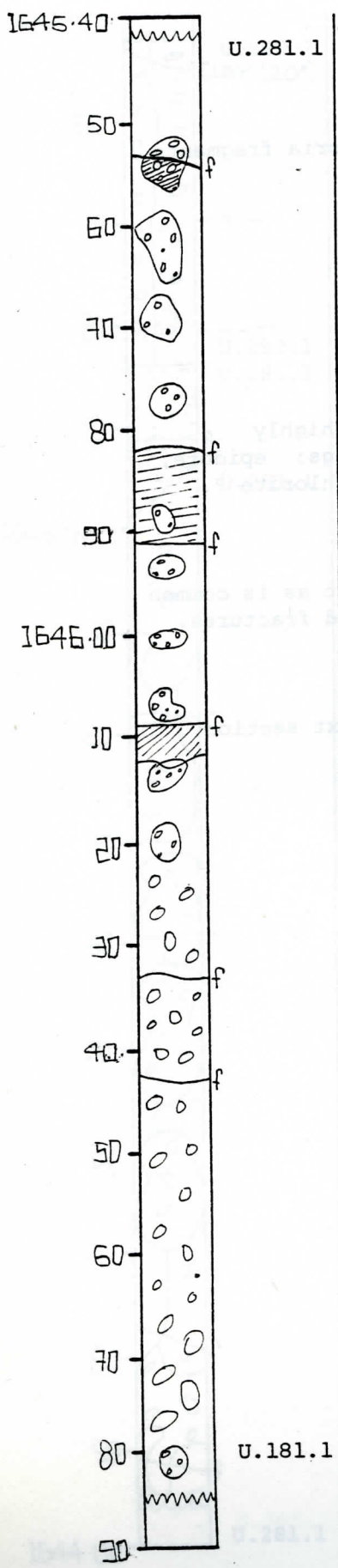


Visual Core Description Observer HUS

Depth Interval 164542 cm to 164685 cm

Box 281, Section 4

Graphic Representation
Sample



LITHOLOGY-PETROGRAPHY

Continues U.281.1
 1645.53 Sofo Zone
 1645.82-1645.92 Soft Zone
 1646.09-1646.12 Soft Zone (Gray to light green).
 Breccia: top half large fragments (→ 10 cm), gray, fine-grained, small vesicles (smaller and fewer than in previous section). Pore space filled with secondary minerals: epidote, chlorite, silica etc.
 1646.70 - downward. Most fragments smaller (1 - 10 mm) and more matrix. Rock denser because more matrix and complete alteration.
 Lava flow top breccia, very heterogeneous and altered.

STRUCTURE

Breccia

VESICLES/AMYGDALES

Many in fragments

FRACTURES - VEINS - BRECCIA

Rate as is common in breccia, but rock breaks easily during drilling and handling.

ROCK ALTERATION

Very high, partly very soft and crumbly material.

Visual Core Description

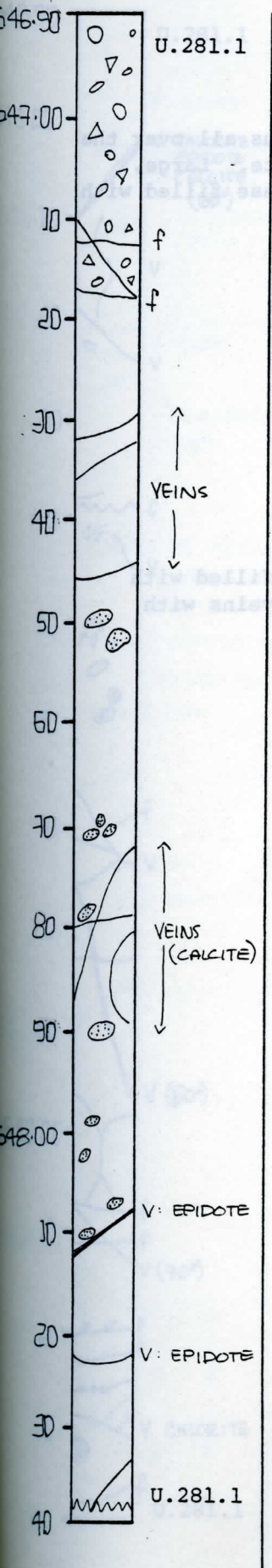
Observer GW

Graphic Representation

Sample

Depth Interval 164685 cm to 164838 cm

Box 282, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.281.1

Grey-green aphyric basalt, upper part to 1647.20 brecciated; vesicles of clasts filled with chlorite and epidote. Below massive with some vesicle-patches. These vesicles filled with chalcedony! Lava flow.

From 1647.15 misorientated!! up to 1648.60.

STRUCTURE.

Brecciated, upper part; but massive lower part.

VESICLES/AMYGDALES

$\phi \rightarrow 3$ mm in vesicle patches, generally lower ≈ 4 vol.%. \approx

FRACTURES - VEINS - BRECCIA

Rare, several generally filled with calcite, some show epidote!

ROCK ALTERATION

Moderate to high.

Depth Interval

| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 4 | 8 | 3 | 8 |
|---|---|---|---|---|---|

 cm to

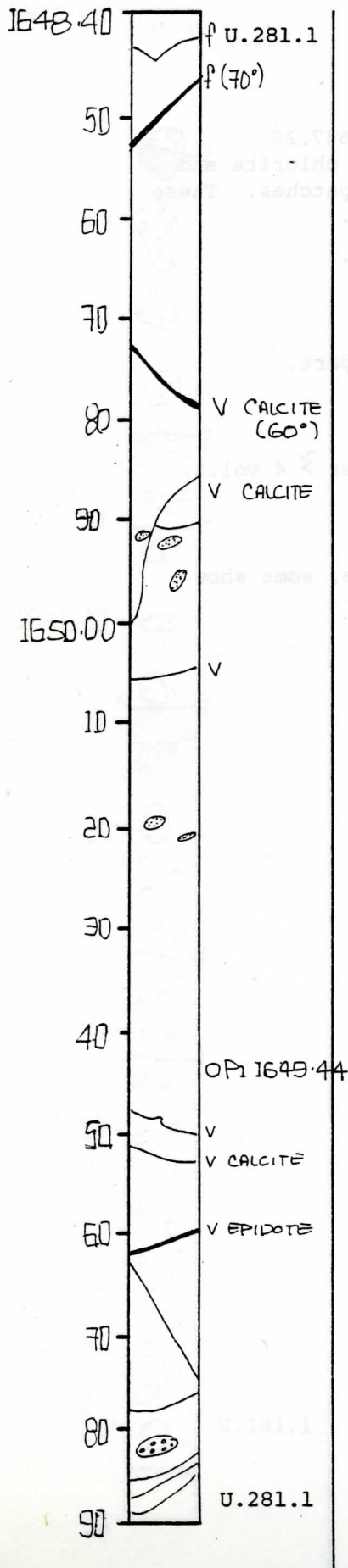
| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 4 | 9 | 9 | 5 |
|---|---|---|---|---|---|

 cm

Box 282, Section 2

Graphic Representation

Sample



LITHOLOGY-PETROGRAPHY

Continues U.281.1

Grey-green aphyric basalt, rather homogeneous all over the section. Small vesicles filled with chlorite. Large, irregular, vesicles rare (max. ϕ 4 mm). These filled with chalcedony and calcite.

Some vesicle patches below 1649.20.

STRUCTURE

Massive with vesicle patches.

VESICLES/AMYGDALES

Most smaller than 2 mm \lesssim 5 vol. %.

FRACTURES - VEINS - BRECCIA

Veins are generally very thin (\rightarrow 1 mm) and filled with calcite and quartz in lower part: thicker veins with calcite, quartz and epidote.

ROCK ALTERATION

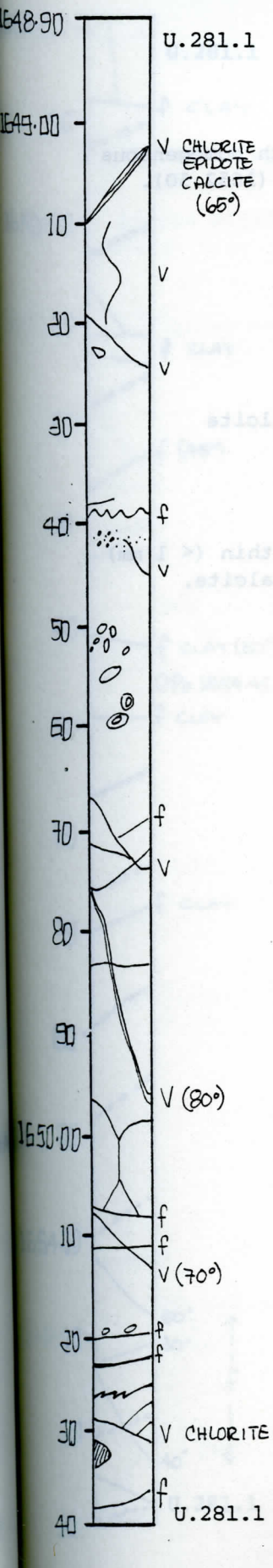
Pervasive, moderate.

Graphic Representation

Sample

Depth Interval 1648.85 cm to 1651.40 cm

Box 282, Section 3



LITHOLOGY-PETROGRAPHY

Continues 281.1

Very similar to previous section. Vesicularity generally low except vesicle-rich zone between 1650.40-1650.70 m. $\phi \rightarrow 4$ mm vesicle filling zoned: chlorite coating the walls, calcite in the interior part.

STRUCTURE

Massive with vesicle sheet and vesicle patches in lowest part.

VESICLES/AMYGDALES

Concentrated in zone and patches. $\phi \rightarrow 4$ mm generally small ϕ 0.5 - 1 mm, 1-2 vol.%.

FRACTURES - VEINS - BRECCIA

Highly fractured, not many veins.

ROCK ALTERATION

Moderate but pervasive.

Visual Core Description

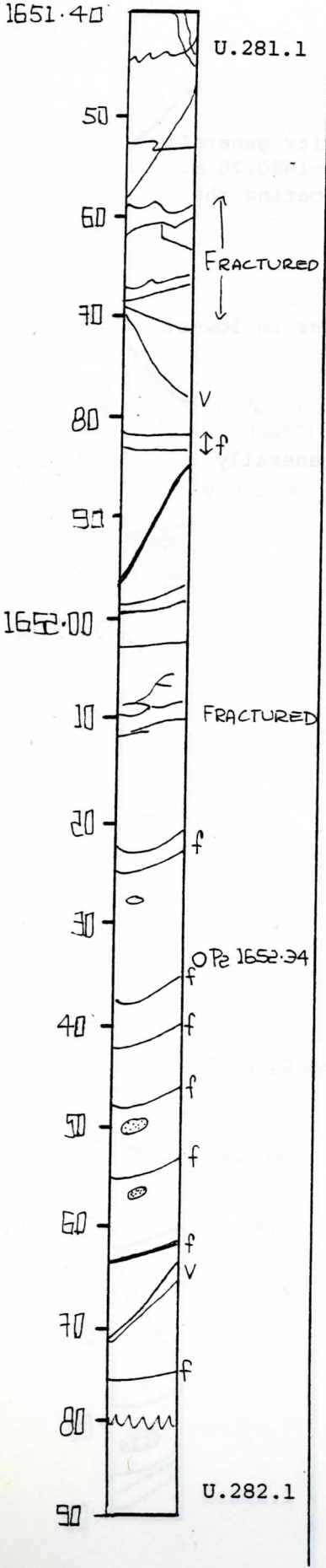
Observer GW

Graphic Representation

Sample

Depth Interval 1651.40 cm to 1652.80 cm

Box 282, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.281.1

Grey-green, fine-grained, aphyric basalt with homogeneous low vesicularity. Only few vesicle patches (1652.50). Very fine grained pyrite in groundmass.

STRUCTURE

Massive

VESICLES/AMYGDALES

Only few > 3 mm filled with silica and/or calcite vesicles < 3 mm ~ 1% filled with chlorite.

FRACTURES - VEINS - BRECCIA

Highly fractured subparallel. Veins mostly thin (< 1 mm) some 2-3 mm thick. Filled with quartz and calcite.

ROCK ALTERATION

Moderate throughout.

Visual Core Description

Observer HUS

Graphic Representation
Sample

Depth Interval

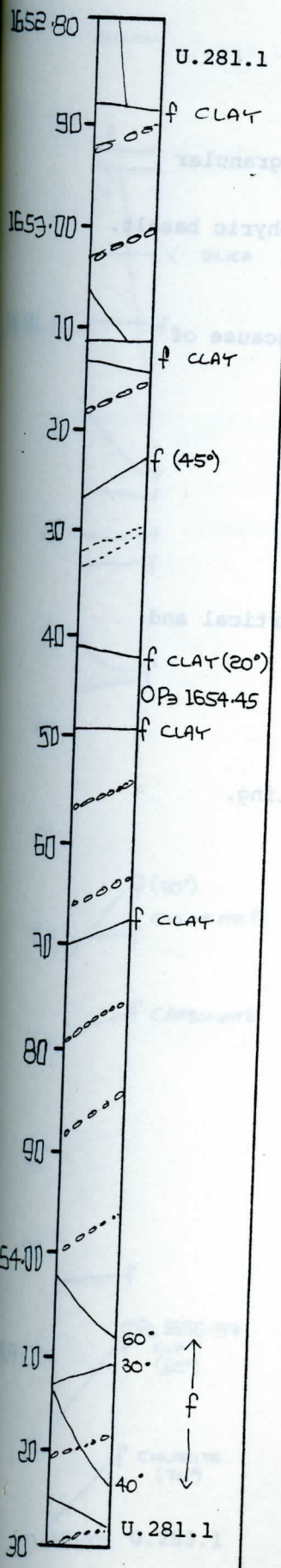
| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 5 | 2 | 8 | 0 |
|---|---|---|---|---|---|

 cm to

| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 5 | 4 | 3 | 4 |
|---|---|---|---|---|---|

 cm

Box 283, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.281.1
Gray, medium-grained, aphyric uniform, even-grained fresh basalt.

1653.01 Subhorizontal vesicle sheet = "flow banding"
Generally similar to previous section.

STRUCTURE

Massive to "flow banded"

VESICLES/AMYGDALES

Subhorizontal sheets of small vesicles, filled with green material (smectite ?).

FRACTURES - VEINS - BRECCIA

Smooth fractures of intermediate inclination coated with clay?

ROCK ALTERATION

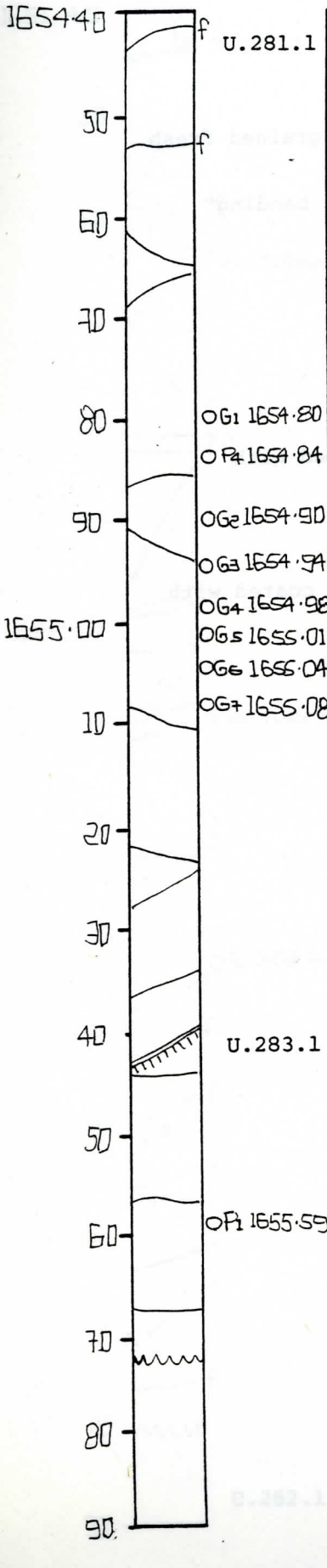
Very fresh rock.

Graphic Representation

Sample

Depth Interval 165434 cm to 165572 cm

Box 283, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.281.1

Flow - medium grey, fine-medium grained equigranular aphyric basalt, similar to previous section.

U.283.1 Dike very fine-grained dark gray aphyric basalt. Central part of flow and dike.

STRUCTURE

U.281.1 Massive, but difficult to assess because of drilling rings.

U.283.1 Massive

VESICLES/AMYGDALES

U.281.1 < 2%, very small

FRACTURES - VEINS - BRECCIA

U.281.1 Highly fractured both inclined, vertical and irregularly, particularly close to dike.

U.283.1 Moderate

ROCK ALTERATION

U.281.1 Fresh rock except for vesicle filling.

Visual Core Description

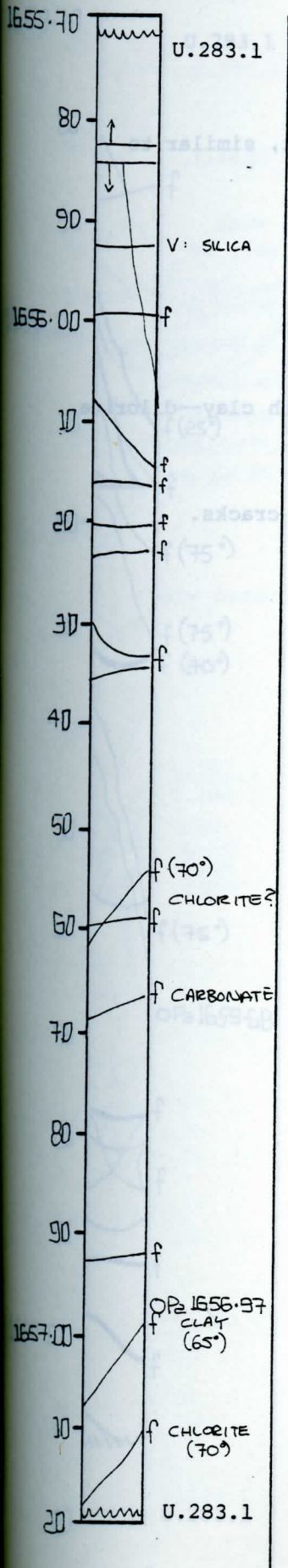
Observer HUS

Graphic Representation

Sample

Depth Interval 165572 cm to 165719 cm

Box 283, Section 3



LITHOLOGY-PETROGRAPHY

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

STRUCTURE

Massive

FRACTURES - VEINS - BRECCIA

Fractures common, several with steep angles. Some coated with chlorite and/or clay, one with carbonate.

ROCK ALTERATION

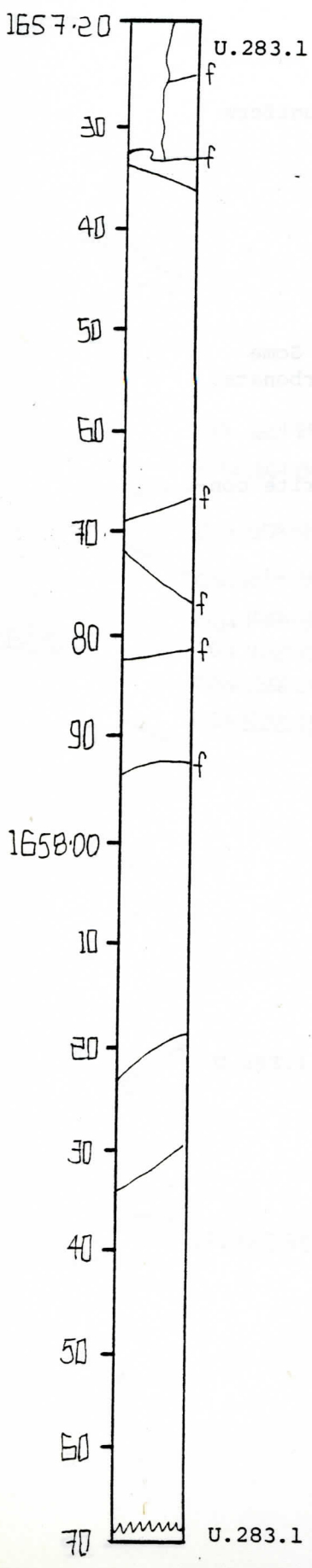
Except on fractures rock is rather fresh. Pyrite conspicuous silica?

Graphic Representation

Sample

Depth Interval 165719 cm to 165869 cm

Box 283, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.283.1

Gray, medium-grained, aphyric uniform basalt, similar to previous unit, slightly more fractured.

STRUCTURE

Massive
Fractured.

FRACTURES - VEINS - BRECCIA

Common fractures, many high angle coated with clay--dilorite.

ROCK ALTERATION

Rather fresh rock, except for coating along cracks.

Graphic Representation

Sample

Depth Interval 165869 cm to 166011 cm

Box 284, Section 1

U.283.1

LITHOLOGY-PETROGRAPHY

Continues U.283.1

Grey-green, medium- to coarse-grained aphyric, basalt. Laths of feldspar up to .5 mm. Vesicles are rare. Fractures mostly coated with clay (anc calcite). Patches of pyrite and chalcopyrite (?) in groundmass, $\phi \rightarrow 1 \text{ mm!}$

STRUCTURE

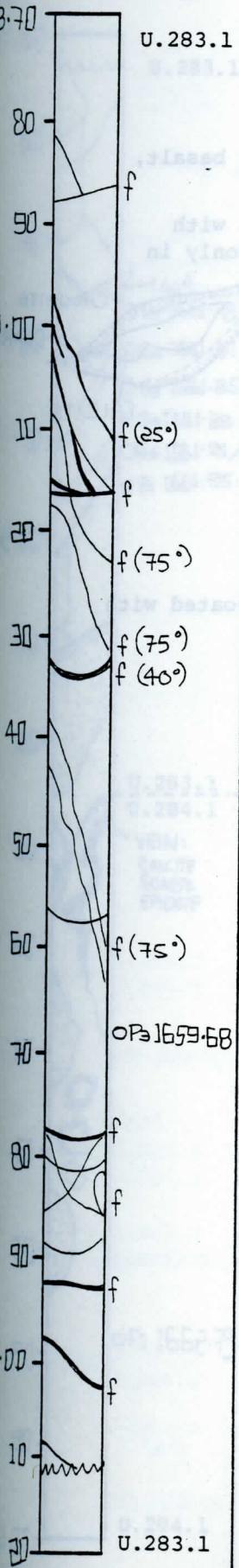
Massive

VESICLES/AMYGDALES

Rare, small ($< 1 \text{ mm}$) $> 1 \text{ vol.}\%$.

FRACTURES - VEINS - BRECCIA

Moderately to highly fractured. No vesible veins.



U.283.1

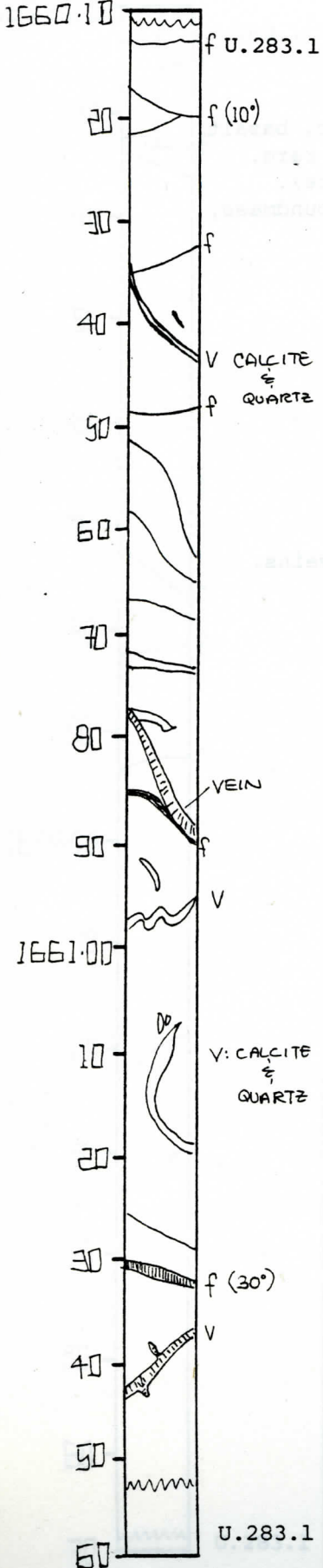
Visual Core Description

Observer GW

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

Box 284, Section 2

Graphic Representation
Sample



LITHOLOGY-PETROGRAPHY

Continues U.283.1

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

Fractures very abundant subparallel. Filled with quartz, pyrite, calcite, chlorite. Epidote only in the thickest veins (→ 2 cm).

STRUCTURE

Massive but fractured.

VESICLES/AMYGDALES

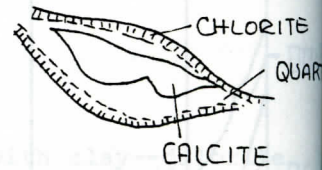
None

FRACTURES - VEINS - BRECCIA

Moderately to highly fractured. Fractures coated with black "soapy" mineral (chlorite? smectite).

ROCK ALTERATION

Moderate but pervasive.



Visual Core Description

Observer ... GW

Graphic Representation

Sample

Depth Interval

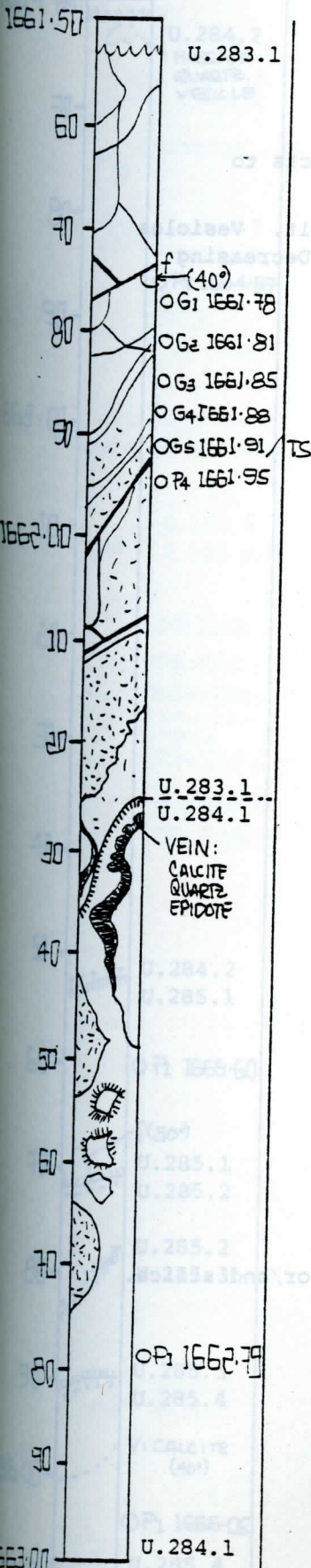
| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 6 | 1 | 5 | 3 |
|---|---|---|---|---|---|

 cm to

| | | | | | |
|---|---|---|---|---|---|
| 1 | 6 | 6 | 3 | 0 | 5 |
|---|---|---|---|---|---|

 cm

Box 284, Section 3



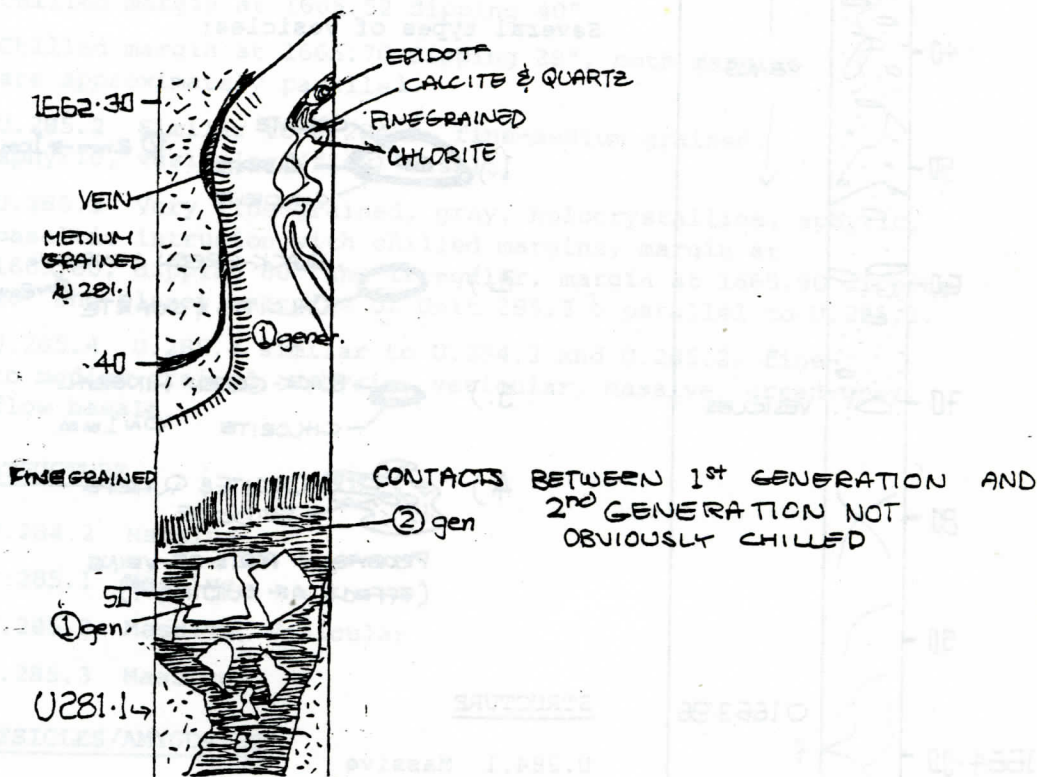
LITHOLOGY-PETROGRAPHY

Continues U.283.1

Similar to previous section. Medium-grained dike.

1662.23 Chilled contact

Three or more generations of dikes (fine-grained) intruding 281.1 - 284.1. Chilled contacts.



STRUCTURE

U.283.1 Massive but fractured.

U.284.1 Fine grained.

VESICLES/AMYGDALES

U.283.1 None

U.284.1 None

FRACTURES - VEINS - BRECCIA

U.283.1 Highly fractured

U.284.1 None. Internal brecciation

ROCK ALTERATION

U.283.1 Moderate

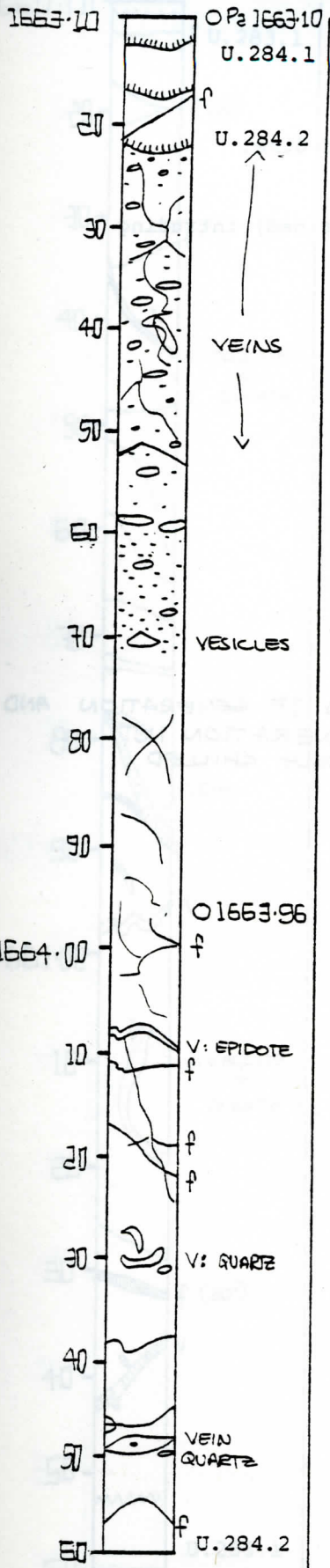
U.284.1 Seems to be fresher than 281.1.

Graphic
Representati

Sample

Depth Interval 1663.05 cm to 1664.63 cm

Box 284, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.284.1

Fine grained grey dikes with chilled contacts to U.284.1 and to each other.

U.284.2 Grey-green vesicular aphyric basalt. Vesicles streaked with subhorizontal orientation. Decreasing vesicularity below 1663.80.

Several types of vesicles:

- 1.) CALCITE
QUARTZ
CHLORITE \varnothing 2mm \rightarrow 1cm
- 2.) BLACK-GREEN MINERAL
CALCITE & QUARTZ \varnothing 2mm
- 3.) BLACK-GREEN MINERAL
CHLORITE \varnothing 1mm
- 4.) CALCITE & QUARTZ
EPIDOTE
PROBABLY PARTS OF VEINS
(EFFECT OF EXTING?)

STRUCTURE

U.284.1 Massive

U.284.2 Vesicular (highly).

1663.75 Below to moderate vesicularity.

VESICLES/AMYGDALES

Abundant between .20 and .70.

FRACTURES - VEINS - BRECCIA

Moderately fractured filled with epidote or/and silica.

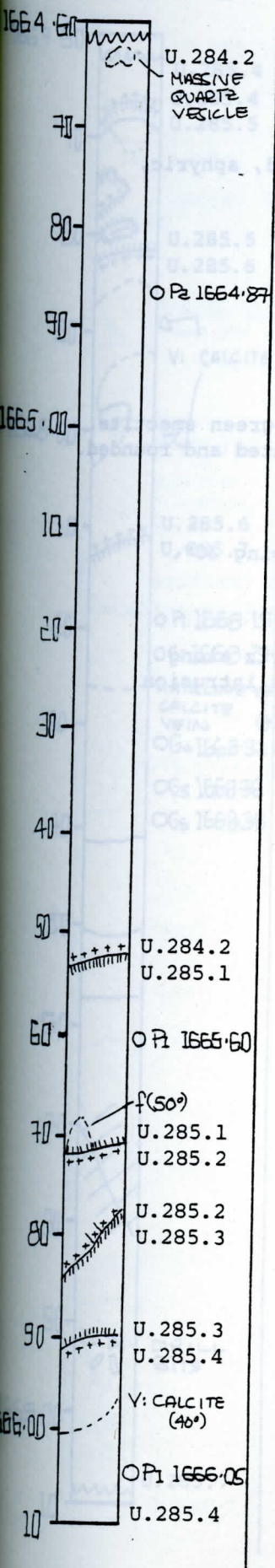
OTHER

U.284.1 - Three generations of dikes.

U.284.2 - High vesicular lava flow.

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

Box 285, Section 1



LITHOLOGY-PETROGRAPHY

Continues U.284.2

Green-gray holocrystalline, equigranular, aphyric, basalt flow, with 5% vesicles. Continuation from box 284.2.

U.285.1 Very fine-grained, gray, holocrystalline, equigranular, aphyric basaltic intrusion, with chilled margins.

Chilled margin at 1665.52 dipping 40°

Chilled margin at 1665.70 dipping 38°, both margins are approximately parallel.

U.285.2 Similar to U.284.2, fine-medium grained, aphyric, vesicular (flow) basalt.

U.285.3 Very fine-grained, gray, holocrystalline, aphyric, basaltic intrusion with chilled margins, margin at 1665.80, dipping 80° and irregular, margin at 1665.90 dipping 20° and planer, margins of Unit 285.3 ~ parallel to U.285.1.

U.285.4 U.285.4 similar to U.284.2 and U.285.2, fine-to medium-grained, aphyric, vesicular, massive, green-gray, flow basalt.

STRUCTURE

U.284.2 Massive

U.285.1 Massive

U.285.2 Massive, Vesicular

U.285.3 Massive

VESICLES/AMYGDALES

U.284.2 Vesicles ~ 5%. Size range, 1.5 cm - < 1 mm, irregular shape and rounded. Lined with green smectite, with smaller vesicles, filled with green smectite. Epidote, calcite and white massive quartz filling vesicles, vesicles randomly distributed.

U.285.1 None

U.285.2 Vesicles, 1 cm - 1 mm, vein like, veins truncated by intrusion, filled with green smectite, quartz (?) and calcite.

U.285.3 None

U.285.4 Veinlike and rounded vesicles, filled with smectite and silica and green smectite.

FRACTURES - VEINS - BRECCIA

U.284.2 Vein both planer and irregular filled with calcite. Veins dipping 38° & parallel with intrusions. Unit 285.1 and U.285.d's lower contact.

U.285.1 Fractures, planer, simple dipping 50°, stop at intrusive contact.

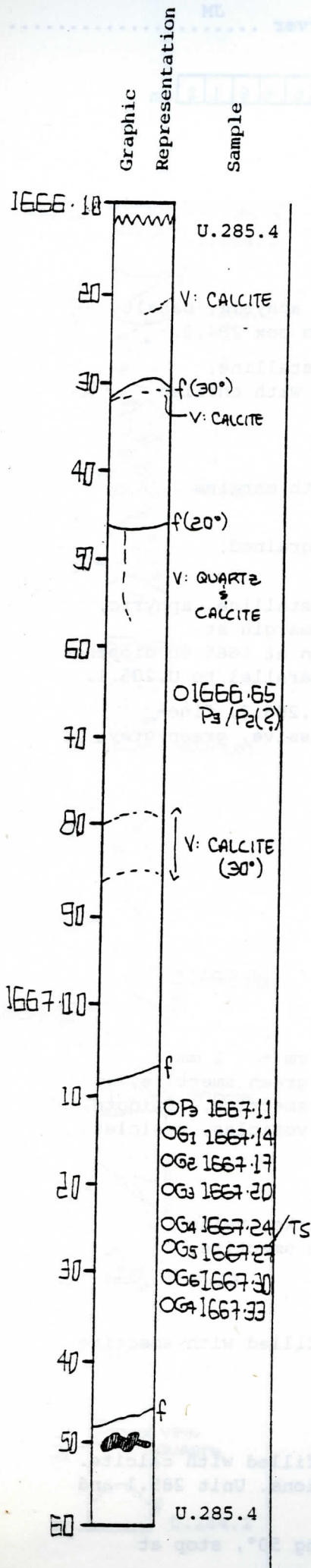
U.285.4 Veins 2 mm wide filled with calcite.

Visual Core Description

Observer

Depth Interval 1666612 cm to 1666762 cm

Box 285, Section 2



LITHOLOGY-PETROGRAPHY

Continues U.285.4

Greenish-gray holocrystalline, medium-grained, aphyric, basalt flow(?).

STRUCTURE

Massive

VESICLES/AMYGDALES

Vesicles ~ 1%.

Filled with calcite, white massive quartz., green smectite. Size range 1 cm - 1 mm vesicles, both elongated and rounded.

FRACTURES - VEINS - BRECCIA

Veins - filled with calcite, planer and dipping 30°.

ROCK ALTERATION

Portion of intrusion with white massive quartz along contact of U.285.4 with the intrusion. This intrusion may be related to Unit 285.5.

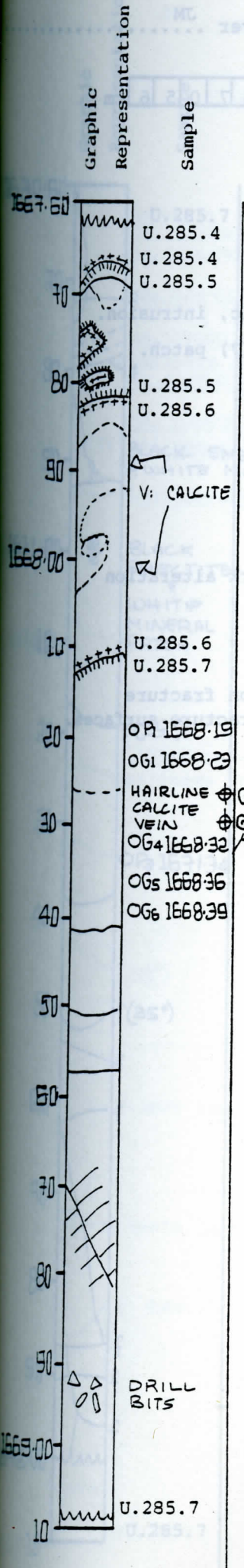


Visual Core Description

Observer

Depth Interval 166762 cm to 166909 cm

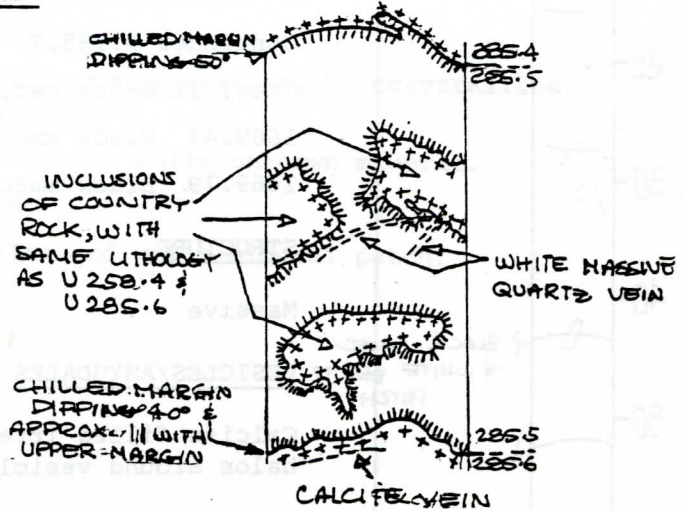
Box 285, Section 3



LITHOLOGY-PETROGRAPHY

Continues U.285.4

U.285.5 Dike



U.285.6 Medium-grained, greenish gray holocrystalline, aphyric, basalt, that seems similar to Unit's 285.4, 285.2 and 284.2 which may imply that these four units are all portions of the same basalt flow.

U.285.7 Chilled margin dipping 30°/ Gray, fine-grained, holocrystalline, equigranular, aphyric intrusion.

STRUCTURE

U.285.6 Massive

U.285.7 Massive

VESICLES/AMYGDALES

U.285.5 Lithology and petrography U.285.5 is very fine-grained, aphyric black intrusion with brecciated inclusions of country rock.

U.285.7 Moderately fractured with 2 planer sets. Dipping 72° and 30°, black smectite on fracture surfaces.

⊕ G2 1668.26

⊕ G3 1668.29

Visual Core Description

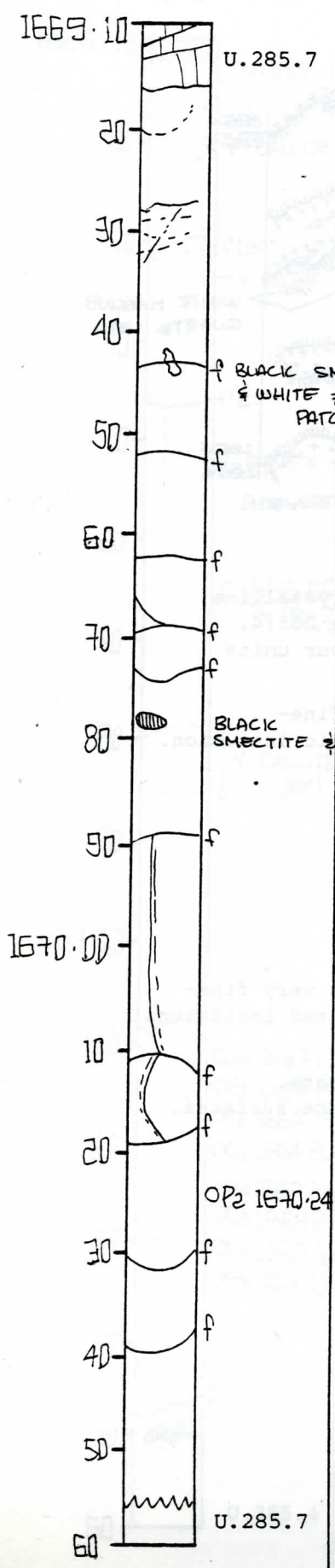
Observer JM

Graphic Representation

Sample

Depth Interval 1669.09 cm to 1670.56 cm

Box 285, Section 4



LITHOLOGY-PETROGRAPHY

Continues U.285.7

Gray, fine-grained, holocrystalline, aphyric, intrusion.

1669.43 Black smectite and white zeolite (?) patch.

1669.79 Black smectite and calcite patch.

STRUCTURE

Massive

VESICLES/AMYGDALES

Calcite filled irregular vesicles, with dark alteration halos around vesicles.

FRACTURES - VEINS - BRECCIA

Moderately fractured, with black smectite on fracture surfaces and alteration halos along some fracture surfaces.

Graphic Representation

Sample

Depth Interval 167056 cm to 167200 cm

Box 286, Section 1

U.285.7

LITHOLOGY-PETROGRAPHY

Continues U.285.7

Greenish-gray, fine- to medium-grained, holocrystalline, aphyric basaltic intrusion.

1670.89 Black smectite and white unknown mineral.

1670.94 Filling vein.

1671.00 Black smectite and white mineral patch.

BLACK SMECTITE & WHITE MINERAL

STRUCTURE

Massive

VESICLES/AMYGDALES

None

FRACTURES - VEINS - BRECCIA

Moderately fractured, with both planer and irregular fractures, minor amounts of black smectite on fracture surface, some surfaces show no secondary mineralization.

BLACK SMECTITE & WHITE MINERAL PATCH

f(35°)

OP 1671:34

f(35°)

f

f

f

f

f

U.285.7

