

Johann Helgason

ICELAND RESEARCH DRILLING PROJECT
REYDARFJORDUR 1978

CORE SUMMARIES

Compiled and Edited by Paul T. Robinson
and Hans-Ulrich Schmincke

Note : that often elastic units between lanas have
not been described as individual units.

EXPLANATORY NOTES

The enclosed core summaries were compiled and edited jointly by Paul Robinson and Hans Schmincke using the detailed core logs and core summaries written in the field by Hans Schmincke, Paul Robinson, Jim Mehegan and others. To provide independent judgement many of the core summaries were written by viewing the core as a whole and then checking the results against the detailed core logs. During final editing and compilation the stratigraphic section completed by Jim Mehegan was cross checked against the units listed here. We also used a set of core photographs provided by Hans Schmincke, but we did not have access to the detailed core log. Because microscopic descriptions are still incomplete we have omitted these and placed two core summaries on one page.

During description of the core, lithologic units were identified and numbered sequentially down the hole in a strictly observational way with no attempt to lump units together based on origin. Hence, each contact cutting completely across the core starts a new unit. The unit numbers designate the core box in which the unit first appears. In this core summary we have attempted to interpret the descriptive units in terms of major genetic units; basalt (icelandite) flows, basalt dikes (any intrusive body, regardless of inclination) and clastic units. A fourth unit is an ignimbrite (welded ash flow tuff cooling unit). Where warranted by the evidence we have grouped two or more lithologic units into one genetic unit. For example, two lithologically similar flow units cut by a thin dike have been lumped together as a single flow. Where this has been done, the individual unit numbers and intervals are still listed.

Flows and clastic units are called complete when top and bottom contacts are depositional and the unit is not interrupted by dikes; incomplete when one or both contacts are against a younger intrusive unit. Some complete flows may be subunits of large complex flows. Intrusive units are called complete when both contacts are fine-grained and chilled against adjacent older units. An intrusive unit is incomplete when one or both sides are cut by a still younger dike.

Among the secondary minerals that occur throughout the section, chlorite and smectite were impossible to distinguish in the field and therefore are listed as chlorite/smectite. Individual zeolite species could only rarely be distinguished in hand specimen and in some incomplete core summaries the type of secondary mineral (e.g. zeolite versus carbonate or quartz) was not given and could not be identified from the core photographs.

For lithologic details the core descriptions should be consulted. We would appreciate being informed of any errors or inconsistencies in the core summaries. While checking the unit summaries certain errors were noted in the core photographs. These have been noted on the appropriate unit summary forms.

Paul T. Robinson
Hans-Ulrich Schmincke

February, 1979

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UNIT NO. 1.1 INTERVAL(m) 11.70 - 26.17 THICKNESS(m) 14.47

INTERPRETATION Basalt dike (incomplete)

MACROSCOPIC DESCRIPTION

Medium gray, medium-grained, equigranular, aphyric, non-vesicular, relatively fresh basalt. Numerous fractures and veinlets lined or filled with smectite/chlorite and minor carbonate and pyrite; zeolite locally present near base. Grain size uniform except in lower meter, where it decreases gradually toward chilled contact. Unit interpreted as a dike based on massive, non-vesicular, equigranular character and on chilled contact at base, which dips about 45°.

UNIT NO. 3.1 INTERVAL(m) 26.17 - 27.36 THICKNESS(m) 1.19

INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric, vesicular basalt. Large, irregular amygdules filled with pink carbonate and white zeolite; smaller amygdules filled with smectite/chlorite. Unit bounded by intrusive bodies above and below. It is interpreted as a lava flow because of its highly vesicular nature, relatively altered character, and fine grain size.

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UNIT NO. 3.2 INTERVAL(m) 27.36 - 28.21 THICKNESS(m) 0.85INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric basalt. Grain size increases slightly from margins to center of unit. Sparse vesicles aligned in planes parallel to contacts and filled with calcite and zeolite. Sparse hairline fractures also filled with zeolite and calcite. Unit contains several small irregular patches of fine-grained basalt chilled against coarser-grained host. Unit is interpreted as a dike based on chilled contacts, which dip about 45°.

UNIT NO. 4.1 INTERVAL(m) 28.21 - 38.50 THICKNESS(m) 10.29INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Uniform, greenish-gray, fine-grained, aphyric basalt. Moderately well developed flow banding from about 36.0 m to base. Moderately vesicular in upper 6.5 m and lower 0.5 m; sparsely vesicular in middle section. Vesicles filled with smectite/chlorite, zeolite, calcite, and minor quartz. Fractures and veinlets lined with smectite/chlorite with minor zeolite and carbonate. Unit is interpreted as a lava flow because of fine-grained, vesicular nature and lower depositional contact with interflow sediments. No obvious chill zone or grain size changes adjacent to lower contact. Top of unit is defined by lower intrusive contact of unit 3.2.

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UNIT NO. <u>5.1, 6.1</u>	INTERVAL(m) <u>38.50 - 39.37</u>	THICKNESS(m) <u>0.87</u>
	<u>41.00 - 41.42</u>	<u>0.42</u>

INTERPRETATION Clastic unit cut by a dike (incomplete)

MACROSCOPIC DESCRIPTION

Dark gray, weakly bedded, poorly sorted, well indurated claystone, siltstone and sandstone with minor fragments of basalt to 1 cm across. Lithic fragments are green, angular and concentrated in a layer between 39.05 and 39.22 m. One vein, filled with zeolite. Unit 5.1 is interpreted as interflow sediment, perhaps weathered and altered pyroclastic material.

Unit 6.1 is interpreted to be lower part of the same sedimentary sequence. Unit 5.2 is a dike cutting the sediments. Unit 6.1 is lithologically similar to unit 5.1, being gray, fine-grained mudstone, somewhat red in lower 20 cm. Unit rests in depositional contact on the basalt flow of unit 6.2, and is truncated at the top by the lower intrusive contact of unit 5.2.

UNIT NO. <u>5.2</u>	INTERVAL(m) <u>39.37 - 41.00</u>	THICKNESS(m) <u>1.63</u>
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INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Dark gray to greenish-gray, very fine-grained to fine- or medium-grained, aphyric basalt. Grain size increases from contacts toward the center of the unit. Upper contact chilled against sediments of unit 5.1 and dips about 20°; lower contact horizontal with aphanitic basalt in contact with sediments of underlying unit. Upper chilled contact offset a few cm by small fault. Basalt very sparsely vesicular and has scattered veinlets of zeolite and pyrite. Unit is interpreted as a dike intruded into sedimentary sequence represented by units 5.1 and 6.1.

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UNIT NO. 6.2 INTERVAL(m) 41.42 - 47.10 THICKNESS(m) 5.68INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric basalt. Flow has 1-m-thick scoriaceous brecciated top and minor scoriaceous breccia at base. Sparsely vesicular; vesicles 1-2 mm, filled with smectite/chlorite and minor zeolite. Rare large vesicles filled with several minerals and zoned with quartz on rim, followed by heulandite and epistilbite. Basalt cut by veinlets of smectite/chlorite and zeolite. Unit is depositionally overlain by sediments of unit 6.1 and rests depositionally on sediments of unit 7.1.

UNIT NO. 7.1 INTERVAL(m) 47.10 - 47.26 THICKNESS(m) 0.16INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Reddish-brown, poorly bedded claystone and fine-grained siltstone. Unit is depositionally overlain by basalt flow of unit 6.2 and depositionally overlies basalt flow of unit 7.2

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UNIT NO. 7.2 INTERVAL(m) 47.26 - 49.13 THICKNESS(m) 1.87INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Upper 50 cm slightly scoriaceous and small fragments of scoriaceous material are scattered through the flow. Very slight brecciation in upper part of flow. Vesicles irregularly distributed in zones, mostly 2-3 mm in diameter, filled with smectite/chlorite and zeolite. Large amygdules to 3 cm, slightly oval, and filled with smectite/chlorite and zeolite. Irregular patches of interstitial zeolite in slightly brecciated zones. Sparse veinlets filled with zeolite. Unit is interpreted as lava flow based on slightly brecciated and vesicular nature, fine grain size, and depositional contacts. Unit is depositionally overlain by sediments of unit 7.1 and in depositional contact with scoriaceous basalt of unit 7.3.

UNIT NO. 7.3 INTERVAL(m) 49.13 - 50.38 THICKNESS(m) 1.25INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Upper 30-40 cm are reddish-gray, scoriaceous flow top breccia. Vesicles less than 1%, 1-2 mm, filled with smectite/chlorite. Small patches of zeolite in breccia matrix. Local hairline veinlets filled with zeolite. Unit interpreted as lava flow based on brecciated upper portion, fine grain size, and depositional contacts. It is depositionally overlain by the basalt flow of unit 7.2 and rests depositionally on sediments of unit 8.1.

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UNIT NO. 8.1 INTERVAL(m) 50.38 - 50.95 THICKNESS(m) 0.57INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Deep reddish-brown, very poorly sorted, very poorly bedded, fine-grained claystone with one fragment of scoriaceous basalt about 7 cm across. Unit is probably a soil horizon. It is depositionally overlain by basalt flow of unit 7.3 and depositionally overlies the scoriaceous basalt of unit 8.2.

UNIT NO. 8.2 INTERVAL(m) 50.95 - 63.14 THICKNESS(m) 12.19INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine-grained, holocrystalline, aphyric basalt. Red scoriaceous breccia zone at top about 4 m thick; passes downward into massive, flow banded basalt in central part of unit. Vesicles sparse, less than 1%, 1 mm or less, filled with smectite/chlorite. Rare amygdules 1 cm across, oval, filled with smectite/chlorite. Hairline veinlets and fractures dip about 60 - 70°, filled with smectite/chlorite, zeolite and minor calcite. Unit interpreted as flow based on scoriaceous zone at top, flow banding in central portion, and fine grain size. Unit depositionally overlain by sediments of unit 8.1 and cut at base by upper intrusive contact of unit 10.1.

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REYDARFJORDUR 1978

UNIT NO. 10.1 INTERVAL(m) 63.14 - 103.41 THICKNESS(m) 40.27INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine- to medium-grained, holocrystalline, subophitic aphyric basalt. Unit very uniform in grain size and general appearance. Most of unit medium-grained, becoming fine-grained to aphanitic within about 1 m of chilled margins. Fractures and veinlets steep, 70 - 80°, filled with smectite/chlorite. Unit interpreted as dike because of uniform, medium-grained non-vesicular character and because of chilled margins at top and bottom. Upper contact chilled against basalt flow of unit 8.2 and lower contact chilled against porphyritic basalt of unit 17.1.

UNIT NO. 17.1 INTERVAL(m) 103.41 - 172.29 THICKNESS(m) 68.88INTERPRETATION Basalt dike (incomplete)

MACROSCOPIC DESCRIPTION

Greenish-gray, plagioclase phyric basalt with fine- to medium-grained, subophitic groundmass. Phenocrysts up to 15 - 20%, chiefly subhedral plagioclase laths from 2 to 15 mm with intergrown clinopyroxene. Basalt fresh, except for breccia zone between 113.80 and 115.09 m, where green smectite/chlorite and zeolite (laumontite?) are abundant. Vesicles 1% or less, 1 mm or less, round, filled with green smectite/chlorite. Fractures and veinlets form two groups; one dipping about 15-20°, the other 50-70°; all filled with smectite/chlorite, some with minor zeolite. Unit interpreted as dike because of uniform nature, sparse vesicles, relatively coarse-grained groundmass, and lower chilled contact. Unit cut by intrusive unit 10.1 at top; basal contact cuts lava flow of unit 28.1 with a chilled margin dipping about 60°.

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UNIT NO. 28.1 INTERVAL(m) 172.29 - 177.23 THICKNESS(m) 4.94INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, holocrystalline, sparsely vesicular, aphyric basalt. Upper 1.5 m massive, passing downward into gray-green scoriaceous breccia composed of angular fragments of widely varying size. Massive portion sparsely vesicular; scoriaceous zone highly vesicular. Vesicles and matrix in breccia filled with zeolite (laumontite?) and calcite. Rare fractures and veins filled with zeolite. Unit interpreted as lava flow with scoriaceous basal breccia. Lower contact drawn arbitrarily at 177.23 m where breccia clasts change abundance and shape; upper part of unit truncated by lower intrusive contact of unit 17.1.

UNIT NO. 29.1 INTERVAL(m) 177.23 - 186.10 THICKNESS(m) 8.87INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine-grained, holocrystalline, aphyric basalt. Upper 1 m and lower 1.5 m is gray, scoriaceous breccia containing round to subround basalt fragments in a comminuted matrix. Central part is greenish-gray and massive with some well-developed flow banding. Small, subrounded clots of intergrown plagioclase and clinopyroxene are scattered through unit. Vesicles less than 1%, except in scoriaceous fragments; most filled with smectite/chlorite, some with calcite or zeolite. Rare fractures and veinlets filled with smectite/chlorite or zeolite dip about 70°. Unit interpreted as lava flow because of breccia zones, fine grain size, and well developed flow banding. Unit depositionally overlain by basalt flow of unit 28.1 with boundary drawn arbitrarily. Lower contact also drawn arbitrarily at reddish interbed in underlying breccia sequence.

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UNIT NO. 31.1 INTERVAL(m) 186.10 - 195.95 THICKNESS(m) 9.85INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine-grained, holocrystalline, aphyric basalt and basalt breccia. Upper 3 m gray, scoriaceous flow top breccia composed of angular fragments in a matrix partly replaced by calcite and zeolite (laumontite?). Lower part of unit massive, sparsely vesicular with some minor flow banding. Vesicles in massive part 1-2%, 1-2 mm, round, filled with smectite/chlorite and/or zeolite. Fractures and veinlets dip mostly 70-90°, a few 15-30°; all coated or filled with smectite/chlorite, minor carbonate or zeolite. Unit interpreted as lava flow based on fine-grained nature, abundant scoriaceous breccia and lack of chilled contacts. Upper contact arbitrarily placed at reddish interbed in breccia zone between units 29.1 and 31.1. Lower contact depositional on small, red sedimentary interbed.

UNIT NO. 32.1 INTERVAL(m) 195.95 - 199.55 THICKNESS(m) 3.60INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Light gray, fine-grained, holocrystalline, moderately vesicular aphyric basalt. Unit mostly massive with minor brecciation in upper 50 cm. A few zones slightly reddish-gray, and one 50-cm-thick zone near center of flow is mottled. Vesicles 5-20%, most abundant in upper and lower parts, filled with zeolite and calcite with smectite/chlorite linings. Veinlets and fractures dip most 70-80°, filled or lined with smectite/chlorite, calcite or zeolite. Unit interpreted as lava flow based on fine grain size, high vesicularity, and lack of intrusive contacts. Upper contact depositionally overlain by thin sedimentary interbed and lower contact rests depositionally on similar interbed.

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UNIT NO. 33.1 INTERVAL(m) 199.55 - 200.83 THICKNESS(m) 1.28INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray or reddish-gray basaltic breccia composed largely of angular fragments of fine-grained, aphyric basalt and minor scoriaceous basalt. Vesicles and matrix have zeolite and minor calcite; minor smectite/chlorite in vesicles. Rare fractures dip 0-10° or about 65°, coated with smectite/chlorite. Unit interpreted as upper scoriaceous breccia of basalt flow. Unit positionally overlain by thin sedimentary interbed and base of unit cut by intrusive contact of unit 33.2.

UNIT NO. 33.2 INTERVAL(m) 200.83 - 207.33 THICKNESS(m) 6.50INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine- to medium-grained, holocrystalline, aphyric basalt. Grain size increases toward center of unit, away from upper and lower chilled contacts; unit mostly medium-grained, slightly subophitic near center. Numerous subrounded clots, 1-3 cm across, of intergrown plagioclase and clinopyroxene scattered through unit. Vesicles less than 1%, except adjacent to upper chilled contact where several trains of vesicles parallel contact. Fractures sparse; rare veinlets dip 70-90°, filled with calcite and zeolite. Unit interpreted as dike because of chilled margins, massive character, and general absence of vesicles. Upper chilled margin intrudes unit 33.1 and dips about 65°; lower contact chilled against basalt flow of unit 34.1 and dips about 60°.

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UNIT NO. 34.1 INTERVAL(m) 207.33 - 214.20 THICKNESS(m) 6.87INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Unit massive except for 70-cm-thick breccia zone at base; upper part truncated by chilled base of unit 33.2 so there may have been an upper breccia zone also. Minor flow banding in center of unit. Vesicles about 1%, except in lower breccia zone where they are 5-10% in some scoriaceous fragments; most vesicles 1-2 mm, round, filled with green smectite/chlorite. Fractures dip 60-70°, coated with smectite/chlorite. Unit interpreted as flow based on fine grain size, vesicularity, and lower depositional contact. Lower contact drawn at top of red scoriaceous zone interpreted as top of underlying unit 35.1; upper contact is at lower chilled margin of unit 33.2

UNIT NO. 35.1 INTERVAL(m) 214.20 - 225.64 THICKNESS(m) 11.44INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, holocrystalline, aphyric basalt. Upper 2.5 m is red to reddish-gray, scoriaceous breccia grading down to massive interior, with poorly developed flow banding; massive basalt continues to base of unit. Vesicles mostly 1-2%, somewhat greater in upper scoriaceous zone and in lower 50 cm of flow; most vesicles 1-2 mm, filled with smectite/chlorite. A few anygdules and vugs to 5 cm across scattered in lower part of flow, filled with zeolite, calcite, quartz, and minor smectite/chlorite. Sparse fractures mostly dip less than 10°, lined with smectite/chlorite; a few smectite/chlorite veinlets dip 60-70°. Unit interpreted as lava flow based on depositional contacts, fine grain size, and presence of scoriaceous breccia. Upper contact drawn at top of red scoriaceous breccia and is overlain by breccia of unit 34.1; basal contact drawn at top of brick red scoriaceous zone interpreted to be top of lava flow in unit 37.1.

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UNIT NO. 37.1 INTERVAL(m) 225.64 - 237.37 THICKNESS(m) 11.73INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine- to medium-grained, holocrystalline, aphyric basalt. Upper 1.35 m and lower 0.4 m are gray to reddish-gray, scoriaceous breccia; breccia grades into massive, flow banded, moderately vesicular basalt in center of flow. Basalt dominantly fine-grained, grading into medium-grained near flow center. Vesicles very abundant in scoriaceous zones, 2-5% elsewhere; most 2 mm or less, spherical, filled with smectite/chlorite and minor zeolite. A few long, flat amygdules are filled with smectite/chlorite and zeolite. Fractures and sparse veins dip mostly 60-70°, filled or lined with smectite/chlorite. Unit interpreted as lava flow based on depositional contacts, fine grain size, moderately vesicular nature, and scoriaceous breccia zones. Unit depositionally overlain by unit 35.1 and depositionally overlies unit 39.1. Upper contact at top of scoriaceous zone and lower contact at top of scoriaceous zone interpreted as upper part of flow in unit 39.1.

UNIT NO. 39.1 INTERVAL(m) 237.37 - 245.10 THICKNESS(m) 7.73INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, microporphyritic basalt. Upper 90 cm reddish scoriaceous breccia grading downward into massive flow interior. Flow interior has microphenocrysts of plagioclase in medium-grained groundmass. Basal 1 m is fine-grained and moderately vesicular. Large vesicles abundant between 239.50 and 243.80 m, filled with quartz, zeolite, and smectite/chlorite. Some calcite and zeolite in breccia matrix. Unit interpreted as flow from scoriaceous breccia, fine grain size, and vesicularity. Depositionally overlain by flow of unit 37.1 and rests depositionally on flow of unit 41.1.

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UNIT NO. 41.1 INTERVAL(m) 245.10 - 249.20 THICKNESS(m) 4.10INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Gray, fine-grained, vesicular, aphyric basalt. About 1 m of reddish, flow top breccia, grading downward into massive, highly vesicular central zone. Vesicles elongate, to 1 cm, filled with smectite/chlorite, zeolite, and carbonate. Unit interpreted as flow because of brecciation, vesicularity, and fine grain size. Unit separated from overlying unit by 7 cm of dark brown fine-grained sediment. Base drawn arbitrarily at top of breccia interpreted as flow top of underlying unit 41.2.

UNIT NO. 41.2 INTERVAL(m) 249.20 - 258.58 THICKNESS(m) 9.38INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size increases slightly toward base of unit; upper 20 cm are reddish gray, scoriaceous breccia. Vesicles at top filled with white zeolite (laumontite?), cavities in upper scoriaceous zone filled with smectite/chlorite. Most of section has less than 5% vesicles, mostly filled with smectite/chlorite. Unit interpreted as flow based on fine grain size, vesicularity, and brecciated zone at top. Unit overlain depositionally by unit 41.1 and rests depositionally on unit 43.1. Lower contact drawn at top of highly vesicular, highly altered zone interpreted as top of lower unit.

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UNIT NO. 43.1 INTERVAL(m) 258.58 - 262.68 THICKNESS(m) 4.10INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Reddish- or purplish-gray to greenish-gray, highly altered, fine-grained scoriaceous basalt grading downward into more massive, microporphyritic basalt in flow interior. Upper 1-2 m highly vesicular, upper 50 cm highly altered. Vesicles to 1 cm across, round to oval, filled with zeolite. Unit interpreted as flow based on brecciation, vesicularity, and fine grain size. Unit overlain by flow of unit 41.2; contact drawn at top of highly altered, highly vesicular zone interpreted as flow top. Unit depositionally overlies flow of unit 44.1; contact drawn at top of red, scoriaceous zone interpreted as top of lower unit.

UNIT NO. 44.1 INTERVAL(m) 262.68 - 276.30 THICKNESS(m) 13.62INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Grayish-green, fine-grained, aphyric basalt. Upper 3.5 to 4 m is reddish-gray, scoriaceous breccia grading downward into massive basalt. Some flow banding in flow center. Vesicles and amygdules filled with zeolite and smectite/chlorite. Fractures and veinlets dip mostly 60-70°, lined or filled with smectite/chlorite. Unit interpreted as flow based on brecciation, vesicularity, fine grain size, and flow banding. Unit overlain by basalt flow of unit 43.1; upper contact drawn at top of reddish scoriaceous breccia; base of unit rests on clastic unit 46.1.

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UNIT NO. 46.1 INTERVAL(m) 276.30 - 276.60 THICKNESS(m) 0.30

INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Highly weathered, dark red to brown or black, fine-grained sediment with small basalt clasts. Clasts vesicular and amygdaloidal, vesicles filled with calcite. Unit depositionally overlain by flow of unit 44.1 and rests depositionally on flow of unit 46.2.

UNIT NO. 46.2 INTERVAL(m) 276.60 - 279.71 THICKNESS(m) 3.11

INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Upper 1 m is reddish-brown, scoriaceous flow top breccia; vesicles 1 mm to 3 cm, lined with smectite/chlorite and filled with zeolite and calcite. Breccia grades downward into medium-grained grayish-red, aphyric, vesicular basalt. Vesicles here lined with bright green smectite/chlorite or celadonite(?) and filled with zeolite. Unit interpreted as flow based on depositional contacts, vesicularity, brecciation and fine grain size. Unit overlain by sediment of unit 46.1 and rests on sediment of unit 47.1.

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UNIT NO. 47.1 INTERVAL(m) 279.71 - 279.86 THICKNESS(m) 0.15

INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Very dark gray or greenish-gray, vaguely bedded, poorly sorted, soft siltstone or claystone with some sand-size angular fragments. Green color may be celadonite in groundmass. Unit sharply overlain by flow of unit 46.2 and overlies with gradational contact flow of unit 47.2.

UNIT NO. 47.2 INTERVAL(m) 279.86 - 286.30 THICKNESS(m) 6.44

INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish-gray, slightly brecciated basalt to about 280.10 m, grading downward into massive greenish-gray, aphyric, highly vesicular basalt. Vesicles filled with green smectite/chlorite, zeolite, and euhedral quartz crystals. Sparse fractures and veinlets dip mostly 70-80°, filled or lined with smectite/chlorite and some zeolite. Unit interpreted as flow based on depositional contacts, fine grain size, and vesicularity. Unit overlain by clast sequence of unit 47.1 and rests depositionally on clastic rocks of unit 48.1.

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UNIT NO. 48.1 INTERVAL(m) 286.30 - 290.00 THICKNESS(m) 3.60INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Gray to greenish- or reddish-gray, well indurated claystone, siltstone, sandstone, granular breccia and silicic airfall tuff. Sandy units are greenish-gray to reddish-gray, with subangular to subrounded grains of lithic and once glassy material. Most clasts matrix supported. Coarser units consist of green, angular lithic fragments in sandy matrix. Unit depositionally overlain by flow of unit 47.2 and depositionally overlies flow of unit 48.2.

UNIT NO. 48.2 INTERVAL(m) 290.00 - 291.32 THICKNESS(m) 1.32INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Grayish-green, fine-grained, aphyric, amygdaloidal basalt. Grain size increases slightly from margins toward flow center. Amygdules 2-10%, most abundant near top of flow, lined with smectite/chlorite and filled with zeolite. Unit interpreted as flow based on depositional contacts, fine grain size, and vesicularity. Unit depositionally overlain by sediments of unit 48.1 and separated from underlying unit 49.1 by about 5 cm of dark brown clastic material which is included in unit 48.2.

49.1

This is much rather a flow
(compare with lava above)

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UNIT NO. 49.1 INTERVAL(m) 291.32 - 304.98 THICKNESS(m) 13.66INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Grayish-green, fine- to medium-grained, porphyritic massive basalt, with 20% plagioclase phenocrysts and sparse clinopyroxene phenocrysts. Grain size increases somewhat toward center of unit. Sparse amygdules lined with green smectite/chlorite and filled with zeolite and calcite. Leucocratic segregation veins occur throughout. Fractures in lower part of unit coated with black smectite/chlorite. Unit interpreted as an intrusive body based on massive, medium-grained character and on possible chilled margins; could possibly be massive flow. Overlain by sediment at base of unit 48.2, possibly separated by intrusive contact. Base of unit has chilled margin against sediment of unit 51.1.

UNIT NO. 51.1 INTERVAL(m) 304.98 - 305.48 THICKNESS(m) 0.50INTERPRETATION Clastic unit (incomplete?)

MACROSCOPIC DESCRIPTION

Red, very fine-grained to medium-grained soft sediment. Subhorizontal contacts; upper boundary is lower intrusive(?) contact of unit 49.1 and lower contact depositional on flow of unit 51.2.

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UNIT NO. 51.2 INTERVAL(m) 305.48 - 310.80 THICKNESS(m) 5.32

INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, medium-grained porphyritic basalt. Plagioclase and clinopyroxene phenocrysts range in size from 1-7 mm. Unit mostly massive, some flow banding at 306.90 m and minor breccia at 309.20 and 310.00 m. Highly vesicular; vesicle distribution varies through unit. Vesicles round to irregular, mostly filled with zeolite (laumontite?) and green smectite/chlorite. Unit interpreted as flow from depositional contacts; upper contact at base of sediment in unit 51.1 and lower contact at thin layer of black fine-grained sediment on top of unit 52.1.

13.66
5.32
9.5
19.48

UNIT NO. 52.1 INTERVAL(m) 310.80 - 318.87 THICKNESS(m) 8.07

INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Reddish-gray, fine-grained aphyric basalt. Elongate, irregular, and round vesicles common, mostly in upper part but with some near center, filled with zeolite, green smectite/chlorite, red iron oxides, and minor calcite. Iron oxides occur throughout unit along fractures and in vesicles. Unit interpreted as flow from depositional contacts; upper contact at sedimentary interbed, lower contact at top of sediments in unit 53.1.

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UNIT NO. 53.1 INTERVAL(m) 318.87 - 319.45 THICKNESS(m) 0.58INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Dark gray, poorly bedded, very fine-grained basaltic(?) tuff. Unit depositionally overlain by basalt flow of unit 52.1 and rests on flow of unit 53.2.

UNIT NO. 53.2 INTERVAL(m) 319.45 - 322.53 THICKNESS(m) 3.08INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, massive, fine-grained, moderately vesicular aphyric basalt. Vesicles scattered throughout, ranging up to 3 cm across, filled with laumontite, quartz, and some smectite/chlorite. Sparse veinlets of calcite also present. Large vugs at 320.58 and 320.93 m. Vug at 320.58 filled with laumontite and one at 320.93 lined with quartz crystals and filled with large crystals of heulandite and minor epistilbite. Unit interpreted as flow based on depositional contacts. Upper contact at base of sediment unit 53.1; lower contact at top of clastic unit 54.1.

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UNIT NO. 54.1 INTERVAL(m) 322.53 - 326.72 THICKNESS(m) 4.19INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Brown, reddish-brown, and greenish-gray, interbedded claystone, siltstone, sandstone and minor conglomerate and breccia. Moderately well bedded with beds dipping about 10°. Unit interpreted as altered, probably somewhat reworked silicic tuff. Upper contact at base of flow in unit 53.2; lower contact at top of flow in unit 55.1.

UNIT NO. 55.1 INTERVAL(m) 326.72 - 334.93 THICKNESS(m) 8.21INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric basalt; upper 2.5 m is reddish-gray, scoriaceous breccia and some sedimentary breccia. Breccia grades downward into massive flow center. Vesicles abundant in upper 50 cm, 2-5 mm across, filled with zeolite and smectite/chlorite. Unit interpreted as flow from depositional contacts. Upper contact at base of sediment in unit 54.1; lower contact at top of clastic unit 56.1.

ICELAND RESEARCH DRILLING PROJECT

REYDARFJORDUR 1978

UNIT NO. 56.1 INTERVAL(m) 334.93 - 336.80 THICKNESS(m) 1.87

INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Interbedded, fine-grained gray sediment and very fine-grained brown sediment. Bedding indistinct. Depositionally overlain by flow of unit 55.1 and rests on flow of unit 56.2.

UNIT NO. 56.2 INTERVAL(m) 336.80 - 344.15 THICKNESS(m) 7.35

INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Grayish-green, fine-grained, aphyric basalt. Amygdules abundant in upper 50 cm, filled with smectite/chlorite, minor quartz, laumontite and minor heulandite. Large vug between 343.35 and 343.41; other smaller vugs scattered through flow. Unit interpreted as flow based on depositional contacts. Upper contact at base of clastic unit 56.1; lower contact at top of clastic unit 58.1.

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REYDARFJORDUR 1978

UNIT NO. 58.1 INTERVAL (m) 344.15 - 362.25 THICKNESS (m) 18.10INTERPRETATION Clastic unit (complete)

MACROSCOPIC DESCRIPTION

Finely bedded to massive tuffaceous sediments. Some beds poorly sorted, some graded. Mostly light grayish-green, coarse-grained sediment in upper 4.5 m, with some fine-grained intercalations. Remainder reddish-brown, fine-grained siltstone. Lithic and pumice fragments to 2-6 mm across, subangular, mostly in upper part of unit. Upper contact at base of flow in unit 56.2; lower contact at top of flow in unit 61.1.

UNIT NO. 61.1 INTERVAL (m) 362.25 - 364.30 THICKNESS (m) 2.05INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Light reddish-gray, scoriaceous flow top breccia grading downward into light gray, fine-grained, holocrystalline, aphyric basalt. Sparsely vesicular; vesicles filled with smectite/chlorite and some calcite. Unit interpreted as flow based on upper depositional contact and brecciated nature. Upper contact at base of sediments in unit 58.1; lower boundary at intrusive margin of unit 61.2.

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UNIT NO. 61.2 INTERVAL(m) 364.30 - 381.40 THICKNESS(m) 17.10INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Gray- to greenish-gray, fine-grained, holocrystalline, aphyric basalt. Grain size increases gradually from margins to center of unit. Unit interpreted as dike based on steep chilled margins. Upper contact cuts basalt flow of unit 61.1; lower contact cuts flow of unit 64.1 and dips 50-60°.

UNIT NO. 64.1 INTERVAL(m) 381.40 - 386.70 THICKNESS(m) 5.30INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Grayish-green, fine-grained, holocrystalline, aphyric basalt with about 1.5 m reddish-brown, coarse flow breccia at top. Vesicles rare. Unit interpreted as flow based on lower depositional contact and brecciation. Upper contact is lower chilled margin of unit 61.2; lower contact is top of breccia at top of unit 65.1.

ICELAND RESEARCH DRILLING PROJECT

REYDARFJORDUR 1978

UNIT NO. 65.1 INTERVAL(m) 386.83 - 402.33 THICKNESS(m) 15.50INTERPRETATION Basalt flow (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric basalt with about 7.5 m of reddish-brown flow top breccia and about 30 cm of basal breccia. Zeolite and calcite common in breccia matrix. Unit interpreted as flow based on depositional contacts. Upper contact at base of flow in unit 64.1; lower contact at top of clastic unit 67.1.

UNIT NO. 67.1 INTERVAL(m) 402.33 - 409.60 THICKNESS(m) 7.27INTERPRETATION Clastic unit (incomplete)

MACROSCOPIC DESCRIPTION

Interbedded fine- to coarse-grained sandstone and grit with siltstone and minor tuffaceous material. Reddish-brown to bluish-gray, well bedded. Upper contact at base of flow in unit 65.1; lower contact is upper chilled margin of dike in unit 70.1.

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REYDARFJORDUR 1978

UNIT NO. 70.1 INTERVAL(m) 409.60 - 414.40 THICKNESS(m) 4.80

INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Dark grayish-green, fine- to medium-grained, aphyric basalt. Grain size increases from contacts towards center. Numerous large fractures, mostly filled with smectite/chlorite and some zeolite and calcite. Upper and lower boundaries chilled. Upper boundary cuts unit 67.1; lower boundary cut unit 70.2.

UNIT NO. 70.2 INTERVAL(m) 414.40 - 418.53 THICKNESS(m) 4.13

INTERPRETATION Basalt flow (incomplete)

MACROSCOPIC DESCRIPTION

Greenish-gray, medium- to fine-grained, aphyric, holocrystalline, equigranular, massive basalt; somewhat mottled. Upper 1 m is gray to reddish-gray breccia with rounded clasts to 15 cm across. Fractures abundant, lined with smectite/chlorite, laumontite, and calcite. Unit interpreted as flow based on brecciation and fine-grain size. Upper contact at chilled margin of unit 70.1; lower contact at chilled margin of unit 71.1.

ICELAND RESEARCH DRILLING PROJECT

REYDARFJORDUR 1978

UNIT NO. 71.1 INTERVAL(m) 418.53 - 419.30 THICKNESS(m) 0.77

INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Greenish-gray, fine-grained, aphyric basalt with calcite veinlets. Some highly altered breccia clasts. Upper and lower chilled contacts dip about 60°. Upper contact cuts flow of unit 70.2; lower contact cuts basalt of unit 71.2.

Probably dyke !

UNIT NO. 71.2 INTERVAL(m) 419.30 - 420.60 THICKNESS(m) 1.3

INTERPRETATION Basalt dike or flow (incomplete)

MACROSCOPIC DESCRIPTION

Grayish-green, aphyric, fine-grained, equigranular, massive basalt. Highly fractured with fractures dipping 20 to 50°, lined with green smectite/chlorite zeolite, and calcite. Upper and lower contacts cut by younger intrusives; unit could be either a massive flow interior or a dike. Upper contact is chilled margin of unit 71.1; lower contact chilled margin of unit 72.1.

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72.1	420.60 - 421.50	0.90
72.3	421.50 - 421.70	0.20
UNIT NO. 72.5	INTERVAL(m) 421.70 - 422.05	THICKNESS(m) 0.35

Handwritten notes: 421.55, 421.80, 0.15, 0.25

INTERPRETATION Basalt dike (incomplete) cut by two smaller dikes.

MACROSCOPIC DESCRIPTION

Gray, fine- to medium-grained, sparsely phyric basalt with 2-3% plagioclase phenocrysts to 1mm. Sparse vesicles to 2 mm, filled with zeolite and calcite. Planar fractures dip about 50°, lined with laumontite and calcite. Chilled margin at upper contact and intrusive contact with unit 72.2 defines base. Unit interpreted as dike based on upper intrusive contact, medium grain size and sparse vesicles. Units 72.1, 72.3, and 72.5 interpreted as part of single unit cut by narrow dikes at 421.50 (unit 72.2) and 421.70 (unit 72.4).

UNIT NO. 72.2	INTERVAL(m) 421.50 - 421.55	THICKNESS(m) 0.05
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INTERPRETATION Basalt dike (complete)

MACROSCOPIC DESCRIPTION

Gray, very fine-grained aphyric basalt with chilled margins top and bottom. Lies between units 72.1 and 72.3.