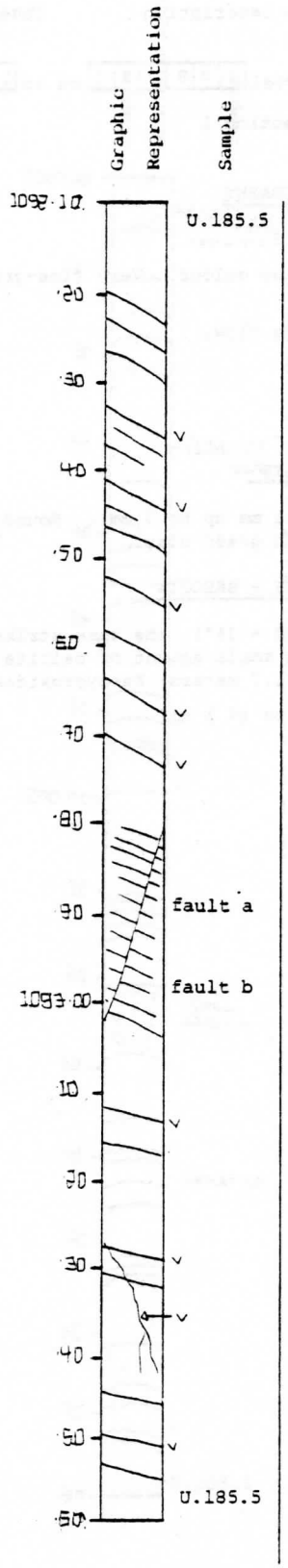
Veinlets - calcite (< 1 mm)

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer... K. Hattori...

Depth Interval 1092.10 cm to 1093.62 cm

Box 187, Section 2



LITHOLOGY-PETROGRAPHY

Continuing U.185.5

Brick-red coloured, highly altered, fine grained, aphyric, holocrystalline basalt. ? Icelandite lava flow.

STRUCTURE

1092.10 - 1092.40 Massive

1092.40 - 1093.30 Banded bands. 1 mm thick, .5 to 1 cm apart, parallel to fracture planes (30°). Filled with zeolite and red oxide.

1093.30 downward. Bands get farther apart, 2-3 cm.

VESICLES/AMYGDALES

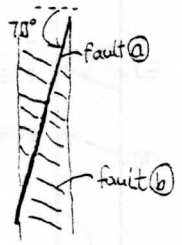
Essentially absent.

FRACTURES - VEINS - BRECCIA

Fault planes; dip, strike; the same Fe-hydroxide occur.

Veinlets of Fe-hydroxides (< 1 mm) run parallel to fault planes. Sometimes, calcite is associated with Fe-hydroxide.

1092.81 - 1093.01



fault a - zeolite plus calcite

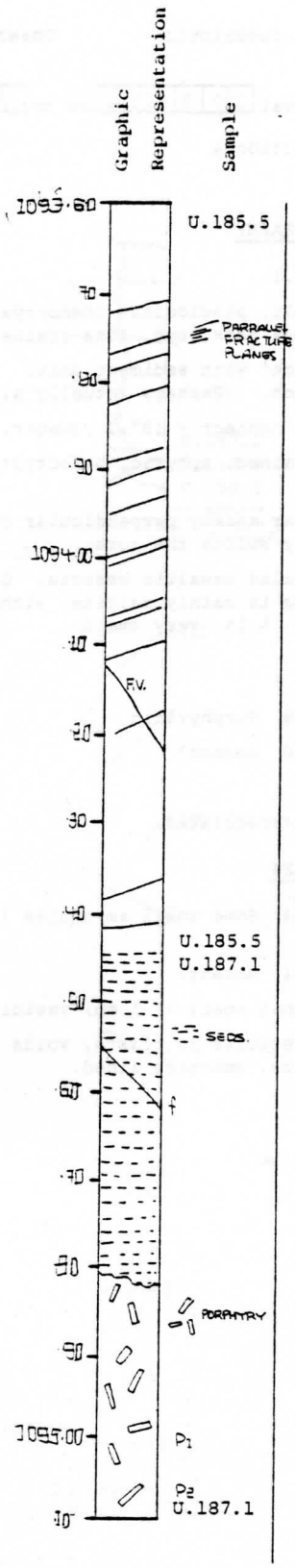
fault b - green clay

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer...RHW.....

Depth Interval 1 0 9 3 6 2 cm to 1 0 9 5 1 1 cm

Box 187, Section 3



LITHOLOGY-PETROGRAPHY

Continuing U.185.5

Brick red, altered, aphyric, holocrystalline, fine-grained basalt.

1094.20 - red color begins to fade to contact with 187.1, by which time it is dark gray.

? Icelandite lava flow.

1094.46 (U.187.1) Contact is irregular, no great evidence of baked red or flow bottom disturbance. Sediment is dark brown, not conspicuously layered.

1094.81 Sediment in probable sediment contact with porphyritic unit (probably the same as the underlying flow, unit 187.3).

Euhedral and subhedral plagioclase phenocrysts, up to 2 mm. Groundmass fine-grained, gray basalt.

STRUCTURE

U.185.5 Massive

1094.46 - 1094.81 Weakly bedded, shallow dip.

1094.81 - 1095.11 Porphyritic

VESICLES/AMYGDALES

U.185.5 Not common

1094.81 - 1095.11 Some vesicles in the porphyritic basalt, zeolite filled.

FRACTURES - VEINS - BRECCIA

U.185.5 Fractures along parallel planes dipping 30°. Two others, 60°, zeolite lined, of minor calcite.

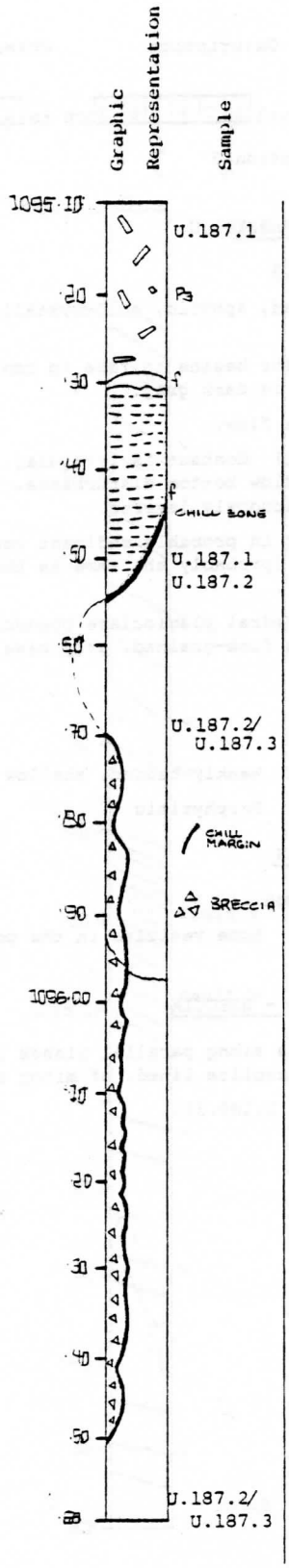
U.187.1 (Same as U.185.5).

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1095.11 cm to 1096.61 cm

Box 187, Section 4



LITHOLOGY-PETROGRAPHY

Continuing U.187.1

Porphyritic basalt, plagioclase phenocryst laths, .5 mm. Groundmass dark gray, fine-grained basalt.

Irregular 'contact' with sediment unit. Sediment unit bedding indistinct. (Perhaps actually altered basalt?)

1095.52 Chilled contact - 187.2 younger.

U.187.2 Fine grained, aphyric, holocrystalline, dark gray basalt.

1095.70 Irregular nearly perpendicular chilled contact which essentially splits the core.

U.187.3 Is a healed basaltic breccia. Clasts are basaltic, filling is mainly calcite, with smectite. Vesicles present, ∿ 1%, very small.

STRUCTURE

1095.10 - 1095.29 Porphyritic

1095.30 - 1095.50 Bedded?

U.187.2 Massive

U.187.3 Massive/Brecciated.

VESICLES/AMYGDALES

1095.11 - 1095.34 Some small amygdules (< 1 mm), zeolite filled.

1095.35 - 1095.51 Absent.

U.187.2 Occasional small (< 1 mm) vesicles.

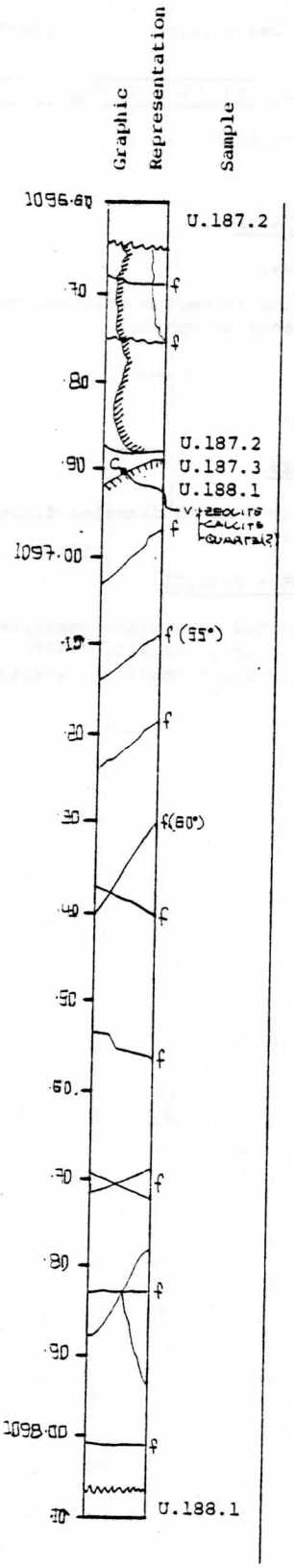
U.187.3 Small vesicles in clasts, voids in healed breccia dominantly calcite, smectite lined.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ....Vieregk.....

Depth Interval 1 0 9 6 6 4 cm to 1 0 9 8 0 7 cm

Box 188, Section 1



LITHOLOGY-PETROGRAPHY

U.187.2 Greenish gray, dense, aphyric, fine-grained basalt (apharitic)

1096.88 Dark gray, dense basalt

1096.89 U.187.3

1096.90 U.188.1 Grayish-green, fine-grained to medium grained (a little coarser than U.187.2), aphyric, uniform basaltic dyke. Rapid increase in grain size between 1096.95 and 1097.10.

STRUCTURE

1096.88 Slightly chilled margin.

VESICLES/AMYGDALES

U.188.1 Only very few vesicles are visable (< 1 mm). They are filled with smectite.

FRACTURES - VEINS - BRECCIA

U.187.2 & 188.1 All fractures are coated with black smectite, few show slickensides.

Veins are concentrated along the contact, width < 2 mm, filled with zeolite plus calcite.

OTHER

The unit 187.3 is vesicular from 1096.60 to 109.80.

Unit 187.2 is a dyke

1096.89 It's hard to tell the difference between U.187.2 and U.187.3 and U.188.1:

U.187.3 is funny looking - what means - a little brecciated.

U.187.2 is really aphanitic

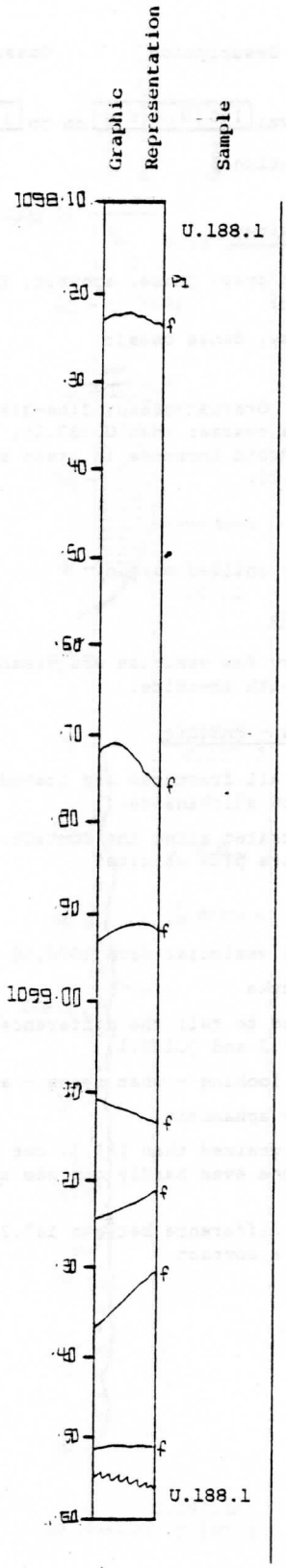
U.188.1 is finer grained than 187.3, but there is no chilled margin, one even hardly can see any distinct contact.

There isn't much difference between 187.2 and 188.3 except one needs a contact.

Visual Core Description Observer ...Vierock.....

Depth Interval 1 0 9 8 0 7 cm to 1 0 9 9 5 5 cm

Box 188, Section 2



LITHOLOGY-PETROGRAPHY

Same Unit as above.

Grayish-green, fine to medium grained, aphyric, uniform basalt with tendency to ophitic.

STRUCTURE

Massive (ophitic)

VESICLES/AMYGDALES

Few vesicles up to 1 mm in diameter filled with smectite, zeolite, calcite.

FRACTURES - VEINS - BRECCIA

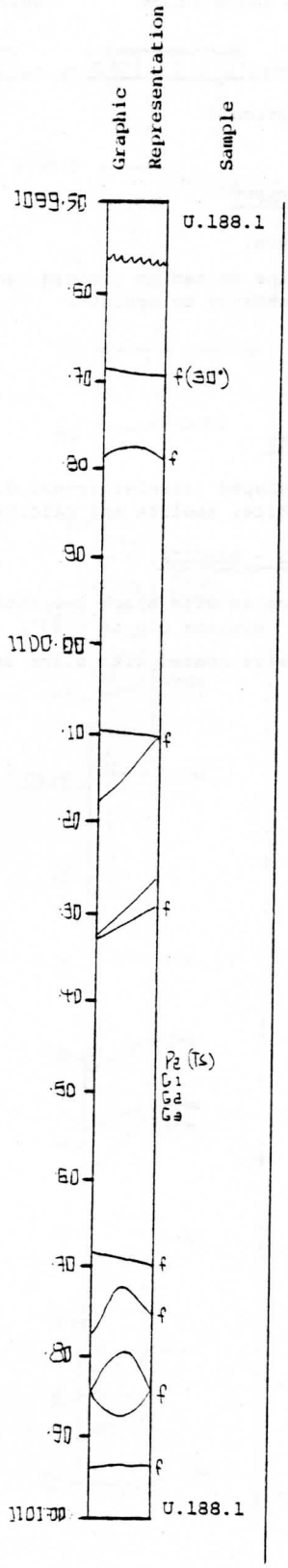
Abundant veins coated with black smectite are the most obvious feature. Dip is usually ∿ 80°. Fractures are always coated with black smectite, average dip is 30°.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer Viereck

Depth Interval 1 0 9 9 5 5 cm to 1 1 0 1 0 0 cm

Box 188, Section 3



LITHOLOGY-PETROGRAPHY

Same unit as above.

Grayish-green, fine to medium grained, uniform, aphyric basalt, with a tendency to ophitic.

STRUCTURE

Massive (ophitic).

VESICLES/AMYGDALES

Irregular vesicles up to 1 mm in diameter. Filled with smectite, zeolite and calcite.

FRACTURES - VEINS - BRECCIA

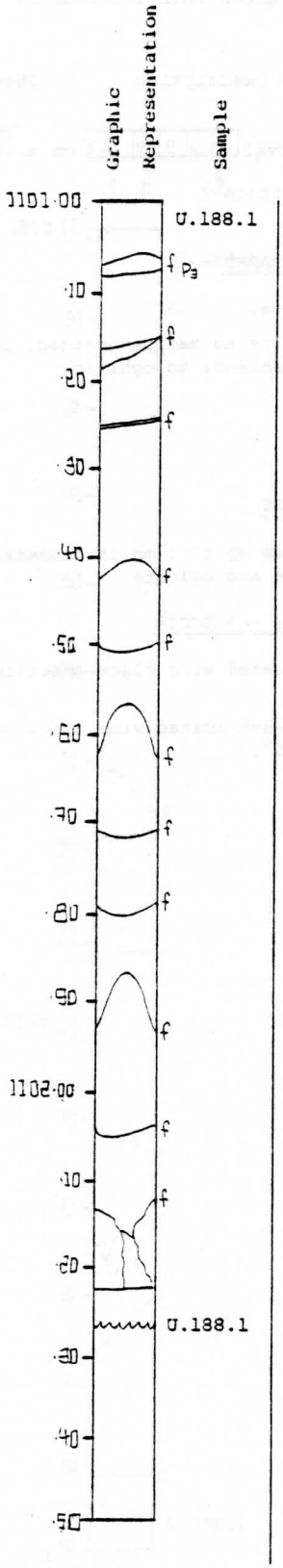
Abundant veins coated with black smectite are the most obvious feature.

Fractures are always coated with black smectite. Average dip is 30°.

Visual Core Description Observer ....Viereck.....

Depth Interval 1101 00 cm to 1102 27 cm

Box 188, Section 4



LITHOLOGY-PETROGRAPHY

Same Unit as before.

Grayish-green, fine to medium grained, uniform, aphyric, basalt, with a tendency to ophitic.

STRUCTURE

Massive (ophitic)

VESICLES/AMYGDALES

Few irregularly shaped vesicles around 0.5 mm in diameter filled with smectite, zeolite and calcite.

FRACTURES - VEINS - BRECCIA

Abundant veins coated with black smectite are the most obvious feature. Average dip is ∿ 80°.

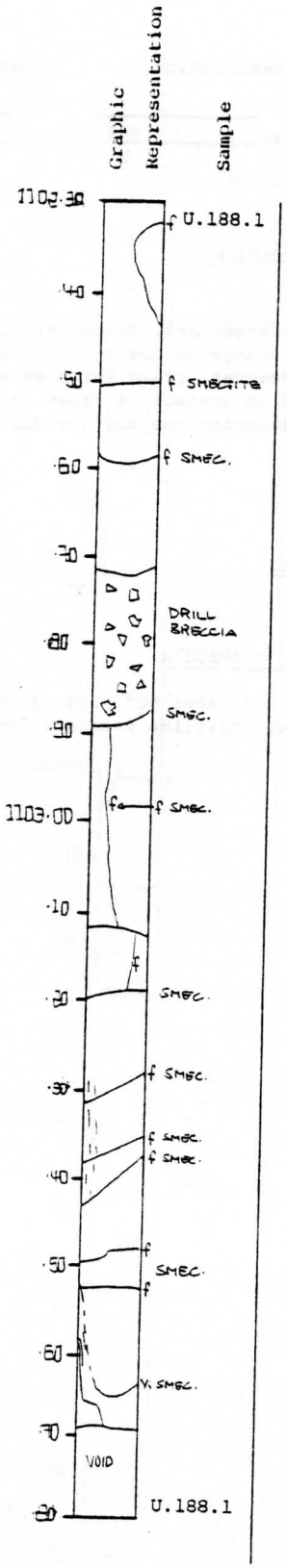
Fractures are always coated with black smectite. Average dip is ∿ 30°.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR

Depth Interval 1 1 0 2 2 7 cm to 1 1 0 3 6 9 cm

Box 189, Section 1



NOTE: This entire box is highly brecciated and depth adjustments have been made in each section.

LITHOLOGY-PETROGRAPHY

U.188.1 Continues.

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size uniform through section. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

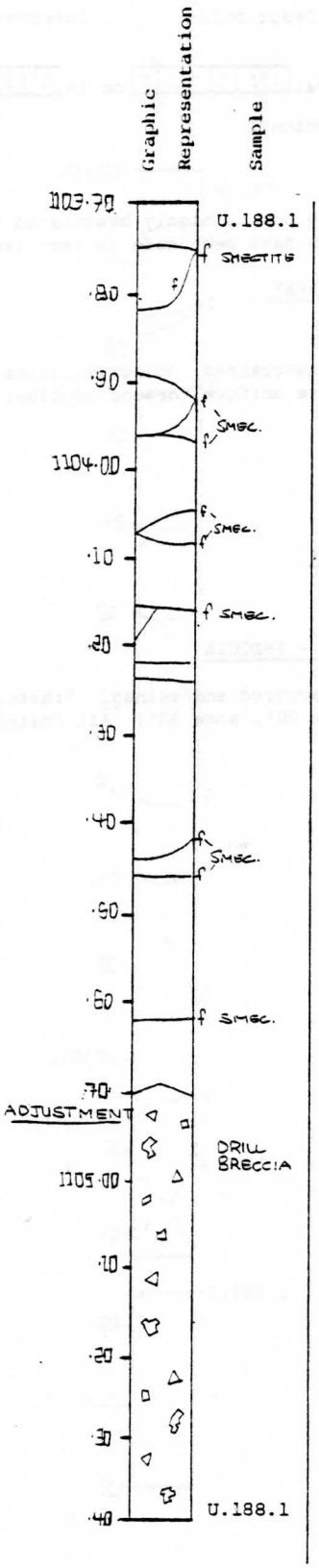
FRACTURES - VEINS - BRECCIA

Rock is highly fractured and veined. Fractures and veins 60-70°, some 90°, some 30°. All coated or filled smectite.

Visual Core Description Observer PTR

Depth Interval 1103.69 cm to 1105.48 cm

Box 189, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.188.1

Grayish-green, fine-grained, holocrystalline, aphyric basalt. A color change occurs at 1104.70 on the surface of the basalt. However, fresh surfaces appear identical on both sides and no contact is drawn here. Change is probably due to scouring the surface during drilling.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

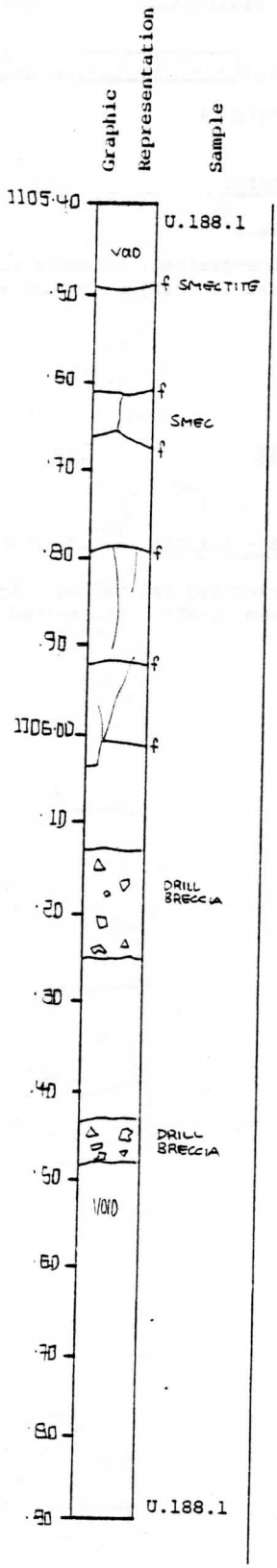
Fractures mostly 30°, some 60°, coated with smectite. Many discontinuous, hairline veinlets 70-90°, filled with smectite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR

Depth Interval 1105.48 cm to 1106.48 cm

Box 189, Section 3



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish gray, fine-grained, holocrystalline, aphyric basalt. Grain size uniform through core. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

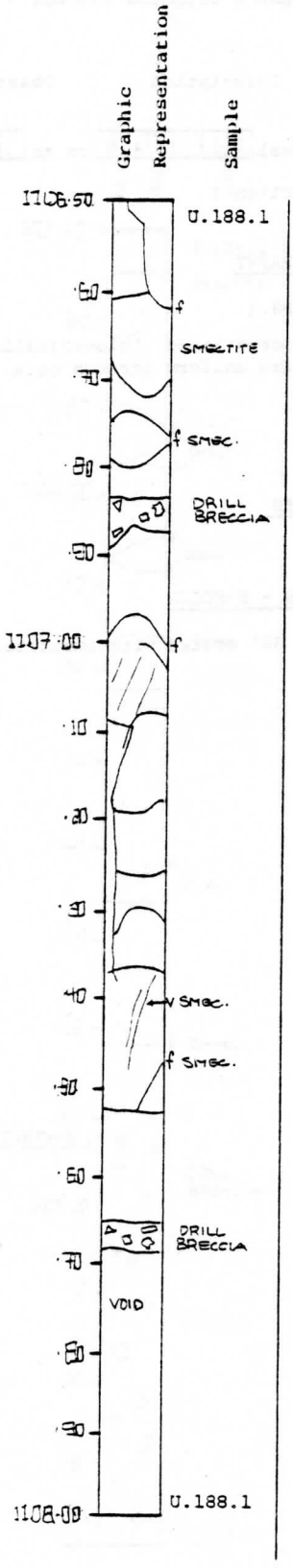
FRACTURES - VEINS - BRECCIA

Most fractures ∿ 80° coated with smectite.

Visual Core Description Observer PTR

Depth Interval 1106.48 cm to 1107.65 cm

Box 189, Section 4



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size is uniform through section. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

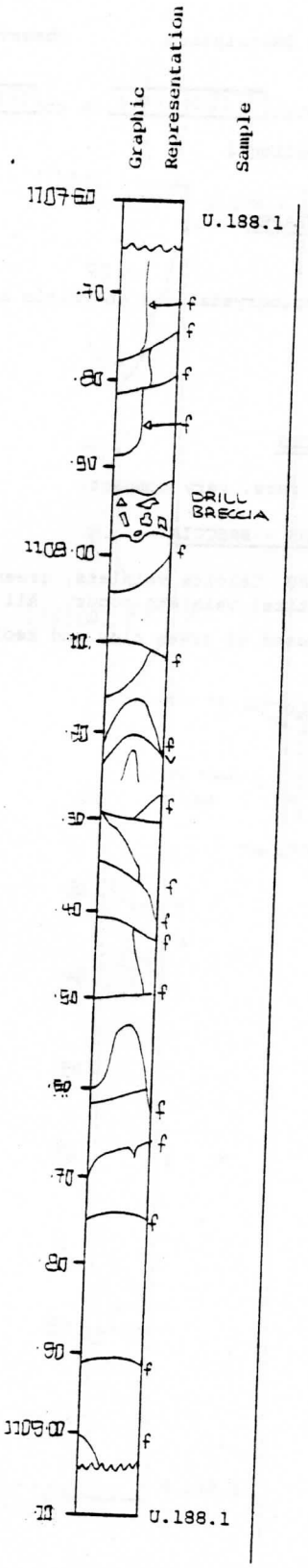
Rock is highly fractured and veined. Fractures and veins mostly 60-90°, some 30-45°. All coated or filled with smectite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1107.65 cm to 1109.04 cm

Box 190, Section 1



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Grayish-green holocrystalline, aphyritic basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - very rare.

FRACTURES - VEINS - BRECCIA

Calcite veinlets occur just aside fault plane, and parallel to fault.

Green clay veinlets run at random.

ROCK ALTERATION

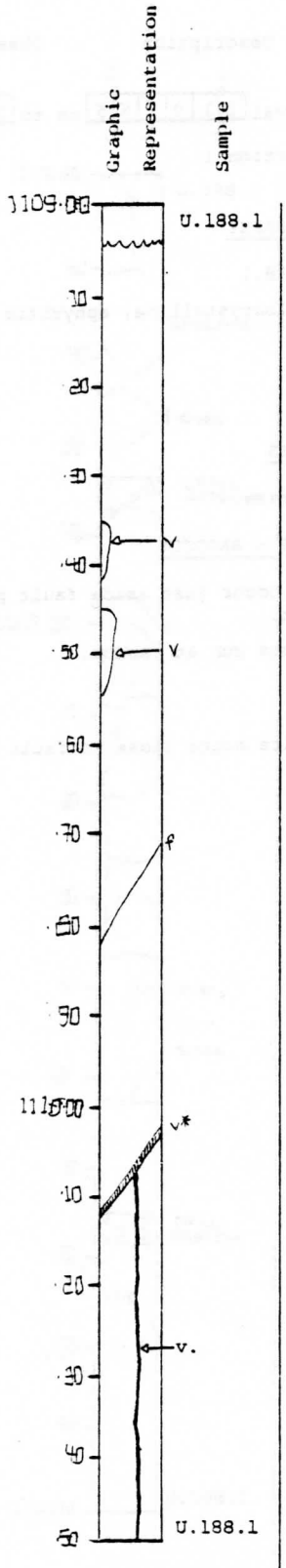
Green clay, calcite occur close to fault plane.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1109.04 cm to 1111.51 cm

Box 190, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.188.1

Grayish-green, holocrystalline aphyritic basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

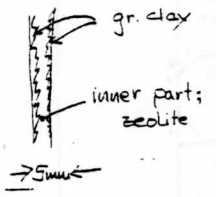
Vesicles - very rare, very compact.

FRACTURES - VEINS - BRECCIA

1109.04 - 1109.80 Calcite veinlets, green clay veinlets, zeolite (laumontite) veinlets occur. All are < 3 mm.

V. vein - composed of green clay and zeolite (laumontite) ∿ 5 mm width.

v.* vein -

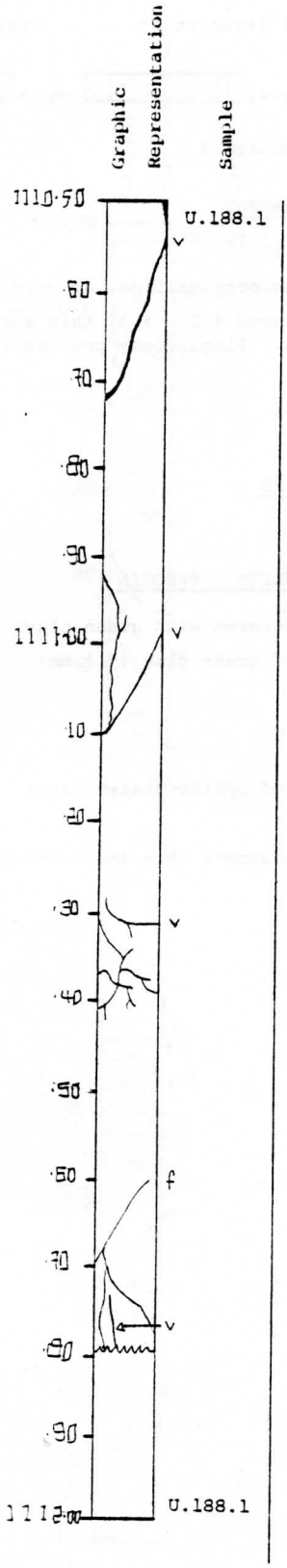


ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1110.51 cm to 1111.79 cm

Box 190, Section 3



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Grayish-green, holocrystalline, aphyritic basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - very rare.

FRACTURES - VEINS - BRECCIA

Many green clay veinlets (< 1 mm)

Thick veinlet (∿ 3 mm ∿ 5 mm) are composed of green clay (outside) and zeolite inside).

OTHER

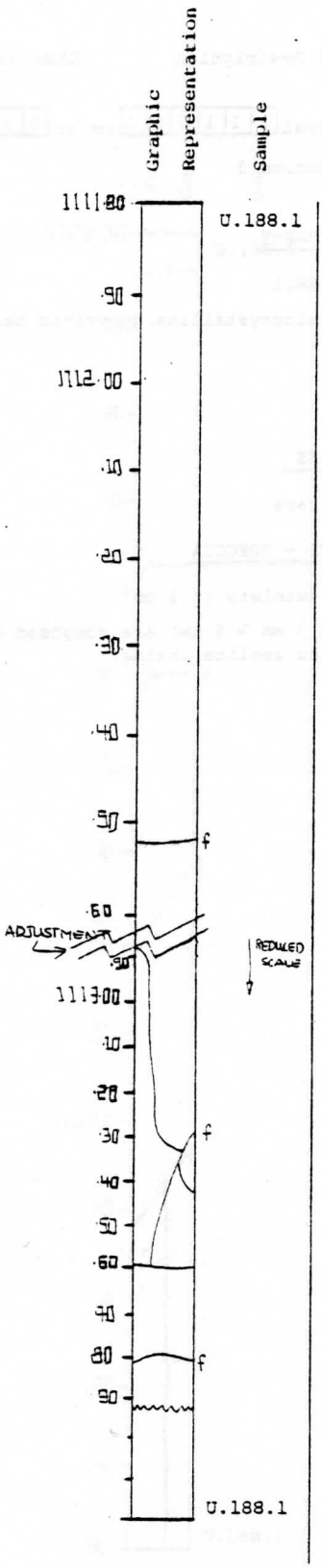
Green clay

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer . K. Hattori.....

Depth Interval 1 1 1 1 7 9 cm to 1 1 1 3 9 2 cm

Box 190, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.188.1

Greyish-green, holocrystalline, aphyritic basalt.

Compared to sections # 1 - # 3, this section # 4 is more crystalline. Plagioclase phenocryst is ∿ 1 mm.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - rare.

FRACTURES - VEINLETS - BRECCIA

Fault plane is covered with green clay.

Small veinlets of green clay (< 1 mm)

ROCK ALTERATION

Green clay.

Very small cube of pyrite disseminates.

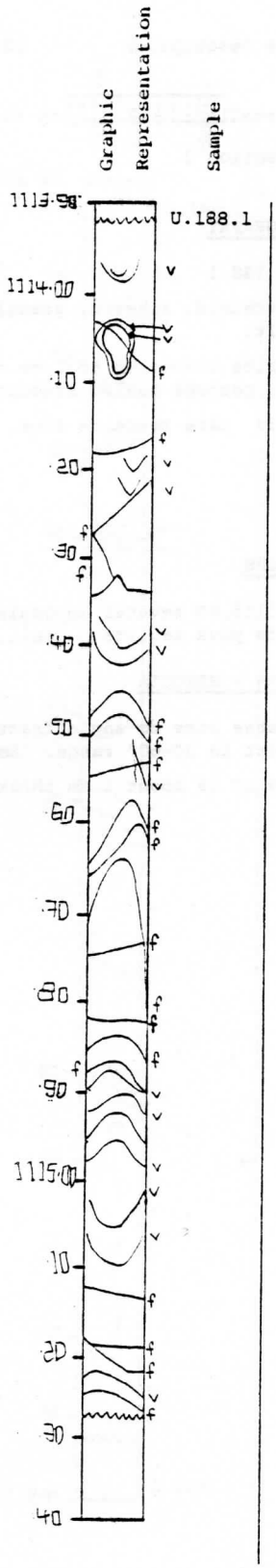
NOTE: Large adjustment thin section-intervals compressed.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ...RHW.....

Depth Interval 1 1 1 3 9 2 cm to 1 1 1 5 2 7 cm

Box 191, Section 1



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine grained, aphyric, granular, holocrystalline, gray-green basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Essentially absent

FRACTURES - VEINS - BRECCIA

Fracture orientation dispersed. Most fall within 30-60° range.

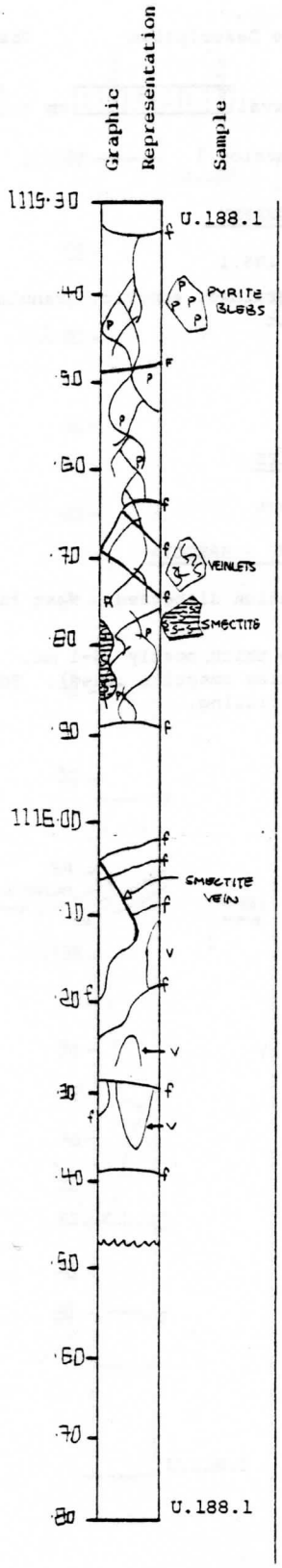
Veins up to 2 mm thick, mostly .5-1 mm. Filled with smectite (fractures smectite lined). Some larger veins contain zeolite filling.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1115.27 cm to 1116.47 cm

Box 191, Section 3



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine-grained, aphyric, granular, holocrystalline, gray-green basalt.

Disseminated pyrite blebs, up to 1 mm diameter, in area of net veinlets, perhaps healed breccia zone.

1115.80 - 1115.85 Lare smectite zone.

STRUCTURE

Massive

VESICLES/AMYGDALES

From 1115.60 - 1115.80 several amygdules or vein fillings, calcite plus zeolite. Small, up to 1 mm.

FRACTURES - VEINS - BRECCIA

Fractures - diverse core to angle fractures as well as veinlets. Most in 30-60° range. Smectite lined.

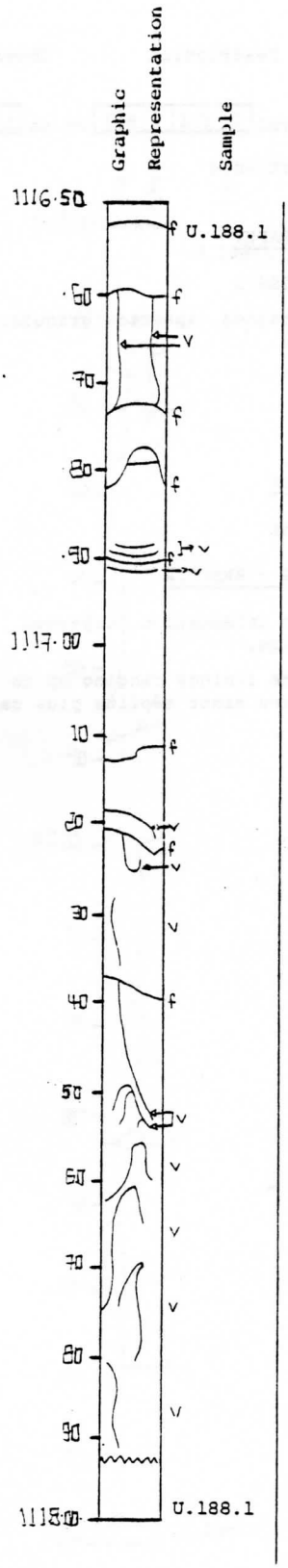
One vein at 1116.10 is about 1 mm thick smectite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1 1 1 6 4 7 cm to 1 1 1 7 9 3 cm

Box 191, Section 3



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine grained, aphyric, holocrystalline, granular, gray-green basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Absent

FRACTURES - VEINS - BRECCIA

Fracture orientation dispersed. Most fall within 30-60° range.

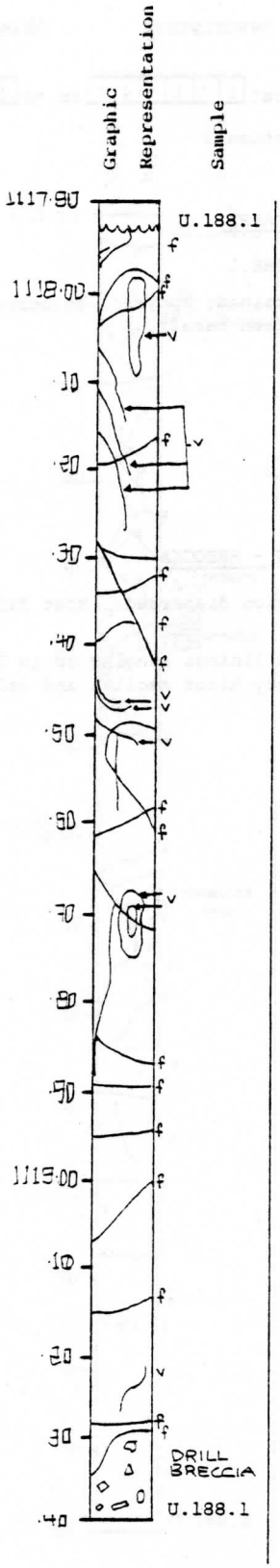
Vein and fracture linings ranging up to 2 mm thick smectite, with very minor zeolite and calcite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ...RHW.....

Depth Interval 1 1 1 7 9 3 cm to 1 1 1 9 4 0 cm

Box 191, Section 4



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine grained, aphyric, granular, holocrystalline, gray-green basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Essentially absent

FRACTURES - VEINS - BRECCIA

Fracture and vein orientation dispersed. Most fall within 30-60° range.

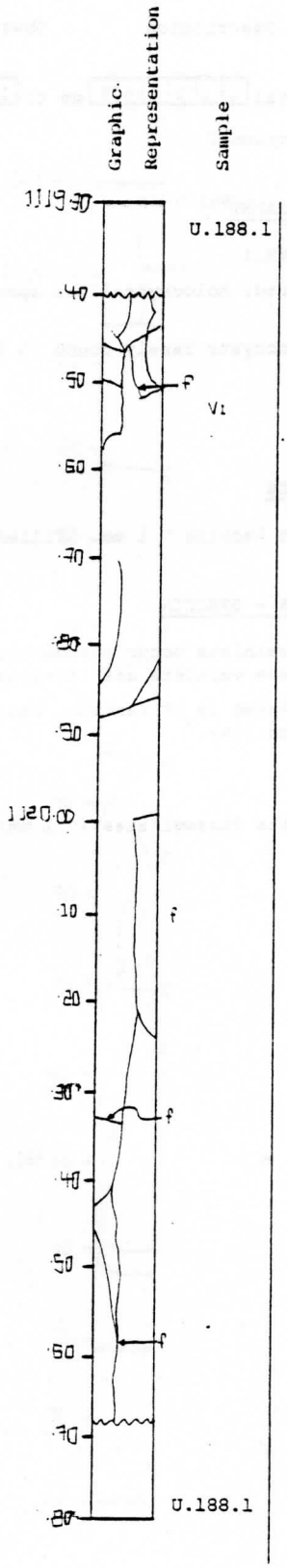
Veins and fracture linings ranging up to 2 mm thick smectite, with very minor zeolite plus calcite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ....K. Hattori.....

Depth Interval 1119.40 cm to 1120.68 cm

Box 192, Section 1



LITHOLOGY-PETROGRAPHY

Gray-green coloured, holocrystalline, aphyritic basalt.

Plagioclase, phenocryst rarely found (∿ 1 mm)

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - almost lacking of vesicles

FRACTURES - VEINS - BRECCIA

Faults - irregular pattern, green clay covers fault planes.

Many green clay veinlets (usually less than 1 mm)

V_1 - Zeolite veins. The swarm of zeolite veinlets run in this part. Very small amount of calcite is associated.

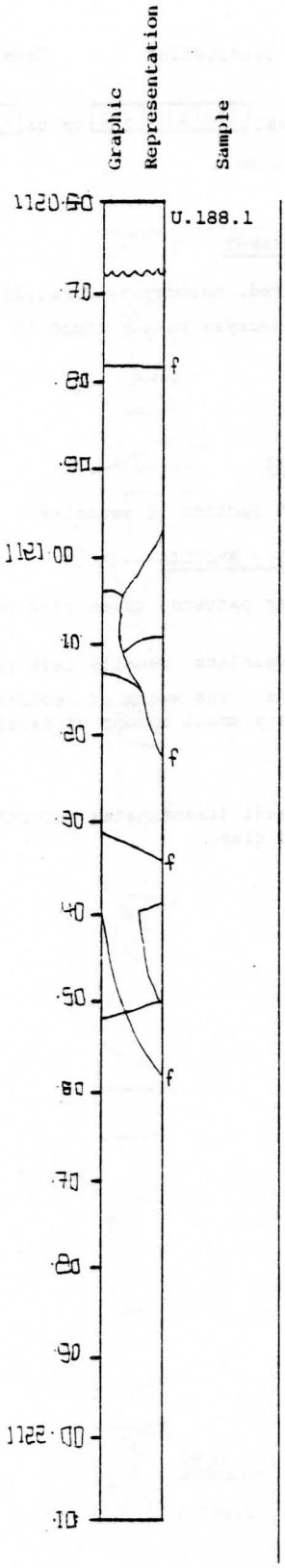
ROCK ALTERATION

Cubic pyrite crystal disseminates throughout the cores (ϕ ∿ 1 mm), green clay.

Visual Core Description Observer K. Hattori

Depth Interval 1 1 2 0 6 8 cm to 1 1 2 1 9 1 cm

Box 192, Section 2



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Gray-green coloured, holocrystalline aphyritic basalt.

Plagioclase phenocrysts rarely found (∿ 1 mm).

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - almost lacking ∿ 1 mm. Filled with green clay.

FRACTURES - VEINS - BRECCIA

Many green clay veinlets occur throughout the core, dip-strike of these veinlets are irregular.

Faults - fault system is at random. Fault planes are covered with green clay.

ROCK ALTERATION

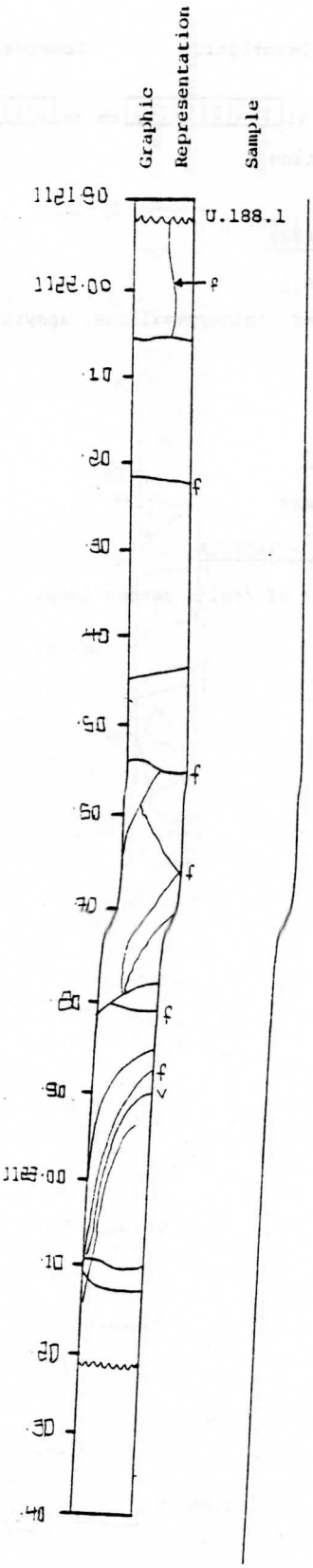
Green clay. Pyrite disseminates (< 1 mm) the amount is less than 1%.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1121920 cm to 1123210 cm

Box 192, Section 3



LITHOLOGY-PETROGRAPHY

Continues U.188.1

Gray-green coloured, holocrystalline aphyric basalt.

Plagioclase phenocrysts sometimes reaches up to 1.5 mm.

STRUCTURE

Massive

VESICLES/AMYGDALES

Almost lacking of vesicles.

FRACTURES - VEINS - BRECCIA

Faults - irregular pattern. Green clay covers fault planes. Many green clay veinlets.

ROCK ALTERATION

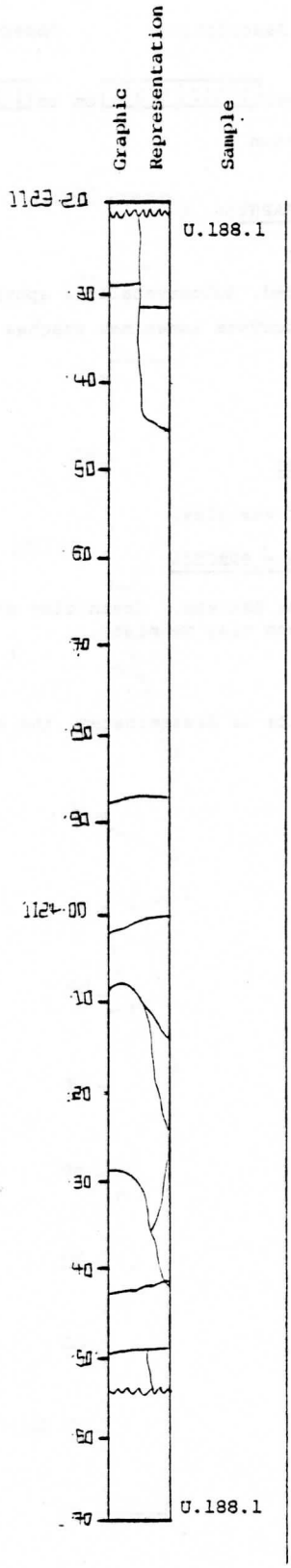
Green clay. Pyrite is disseminated, the amount is less than 1% (< 1 mm).

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ..K..Hattori.....

Depth Interval 1 1 2 3 2 1 cm to 1 1 2 4 5 4 cm

Box 192, Section 4



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Gray-green coloured, holocrystalline, aphyric basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - very rare

FRACTURES - VEINS - BRECCIA

Faults; the number of faults become less.

ROCK ALTERATION

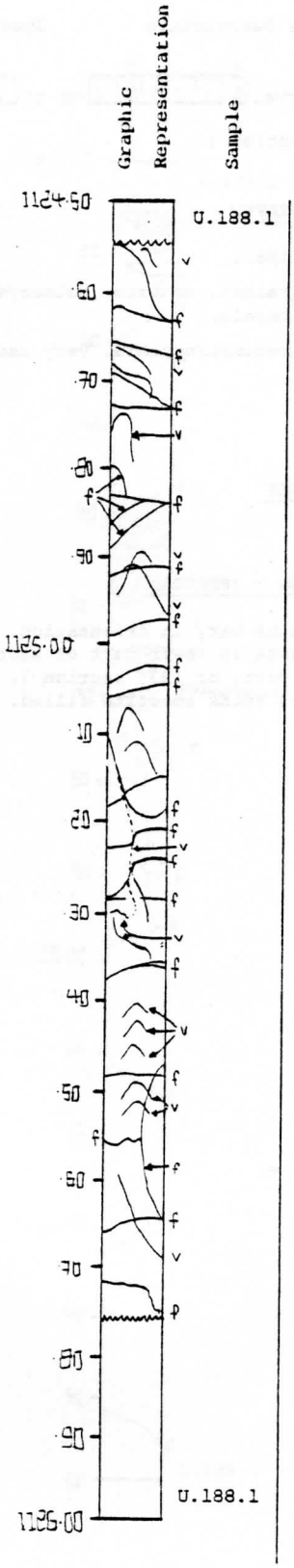
Green clay.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1124.54 cm to 1126.56 cm

Box 193, Section 1



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine grained, aphyric, holocrystalline, gray-green, granular basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Absent

FRACTURES - VEINS - BRECCIA

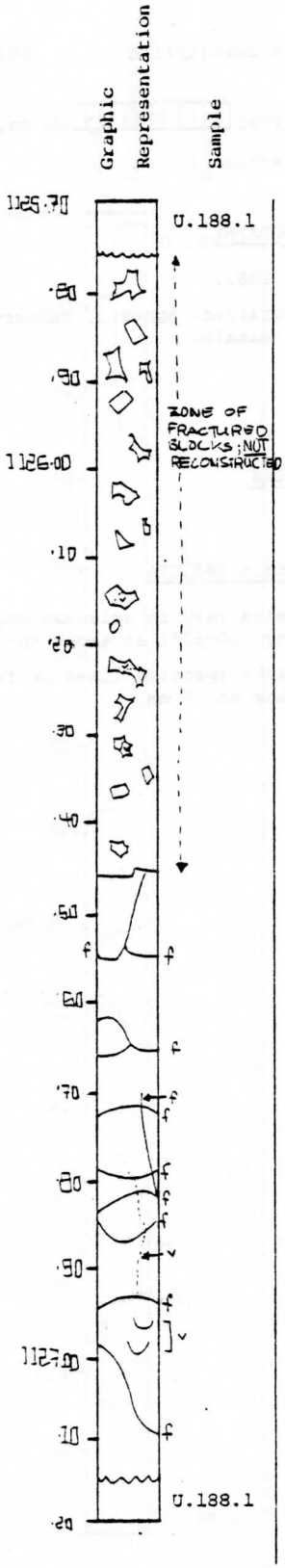
Fractures and veins vary in orientation, most 30-60°, and probably many (30-50°) at about 60°.

Fractures and veins smectite lined or filled. Size generally hairline to .5 mm.

Visual Core Description Observer RHW

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

Box 193, Section 2



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine-grained, aphyric, holocrystalline, gray-green, granular basalt.

Upper 60 cm not reconstructable, very badly shattered.

STRUCTURE

Massive

VESICLES/AMYGDALES

Absent

FRACTURES - VEINS - BRECCIA

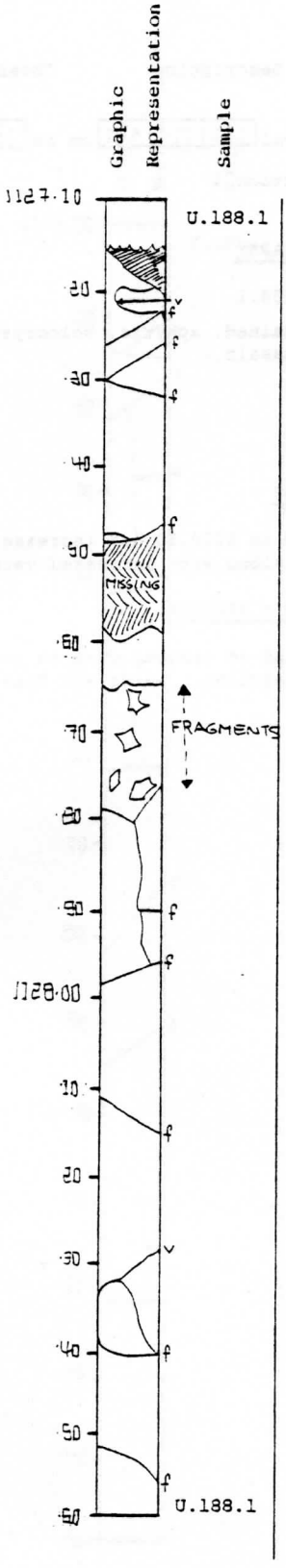
Fractures and veins vary in orientation. Vein density appears to decrease in lower part of section as opposed to fractured upper part, or 193, section 1. Veins hairline; both fracture and veins smectite filled.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer .....RHW.....

Depth Interval 1 1 2 7 1 5 cm to 1 1 2 8 6 0 cm

Box 193, Section 3



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine-grained, aphyric, holocrystalline, gray-green granular basalt.

Several zones of fracturing too intense to reconstruct.

STRUCTURE

Massive

VESICLES/AMYGDALES

Absent. Some dispersed, small (.1 mm) smectite blebs in lower part of section.

FRACTURES - VEINS - BRECCIA

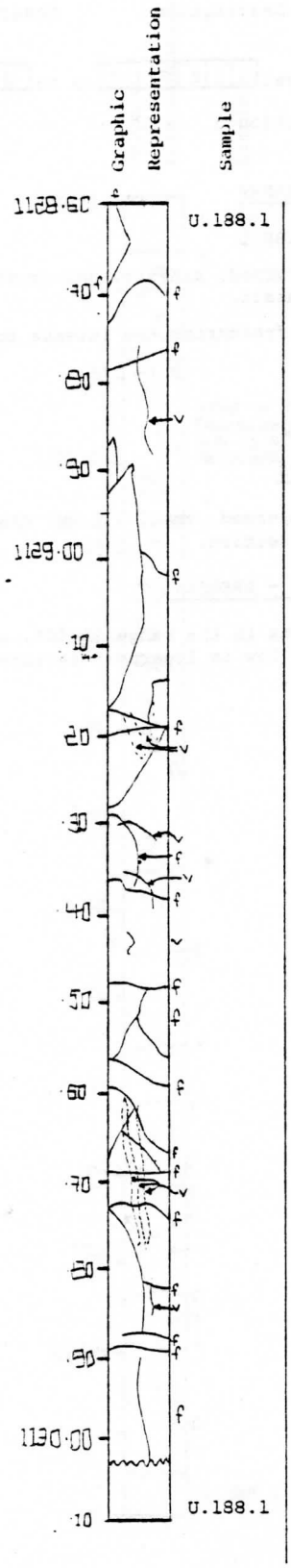
Fractures and veins in the range 45-50°, smectite lined. Vein density very low in lowermost section, as opposed to sections above.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1 1 2 8 6 0 cm to 1 1 3 0 0 3 cm

Box 193, Section 4



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Medium to fine-grained, aphyric, holocrystalline, gray-green, granular basalt.

STRUCTURE

Massive

VESICLES/AMYGDALES

Zone from 1128.80 to 1129.50 has increase in smectite blebs to ∿ 1-2%, along with increased veining.

FRACTURES - VEINS - BRECCIA

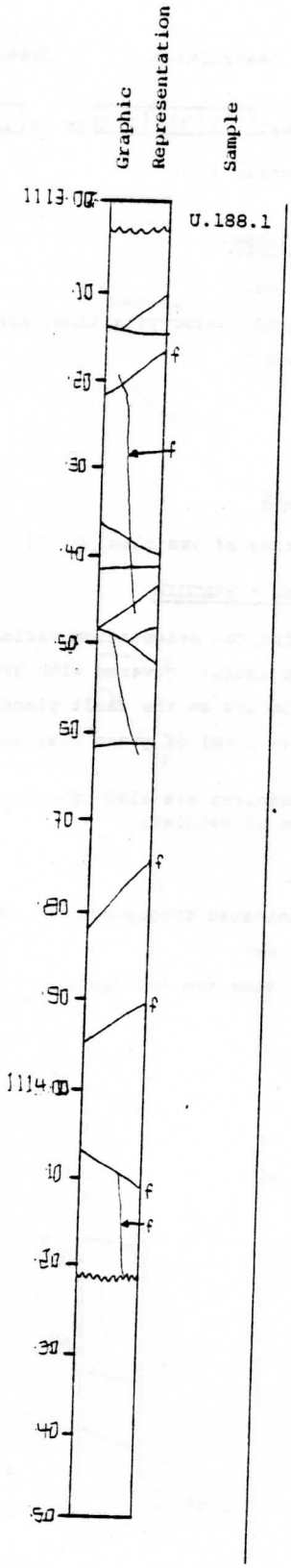
Fractures and veins at various core to angle fractures. Veins generally hairline. Veins and fractures smectite filled.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1130 03 cm to 1131 21 cm

Box 194, Section 1



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Gray-green coloured, holocrystalline, aphyritic basalt.

Plagioclase phenocryst (< 1 mm) rarely found.

No observable change in grain size, degree of alteration, colour, etc. Very homogeneous throughout the cores from # 1 to # 4.

STRUCTURE

Massive

VESICLES/AMYGDALES

Almost completely lacking of vesicles.

FRACTURES - VEINS - BRECCIA

Many irregular faults, orientation variable; fault planes are covered with green clay.

Many thin (< 1 mm) green clay veinlets.

ROCK ALTERATION

Pyrite (anhedral aggregates, euhedral) is disseminated in cores throughout. The size is ∿ 1 mm.

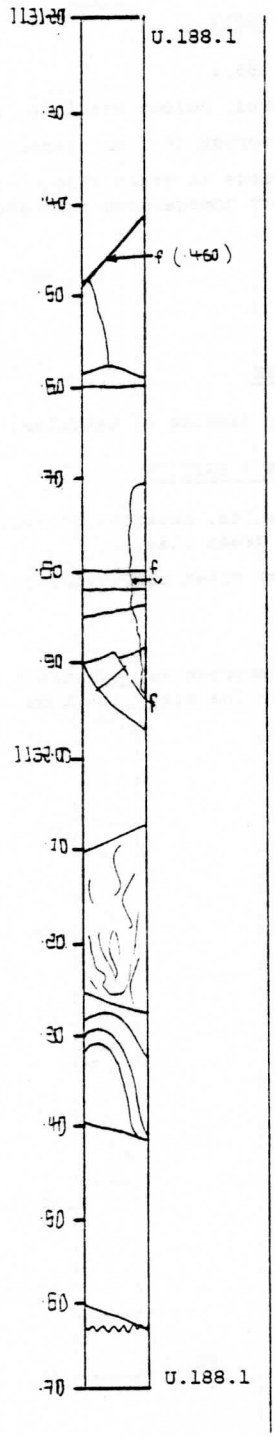
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

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

Box 194, Section 4

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Gray-green coloured, holocrystalline, aphyritic basalt.

The same as number 1.

STRUCTURE

Massive

VESICLES/AMYGDALES

Practically lacking of vesicles.

FRACTURES - VEINS - BRECCIA

Many irregular faults, orientation variable.

Fault planes are usually covered with green clay.

Rarely zeolite occurs on the fault plane.

Small veinlets (< 1 mm) of green clay occur throughout the core.

Dips of these veinlets are also variable. 1132.20 - 1132.40 there are swarms of veinlets.

ROCK ALTERATION

Pyrite is disseminated throughout the cores.

$\phi \sim$ (1 mm - 1.5 mm)

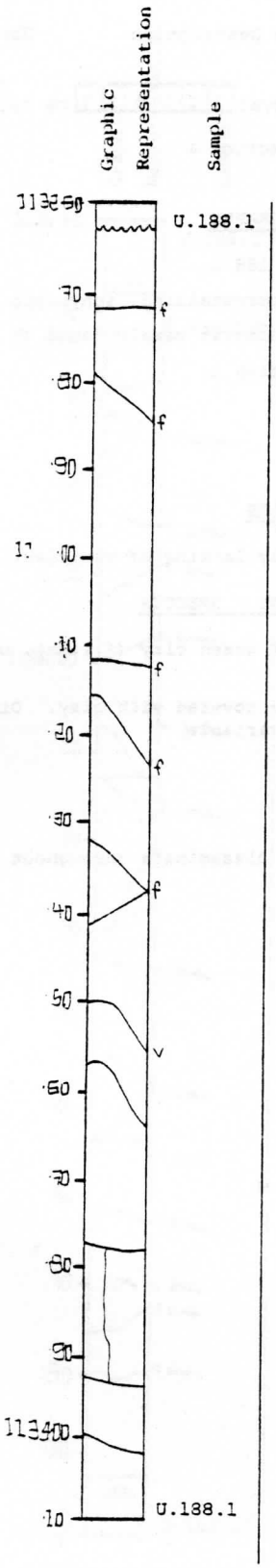
Some are cubic, some are anhedral.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ....K. Hattori.....

Depth Interval 1 1 3 2 6 3 cm to 1 1 3 4 1 0 cm

Box 194, Section 3



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Gray-green holocrystalline, aphyritic basalt.

The same as Section 1.

STRUCTURE

Massive

VESICLES/AMYGDALES

Practically absent.

FRACTURES - VEINS - BRECCIA

The orientations of veinlets, fractures and faults are irregular.

Veinlets of green clay are abundant throughout the cores.

ROCK ALTERATION

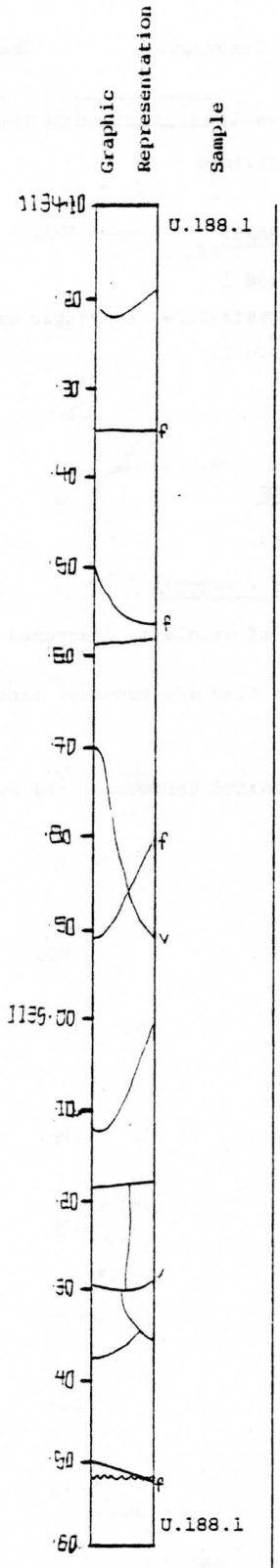
Pyrite is disseminated throughout the core. ($\phi \sim 1$ mm).

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1134.10 cm to 1139.52 cm

Box 194, Section 4



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Gray-green, holocrystalline, aphyritic basalt.

Plagioclase phenocryst rarely found (∿ 1 mm).

The same as Section 1.

STRUCTURE

Massive

VESICLES/AMYGDALES

Almost completely lacking of vesicles.

FRACTURES - VEINS - BRECCIA

Many veinlets of green clay (< 1 mm), orientations are irregular.

Fault planes are covered with clay. Dip-strikes of faults is also variable.

ROCK ALTERATION

Green clay

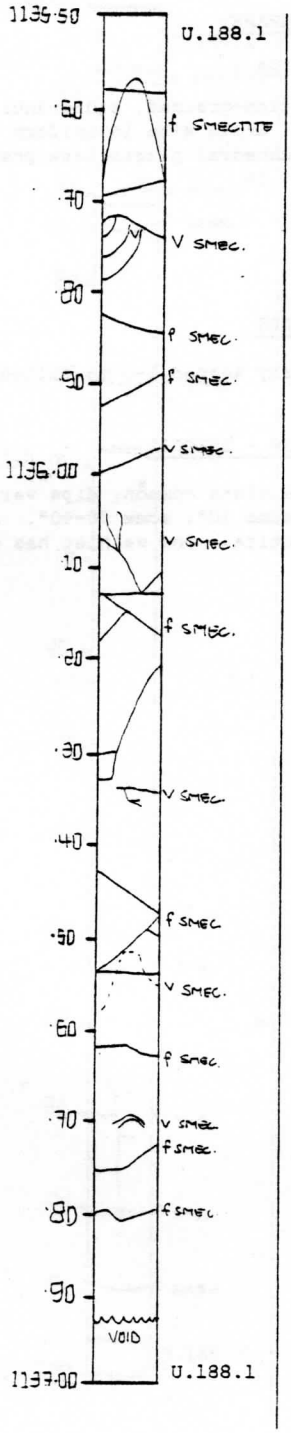
Pyrite (< 1 mm) disseminate throughout the core.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ....PTR.....

Depth Interval 1135.52 cm to 1136.93 cm

Box 195, Section 1



LITHOLOGY-PETROGRAPHY

Continuing Unit 188.1

Greenish-gray, fine-grained, holocrystalline, even grained, aphyric basalt. Grain size is uniform through section. No contacts. Subhedral plagioclase phenocrysts 1-2 mm across make up < 1%.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

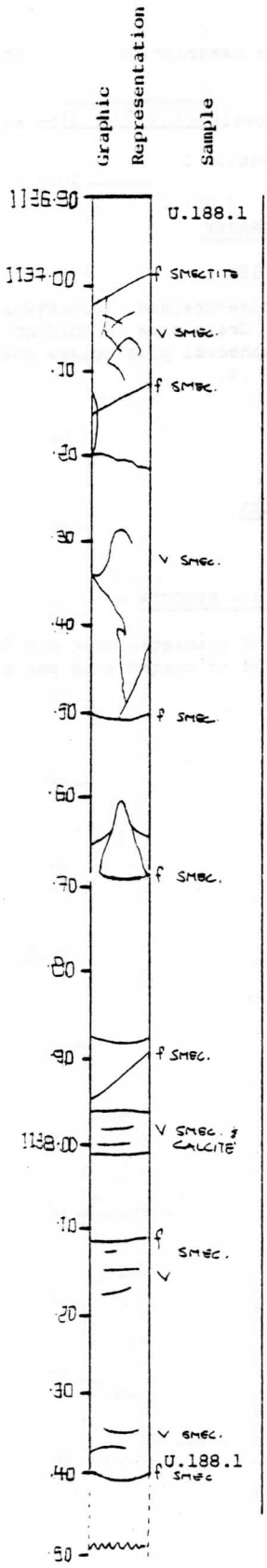
FRACTURES - VEINS - BRECCIA

Many fractures and veinlets, most dip 50-70° -- a few ~ 30°. All filled or coated with smectite.

Visual Core Description Observer ....PTR.....

Depth Interval 1136.93 cm to 1138.49 cm

Box 195, Section 2



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, equigranular, holocrystalline aphyric basalt. Grain size is uniform through section. No contacts. Subhedral plagioclase phenocrysts 1-2 mm across make up < 1%.

STRUCTURE

Massive

VESICLES/AMYGDALES

<< 1%, irregularly shaped 1-3 mm filled with calcite and zeolite.

FRACTURES - VEINS - BRECCIA

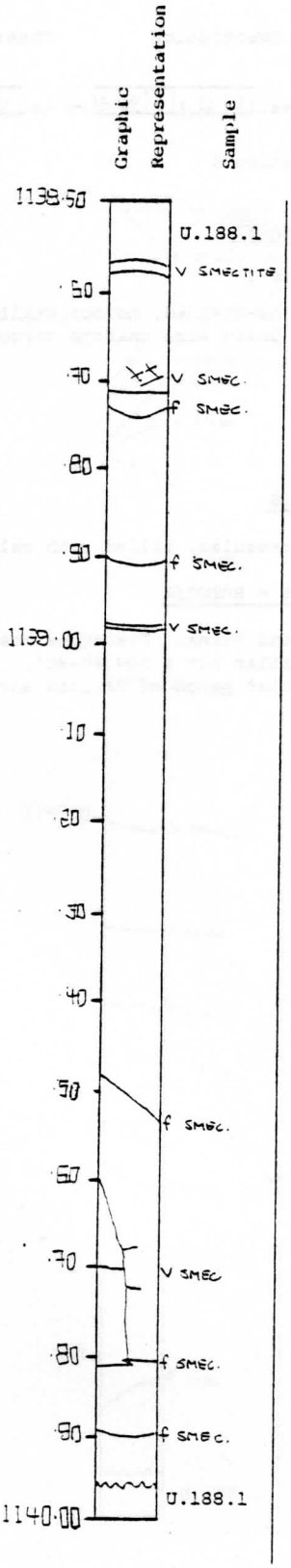
Fractures and veinlets common, dips variable, some subhorizontal, some 30°, some 70-90°. All coated or filled with smectite. One veinlet has minor calcite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR

Depth Interval 1138.49 cm to 1139.96 cm

Box 195, Section 3



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, equigranular, aphyric basalt. Plagioclase phenocrysts 1-2 mm, << 1%. Grain size uniform through section. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

<< 1%, 1-2 mm, irregular, filled with calcite and zeolite.

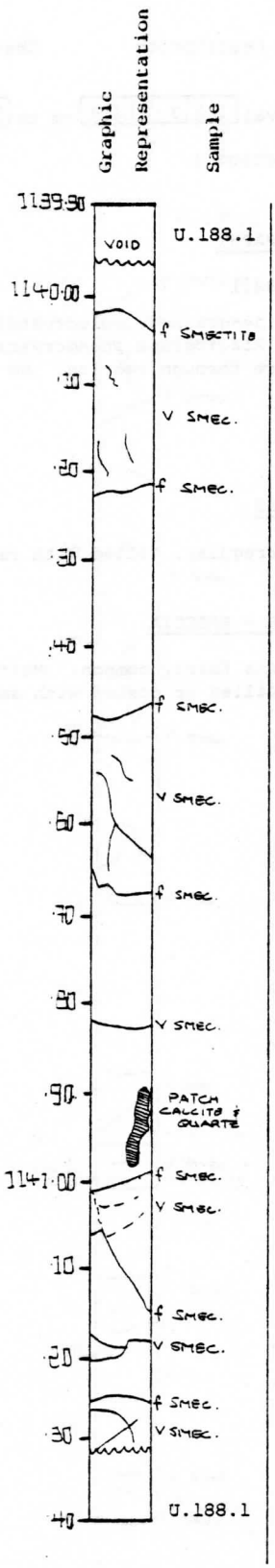
FRACTURES - VEINS - BRECCIA

Fractures and veins fairly common. Most dip ∿ 30°, a few ∿ 60°. All filled or coated with smectite.

Visual Core Description Observer PTR .....

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

Box 195, Section 4



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, equigranular aphyric basalt. Grain size uniform through section. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

<< 1%, 1-2 mm, irregular, filled with calcite.

FRACTURES - VEINS - BRECCIA

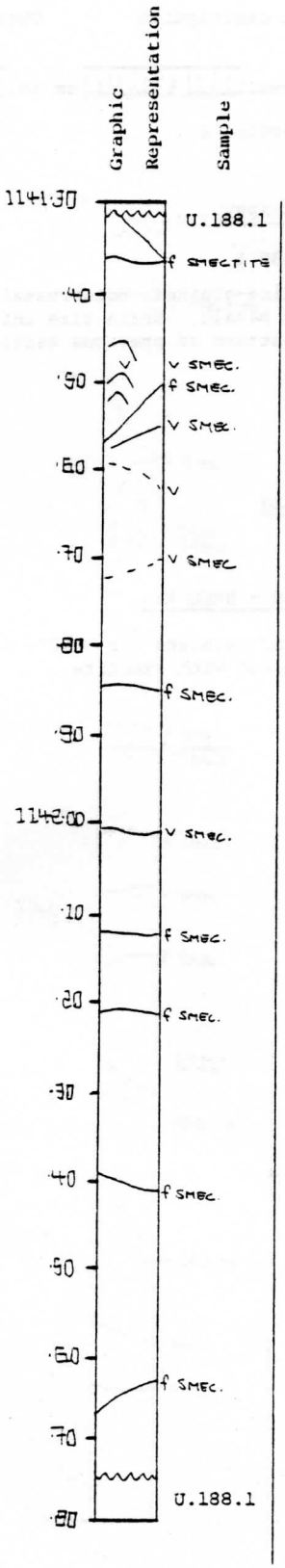
A few fractures and veins. Fractures mostly 30° and 60° Most veinlets similar but a few 80-90°. All filled with smectite. Irregular patch of calcite and quartz (?) at 1140.89.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer ...PTR.....

Depth Interval 1141361 cm to 1142751 cm

Box 196, Section 1



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, equigranular, aphyric basalt. Rock is mottled with darker green, irregular patches to 1 cm across. Seems to be only a color variation. Grain size is uniform through section. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

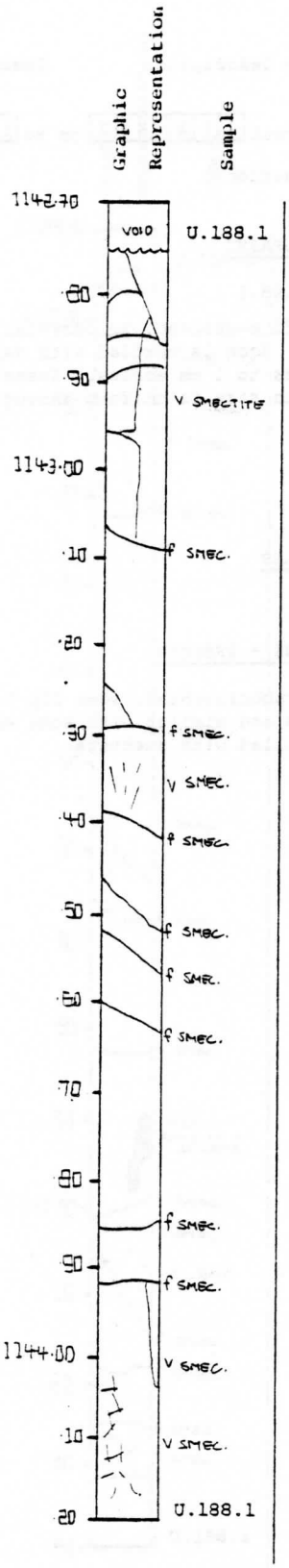
FRACTURES - VEINS - BRECCIA

Most fractures subhorizontal, some dip ∿ 30° and some ∿ 60°. Veinlets are similar with some as steep as 80-90°. All coated or filled with smectite.

Visual Core Description Observer PTR

Depth Interval 1 1 4 2 7 5 cm to 1 1 4 4 2 3 cm

Box 196, Section 2



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, equigranular aphyric basalt. Grain size uniform through core. Blotchy pattern of previous section is absent. No contacts.

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

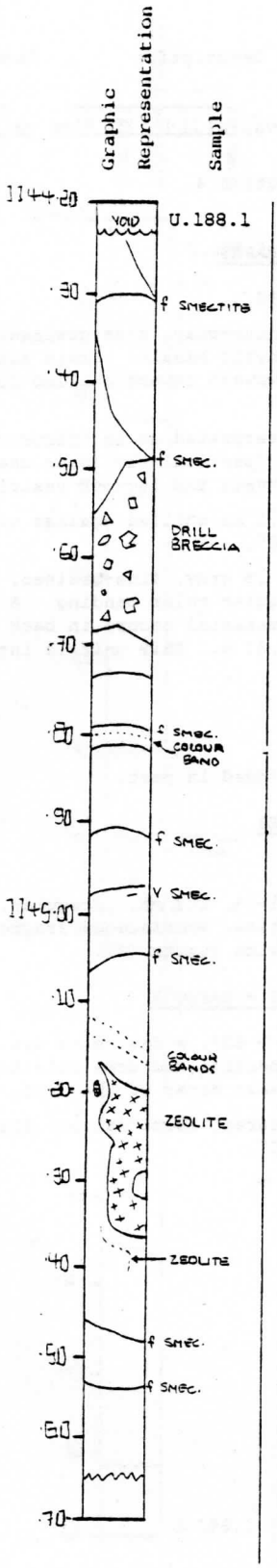
Most fractures and veinlets dip ~ 60°, a few 80-90°. All coated or filled with smectite.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR

Depth Interval 1144.23 cm to 1145.65 cm

Box 196, Section 3



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Greenish-gray, fine-grained, holocrystalline, equigranular aphyric basalt. Grain size uniform through section. No contacts. Color band @ 1144.80 m looks superficially like a contact but there is no apparent chilling and grain size is same on both sides. This probably represents discoloration along a smectite vein.

STRUCTURE

Massive in most of section. Color banding noted at 1144.80 m and 1145.12 m.

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

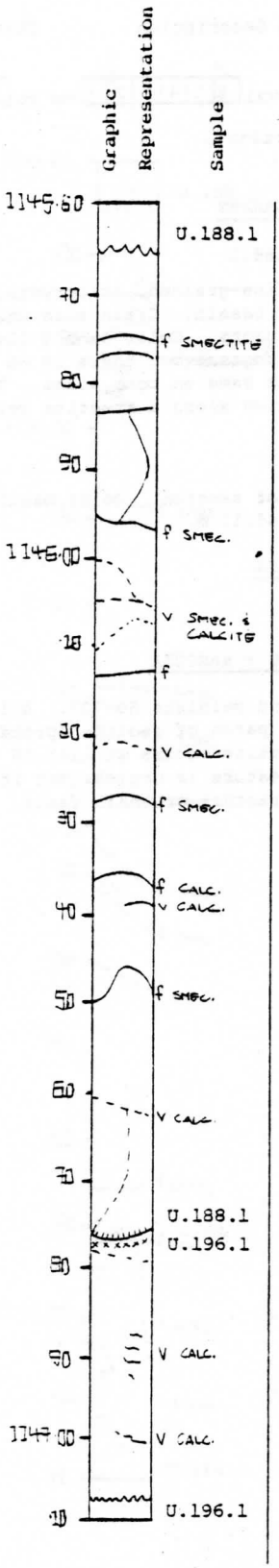
Most fractures and veinlets 60-70°. All filled with smectite. Large patch of zeolite (probably laumontite) with rims of smectite occurs at 1145.18 to 1145.35 m. Origin of this feature is unclear but it probably was formed along a fracture or small fault.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer PTR .....

Depth Interval 1145.65 cm to 1147.03 cm

Box 196, Section 4



LITHOLOGY-PETROGRAPHY

Continues Unit 188.1

Unit 188.1 Greenish-gray, fine-grained, holocrystalline, equigranular, aphyric basalt. Grain size decreases very slightly downward toward chilled contact at base of unit.

Unit 188.1 is interpreted as an intrusive unit based on chilled contacts (particularly lower one) uniform grain size; great thickness and lack of vesicles.

Base of Unit 188.1 is chilled against underlying unit. Contact dips ∿ 20°.

Unit 196.1 Rock is gray, fine-grained, holocrystalline basalt with irregular color banding. A large block of red scoriaceous material occurs in back of core between 1146.75 and 1146.87 m. This unit is interpreted as a flow.

STRUCTURE

U.188.1 Massive

U.196.1 Color banded in part.

VESICLES/AMYGDALES

U.188.1 None

U.196.1 Mostly 1-2%, 1-2 mm, irregular, filled with calcite and smectite, scoriaceous fragments ∿ 20%, vesicles filled with quartz (?).

FRACTURES - VEINS - BRECCIA

U.188.1

Fractures mostly ∿ 60°, a few veins are 80°. Filled and lined with smectite and some calcite. Calcite is restricted to lowest meter of the unit.

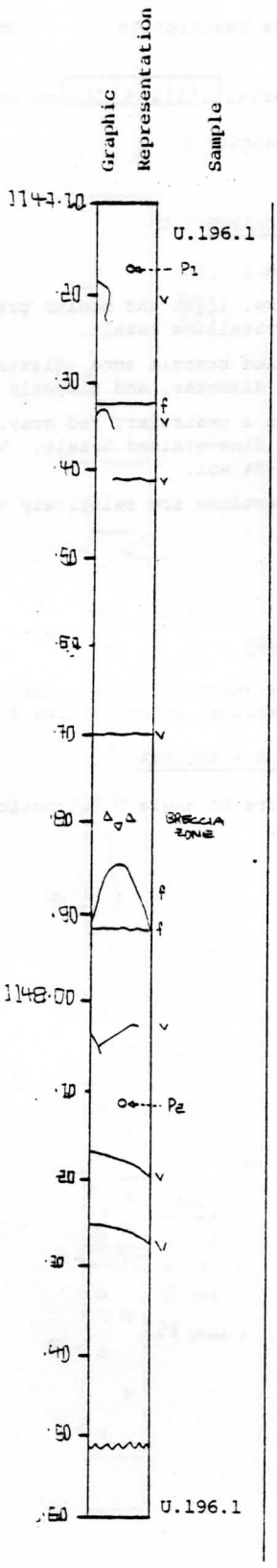
U.196.1 No fractures. Some calcite filled, hairline veinlets dip ∿ 60°.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1 1 4 7 0 8 cm to 1 1 4 8 5 1 cm

Box 197, Section 1



LITHOLOGY-PETROGRAPHY

Continuing Unit 196.1

Very unusual texture, sort of marbled basalt, i.e. darker sections and lighter sections, sometimes swirled randomly, other times semi-planar.

All are light or medium gray, fine-grained, aphyric, holocrystalline, granular basalt.

STRUCTURE

"Marbled"

VESICLES/AMYGDALES

Filled areas in healed breccia are mostly zeolite, smectite lined, as usual.

FRACTURES - VEINS - BRECCIA

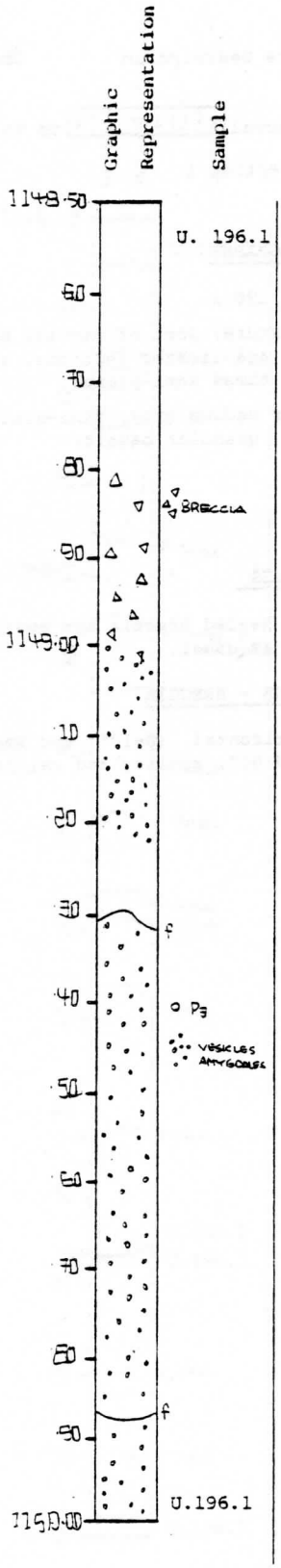
Fractures subhorizontal, (0-10°) and smectite lined. Veins at 30° and 60°, zeolite and calcite filled, .1 - .5 mm thick.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1148.51 cm to 1150.04 cm

Box 197, Section 2



LITHOLOGY-PETROGRAPHY

Continuing U.196.1

"Marbled" texture, light and medium gray, fine grained, aphyric, holocrystalline basalt.

Grades into healed breccia zone, clasts vesicular, rounded, 3-5 cm diameter, and slightly reddish in color.

This grades into a vesicular, red gray, aphyric, holocrystalline fine-grained basalt. Vesicles up to 1 mm x 1 cm ∿ 1-3% vol.

Several short sections are relatively vesicle free.

STRUCTURE

Massive

VESICLES/AMYGDALES

Smaller vesicles smectite filled, larger smectite lined, quartz zeolite, minor calcite filled.

FRACTURES - VEINS - BRECCIA

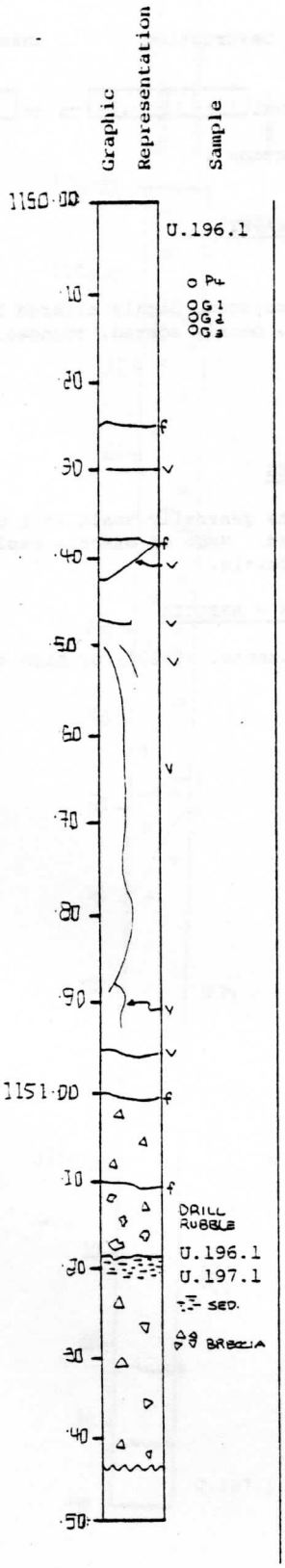
Fractures low core to angle ∿ 20°, calcite, zeolite, smectite lining.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer...RHW.....

Depth Interval 1150.04 cm to 1151.43 cm

Box 197, Section 3



LITHOLOGY-PETROGRAPHY

Continuing U.196.1

Fine-grained, aphyric, holocrystalline basalt of several different characters and colors.

Medium gray, vesicular grading into compact (1150.40) and getting more pink colored (1150.60).

Brecciated zone at base of 196.1 has red layer which is highly fractured.

U.197.1 Brecciated zone not distinctly different from small part above. Contact in this exact spot equivocal. Breccia consists of poorly sorted vesicular basalt, well healed and altered. Very red color.

STRUCTURE

1150.04 - 1151.00 Massive

1151.00 - 1151.19 Brecciated

1151.20 Massive

1151.22 - 1151.43 Brecciated

VESICLES/AMYGDALES

Slightly vesicular high in section. Small vesicles, .1 mm diameter, 1% vol. Many smectite filled and zeolite filled.

1150.45 - 1151.00 Absent except for small smectite blebs.

1151.22 - 1151.43 Vesicles in clasts are zeolite filled.

FRACTURES - VEINS - BRECCIA

Veins at varied angles. Up to 2 mm thick. Filled perhaps with quartz, smectite lined.

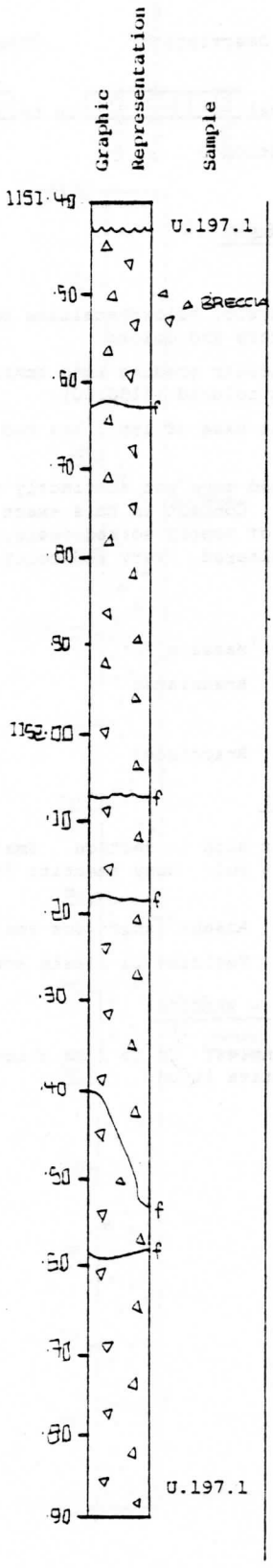
U. 197.1 Absent

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 115.43 cm to 115.90 cm

Box 197, Section 4



LITHOLOGY-PETROGRAPHY

Continuing 197.1

Pink stained, brecciated, highly altered basalt. Vesicular clasts, poorly sorted, rounded.

STRUCTURE

Brecciated

VESICLES/AMYGDALES

Vesicles in clasts generally small (< 1 mm) and zeolite or smectite filled. Much of breccia replacement in groundmass is calcitic.

FRACTURES - VEINS - BRECCIA

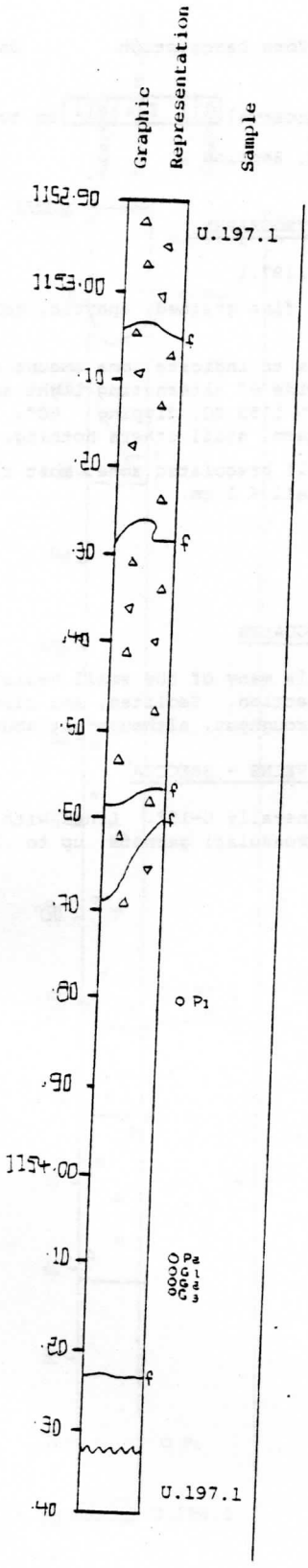
Fractures subhorizontal (0-10°) or high angles (80°). Smectite lined.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1152.90 cm to 1154.32 cm

Box 198, Section 1



LITHOLOGY-PETROGRAPHY

Continuing U.197.1

Healed, altered basaltic breccia. Clasts difficult to distinguish from groundmass. Some clasts vesicular, all rounded. Vesicles < 1 mm. All fine grained, aphyric, holocrystalline.

1153.70 Breccia grades into more massive unit, although some diffuse scoriatious patches are evident to 1153.80 or so.

Color of the entire section is a purplish gray.

STRUCTURE

1152.90 - 1153.70 Brecciated

1153.70 - 1154.32 Massive

VESICLES/AMYGDALES

Small (< 1 mm) vesicles in the scoriatious clasts. Smectite lining, mostly zeolite filling.

1153.70 - 1142.30 Rare zeolite filled amygdules (< 1 mm diameter) in lower part of section.

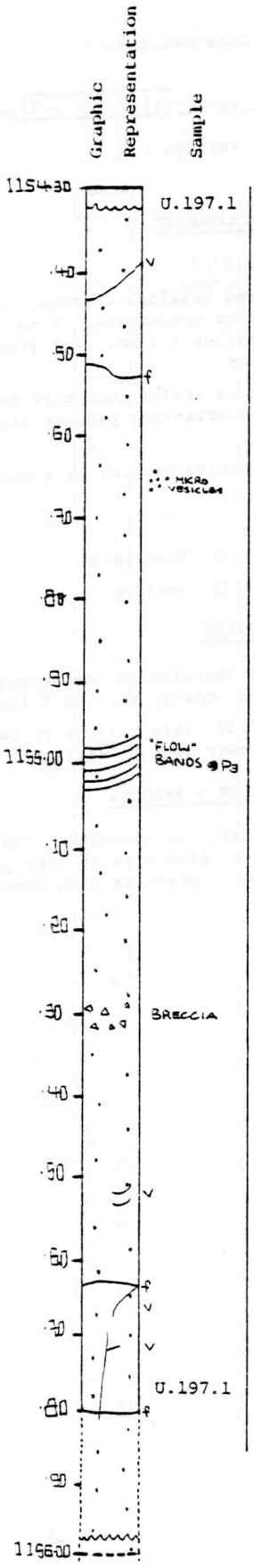
FRACTURES - VEINS - BRECCIA

Fractures generally in the 45-60° range. Linings have abundant epidote, plus more or less garnet and calcite (garnet ≤ .2 mm). Smectite also present.

Visual Core Description Observer RHW

Depth Interval 1154.32 cm to 1166.98 cm

Box 198, Section 2



LITHOLOGY-PETROGRAPHY

Continuing U.197.1

Purple-gray, fine grained, aphyric, holocrystalline basalt.

Texture seems to indicate some amount of low. Bands, about 1 cm wide of alternating light and dark material are present ∿ 1155.00, dipping 60°. Other zones show a swirl pattern, still others nothing.

1155.30 Small brecciated zone, most clasts appear to be in place, small < 1 cm.

STRUCTURE

Massive

VESICLES/AMYGDALES

Smectite fills many of the small vesicles which pervade the entire section. Zeolites, and clots of calcite are scattered throughout, although not abundant.

FRACTURES - VEINS - BRECCIA

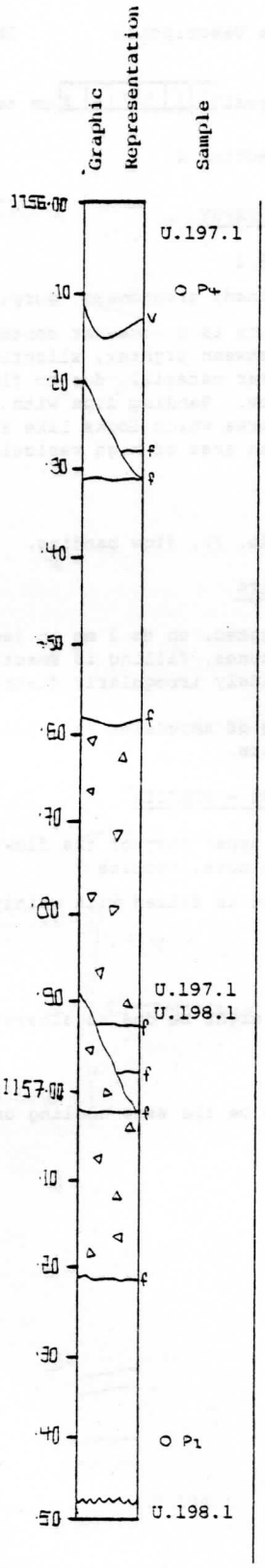
Fractures generally 0-15°. Lined with epidote and diffuse yellowish (grossular) garnets, up to .2 mm or so.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer RHW

Depth Interval 1155.98 cm to 1157.48 cm

Box 198, Section 3



LITHOLOGY-PETROGRAPHY

Continuing U.197.1

Fine grained, vesicular, purple-gray, aphyric, holocrystalline basalt.

Texture shows evidence of flow in some areas; i.e. swirls, etc. Alteration seems to vary, as does color somewhat.

Contact is not clearly defined, chosen on the basis of momentary color change to black, with a large (20%) amount of epidote.

1156.90 U.198.1 - At 1157.10 there is a brown area that might be sediment, but is too altered to tell.

Lower portion is much the same as the upper, but may represent a healed breccia since clasts do seem to appear towards the top of the next section. All in all, a very puzzling box to log.

STRUCTURE

1156.00 - 1156.80 Massive

1156.80 - 1157.15 Brecciated

1157.20 Brecciated?

1157.25 - 1157.48 Massive

VESICLES/AMYGDALES

1156.00 - 1156.50 Vesicles permeate the section (1-2%) are small (< .5 mm) and often smectite filled.

1156.55 - 1157.40 Several large (1-2 cm) patches of calcite rich material are in U.197.1.

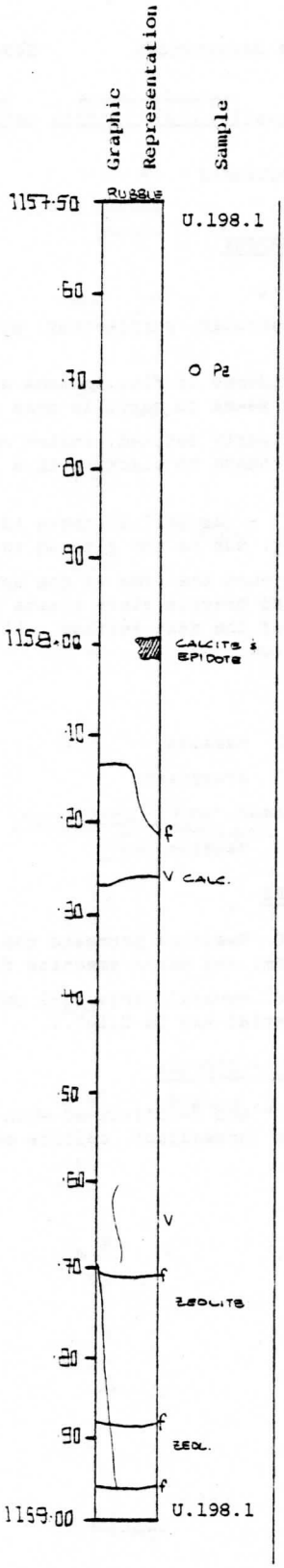
FRACTURES - VEINS - BRECCIA

Fractures @ 65-70° and 0-10°, lined with epidote ± small amounts of garnet (grossular), calcite and zeolite, smectite.

Visual Core Description Observer RHW & Viereck

Depth Interval 1157.48 cm to 1159.00 cm

Box 198, Section 4



LITHOLOGY-PETROGRAPHY

Continuing U.198.1

Dense, fine grained, groundmass, purplish gray.

Internal structure is a somewhat contorted, streaky interlayering between lighter, slightly vesicular zones and darker, denser material, due to flow banding in a (basaltic ?) flow. Banding dips with ∿ 60° at 1158.30 - is a vesicular area which looks like a xenolith but I think it to be an area of high vesicularity.

STRUCTURE

Contorted (pseudo. ?), flow banding.

VESICLES/AMYGDALES

Vesicles - elongated, up to 2 mm in length are very common in the lighter zones, filling is smectite. Large amygdales are widely irregularly distributed.

1158.30 Filling of amygdales is ± zeolite, epidote + calcite + smectite.

FRACTURES - VEINS - BRECCIA

Veinlets in the upper part of the flow are mainly filled with calcite, epidote, zeolite ?

1158.70 Fracture is filled with mainly zeolite (laumontite).

ROCK ALTERATION

Purplish colour might be due to alteration.

OTHER

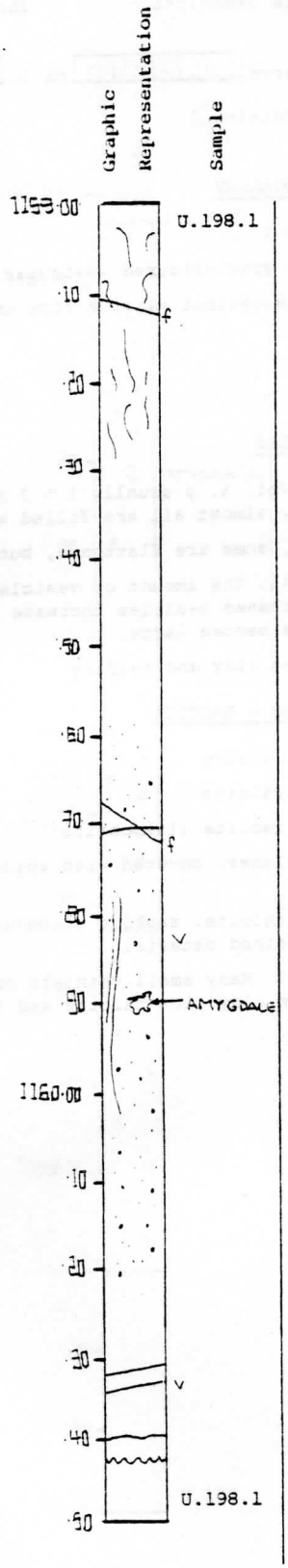
U.198.1 seems to be the same cooling unit as 197.1.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1159.00 cm to 1160.42 cm

Box 199, Section 1



LITHOLOGY-PETROGRAPHY

Continue U.198.1

1159.00 - 1159.44 Greenish purple coloured brecciated, flow top part of U.198.1. The shape of fragment, variable size; variable.

1159.44 - 1159.58 Transitional zone to massive central lava flow part.

1159.58 - 1160.42 Bluish grey coloured massive flow unit of the lava.

STRUCTURE

1159.00 - 1159.44 Brecciated

1159.60 - 1159.90 Massive

VESICLES/AMYGDALES

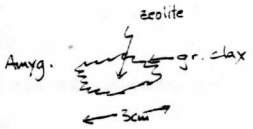
1159.00 - 1159.44 Vesicles in fragments; irregular shape, filled with green clay or calcite.

1159.58 Vesicles; filled with green clay - (∿ 1 mm)

1159.70 - 1160.42 The size of vesicles become large, up to 3 mm.

The shape become irregular.

The amount becomes increasing.



FRACTURES - VEINS - BRECCIA

1159.00 - 1159.30 Many irregular discontinuous calcite veinlets (∿ 1 mm). Fault planes; Fe-hydroxide + small calcite.

1159.70 Fault planes; calcite, green clay, epidote.

1159.83 Veinlets (< 1 mm) of Fe-hydroxide

1160.33 Vein; calcite (∿ 2 mm)

ROCK ALTERATION

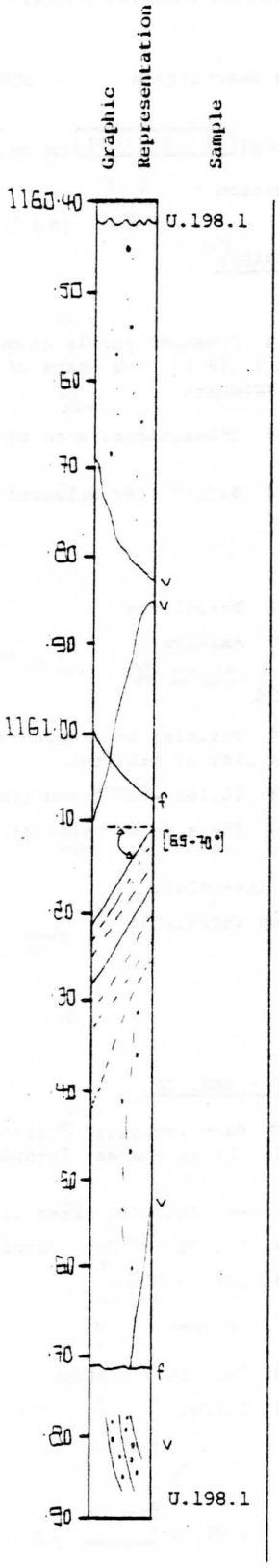
1159.00 - 1159.44 Oxidized, clayey.

1159.58 - 1160.42 Clayey

Visual Core Description Observer K. Hattori

Depth Interval 116042 cm to 116193 cm

Box 199, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.198.1

Bluish greenish gray coloured vesicular basalt lava.

This part is the central massive flow unit of lava.

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles - 3-5 Vol. %. ϕ usually 1 ∿ 3 mm; some reach up to 5 mm. Nearly almost all are filled with green clay.

Irregular shape, some are flattened, but no orientation.

1161.10 - 1161.41 The amount of vesicles decrease. Orientated, flattened vesicles increase (65-70°). The size of vesicles become large.

Filled with green clay and calcite.

FRACTURES - VEINS - BRECCIA

1160.42 Vein - calcite

1160.76 Vein - calcite

1160.91 Vein - zeolite (laumontite)

1161.04 Fault planes, covered with epidote, calcite, green clay.

1161.58 Vein - calcite, zeolite (laumontite) and yellow coloured fine grained material.

1161.70 - 1161.93 Many small veinlets composed of epidote and green clay plus calcite and laumontite.

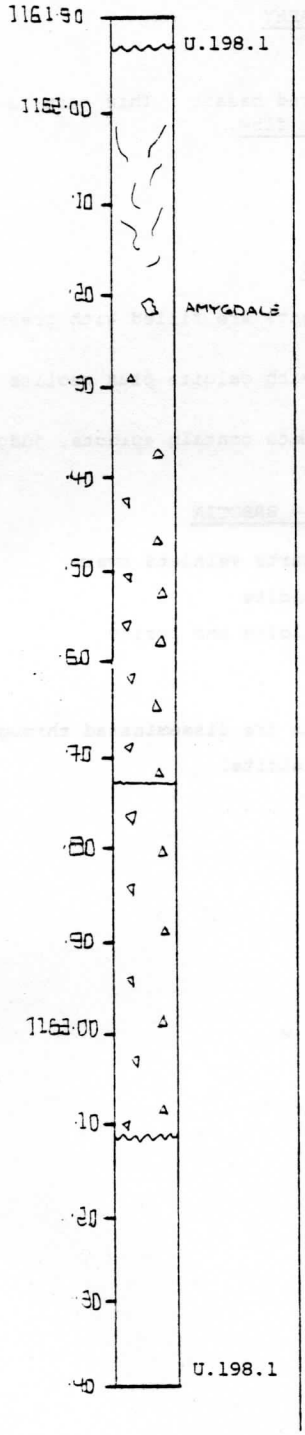
ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description . Observer ....K. Hattori.....

Depth Interval 1161.93 cm to 1163.11 cm

Box 199, Section 3

Graphic Representation | Sample



LITHOLOGY-PETROGRAPHY

Continues U.198.1

Bluish grey coloured basalt. This part is the central massive flow unit.

1162.30 - 1162.50 Transition to brecciated bottom flow part.

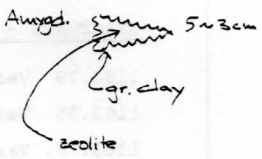
1162.58 - downwards. Brecciated bottom flow part.

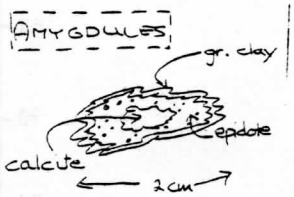
STRUCTURE

1161.93 - 1162.30 Massive

1162.35 - 1163.11 Brecciated

VESICLES/AMYGDALES





FRACTURES - VEINS - BRECCIA

1162.00 - 1162.20 Many small veinlets of calcite and epidote and green clay minerals.

Veinlets of calcite. Fractures are filled with green clay, epidote, calcite, zeolite (looks laumontite).

ROCK ALTERATION

Clayey

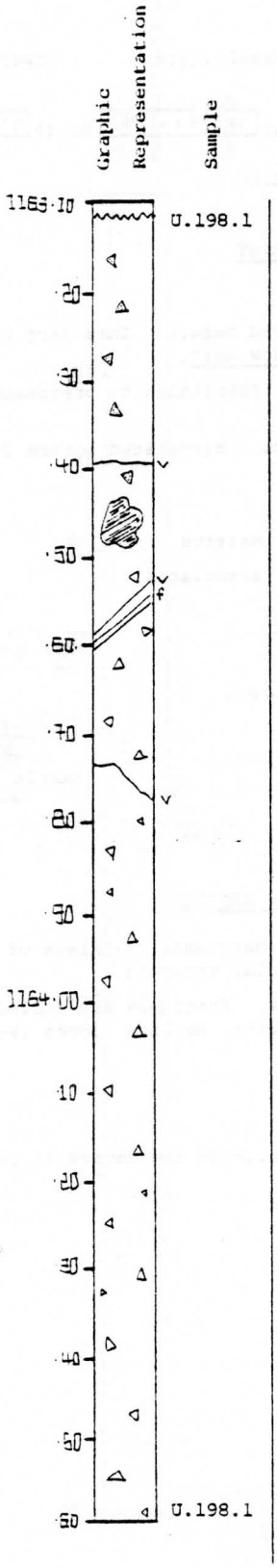
1162.40 With brecciation the degree of oxidation and clayey proceeds.

ICELAND RESEARCH DRILLING PROJECT - REYDARFJORDUR 1978

Visual Core Description Observer K. Hattori

Depth Interval 1163.11 cm to 1164.64 cm

Box 199, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.198.1

Purple grey coloured basalt. This part is the brecciated bottom part of the flow.

STRUCTURE

Brecciated

VESICLES/AMYGDALES

Vesicles in fragments are filled with green clay. Some are calcite.

Amygdale; filled with calcite plus zeolite plus green clay.

Some amygdales look to contain epidote, judging from its colour.

FRACTURES - VEINS - BRECCIA

1163.39 Vein - quartz veinlets swarm

1163.55 Vein - calcite

1163.75 Vein - calcite and pyrite

ROCK ALTERATION

Green clay minerals are disseminated throughout the core.

Fe-hydroxide and calcite.