

# Fjarðarheiðargöng

Jarðfræðirannsóknir

## Viðauki A

Lýsingar á borkjörnum

Borholur FH-01 til FH-06

Holurnar voru boraðar 2014 og 2016



Júni 2017

**Unnið fyrir Vegagerðina**

**Legend for corehole logs /  
 Skýringar með kjarnaborholum**

Date May 2017

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Empl.



Design AgG

Drawn AgG

Coord. X: Y: Elev.:

Driller X

Drilled x

| Elev. m a.s.l. | Depth m | Description of corehole - name of corehole   | Depth m | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | QC | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|---------|-------------|--------|-----------------------------|----|-----|---------------------------|
| 454,1          | 150     | All core was drilled with NQ triple tube core barrels<br>Diameter of core 44,7 - 45 mm<br>Hole diameter 75,7 mm<br><br>NQ drilling rods with triple tube, core Ø 45 mm<br><br>Tholeiite basalt<br><br>Olivine basalt<br><br>Porphyritic basalt<br><br>Scoria<br><br>Dyke intrusions (subvertical)<br><br>Tectonic breccia<br><br>Sedimentary interbeds (fine grained)<br><br>Sedimentary interbeds (coarse grained)<br><br>Sedimentary interbeds pyroclastic - agglomerate<br><br>Percussion drilling at top and complete core loss<br><br>Core loss<br><br>Rock magnetisation<br>Normal / Reverse / Anomalous<br>(N)/(R)/(A)<br><br>UCS=55 MPa (Laboratory tested Uniaxial compressive strength)<br>Core box number K-31<br>K-32<br><br>TS=5,5 MPa (Laboratory tested tensile strength)<br>Schmidt hammer test<br>Number of tests 8<br>Average rebound hardness 12,1<br><br>Point load test<br>Number of tests 8<br>Average PLI value = Is(50) Is(50) 3.5 MPa<br><br>Laboratory tests<br>UCS=55 MPa (Laboratory tested Uniaxial compressive strength)<br>TS=5,5 MPa (Laboratory tested tensile strength)<br><br>NGI Rock classification system<br>Qc Q-value as evaluated on core<br>(not valid for measurements on blasted tunnel walls)<br><br>$Q_c = \frac{RQD}{J_n} \times \frac{J_r}{J_a} \times \frac{J_w}{SRF}$ Joint roughness<br>Joint sets<br>Joint alteration<br>The joint water and SRF (stress reduction) parameters are evaluated as 1/1 in the boreholes | 150     |             |        |                             |    |     |                           |
|                | 152     |  |         | 152         |        |                             |    |     |                           |
|                | 154     |  |         | 154         |        |                             |    |     |                           |
|                | 156     |  |         | 156         |        |                             |    |     |                           |
|                | 158     |  |         | 158         |        |                             |    |     |                           |
|                | 160     |  |         | 160         |        |                             |    |     |                           |
|                | 162     |  |         | 162         |        |                             |    |     |                           |
|                | 164     |  |         | 164         |        |                             |    |     |                           |
|                | 166     |  |         | 166         |        |                             |    |     |                           |
|                | 168     |  |         | 168         |        |                             |    |     |                           |
|                | 170     |  |         | 170         |        |                             |    |     |                           |
|                | 172     |  |         | 172         |        |                             |    |     |                           |
|                | 174     |  |         | 174         |        |                             |    |     |                           |
|                | 176     |  |         | 176         |        |                             |    |     |                           |
|                | 178     |  |         | 178         |        |                             |    |     |                           |
|                | 180     |  | 180     |             |        |                             |    |     |                           |
|                | 182     |  | 182     |             |        |                             |    |     |                           |
|                | 184     |  | 184     |             |        |                             |    |     |                           |
|                | 186     |  | 186     |             |        |                             |    |     |                           |
|                | 188     |  | 188     |             |        |                             |    |     |                           |
|                | 190     |  | 190     |             |        |                             |    |     |                           |
|                | 192     |  | 192     |             |        |                             |    |     |                           |
|                | 194     |  | 194     |             |        |                             |    |     |                           |
|                | 196     |  | 196     |             |        |                             |    |     |                           |
|                | 198     |  | 198     |             |        |                             |    |     |                           |
|                | 200     |  | 200     |             |        |                             |    |     |                           |

Core recovery and RQD is defined by rock units

Percentage of core pieces of over 10 cm, 30 cm, 50 cm and 100 cm continuous core length, indicating block sizes, within the same rock unit

NGI Rock classification system Qc - value as evaluated on core

Ground water table

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01  | Depth m | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100                                     | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5   |
|----------------|---------|--|---------|-------------|--------|---|---|-----|-----------------------------|
| 603,3          | 0       | Drilled on a rock outcrop some 30m west from the road over Fjarðarheiði  | 0       |             |        |   |   |     |                             |
|                | 2       | Percussion odex drilling, with 3,5" casing down to 3,14m depth.  | 2       |             |        |   |   |     |                             |
| 600,16         | 4       | <b>Porphyritic basalt</b><br>Very coarsely crystalline, microporous, strong basalt   | 4       | (R)         | 98     | 30/0/0/0  |   |     | GWT at 200-346 m hole depth |
|                | 6       | <b>Scoriaceous basalt</b>  | 6       |             | 100    | 57/43/17/0  |   |     | GWT at 0-200 m hole depth   |
|                | 8       | Red brown, porous, scoriaceous basalt. Most vesicles coated with small chabazite crystals  | 8       |             | 100    | 47/13/0/0   |   |     |                             |
|                | 10      | <b>Porphyritic basalt (olivine basalt type)</b><br>Medium grey, microporous, strong rock, rather coarsely crystalline. Dark clay in micropores. Joints rough and undulating. | 10      |             | 99     | 28/15/0/0   |   |     |                             |
|                | 12      |  | 12      |             | 100    | 60/0/0/0  |   |     |                             |
|                | 14      |  | 14      |             | 100    | 93/45/0/0   |   |     |                             |
|                | 16      |  | 16      |             | 100    | 60/35/0/0   |   |     |                             |
|                | 18      | Highly jointed zone  | 18      | (R)         | 93     | 42/42/0/0   |   |     |                             |
|                | 20      | Highly jointed zone  | 20      |             | 100    | 50/42/42/0  |   |     |                             |
|                | 22      |  | 22      |             | 100    | 63/50/50/0  |   |     |                             |
| 580,74         | 22      |  | 22      |             | 99     | 86/86/50/0  |   |     |                             |
|                | 24      | <b>Sediment, Sandstone - Claystone</b><br>Red, stratified sandstone. The lowest 0,3m are clayeous weak rock.   | 24      |             | 95     | 35/0/0/0  |   |     |                             |
| 579,55         | 24      |  | 24      |             | 100    | 55/0/0/0  |   |     |                             |
|                | 26      | <b>Scoriaceous basalt</b><br>Well compressed and consolidated, rather porous, strong, competent basalt.  | 26      | (R)         | 100    | 100/88/88/48  |   |     |                             |
|                | 28      | <b>Tholeiite basalt</b><br>Medium grey, fine grained, very hard and strong, scattered small vesicles coated with black clay.   | 28      | (R)         | 100    | 49/28/28/0  |   |     |                             |
|                | 30      |  | 30      | (R)         | 100    | 79/30/0/0   |   |     |                             |
|                | 32      | Tectonized zone<br>The basalt is moderately to highly jointed, joints rough, undulating, and coated with brown and blue-black clay.  | 32      |             | 100    | 29/0/0/0  |   |     |                             |
|                | 34      |  | 34      |             | 96     | 0/0/0/0   |   |     |                             |
|                | 36      |  | 36      |             | 100    | 13/0/0/0  |   |     |                             |
|                | 38      |  | 38      |             | 100    | 49/21/21/0  |   |     |                             |
|                | 40      |  | 40      |             | 100    | 56/33/26/13   |   |     |                             |
|                | 42      |  | 42      |             | 100    | Q = 3,7 - 13  |   |     |                             |
|                | 44      |  | 44      |             | 100    | Q = $\frac{56}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                             |
|                | 46      | <b>Scoriaceous basalt 0,3m</b><br><b>Sediment, Sandstone</b> red, stratified with sandy lenses, not waxy. Weak.  | 46      |             | 100    | 67/37/20/0  |   |     |                             |
| 558,50         | 46      |  | 46      |             | 100    | 85/47/0/0   |   |     |                             |
| 557,80         | 46      | <b>Porphyritic basalt</b> red brown at top 0,5m.<br>Vesicular, about 15% vesicles, <10mm.<br>medium grey core with 15% to 20% small plagioclase crystals.                    | 46      | (R)         | 100    | 39/13/0/0   |   |     |                             |
|                | 48      |  | 48      |             | 100    | 78/64/64/64   |   |     |                             |
|                | 50      | The rock is highly jointed or tectonized at 49m to 52m depth.<br>Vesicles disappear down from here   | 50      |             | 99     | 17/0/0/0  |   |     |                             |
|                | 50      |  | 50      |             | 100    | 100/100/100/0   |   |     |                             |

2,4 LU at 7,4 bar

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01   | Depth | Rock column | Core % | RQD %  | Q       | GWT | Perm. (LU)  |
|----------------|---------|---|-------|-------------|--------|--|---------|-----|-------------|
|                |         |   |       |             |        | 10 / 30 / 50 / 100   |         |     | 2,5 5,0 7,5 |
|                | 50      | Porphyritic basalt<br>Medium grey, microporous basalt.<br>15% to 20% small (<=3mm) plagioclase crystals.  | 50    |             | 100    | 35/27/0/0  |         |     |             |
|                | 52      | Highly jointed. Tectonized at 50,5m to 52m.   | 52    |             | 100    | 0/0/0/0  |         |     |             |
|                | 54      | Massive porphyritic basalt, very strong rock.   | 54    |             | 100    | 59/44/32/19  |         |     |             |
|                | 54      | Vesicular zone 0,3m   | 54    |             | 100    | Q = 4 - 13   |         |     |             |
| 547,95         | 56      | Sediment, Siltstone Dark brown weak 0,3m. Then red brown waxy core, very weak, breaks up during drilling and handling.  | 56    |             | 100    | 36/0/0/0   | Q = < 1 |     |             |
| 547,15         | 56      | Scoriaceous basalt  | 56    |             | 99     | 99/99/99/99  |         |     |             |
|                | 58      | Dark purple grey, well compressed and consolidated, originally porous rock, but now most vugs are filled with calcite and chabazite.  | 58    |             | 100    | 94/70/70/48  |         |     |             |
|                | 60      |   | 60    |             | 100    | 93/84/80/62  |         |     |             |
|                | 62      |   | 62    |             | 100    | Q = 6 - 30   |         |     |             |
|                | 64      | No weakness at diffuse boundary.  | 64    |             | 100    | 98/98/98/75  |         |     |             |
|                | 64      | Porphyritic basalt  | 64    |             | 100    | 94/85/73/51  |         |     |             |
|                | 66      | Scoriaceous basalt  | 66    |             | 97     | 0/0/0/0  |         |     |             |
|                | 68      | Tholeiite basalt - intermediate porphyritic basalt  | 68    |             | 100    | 84/59/42/0   |         |     |             |
|                | 70      | The core is light grey, very hard and dense, extremely strong rock. Joints are rough, undulating and coated with black and dark clay. Plagioclase crystals, about 5% to 7% (<4mm) | 70    |             | 100    | 68/52/0/0  |         |     |             |
|                | 72      |   | 72    |             | 100    | 84/55/55/0   |         |     |             |
|                | 74      |   | 74    |             | 100    | 81/0/0/0   |         |     |             |
|                | 76      | 5% to 10% small plagioclase crystals  | 76    |             | 100    | 37/18/0/0  |         |     |             |
|                | 78      |   | 78    |             | 100    | 88/75/75/75  |         |     |             |
|                | 80      | Few and scattered vesicles, coated with black and blue clay. Very hard and dense basalt.  | 80    |             | 100    | 80/61/49/29  |         |     |             |
|                | 82      |   | 82    |             | 100    | Q = 5,3 - 18   |         |     |             |
|                | 84      | Highly broken zone (~1m). Joints are rough, undulating, coated with black clay  | 84    |             | 100    | Q = $\frac{80}{9.3} \times \frac{2.4}{1} \times \frac{1}{1}$ |         |     |             |
|                | 86      |   | 86    |             | 100    | 94/89/78/59  |         |     |             |
|                | 88      | Scoria 0,2m. Well compressed and consolidated   | 88    |             | 99     | 74/0/0/0   |         |     |             |
| 514,62         | 88      | Sediment, Sandstone   | 88    |             | 100    | 100/0/0/0  |         |     |             |
| 514,47         | 90      | Scoriaceous basalt Red brown, highly porous and vesicular rock. Moderately strong. Pores and vesicles >20%. Half of the pores are filled with zeolites                            | 90    |             | 99     | 94/68/44/0   |         |     |             |
|                | 92      | Olivine basalt  | 92    |             | 99     | 84/57/0/0  |         |     |             |
|                | 94      | Coarse grained dark grey basalt, with about 30% small plagioclase crystals.   | 94    |             | 100    | 99/65/45/0   |         |     |             |
|                | 96      | Layer contact, no weakness.   | 96    |             | 100    | 90/48/25/0   |         |     |             |
|                | 98      | Olivine basalt  | 98    |             | 99     | 83/62/30/12  |         |     |             |
|                | 100     | Grey brown, vesicular basalt.   | 100   |             |        |  |         |     |             |

0,8 LU at 8,2 bar

5,9 LU at 10,0 bar 140L/min

**Fjarðarheiði at Heiðarvatn**  
**Corehole FH - 01 100 - 150 m**

Date June 2017

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Empl.



Design AgG

Drawn AgG/TW

Coord. X: 724 695,9 Y: 536 183,1 Elev.: 603,3

Driller RFS

Drilled June 2014

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01  | Depth | Rock column | Core %             | RQD %         | Q  | GWT | Perm. (LU)                   |
|----------------|---------|--|-------|-------------|--------------------|---------------|--|-----|------------------------------|
|                |         |  |       |             | 10 / 30 / 50 / 100 |               |  |     | 2,5 5,0 7,5                  |
|                | 100     | Olivine basalt<br>The core breaks up at subvertical joints.  | 100   |             | 100                | 55/52/0/0     |  |     |                              |
|                | 102     | Approximately 15% to 20% small olivine crystals, which are red brown and rusty.  | 102   |             | 100                | 56/56/0/0     |  |     |                              |
|                | 104     | Rather coarse crystals, microporous with black clay in micropores.   | 104   |             | 100                | 87/83/52/35   |  |     |                              |
|                | 106     |  | 106   |             |                    |               | <b>Q = 5,5 - 18</b><br>$Q = \frac{83}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                              |
|                | 108     | Scoriaceous basalt<br>Sediment, Siltstone<br>Red sandstone, weak rock, sandy.<br>Red siltstone 0,3m, dark, very weak rock, silty, waxy | 108   |             | 100                | 86/86/86/0    |  |     |                              |
| 496,03         | 108     | Olivine basalt<br>Very vesicular and scoriaceous. Most vesicles filled with zeolites.  | 108   |             | 100                | 100/100/100/0 |  |     | 1,1 LU at 10,4 bar           |
| 495,30         | 110     | Olivine basalt<br>Dark grey, microporous, but massive rock. All micropores filled with black clay.                                     | 110   |             | 100                | 92/80/80/0    |  |     |                              |
|                | 112     | Scattered joints filled and cemented with white calcite or zeolites.   | 112   |             |                    |               |  |     |                              |
|                | 114     | Frequent joint pattern, cemented with black clay and white zeolites or calcite.  | 114   |             | 99                 | 83/0/0/0      |  |     |                              |
|                | 116     |  | 116   |             | 100                | 77/17/0/0     |  |     |                              |
|                | 118     |  | 118   |             | 100                | 80/58/33/33   |  |     |                              |
|                | 120     |  | 120   |             | 99                 | 77/46/34/4    |  |     | 0,0 LU tested up to 12,4 bar |
|                | 122     |  | 122   |             | 99                 | 69/54/54/0    |  |     |                              |
|                | 124     | zone of red alteration ~15cm<br>Tectonized zone. Joints healed with black clay and red clay indicating thermal alteration.             | 124   |             |                    |               | <b>Q = 5,1 - 18</b><br>$Q = \frac{77}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                              |
|                | 126     | Reddish porous zone<br>Red sandstone bed, 1cm to 3cm.<br>Unclear lava boundary, no weakness  | 126   |             | 98                 | 74/50/37/0    |  |     |                              |
|                | 128     | Vesicular top of olivine basalt<br>Olivine basalt<br>Dark grey, microporous  | 128   |             | 100                | 100/0/0/0     |  |     |                              |
|                | 130     | Pattern of black thin veins of joints healed with black clay. Part of the core breaks up.  | 130   |             | 100                | 69/46/32/0    |  |     |                              |
|                | 132     |  | 132   |             |                    |               |  |     |                              |
|                | 134     |  | 134   |             | 100                | 70/57/24/0    |  |     |                              |
| 468,20         | 136     | Sediment, Sandstone - Claystone<br>Tuffaceous sandstone - claystone of low breaking strength. Slickensides.                            | 136   |             | 96                 | 100/0/0/0     |  |     |                              |
| 467,02         | 136     | Vesicular top of olivine basalt.<br>Vesicles mainly filled with white zeolites or black clay.  | 136   |             | 94                 | 60/0/0/0      |  |     |                              |
|                | 138     | Olivine basalt, intermediate olivine - tholeiite basalt<br>Dark grey, microporous, faintly flow banded. Strong, competent basalt.      | 138   |             | 100                | 100/78/78/55  |  |     |                              |
|                | 140     |  | 140   |             | 98                 | 88/88/63/41   |  |     |                              |
|                | 142     | Red Sandstone <1cm, no weakness.   | 142   |             | 100                | 100/68/43/0   |  |     |                              |
|                | 144     | Scoriaceous reddish zone, 0,5m   | 144   |             | 100                | 87/66/51/21   |  |     |                              |
|                | 146     | Olivine basalt<br>Dark grey, with some 15% to 20% large vesicles, mainly coated with zeolites.   | 146   |             | 100                | 97/69/47/0    |  |     |                              |
|                | 148     |  | 148   |             |                    |               | <b>Q = 5,8 - 19</b><br>$Q = \frac{87}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                              |
|                | 150     | Massive microporous olivine basalt   | 150   |             | 100                | 80/73/62/40   |  |     |                              |

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01  | Depth | Rock column | Core %             | RQD %   | Q | GWT | Perm. (LU)  |
|----------------|---------|--|-------|-------------|--------------------|---|---|-----|-------------|
|                |         |  |       |             | 10 / 30 / 50 / 100 |   |   |     | 2,5 5,0 7,5 |
|                | 150     | Olivine basalt Dark grey, microporous, with dark clay in pores<br>The core breaks up at subvertical joints, coated with black clay.                            | 150   |             |                    |   |   |     |             |
|                | 152     |  | 152   |             | 100                | 62/24/24/0  |   |     |             |
| 449,90         |         | Red sandstone bed 0,5cm to 1,5cm, no weakness.   |       |             | 98                 | 28/0/0/0  |   |     |             |
|                | 154     | Olivine basalt Dark grey.<br>Very vesicular, about 20% vesicles. All vesicles filled with dark clay.   | 154   |             | 100                | 83/68/45/0  |   |     |             |
| 447,90         |         | Scoria - Scoriaceous basalt<br>Red grey in the upper part, grey in the lower part.<br>Very porous and very weak rock   | 156   |             | 84                 | 71/71/71/0  |   |     |             |
|                | 158     | Tholeiite basalt<br>Medium grey. With 10% to 20% small vesicles, coated and half-filled with black clay.   | 158   |             | 90                 | 18/0/0/0  |   |     |             |
|                | 160     |  | 160   |             | 95                 | 54/37/37/14   |   |     |             |
|                | 162     |  | 162   |             | 100                | 84/44/44/0  |   |     |             |
| 440,60         |         | Sediment, Claystone Red, waxy. Slickensides.   | 162   |             | 100                | 49/0/0/0  |   |     |             |
| 440,20         |         | Dyke - Basalt Dark grey, vesicular, vesicles coated and filled with black clay. Part of the dyke is angular dyke fragments mixed with sediments.               | 164   |             | 99                 | 51/0/0/0  |   |     |             |
| 438,60         |         | Sediment, Claystone Waxy surface. Shrinks during drying. Slickensides.   | 164   |             | 98                 | 52/0/0/0  |   |     |             |
| 437,70         |         | Tholeiite basalt, intermediate olivine - tholeiite basalt<br>Medium grey, vesicular at the top, but few vesicles scattered in the lower part. Hard and strong. | 166   |             | 94                 | 56/0/0/0  |   |     |             |
|                | 168     |  | 168   |             | 100                | 0/0/0/0   |   |     |             |
| 433,10         |         | Sediment, Claystone waxy, weak.  | 170   |             | 100                | 25/0/0/0  |   |     |             |
| 432,90         |         | Scoriaceous basalt Vesicular. Dark grey at top, lighter grey downwards   | 172   |             | 99                 | 67/47/16/0  |   |     |             |
|                | 172     | Tholeiite basalt Medium grey. Hard and strong rock.  | 172   |             | 99                 | 67/47/16/0  |   |     |             |
|                | 174     |  | 174   |             | 99                 | Q = 4,5 - 15  |   |     |             |
|                | 176     |  | 176   |             | 97                 | Q = $\frac{67}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |             |
| 427,30         |         | Sediment, Sandstone - Siltstone Red, weak or very weak.  | 176   |             | 100                | 0/0/0/0   |   |     |             |
| 426,70         |         | Scoriaceous basalt<br>Grey and Purpule-grey, well compressed, moderately strong. Vugs about 15% to 20%. All filled with zeolites.                              | 178   |             | 98                 | 96/96/96/96   |   |     |             |
|                | 180     | Tholeiite basalt Medium grey, very hard and strong rock  | 180   |             | 100                | 77/65/65/41   |   |     |             |
|                | 182     |  | 182   |             | 100                | 74/68/68/41   |   |     |             |
|                | 184     |  | 184   |             | 97                 | Q = 5,1 - 17  |   |     |             |
|                | 186     |  | 186   |             | 84                 | Q = $\frac{74}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |             |
| 419,25         |         | Sediment, Sandstone - Siltstone Red.   | 184   |             | 100                | 52/52/52/0  |   |     |             |
| 419,15         |         | Scoriaceous basalt<br>Grey, slightly reddish well compressed, moderately weak rock. Very porous but most pores filled with white zeolites.                     | 186   |             | 100                | 0/0/0/0   |   |     |             |
|                | 188     | Well compressed moderately strong scoriaceous basalt   | 188   |             | 100                | 100/44/0/0  |   |     |             |
|                | 190     | Tholeiite basalt<br>Medium grey, hard and brittle, moderately jointed. Joints rough, undulating, and coated with black clay.<br>Some crushed tectonized zones. | 190   |             | 99                 | 67/39/10/0  |   |     |             |
|                | 192     |  | 192   |             | 100                | Q = 4,5 - 15  |   |     |             |
|                | 194     |  | 194   |             | 100                | Q = $\frac{67}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |             |
|                | 196     |  | 196   |             | 100                | 67/36/0/0   |   |     |             |
| 406,25         |         | Scoriaceous basalt<br>Dark grey, very vesicular, vesicles filled with zeolites.  | 194   |             | 96                 | 22/0/0/0  |   |     |             |
| 406,05         |         | Tholeiite basalt Dark grey. Vesicular hard and brittle.  | 196   |             | 100                | 100/94/58/0   |   |     |             |
|                | 198     | Sediment, Claystone Red tuff, waxy, clayeous, weak.  | 198   |             | 92                 | 64/19/0/0   |   |     |             |
|                | 200     | Scoriaceous basalt<br>A mix of scoriaceous basalt and tholeiite basalt. Vesicular, most vugs filled with zeolites  | 200   |             | 100                | 50/0/0/0  |   |     |             |
|                |         |  |       |             | 100                | 91/67/67/0  |   |     |             |
|                |         |  |       |             | 88                 | 76/49/36/0  |   |     |             |

0,6 LU  
téstet  
up to  
13,1 bar

The GWT rose to  
170 m depth after  
drilling as  
measured at the  
end of october  
2014

4,7 LU at  
14,0 bar  
197L/min

| Elev. m a.s.l.   | Depth m | Description of corehole FH - 01   | Depth                                       | Rock column | Core %    | RQD %                 | Q | GWT | Perm. (LU)              |
|------------------|---------|---|---|-------------|-----------|-----------------------|---|-----|-------------------------|
|                  |         |   |   |             |           | 10 / 30 / 50 / 100    |   |     | 2,5 5,0 7,5             |
|                  | 200     | A mix of scoriaceous basalt and tholeiite basalt. Three zones of crystalline basalt (each 1m to 2m long) involved in scoriaceous porous zones     | K-31<br>K-32                                |             |           |                       |   |     | At 375-432 m hole depth |
|                  | 202     |   |   |             | 96        | 83/55/22/0            |   |     |                         |
|                  | 204     | Scoriaceous basalt<br>Red brown, very porous. All vesicles filled with zeolites.  | 9<br>5,9 kN<br>Is (50) 2,8 MPa              |             |           |                       |   |     |                         |
|                  | 206     | Tholeiite basalt<br>Medium grey, very hard and strong, frequently micropore flow banded.  | K-32<br>K-33<br>22,5 kN<br>Is (50) 10,6 MPa |             | 95        | 69/63/63/63           |   |     |                         |
|                  | 208     |   |   |             | 100       | 100/92/50/0           |   |     |                         |
|                  | 210     | Widespread inclined joints and black veins of irregular joints. Filled and coated with black clay.  |   |             | 96        | 75/55/38/6            |   |     |                         |
|                  | 212     |   |   |             | 94        | 55/29/0/0             |   |     |                         |
|                  | 214     | Very hard and strong, frequently micropore flow banded.   | K-33<br>K-34                                |             | 100       | 73/51/51/0            |   |     |                         |
|                  | 216     |   |   |             | 100       | 83/63/40/0            |   |     |                         |
|                  | 218     | Sediment - Ignimbrite Pink at the top, green in the lower part.   | 10<br>5,8 kN                                |             | 100       | 70/70/70/0            |   |     |                         |
| 385,50           | 220     | Tuffaceous Siltstone - Claystone Dark red brown, very weak, waxy. Breaks up during drilling and shrinks during drying.                            | Sample<br>Is(50) 2,73 MPa<br>TS=0,59 MPa    |             | 99<br>100 | 95/79/0/0<br>0/0/0/0  |   |     |                         |
| 381,95           | 222     | Porphyritic basalt<br>Dark to medium grey. Plagioclase phenocrysts 5% to 10% (<5mm). Very vesicular in the upper half, massive in the lower part. | 10<br>3,8 kN<br>Is (50) 1,77 MPa            |             | 100       | 85/85/85/0            |   |     |                         |
|                  | 224     |   |   |             | 99        | 87/60/49/36           |   |     |                         |
|                  | 226     | Red sediment, probably some drop from upper sediment.   | 5<br>20,9 kN<br>Is (50) 9,84 MPa            |             | 100       | 87/74/67/47           |   |     |                         |
|                  | 228     | Medium grey, massive porphyritic basalt.  | K-35<br>K-36                                |             | 100       | 80/67/56/37           |   |     |                         |
|                  | 230     |   | Is (50) 2,0 MPa                             |             | 100       | 96/96/96/96           |   |     |                         |
| 372,60<br>372,25 | 232     | Sediment, Siltstone Red to red brown, weak rock, waxy at base.  | 7   |             | 100       | 91/91/0/0             |   |     |                         |
|                  | 234     | Scoriaceous basalt<br>Scoriaceous basalt mixed with red sandstone infiltrations.  | 8<br>2,2 kN<br>Is (50) 1,02 MPa             |             | 96<br>99  | 96/0/0/0<br>99/99/0/0 |   |     |                         |
|                  | 236     | Porphyritic basalt - Cumulate<br>The basalt contains 20-30 % large plagioclase phenocrysts (<15mm).   | K-36<br>K-37                                |             | 98        | 98/78/78/78           |   |     |                         |
|                  | 238     | Medium to light grey core.<br>Massive porphyritic basalt, with few joints.  |   |             | 100       | 100/100/100/48        |   |     |                         |
|                  | 240     |   | 10<br>17,1 kN<br>Is (50) 8,0 MPa            |             | 99        | 94/85/70/57           |   |     |                         |
|                  | 242     |   |   |             | 100       | 100/100/100/100       |   |     |                         |
|                  | 244     | Sediment, Tuffaceous Siltstone - Claystone Dark at the top 0,5m, then red. Very weak.   | TS=1,72 MPa<br>Sample                       |             | 100       | 140/0/0               |   |     |                         |
| 359,78<br>358,75 | 246     | Scoriaceous basalt Scoriaceous and vesicular basalt   | K-38<br>K-39                                |             | 99        | 79/50/28/0            |   |     |                         |
|                  | 248     | Olivine basalt, Intermediate Olivine - Tholeiite basalt<br>Sediment, probably some drop from upper sediment.                                      | 4<br>21,5 kN<br>Is (50) 10,1 MPa            |             | 100       | 92/92/62/39           |   |     |                         |
|                  | 250     | Dense and massive very strong basalt, with few joints.  |   |             |           |                       |   |     |                         |

1,0 LU tested up to 15,0 bar

0,0 LU tested up to 12,1 bar

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
|                | 250     | Olivine - Tholeiite intermediate basalt<br>Extremely hard and strong.   | 250   |             | 100    | 91/81/81/60                 |   |     |                           |
|                | 252     | Layer boundary, red sandstone bed <1cm  | 252   |             | 100    | 100/72/0/0                  |   |     |                           |
|                |         | Scoriaceous basalt Mix of scoria and sandstone (0,3m)   |       |             | 96     | 96/96/0/0                   |   |     |                           |
|                | 254     | Scoriaceous basalt - Tholeiite basalt<br>A mix of scoriaceous and crystalline vesicular basalt, moderately strong.  | 254   | (R)         | 100    | 100/0/0/0                   |   |     |                           |
|                | 256     | Scoriaceous basalt  | 256   |             | 98     | 83/76/28/0                  |   |     |                           |
|                |         | Tholeiite basalt, Intermediate Olivine -Tholeiite basalt  |       |             | 99     | 88/72/47/22                 |   |     |                           |
|                | 258     | Medium grey, very hard and strong. Micropore flow-banded, and scattered vesicles filled with black clay and zeolites.   | 258   |             | 100    | 68/50/25/0                  |   |     |                           |
|                | 260     |   | 260   | (R)         | 100    | 100/77/77/0                 |   |     |                           |
|                | 262     |   | 262   |             | 100    | 91/0/0/0                    |   |     |                           |
|                | 262     | Vesicular and scoriaceous 0,5m  | 262   |             | 97     | 97/97/73/0                  |   |     |                           |
| 340,00         |         | Sediment, Sandstone Red grey and pink   |       |             | 100    | 97/86/67/67                 |   |     |                           |
| 339,75         | 264     | Scoriaceous basalt Porous, all vugs filled with zeolites.   | 264   |             | 100    | 0/0/0/0                     |   |     |                           |
|                |         | Olivine basalt - Intermediate Olivine -Tholeiite basalt <sup>9</sup>  |       |             |        | 100/100/100/0               |   |     |                           |
|                | 266     | Medium dark grey, scattered vesicles, mainly coated and half-filled with black clay and zeolites.   | 266   | (N)         | 95     | 86/78/0/0                   |   |     |                           |
|                | 268     | Zones of micropore flow-banding with black clay.  | 268   |             | 98     | 78/51/15/0                  |   |     |                           |
|                | 270     |   | 270   |             | 100    | 96/72/24/0                  |   |     |                           |
|                | 272     | Some joints in the lower part with red alteration.  | 272   |             |        |                             |   |     |                           |
|                | 274     |   | 274   |             |        |                             |   |     |                           |
| 328,80         |         | Sediment - Ignimbrite Red sandstone bed at top 5cm.   |       |             |        |                             |   |     |                           |
|                | 276     | Pink and green, welded moderately strong rock.  | 276   |             | 100    | 91/78/78/0                  |   |     |                           |
| 326,80         |         | Sediment - Tuffaceous Siltstone-Claystone   |       |             |        |                             |   |     |                           |
|                | 278     | Stratified argillaceous sandy tephra, and green highly stratified tephra. Moderately weak and weak lenses.  | 278   |             | 94     | 40/21/0/0                   |   |     |                           |
|                | 280     | Argillaceous Stratified Tuff Dark purple- and violet grey stratified clayous rock which breaks up into slices during drilling. Possibly swelling type of clayous sediment   | 280   |             | 98     | 32/21/15/0                  |   |     |                           |
|                | 282     | Very weak rock, which breaks up during drilling.  | 282   |             | 100    | 8/0/0/0                     |   |     |                           |
|                | 284     | Argillaceous Siltstone - Claystone Dark red, possibly swelling type.  | 284   |             | 100    | 0/0/0/0                     |   |     |                           |
| 318,90         |         | Argillaceous very weak rock. Waxy surface. Dark brown grey stratified tuff.   |       |             |        |                             |   |     |                           |
|                | 286     | Scoriaceous basalt Medium grey porous rock, but all vugs filled with zeolites.  | 286   |             | 100    | 97/69/69/0                  |   |     |                           |
|                | 288     | Unclear boundary  | 288   |             | 100    | 100/84/84/66                |   |     |                           |
|                | 290     | Olivine basalt - porphyritic Medium to dark grey core, with about 7% to 10% plagioclase phenocrysts < 5 mm. Zones show faint micropore flow-banding. Joints subvertical, inclined and subhorizontal. Rough, undulating, and coated with black clay. Hard and strong competent rock. | 290   |             | 98     | 86/19/19/0                  |   |     |                           |
|                | 292     |   | 292   | (N)         | 100    | 54/16/0/0                   |   |     |                           |
|                | 294     |   | 294   |             | 100    | 79/43/30/12                 |   |     |                           |
|                | 296     |   | 296   |             | 100    | 54/0/0/0                    |   |     |                           |
|                | 298     |   | 298   |             | 100    | 64/30/0/0                   |   |     |                           |
|                | 300     |   | 300   |             | 100    | 27/0/0/0                    |   |     |                           |

0,2 LU tested up to 12,1 bar

0,2 LU tested up to 15,0 bar



| Elev. m a.s.l. | Depth m | Description of corehole FH - 01  | Depth | Rock column | Core %                 | RQD %<br>10 / 30 / 50 / 100                | Q | GWT | Perm. (LU)<br>2.5 5.0 7.5 |
|----------------|---------|--|-------|-------------|------------------------|--|---|-----|---------------------------|
| 302,10         | 300     | Porphyritic Olivine basalt<br>$I_s(50)$ 7,6 MPa  | 300   |             | 100                    | 96/66/66/0                                 |   |     |                           |
| 300,40         | 302     | Sediment, Tuffaceous Sandstone - Claystone<br>Stratified grey pink dark-red. Very weak rock, breaks during drilling, and shrinks during drying.<br>Sample  | 302   |             | 94                     | 40/18/0/0                                  |   |     |                           |
| 298,60         | 304     | Olivine basalt<br>Dark grey. Vesicular, moderately strong. Vesicles filled with zeolites.<br>K-47<br>K-48  | 304   |             | 100<br>99<br>99        | 59/0/0/0<br>70/18/0/0<br>71/20/0/0         |   |     |                           |
| 293,80         | 306     | Sediment, Tuffaceous Sandstone - Claystone<br>Stratified colourful tephra. Green, brown, red, light green, red, violet, green. Many subvertical slickensides. Very weak clayey rock, which breaks up into slices during drying.<br>Sample  | 306   |             | 100<br>76<br>91<br>100 | 20/0/0/0<br>11/0/0/0<br>5/0/0/0<br>0/0/0/0 |   |     |                           |
| 292,15         | 308     | Violet grey claystone, very weak, waxy surface on core probably swelling rock.<br>$Q = < 0,1 - 1$  | 308   |             | 89                     | 0/0/0/0                                    |   |     |                           |
| 289,75         | 310     | Igimbrite, green welded tuff<br>Mainly green, strong, argillaceous, acidic tephra. Well stratified.<br>$I_s(50)$ 0,8 MPa<br>K-48<br>K-49   | 310   |             | 100<br>100             | 0/0/0/0<br>75/48/0/0<br>80/51/0/0          |   |     |                           |
|                | 312     | Green, very weak, argillaceous tuff, probably swelling.<br>Sample  | 312   |             | 98<br>99<br>100        | 0/0/0/0<br>0/0/0/0<br>0/0/0/0              |   |     |                           |
|                | 314     | Scoriaceous sediment<br>A mix of scoriaceous basalt and red tuffaceous sandstone with a moderately strong matrix. This formation was probably formed near some volcanic crater.<br>2,2 kN<br>$I_s(50)$ 1,03 MPa<br>K-49  | 314   |             | 100                    | 100/100/66/0                               |   |     |                           |
|                | 316     |  | 316   |             | 99                     | 66/66/66/0                                 |   |     |                           |
|                | 318     | Medium dark red, well compressed and consolidated<br>K-49<br>K-50<br>11<br>3,8 kN<br>$I_s(50)$ 1,79 MPa  | 318   |             | 100                    | 100/100/100/100                            |   |     |                           |
|                | 320     |  | 320   |             | 99<br>100              | 91/91/81/81<br>83/74/67/44                 |   |     |                           |
|                | 322     | Tholeiite basalt<br>Grey, somehow brecciated but recemented. Hard and moderately strong rock.<br>4,0 kN<br>$I_s(50)$ 1,89 MPa<br>K-50  | 322   |             | 100                    | 86/57/57/0                                 |   |     |                           |
|                | 324     | Some red discoloration of fracture surfaces and fracture wall rock. Green and blue clay coatings to some fracture surfaces.<br>K-51  | 324   |             | 100                    | 54/36/0/0                                  |   |     |                           |
| 277,20         | 326     | Sediment, Tuffaceous Claystone<br>Stratified colour, dark grey and black at the top, brown, green, red, black clayey tephra.<br>Sample<br>TS=0,82 MPa<br>TS=0,50 MPa<br>TS=0,59 MPa  | 326   |             | 89<br>100<br>90        | 0/0/0/0<br>0/0/0/0<br>0/0/0/0              |   |     |                           |
| 273,90         | 328     | Red and dark purple grey, argillaceous, very weak sandstone - claystone.<br>K-51<br>K-52<br>10<br>5,5 kN<br>$I_s(50)$ 2,62 MPa   | 328   |             | 83<br>100              | 0/0/0/0<br>0/0/0/0                         |   |     |                           |
|                | 330     | Olivine basalt<br>Medium dark grey, vesicular in the topmost 2m to 3m, all vesicles filled with black clay.<br>K-51<br>K-52<br>10<br>5,5 kN<br>$I_s(50)$ 2,62 MPa  | 330   |             | 98                     | 89/33/0/0                                  |   |     |                           |
|                | 332     | Zones with frequent joints and black veins of joints healed with black clay.   | 332   |             | 100                    | 77/28/0/0                                  |   |     |                           |
|                | 334     | The core breaks up at subvertical joints, (possibly a subvertical dyke 0,8 m).<br>Most part of the layer is massive microporous basalt, all micropores and voids are filled with black clay yielding a dark colour to the rock.<br>K-52<br>K-53<br>10<br>13,7 kN<br>$I_s(50)$ 6,45 MPa | 334   |             | 100<br>99              | 54/41/16/0<br>64/27/11/0                   |   |     |                           |
|                | 336     | Tectonized zone<br>103 MPa   | 336   |             | 100                    | 78/60/60/0                                 |   |     |                           |
|                | 338     |  | 338   |             | 100                    | 55/30/30/0                                 |   |     |                           |
|                | 340     | Dyke, basalt<br>Dark grey, fine grained, welded to the adjacent basalt.<br>K-53  | 340   |             | 100                    | 51/15/0/0                                  |   |     |                           |
|                | 342     | Olivine basalt<br>Dark grey, microporous, flow-banded pores, pores filled with black clay. 12,9 kN<br>K-54<br>K-55<br>6  | 342   |             | 100                    | 100/37/0/0                                 |   |     |                           |
|                | 344     | Tectonized rock with frequent joints healed with black clay.<br>$I_s(50)$ 6,63 MPa   | 344   |             | 92                     | 39/0/0/0                                   |   |     |                           |
| 257,70         | 346     | Dyke, basalt Very dark grey, dense pattern of thin joints healed with white zeolites   | 346   |             | 100                    | 78/0/0/0                                   |   |     |                           |
|                | 348     | Sediment, Tuffaceous Claystone<br>Stratified colours, very dark grey in the topmost 1m, then red, dark and red. Very weak rock, which breaks up during drilling and shrinks during drying.<br>K-54<br>K-55   | 348   |             | 100                    | 24/0/0/0                                   |   |     |                           |
|                | 350     | Red and dark purple grey partly argillaceous very weak sandstone.  | 350   |             | 100                    | 24/0/0/0                                   |   |     |                           |

5,6 LU at  
10,0 bar  
167L/min

| Elev. m a.s.l. | Depth m | Description of corehole FH - 01  | Depth | Rock column | Core % | RQD %              | Q | GWT | Perm. (LU)  |
|----------------|---------|--|-------|-------------|--------|--------------------|---|-----|-------------|
|                |         |  |       |             |        | 10 / 30 / 50 / 100 |   |     | 2,5 5,0 7,5 |
| 253,00         | 350     | Scoriaceous Tholeiite basalt   | 350   |             | 100    | 100/68/68/0        |   |     |             |
|                | 352     | The rock varies in zones from hard tholeiite basalt to scoriaceous basalt but technically one rock unit.   | 352   |             | 100    | 79/72/58/0         |   |     |             |
|                | 354     |  | 354   | (N)         | 99     | 86/77/67/28        |   |     |             |
|                | 356     | Tectonized, highly jointed and recemented, mix of tholeiite and scoriaceous basalt   | 356   |             | 100    | 84/79/56/0         |   |     |             |
|                | 358     | Scoriaceous basalt Dark red-grey, porous with white zeolite amygdalae. Mixed with brecciated basalt injections.  | 358   |             | 100    | 48/0/0/0           |   |     |             |
|                | 360     | Sediment, dark red sandstone   | 360   |             | 97     | 97/97/97/97        |   |     |             |
| 242,55         | 360     | Scoriaceous basalt Dark red grey, porous with white zeolite amygdalae. Moderately hard and strong rock.  | 360   |             | 100    | 44/0/0/0           |   |     |             |
|                | 362     | Basaltic dyke, probably a sill intrusion   | 362   | (R)         | 100    | 47/0/0/0           |   |     |             |
|                | 364     | Dark grey, microporous, pores are filled with black clay. The rock is tectonized, heavily broken and highly jointed, joints coated and healed with black clay up to 5 mm thick. Slickensides.  | 364   | (N)         | 100    | 100/30/0/0         |   |     |             |
|                | 366     | The dyke looks quite like olivine basalt but shows marks of chilled margins.   | 366   |             | 82     | 14/0/0/0           |   |     |             |
|                | 368     | Fault breccia - margin of dyke   | 368   |             | 33     | 0/0/0/0            |   |     |             |
| 233,70         | 370     | Inclined contact with 5cm dark sandstone. Tectonic breccia   | 370   |             | 100    | 26/0/0/0           |   |     |             |
|                | 372     | The brecciated rock consists mainly of hard basalt fragments, well cemented in a red sandstone matrix, forming a competent rock mass.  | 372   |             | 100    | 0/0/0/0            |   |     |             |
|                | 374     | The hard fragments are of different rock types indicating large displacement in the fault zone.  | 374   |             | 100    | 0/0/0/0            |   |     |             |
| 229,00         | 376     | Dyke, basalt   | 376   | (N)         | 100    | 23/0/0/0           |   |     |             |
|                | 378     | Dark grey, fine grained, mainly of high intact strength but highly jointed. The rock is tectonized and heavily jointed, joints frequently healed or coated with black clay. Most joints are with red alteration zones and joint planes are coated with red stain as a result of former thermal activity. | 378   |             | 85     | 31/4/0/0           |   |     |             |
|                | 380     | Most joints are with red alteration zones and joint planes are coated with red stain as a result of former thermal activity.   | 380   |             | 100    | 31/0/0/0           |   |     |             |
| 222,08         | 382     | Porphyritic-olivine basalt Dark grey, 10% plagioclase phenocrysts. Sharp contacts to the dyke.   | 382   |             | 47     | 0/0/0/0            |   |     |             |
| 221,00         | 384     | Dyke, basalt   | 384   | (N)         | 40     | 0/0/0/0            |   |     |             |
|                | 386     | Dark grey, fine grained, dense rock, mainly of high intact strength. Tectonized and heavily jointed rock. All joints are with red alteration zones and joint planes are coated with red stain as a result of former thermal activity.  | 386   |             | 100    | 100/100/100/0      |   |     |             |
| 216,94         | 388     | Porphyritic basalt Medium to dark grey, hard and strong. Vesicular, most vesicles filled with black clay and zeolites.   | 388   | (N)         | 95     | 29/0/0/0           |   |     |             |
| 216,70         | 390     | Relatively few joints.   | 390   |             | 100    | 33/0/0/0           |   |     |             |
|                | 392     | Sediment, Claystone Tuffaceous, argillaceous very weak rock, crushed core  | 392   |             | 99     | 24/0/0/0           |   |     |             |
|                | 394     | Dyke, basalt Fine grained, very dark moderately strong rock  | 394   | (N)         | 100    | 33/0/0/0           |   |     |             |
|                | 396     | Dyke, basalt Fine grained, very dark moderately strong rock  | 396   |             | 100    | 0/0/0/0            |   |     |             |
| 211,60         | 398     | Tholeiite basalt Medium grey, very hard and very strong rock. highly jointed, some joints healed. Joints rough and undulating.   | 398   | (N)         | 99     | 10/0/0/0           |   |     |             |
| 210,80         | 400     |  | 400   |             | 100    | 100/0/0/0          |   |     |             |

3.3 LU at 13.7 bar  
135L/min

The hole was cemented four times at 360-387 m depth. Later the hole was cemented from 372-432 m depth.

**Fjarðarheiði at Heiðarvatn**

Date June 2017

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Empl.



**Corehole FH - 01 400 - 432,75 m**

Design AgG

Drawn AgG/TW

Coord. X: 724 695,9 Y: 536 183,1 Elev.: 603,3

Driller RFS

Drilled Aug. 2014

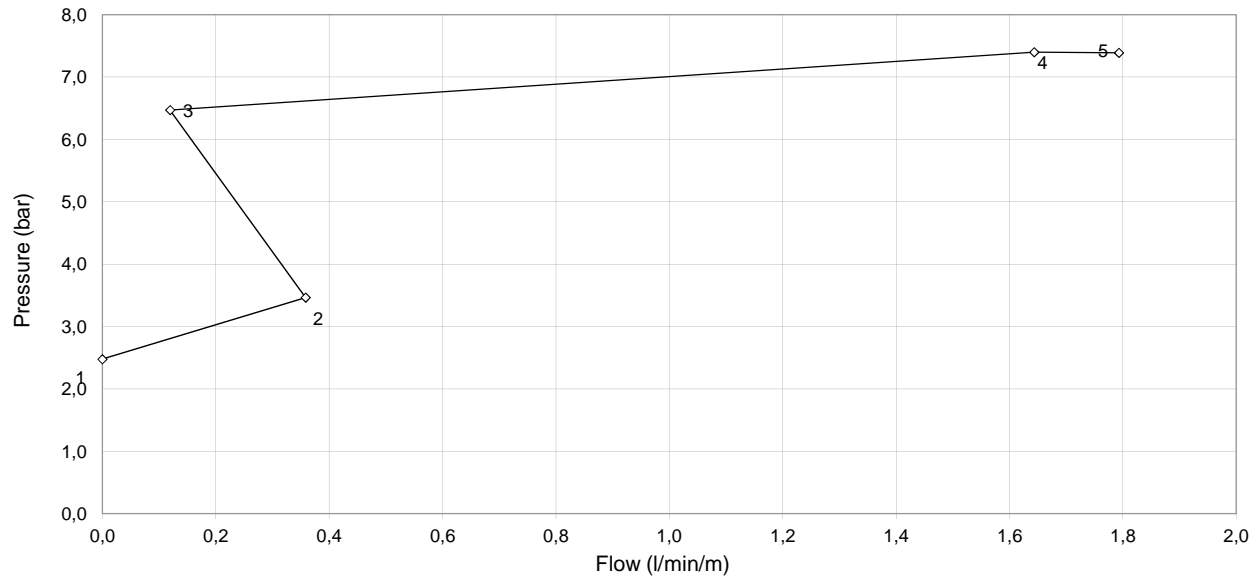
| Elev. m a.s.l. | Depth m | Description of corehole FH - 01   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
| 202,30         | 400     | Sediment, Sandstone Dark brown, several joints healed with zeolites and calcite.  | 400   |             | 100    | 100/61/0/0                  |   |     |                           |
| 201,50         | 402     | Scoriaceous basalt Dark grey, porous with white zeolite amygdalae. Moderately strong and hard rock.   | 402   |             | 100    | 57/0/0/0                    |   |     |                           |
|                | 404     | Tholeiite basalt Medium grey, very hard and strong rock. Fine grained crystals. Short tectonized zones with crushed recemented rock, full of black clay.  | 404   |             | 100    | 55/0/0/0                    |   |     |                           |
|                | 406     | Joints are rough, undulating, coated with black clay.   | 406   |             | 97     | 22/0/0/0                    |   |     |                           |
|                | 408     |   | 408   |             | 100    | 44/0/0/0                    |   |     |                           |
|                | 410     | Faint unclear boundary  | 410   |             | 100    | 0/0/0/0                     |   |     |                           |
|                | 412     | Scoriaceous Tholeiite basalt This part of the layer is moderately strong with few joints.   | 412   |             | 100    | 100/0/0/0                   |   |     |                           |
|                | 414     | Faint unclear boundary  | 414   |             | 100    | 97/87/69/0                  |   |     |                           |
|                | 416     | Tholeiite basalt Medium grey, very fine grained, very hard and strong. Gravely eroded pebbles of dark brown tephra sediment, fallen from hole walls above.  | 416   |             | 100    | 58/26/18/0                  |   |     |                           |
|                | 418     | Sediment, Siltstone Dark, well compressed, hard, sandy, tephra.   | 418   |             | 80     | 0/0/0/0                     |   |     |                           |
| 185,85         | 420     | Olivine basalt Dark grey, slightly microporous. Stratified micropores form faint flow banding. Mainly strong rock.  | 420   |             | 99     | 84/47/47/0                  |   |     |                           |
| 185,70         | 422     | The layer is tectonized in the lower part, frequently jointed, joints rough, undulating, and coated with black clay.  | 422   |             | 100    | 43/0/0/0                    |   |     |                           |
|                | 424     |   | 424   |             | 100    | 34/0/0/0                    |   |     |                           |
|                | 426     | Olivine basalt Dark grey, medium size of crystals. The basalt is heavily tectonized but most joints healed with black clay, forming black mosaic pattern. Moderately strong to strong rock.   | 426   |             | 100    | 55/24/18/0                  |   |     |                           |
|                | 428     | Dyke, basalt Dark grey, fine grained, intensely jointed (dark crushed basalt). Some joints are healed with black clay forming thin black veins. Red colour from former thermal alteration at many joints. Most joints rough, undulating, coated with black clay. Moderately weak to weak rock mass. | 428   |             | 99     | 39/0/0/0                    |   |     |                           |
|                | 430     |   | 430   |             | 98     | 12/0/0/0                    |   |     |                           |
|                | 432     |   | 432   |             | 100    | 33/33/0/0                   |   |     |                           |
| 178,55         | 434     | Sediment, Sandstone - Siltst. Dark grey tephra, weak rock, partly clayey.   | 434   |             | 100    | 29/0/0/0                    |   |     |                           |
| 178,10         | 436     |   | 436   |             | 100    | 89/89/89/89                 |   |     |                           |
|                | 438     |   | 438   |             | 100    | 74/46/46/46                 |   |     |                           |
|                | 440     |   | 440   |             | 100    | 57/0/0/0                    |   |     |                           |
|                | 442     |   | 442   |             | 100    | 58/32/32/0                  |   |     |                           |
|                | 444     |   | 444   |             | 99     | 27/13/13/0                  |   |     |                           |
|                | 446     |   | 446   |             | 99     | 0/0/0/0                     |   |     |                           |
|                | 448     |   | 448   |             | 98     | 12/0/0/0                    |   |     |                           |
| 170,55         | 450     | Bottom of hole august 21. 2014  | 450   |             |        |                             |   |     |                           |

> 7 LU'at  
20 bar  
370 L/min



|  |  |                    |  |          |                                  |                            |           |          |                            |           |        |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|-----------|----------|----------------------------|-----------|--------|--|
|  |  | Project            |  |          | Date                             |                            | 28.6.2014 |          | Drill type                 |           | NQ     |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 11:00     |          | Paker                      |           | Johnny |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | #####     |          | Water meter                |           | Tester |  |
|  |  | Water pumping test |  |          | Time                             |                            |           |          | AgG                        |           |        |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0         |          | Inclined length to GWT (m) |           | 3,76   |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076     |          | Depth to GWT (m)           |           | 3,76   |  |
| Inclined   |  | To (m)             |  | 43,81 m  |                                  | m: (k/kp) <sup>0.5</sup> = |           | 1000     |                            | (no dim.) |        |  |
| Depth  |  | From (m)           |  | 21,5 m   |                                  |                            |           |          |                            |           |        |  |
| Test length (m)                                  |  |                    |  | 22,31 m  |                                  |                            |           |          |                            |           |        |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |           | 4        |                            | 5         |        |  |
| Water meter End (L)                              |  | 941629,0           |  | 941646,0 |                                  | 941738,0                   |           | 941890,0 |                            | 941990,0  |        |  |
| Water meter Start (L)                            |  | 941629,0           |  | 941630,0 |                                  | 941730,0                   |           | 941780,0 |                            | 941950,0  |        |  |
| Total Flow (L)                                   |  | 0,0                |  | 16,0     |                                  | 8,0                        |           | 110,0    |                            | 40,0      |        |  |
| Test time (min)                                  |  | 0,0                |  | 2,0      |                                  | 3,0                        |           | 3,0      |                            | 1,0       |        |  |
| Flow Rate (L/min)                                |  | 0,0                |  | 8,0      |                                  | 2,7                        |           | 36,7     |                            | 40,0      |        |  |
| L/min/m  |  | 0,0                |  | 0,4      |                                  | 0,1                        |           | 1,6      |                            | 1,8       |        |  |
| Start pressure (bar)                             |  | 2,0                |  | 3,0      |                                  | 6,0                        |           | 7,0      |                            | 7,0       |        |  |
| End pressure (bar)                               |  | 2,0                |  | 3,0      |                                  | 6,0                        |           | 7,0      |                            | 7,0       |        |  |
| H <sub>pump</sub> (bar)                          |  | 2,0                |  | 3,0      |                                  | 6,0                        |           | 7,0      |                            | 7,0       |        |  |
| H <sub>elevation</sub> (bar)                     |  | 0,5                |  | 0,5      |                                  | 0,5                        |           | 0,5      |                            | 0,5       |        |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 2,5                |  | 3,5      |                                  | 6,5                        |           | 7,5      |                            | 7,5       |        |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |           | 0,1      |                            | 0,1       |        |  |
| H <sub>total</sub> (bar)                         |  | 2,5                |  | 3,5      |                                  | 6,5                        |           | 7,4      |                            | 7,4       |        |  |
| LU   |  | 0,0                |  | 1,0      |                                  | 0,2                        |           | 2,2      |                            | 2,4       |        |  |
| k (m/s)  |  | 0,0E+00            |  | 3,6E-07  |                                  | 6,5E-08                    |           | 7,8E-07  |                            | 8,5E-07   |        |  |

FH-01 21,5m to 43,81m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure guage estimated.

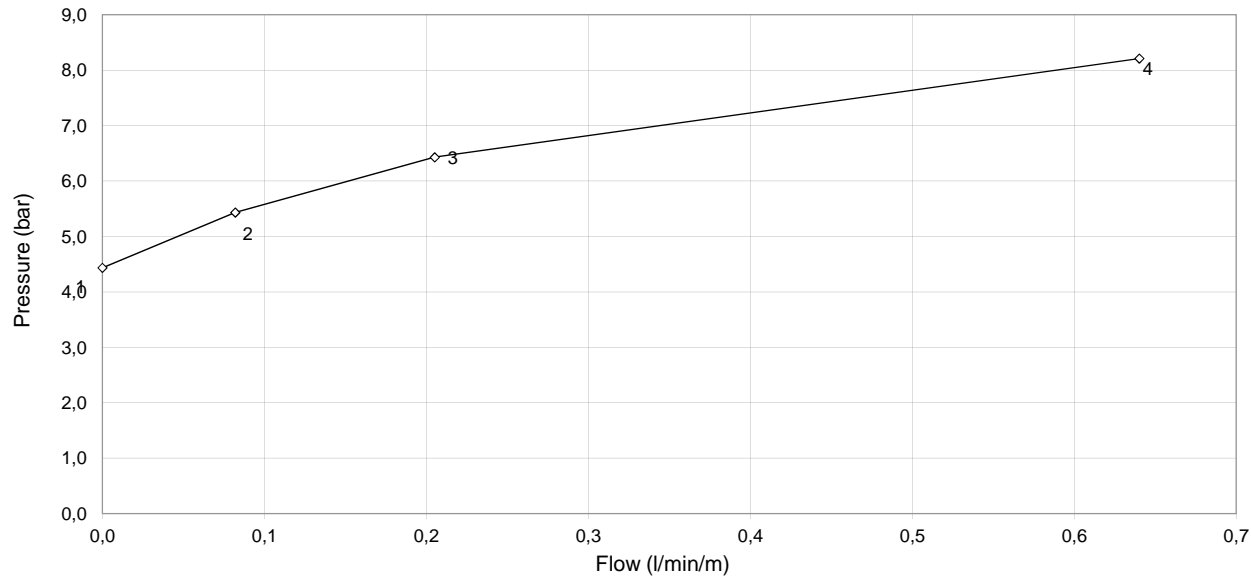
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |                                 |  |                                 |                                |                |               |
|--|---------------------------------|--|---------------------------------|--------------------------------|----------------|---------------|
|  |                                 | Project <b>Fjarðarheiði Tunnel Project</b> |                                 |                                | Date 29.6.2014 | Drill type NQ |
| Client <b>Vegagerðin</b>                         |                                 |  |                                 | Start 08:20                    | Paker Johnny   |               |
| Contractor <b>RFS</b>                            | <b>Water pumping test</b>       |  |                                 | End 09:15                      | Water meter    |               |
|  |                                 | Hole inclination (fom vertical)° 0         | Inclined length to GWT (m) 3,35 | Time 00:55                     | Tester AgG     |               |
| <b>Borehole FH-01</b>                            | Borehole diameter (m) 0,076     |  | Depth to GWT (m) 3,35           | height of pressure gauge (m) 1 |                |               |
| Inclined To (m) 66,57 m                          | m: (k/kp) <sup>0.5</sup> = 1000 |  | (no dim.)                       |                                |                |               |
| Depth From (m) 42,2 m                            |                                 |  |                                 |                                |                |               |
| Test length (m) 24,37 m                          |                                 |  |                                 |                                |                |               |
| Test stage                                       | 1                               | 2  | 3                               | 4                              |                |               |
| Water meter End (L)                              | 942364,0                        | 942380,0                                   | 942435,0                        | 942578,0                       |                |               |
| Water meter Start (L)                            | 942364,0                        | 942370,0                                   | 942410,0                        | 942500,0                       |                |               |
| Total Flow (L)                                   | 0,0                             | 10,0                                       | 25,0                            | 78,0                           |                |               |
| Test time (min)                                  | 0,0                             | 5,0  | 5,0                             | 5,0                            |                |               |
| Flow Rate (L/min)                                | 0,0                             | 2,0  | 5,0                             | 15,6                           |                |               |
| L/min/m  | 0,0                             | 0,1  | 0,2                             | 0,6                            |                |               |
| Start pressure (bar)                             | 4,0                             | 5,0  | 6,0                             | 7,8                            |                |               |
| End pressure (bar)                               | 4,0                             | 5,0  | 6,0                             | 7,8                            |                |               |
| H <sub>pump</sub> (bar)                          | 4,0                             | 5,0  | 6,0                             | 7,8                            |                |               |
| H <sub>elevation</sub> (bar)                     | 0,4                             | 0,4  | 0,4                             | 0,4                            |                |               |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 4,4                             | 5,4  | 6,4                             | 8,2                            |                |               |
| H <sub>loss</sub> (bar)                          | 0,0                             | 0,0  | 0,0                             | 0,0                            |                |               |
| H <sub>total</sub> (bar)                         | 4,4                             | 5,4  | 6,4                             | 8,2                            |                |               |
| LU   | 0,0                             | 0,2  | 0,3                             | 0,8                            |                |               |
| k (m/s)  | 0,0E+00                         | 5,4E-08                                    | 1,1E-07                         | 2,8E-07                        |                |               |

FH-01 42,2m to 66,57m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

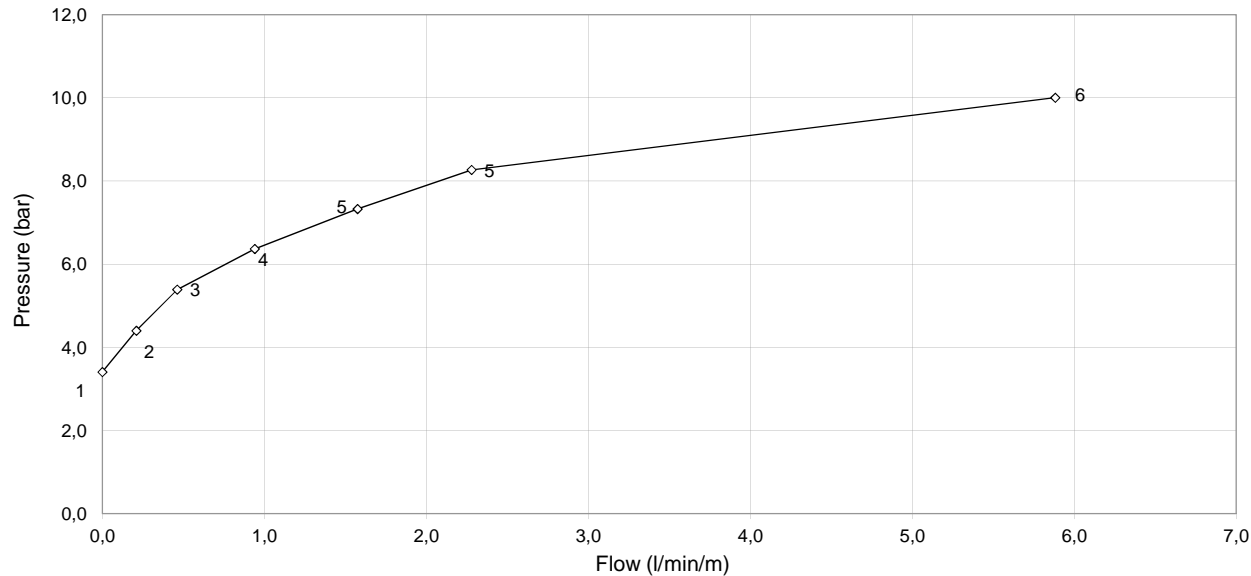
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |  |                    |  |          |                                  |                            |           |          |                            |           |        |          |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|-----------|----------|----------------------------|-----------|--------|----------|--|
|  |  | Project            |  |          | Date                             |                            | 30.6.2014 |          | Drill type                 |           | NQ     |          |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 09:00     |          | Paker                      |           | Johnny |          |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 09:50     |          | Water meter                |           |        |          |  |
|  |  | Water pumping test |  |          | Time                             |                            | 00:50     |          | Tester                     |           | AgG    |          |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0         |          | Inclined length to GWT (m) |           | 3,07   |          |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076     |          | Depth to GWT (m)           |           | 3,07   |          |  |
| Inclined   |  | To (m)             |  | 90,35 m  |                                  | m: (k/kp) <sup>0.5</sup> = |           | 1000     |                            | (no dim.) |        |          |  |
| Depth  |  | From (m)           |  | 66,55 m  |                                  |                            |           |          |                            |           |        |          |  |
| Test length (m)                                  |  |                    |  | 23,8 m   |                                  |                            |           |          |                            |           |        |          |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |           | 4        |                            | 5         |        | 6        |  |
| Water meter End (L)                              |  | 943070,0           |  | 943090,0 |                                  | 943175,0                   |           | 943312,0 |                            | 943530,0  |        | 943847,0 |  |
| Water meter Start (L)                            |  | 943070,0           |  | 943080,0 |                                  | 943120,0                   |           | 943200,0 |                            | 943380,0  |        | 943630,0 |  |
| Total Flow (L)                                   |  | 0,0                |  | 10,0     |                                  | 55,0                       |           | 112,0    |                            | 150,0     |        | 217,0    |  |
| Test time (min)                                  |  | 3,0                |  | 2,0      |                                  | 5,0                        |           | 5,0      |                            | 4,0       |        | 1,0      |  |
| Flow Rate (L/min)                                |  | 0,0                |  | 5,0      |                                  | 11,0                       |           | 22,4     |                            | 37,5      |        | 140,0    |  |
| L/min/m  |  | 0,0                |  | 0,2      |                                  | 0,5                        |           | 0,9      |                            | 1,6       |        | 2,3      |  |
| Start pressure (bar)                             |  | 3,0                |  | 4,0      |                                  | 5,0                        |           | 6,0      |                            | 7,0       |        | 8,0      |  |
| End pressure (bar)                               |  | 3,0                |  | 4,0      |                                  | 5,0                        |           | 6,0      |                            | 7,0       |        | 8,0      |  |
| H <sub>pump</sub> (bar)                          |  | 3,0                |  | 4,0      |                                  | 5,0                        |           | 6,0      |                            | 7,0       |        | 8,0      |  |
| H <sub>elevation</sub> (bar)                     |  | 0,4                |  | 0,4      |                                  | 0,4                        |           | 0,4      |                            | 0,4       |        | 0,4      |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 3,4                |  | 4,4      |                                  | 5,4                        |           | 6,4      |                            | 7,4       |        | 8,4      |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |           | 0,0      |                            | 0,1       |        | 0,1      |  |
| H <sub>total</sub> (bar)                         |  | 3,4                |  | 4,4      |                                  | 5,4                        |           | 6,4      |                            | 7,3       |        | 8,3      |  |
| LU   |  | 0,0                |  | 0,5      |                                  | 0,9                        |           | 1,5      |                            | 2,2       |        | 2,8      |  |
| k (m/s)  |  | 0,0E+00            |  | 1,7E-07  |                                  | 3,0E-07                    |           | 5,2E-07  |                            | 7,6E-07   |        | 9,8E-07  |  |

FH-01 66,55m to 90,35m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

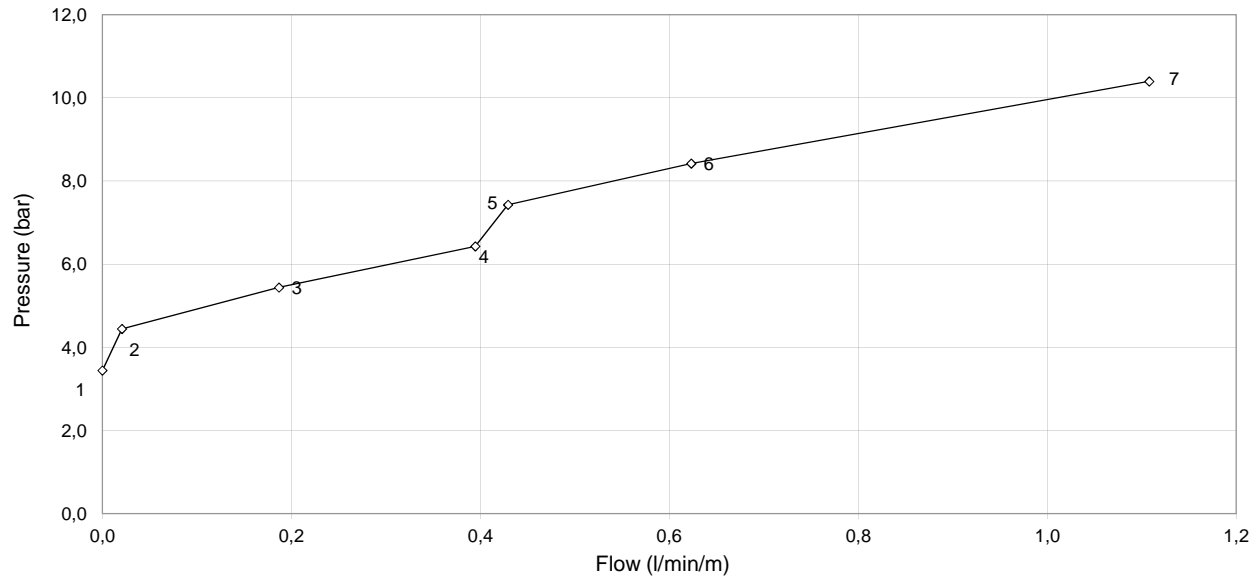
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |          |  |          |                            |                |                              |                |
|--|----------|--|----------|----------------------------|----------------|------------------------------|----------------|
|  |          | Project <b>Fjarðarheiði Tunnel Project</b> |          |                            | Date 30.6.2014 | Drill type NQ                |                |
| Client <b>Vegagerðin</b>                         |          | Water pumping test                         |          |                            | Start 16:30    | Paker Johnny                 |                |
| Contractor <b>RFS</b>                            |          |  |          |                            | Date           |                              | End Time ##### |
| Borehole <b>FH-01</b>                            |          | Hole inclination (fom vertical)°           | 0        | Inclined length to GWT (m) | 3,44           | height of pressure gauge (m) | 1              |
|  |          | Borehole diameter (m)                      | 0,076    | Depth to GWT (m)           | 3,44           |                              |                |
| Inclined To (m) 114,57 m                         |          | m: (k/kp) <sup>0.5</sup> = 1000            |          | (no dim.)                  |                |                              |                |
| Depth From (m) 90,5 m                            |          |  |          |                            |                |                              |                |
| Test length (m) 24,07 m                          |          |  |          |                            |                |                              |                |
| Test stage                                       | 1        | 2  | 3        | 4                          | 5              | 6                            | 7              |
| Water meter End (L)                              | 945885,0 | 945889,0                                   | 945909,0 | 945958,0                   | 945996,0       | 946065,0                     | 946180,0       |
| Water meter Start (L)                            | 945885,0 | 945887,0                                   | 945900,0 | 945920,0                   | 945965,0       | 946020,0                     | 946100,0       |
| Total Flow (L)                                   | 0,0      | 2,0  | 9,0      | 38,0                       | 31,0           | 45,0                         | 80,0           |
| Test time (min)                                  | 5,0      | 4,0  | 2,0      | 4,0                        | 3,0            | 3,0                          | 3,0            |
| Flow Rate (L/min)                                | 0,0      | 0,5  | 4,5      | 9,5                        | 10,3           | 15,0                         | 26,7           |
| L/min/m  | 0,0      | 0,0  | 0,2      | 0,4                        | 0,4            | 0,6                          | 1,1            |
| Start pressure (bar)                             | 3,0      | 4,0  | 5,0      | 6,0                        | 7,0            | 8,0                          | 10,0           |
| End pressure (bar)                               | 3,0      | 4,0  | 5,0      | 6,0                        | 7,0            | 8,0                          | 10,0           |
| H <sub>pump</sub> (bar)                          | 3,0      | 4,0  | 5,0      | 6,0                        | 7,0            | 8,0                          | 10,0           |
| H <sub>elevation</sub> (bar)                     | 0,4      | 0,4  | 0,4      | 0,4                        | 0,4            | 0,4                          | 0,4            |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 3,4      | 4,4  | 5,4      | 6,4                        | 7,4            | 8,4                          | 10,4           |
| H <sub>loss</sub> (bar)                          | 0,0      | 0,0  | 0,0      | 0,0                        | 0,0            | 0,0                          | 0,0            |
| H <sub>total</sub> (bar)                         | 3,4      | 4,4  | 5,4      | 6,4                        | 7,4            | 8,4                          | 10,4           |
| LU   | 0,0      | 0,0  | 0,3      | 0,6                        | 0,6            | 0,7                          | 1,1            |
| k (m/s)  | 0,0E+00  | 1,7E-08                                    | 1,2E-07  | 2,2E-07                    | 2,0E-07        | 2,6E-07                      | 3,8E-07        |

FH-01 90,5m to 114,57m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

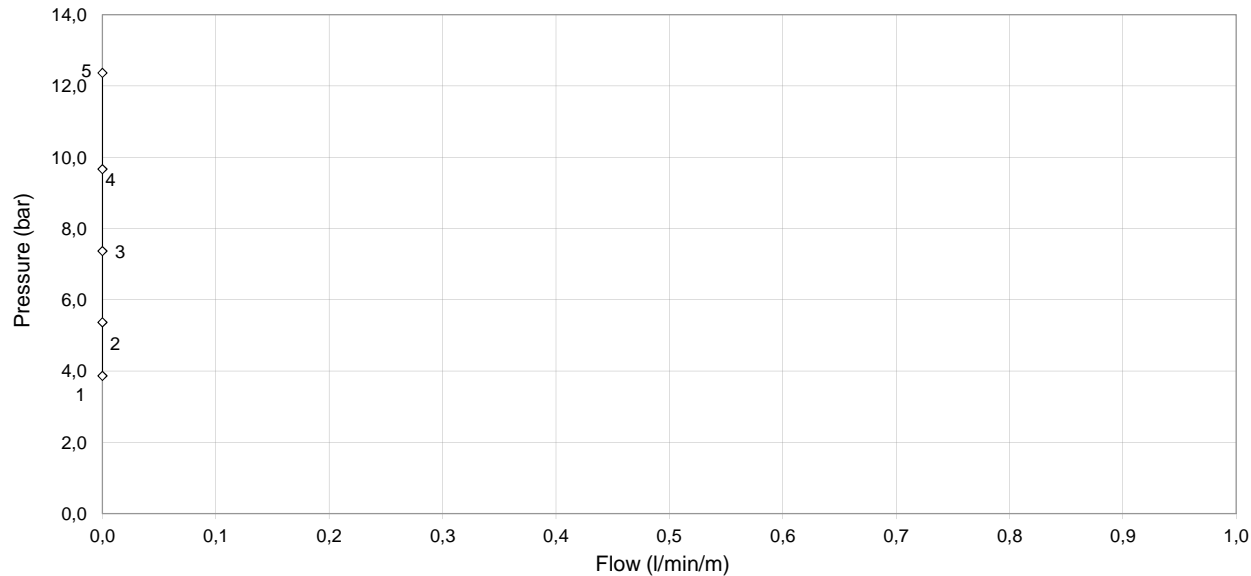
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |  |                    |  |          |                                  |                            |          |          |                            |           |        |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|----------|----------|----------------------------|-----------|--------|--|
|  |  | Project            |  |          | Date                             |                            | 1.7.2014 |          | Drill type                 |           | NQ     |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 13:00    |          | Paker                      |           | Johnny |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 14:05    |          | Water meter                |           |        |  |
|  |  | Water pumping test |  |          | Time                             |                            | 01:05    |          | Tester                     |           | AgG    |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0        |          | Inclined length to GWT (m) |           | 2,7    |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076    |          | Depth to GWT (m)           |           | 2,70   |  |
| Inclined   |  | To (m)             |  | 138,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |          | 1000     |                            | (no dim.) |        |  |
| Depth  |  | From (m)           |  | 114,5 m  |                                  |                            |          |          |                            |           |        |  |
| Test length (m)                                  |  |                    |  | 24 m     |                                  |                            |          |          |                            |           |        |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |          | 4        |                            | 5         |        |  |
| Water meter End (L)                              |  | 947293,0           |  | 947295,0 |                                  | 947295,0                   |          | 947295,0 |                            | 947295,0  |        |  |
| Water meter Start (L)                            |  | 947293,0           |  | 947295,0 |                                  | 947295,0                   |          | 947295,0 |                            | 947295,0  |        |  |
| Total Flow (L)                                   |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,0       |        |  |
| Test time (min)                                  |  | 5,0                |  | 3,0      |                                  | 1,0                        |          | 1,0      |                            | 1,0       |        |  |
| Flow Rate (L/min)                                |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,0       |        |  |
| L/min/m  |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,0       |        |  |
| Start pressure (bar)                             |  | 3,5                |  | 5,0      |                                  | 7,0                        |          | 9,3      |                            | 12,0      |        |  |
| End pressure (bar)                               |  | 3,5                |  | 5,0      |                                  | 7,0                        |          | 9,3      |                            | 12,0      |        |  |
| H <sub>pump</sub> (bar)                          |  | 3,5                |  | 5,0      |                                  | 7,0                        |          | 9,3      |                            | 12,0      |        |  |
| H <sub>elevation</sub> (bar)                     |  | 0,4                |  | 0,4      |                                  | 0,4                        |          | 0,4      |                            | 0,4       |        |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 3,9                |  | 5,4      |                                  | 7,4                        |          | 9,7      |                            | 12,4      |        |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,0       |        |  |
| H <sub>total</sub> (bar)                         |  | 3,9                |  | 5,4      |                                  | 7,4                        |          | 9,7      |                            | 12,4      |        |  |
| LU   |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,0       |        |  |
| k (m/s)  |  | 0,0E+00            |  | 0,0E+00  |                                  | 0,0E+00                    |          | 0,0E+00  |                            | 0,0E+00   |        |  |

FH-01 114,5m to 138,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure guage estimated.

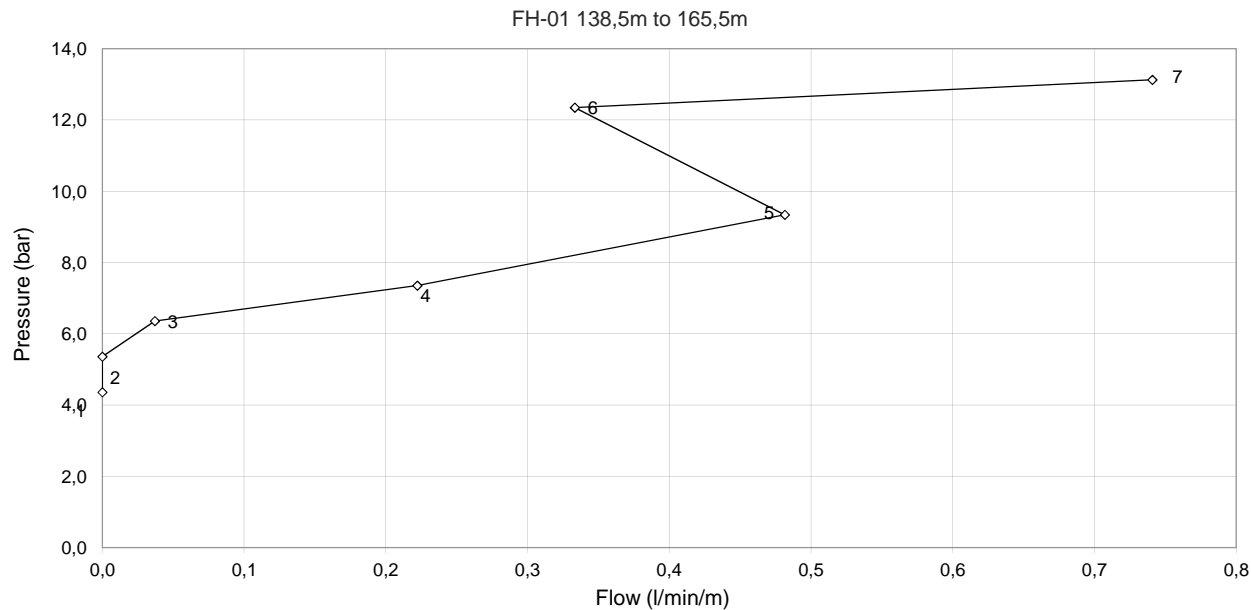
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSExcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.





|  |                                 |  |                                |                                |               |               |          |
|--|---------------------------------|--|--------------------------------|--------------------------------|---------------|---------------|----------|
|  |                                 | Project <b>Fjarðarheiði Tunnel Project</b> |                                |                                | Date 2.7.2014 | Drill type NQ |          |
| Client <b>Vegagerðin</b>                         |                                 |  |                                | Start 12:00                    | Paker Johnny  |               |          |
| Contractor <b>RFS</b>                            | <b>Water pumping test</b>       |  |                                | End 12:30                      | Water meter   |               |          |
|  |                                 | Hole inclination (fom vertical)° 0         | Inclined length to GWT (m) 2,6 | Time 00:30                     | Tester AgG    |               |          |
| <b>Borehole FH-01</b>                            | Borehole diameter (m) 0,076     |  | Depth to GWT (m) 2,60          | height of pressure gauge (m) 1 |               |               |          |
| Inclined To (m) 165,5 m                          | m: (k/kp) <sup>0,5</sup> = 1000 |  | (no dim.)                      |                                |               |               |          |
| Depth From (m) 138,5 m                           |                                 |  |                                |                                |               |               |          |
| Test length (m) 27 m                             |                                 |  |                                |                                |               |               |          |
| Test stage                                       | 1                               | 2  | 3                              | 4                              | 5             | 6             | 7        |
| Water meter End (L)                              | 947743,0                        | 947749,0                                   | 947764,0                       | 947794,0                       | 947826,0      | 947903,0      | 947950,0 |
| Water meter Start (L)                            | 947743,0                        | 947749,0                                   | 947761,0                       | 947788,0                       | 947800,0      | 947885,0      | 947930,0 |
| Total Flow (L)                                   | 0,0                             | 0,0  | 3,0                            | 6,0                            | 26,0          | 18,0          | 20,0     |
| Test time (min)                                  | 5,0                             | 4,0  | 3,0                            | 1,0                            | 2,0           | 2,0           | 1,0      |
| Flow Rate (L/min)                                | 0,0                             | 0,0  | 1,0                            | 6,0                            | 13,0          | 9,0           | 20,0     |
| L/min/m  | 0,0                             | 0,0  | 0,0                            | 0,2                            | 0,5           | 0,3           | 0,7      |
| Start pressure (bar)                             | 4,0                             | 5,0  | 6,0                            | 7,0                            | 9,0           | 12,0          | 12,8     |
| End pressure (bar)                               | 4,0                             | 5,0  | 6,0                            | 7,0                            | 9,0           | 12,0          | 12,8     |
| H <sub>pump</sub> (bar)                          | 4,0                             | 5,0  | 6,0                            | 7,0                            | 9,0           | 12,0          | 12,8     |
| H <sub>elevation</sub> (bar)                     | 0,4                             | 0,4  | 0,4                            | 0,4                            | 0,4           | 0,4           | 0,4      |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 4,4                             | 5,4  | 6,4                            | 7,4                            | 9,4           | 12,4          | 13,2     |
| H <sub>loss</sub> (bar)                          | 0,0                             | 0,0  | 0,0                            | 0,0                            | 0,0           | 0,0           | 0,0      |
| H <sub>total</sub> (bar)                         | 4,4                             | 5,4  | 6,4                            | 7,4                            | 9,3           | 12,3          | 13,1     |
| LU   | 0,0                             | 0,0  | 0,1                            | 0,3                            | 0,5           | 0,3           | 0,6      |
| k (m/s)  | 0,0E+00                         | 0,0E+00                                    | 2,1E-08                        | 1,1E-07                        | 1,8E-07       | 9,6E-08       | 2,0E-07  |



Notes:

Estimated vertical stress in rock at packer depth:  
 $= 2,6\text{Mg} \cdot 138,5\text{m} = 3,6\text{MPa} = 36\text{bar}$

*Hole inclination not measured and assumed here to be vertical.*

*Height of pressure gauge estimated.*

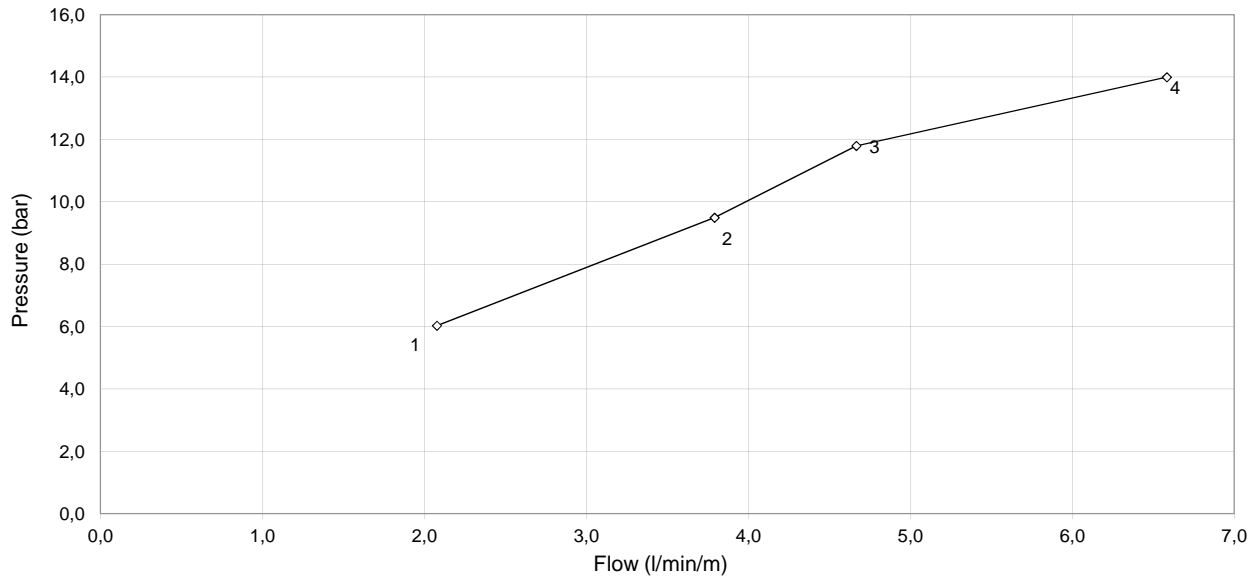
*H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSExcel):*  
 $\text{Loss (bar)} = 0,0000247822 \cdot (\text{L/min})^2 + 0,0011837362 \cdot (\text{L/min})$

*k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering) 'm' is assumed to be 10<sup>3</sup>.*



|  |  |                    |  |          |                                  |                            |          |          |                            |           |        |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|----------|----------|----------------------------|-----------|--------|--|
|  |  | Project            |  |          | Date                             |                            | 9.7.2014 |          | Drill type                 |           | NQ     |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 08:15    |          | Paker                      |           | Johnny |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 08:50    |          | Water meter                |           | Tester |  |
|  |  | Water pumping test |  |          | Time                             |                            | 00:35    |          | Tester                     |           | HJ     |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0        |          | Inclined length to GWT (m) |           | 0,97   |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076    |          | Depth to GWT (m)           |           | 0,97   |  |
| Inclined   |  | To (m)             |  | 195,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |          | 1000     |                            | (no dim.) |        |  |
| Depth  |  | From (m)           |  | 165,5 m  |                                  |                            |          |          |                            |           |        |  |
| Test length (m)                                  |  | 30 m               |  |          |                                  |                            |          |          |                            |           |        |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |          | 4        |                            |           |        |  |
| Water meter End (L)                              |  | 951282,0           |  | 951737,0 |                                  | 952297,0                   |          | 952692,0 |                            |           |        |  |
| Water meter Start (L)                            |  | 951095,0           |  | 951282,0 |                                  | 951737,0                   |          | 952297,0 |                            |           |        |  |
| Total Flow (L)                                   |  | 187,0              |  | 455,0    |                                  | 560,0                      |          | 395,0    |                            |           |        |  |
| Test time (min)                                  |  | 3,0                |  | 4,0      |                                  | 4,0                        |          | 2,0      |                            |           |        |  |
| Flow Rate (L/min)                                |  | 62,3               |  | 113,8    |                                  | 140,0                      |          | 197,5    |                            |           |        |  |
| L/min/m  |  | 2,1                |  | 3,8      |                                  | 4,7                        |          | 6,6      |                            |           |        |  |
| Start pressure (bar)                             |  | 6,0                |  | 9,0      |                                  | 12,0                       |          | 15,0     |                            |           |        |  |
| End pressure (bar)                               |  | 6,0                |  | 10,5     |                                  | 12,5                       |          | 15,0     |                            |           |        |  |
| H <sub>pump</sub> (bar)                          |  | 6,0                |  | 9,8      |                                  | 12,3                       |          | 15,0     |                            |           |        |  |
| H <sub>elevation</sub> (bar)                     |  | 0,2                |  | 0,2      |                                  | 0,2                        |          | 0,2      |                            |           |        |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 6,2                |  | 9,9      |                                  | 12,4                       |          | 15,2     |                            |           |        |  |
| H <sub>loss</sub> (bar)                          |  | 0,2                |  | 0,5      |                                  | 0,7                        |          | 1,2      |                            |           |        |  |
| H <sub>total</sub> (bar)                         |  | 6,0                |  | 9,5      |                                  | 11,8                       |          | 14,0     |                            |           |        |  |
| LU   |  | 3,4                |  | 4,0      |                                  | 4,0                        |          | 4,7      |                            |           |        |  |
| k (m/s)  |  | 1,2E-06            |  | 1,4E-06  |                                  | 1,4E-06                    |          | 1,7E-06  |                            |           |        |  |

FH-01 165,5m to 195,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

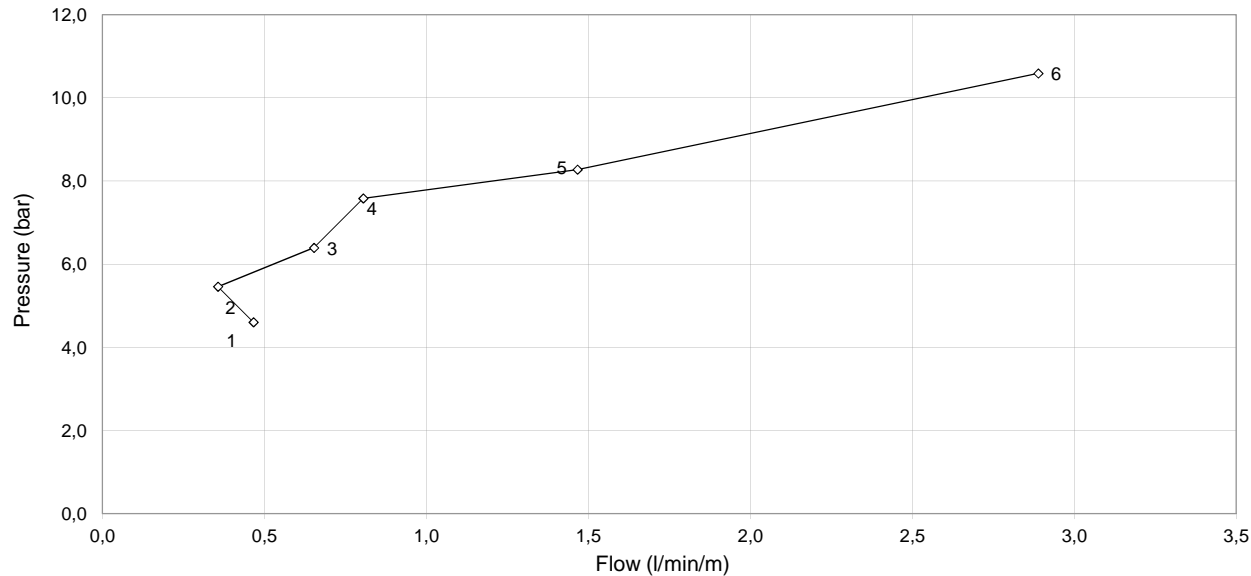
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |  |                    |  |          |                                  |                            |          |          |                            |           |        |          |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|----------|----------|----------------------------|-----------|--------|----------|--|
|  |  | Project            |  |          | Date                             |                            | 8.7.2014 |          | Drill type                 |           | NQ     |          |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 15:20    |          | Paker                      |           | Johnny |          |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 16:00    |          | Water meter                |           |        |          |  |
|  |  | Water pumping test |  |          | Time                             |                            | 00:40    |          | Tester                     |           | HJ     |          |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0        |          | Inclined length to GWT (m) |           | 2,76   |          |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076    |          | Depth to GWT (m)           |           | 2,76   |          |  |
| Inclined   |  | To (m)             |  | 195,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |          | 1000     |                            | (no dim.) |        |          |  |
| Depth  |  | From (m)           |  | 165,5 m  |                                  |                            |          |          |                            |           |        |          |  |
| Test length (m)                                  |  | 30 m               |  |          |                                  |                            |          |          |                            |           |        |          |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |          | 4        |                            | 5         |        | 6        |  |
| Water meter End (L)                              |  | 948273,0           |  | 948348,0 |                                  | 948446,0                   |          | 948591,0 |                            | 948723,0  |        | 948983,0 |  |
| Water meter Start (L)                            |  | 948175,0           |  | 948273,0 |                                  | 948348,0                   |          | 948446,0 |                            | 948591,0  |        | 948723,0 |  |
| Total Flow (L)                                   |  | 98,0               |  | 75,0     |                                  | 98,0                       |          | 145,0    |                            | 132,0     |        | 260,0    |  |
| Test time (min)                                  |  | 7,0                |  | 7,0      |                                  | 5,0                        |          | 6,0      |                            | 3,0       |        | 3,0      |  |
| Flow Rate (L/min)                                |  | 14,0               |  | 10,7     |                                  | 19,6                       |          | 24,2     |                            | 44,0      |        | 86,7     |  |
| L/min/m  |  | 0,5                |  | 0,4      |                                  | 0,7                        |          | 0,8      |                            | 1,5       |        | 2,9      |  |
| Start pressure (bar)                             |  | 4,0                |  | 5,0      |                                  | 6,0                        |          | 7,0      |                            | 8,0       |        | 10,0     |  |
| End pressure (bar)                               |  | 4,5                |  | 5,2      |                                  | 6,1                        |          | 7,5      |                            | 8,0       |        | 11,0     |  |
| H <sub>pump</sub> (bar)                          |  | 4,3                |  | 5,1      |                                  | 6,1                        |          | 7,3      |                            | 8,0       |        | 10,5     |  |
| H <sub>elevation</sub> (bar)                     |  | 0,4                |  | 0,4      |                                  | 0,4                        |          | 0,4      |                            | 0,4       |        | 0,4      |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 4,6                |  | 5,5      |                                  | 6,4                        |          | 7,6      |                            | 8,4       |        | 10,9     |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |          | 0,0      |                            | 0,1       |        | 0,3      |  |
| H <sub>total</sub> (bar)                         |  | 4,6                |  | 5,5      |                                  | 6,4                        |          | 7,6      |                            | 8,3       |        | 10,6     |  |
| LU   |  | 1,0                |  | 0,7      |                                  | 1,0                        |          | 1,1      |                            | 1,8       |        | 2,7      |  |
| k (m/s)  |  | 3,7E-07            |  | 2,4E-07  |                                  | 3,7E-07                    |          | 3,8E-07  |                            | 6,4E-07   |        | 9,8E-07  |  |

FH-01 165,5m to 195,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure guage estimated.

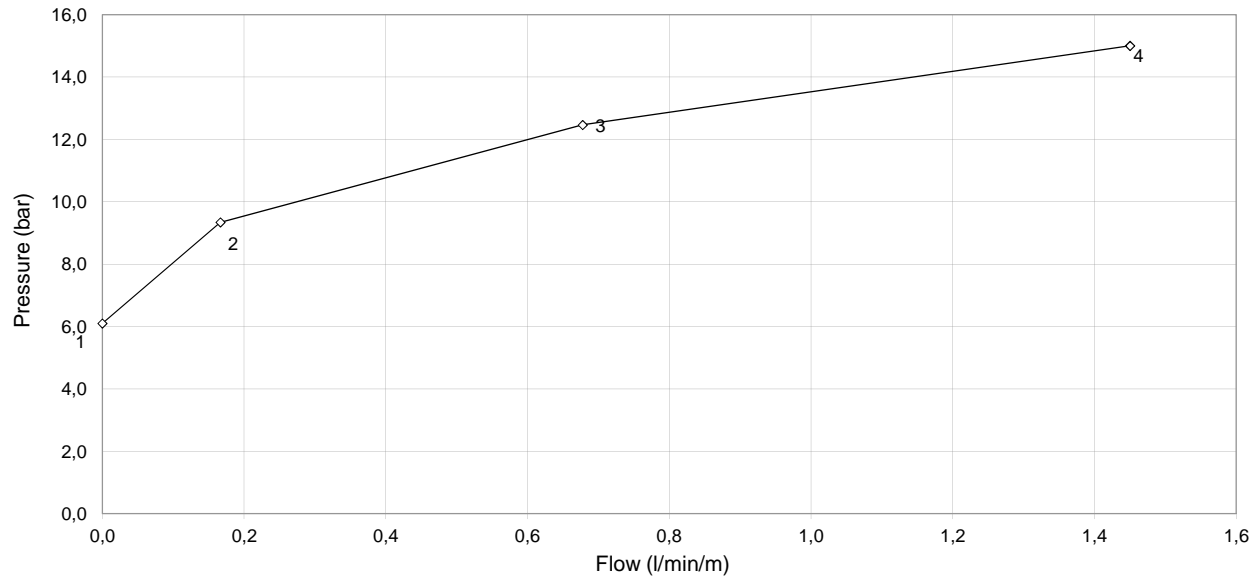
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |  |                    |  |          |                                  |                            |           |          |                            |           |        |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|-----------|----------|----------------------------|-----------|--------|--|
|  |  | Project            |  |          | Date                             |                            | 10.7.2014 |          | Drill type                 |           | NQ     |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 17:10     |          | Paker                      |           | Johnny |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 17:30     |          | Water meter                |           | Tester |  |
|  |  | Water pumping test |  |          | Time                             |                            | 00:20     |          | Tester                     |           | HJ     |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0         |          | Inclined length to GWT (m) |           | 0      |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076     |          | Depth to GWT (m)           |           | 0,00   |  |
| Inclined   |  | To (m)             |  | 225,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |           | 1000     |                            | (no dim.) |        |  |
| Depth  |  | From (m)           |  | 195,5 m  |                                  |                            |           |          |                            |           |        |  |
| Test length (m)                                  |  |                    |  | 30 m     |                                  |                            |           |          |                            |           |        |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |           | 4        |                            |           |        |  |
| Water meter End (L)                              |  | 967145,0           |  | 967160,0 |                                  | 967221,0                   |           | 967308,0 |                            |           |        |  |
| Water meter Start (L)                            |  | 967145,0           |  | 967145,0 |                                  | 967160,0                   |           | 967221,0 |                            |           |        |  |
| Total Flow (L)                                   |  | 0,0                |  | 15,0     |                                  | 61,0                       |           | 87,0     |                            |           |        |  |
| Test time (min)                                  |  | 1,0                |  | 3,0      |                                  | 3,0                        |           | 2,0      |                            |           |        |  |
| Flow Rate (L/min)                                |  | 0,0                |  | 5,0      |                                  | 20,3                       |           | 43,5     |                            |           |        |  |
| L/min/m  |  | 0,0                |  | 0,2      |                                  | 0,7                        |           | 1,5      |                            |           |        |  |
| Start pressure (bar)                             |  | 6,0                |  | 9,0      |                                  | 12,0                       |           | 15,0     |                            |           |        |  |
| End pressure (bar)                               |  | 6,0                |  | 9,5      |                                  | 12,8                       |           | 15,0     |                            |           |        |  |
| H <sub>pump</sub> (bar)                          |  | 6,0                |  | 9,3      |                                  | 12,4                       |           | 15,0     |                            |           |        |  |
| H <sub>elevation</sub> (bar)                     |  | 0,1                |  | 0,1      |                                  | 0,1                        |           | 0,1      |                            |           |        |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 6,1                |  | 9,4      |                                  | 12,5                       |           | 15,1     |                            |           |        |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |           | 0,1      |                            |           |        |  |
| H <sub>total</sub> (bar)                         |  | 6,1                |  | 9,3      |                                  | 12,5                       |           | 15,0     |                            |           |        |  |
| LU   |  | 0,0                |  | 0,2      |                                  | 0,5                        |           | 1,0      |                            |           |        |  |
| k (m/s)  |  | 0,0E+00            |  | 6,4E-08  |                                  | 2,0E-07                    |           | 3,5E-07  |                            |           |        |  |

FH-01 195,5m to 225,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

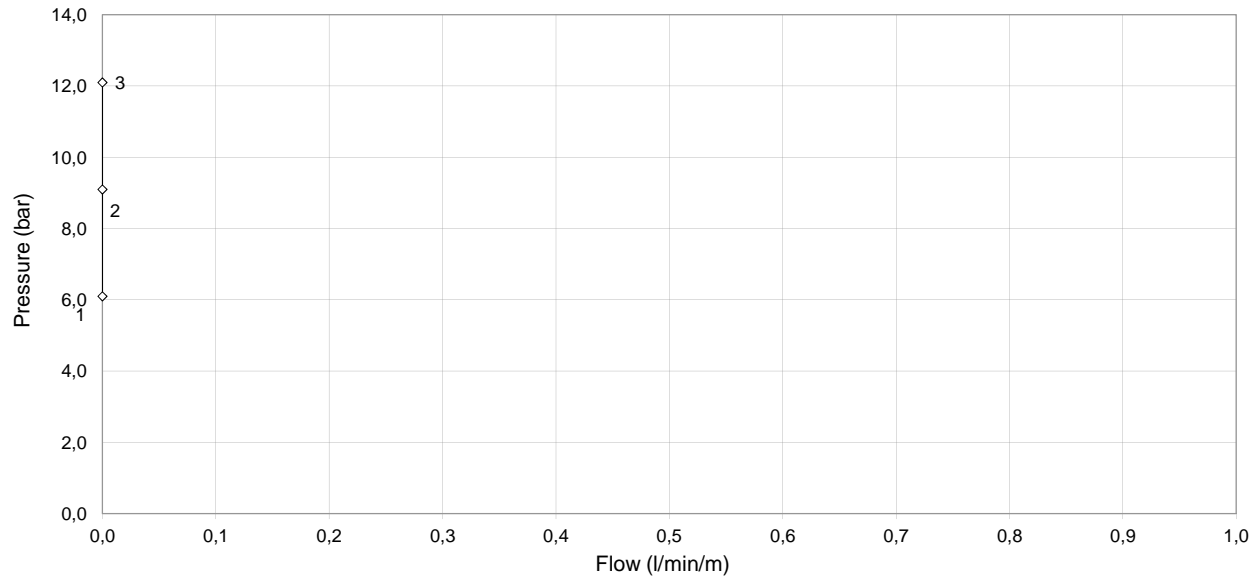
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |                                    |  |                              |                       |                                |               |
|--|------------------------------------|--|------------------------------|-----------------------|--------------------------------|---------------|
|  |                                    | Project <b>Fjarðarheiði Tunnel Project</b> |                              |                       | Date 12.7.2014                 | Drill type NQ |
| Client <b>Vegagerðin</b>                         |                                    |  |                              | Start 13:00           | Paker Johnny                   |               |
| Contractor <b>RFS</b>                            | <b>Water pumping test</b>          |  |                              | End 13:35             | Water meter                    |               |
|  |                                    | Hole inclination (fom vertical)° 0         | Inclined length to GWT (m) 0 | Time 00:35            | Tester AgG                     |               |
| <b>Borehole FH-01</b>                            | Borehole diameter (m) 0,076        |  |                              | Depth to GWT (m) 0,00 | height of pressure gauge (m) 1 |               |
| Inclined To (m) 255,5 m                          | m: $(k/kp)^{0.5} = 1000$ (no dim.) |  |                              |                       |                                |               |
| Depth From (m) 225,5 m                           |                                    |  |                              |                       |                                |               |
| Test length (m) 30 m                             |                                    |  |                              |                       |                                |               |
| Test stage                                       | 1                                  | 2  | 3                            |                       |                                |               |
| Water meter End (L)                              | 970144,0                           | 970144,0                                   | 970144,0                     |                       |                                |               |
| Water meter Start (L)                            | 970144,0                           | 970144,0                                   | 970144,0                     |                       |                                |               |
| Total Flow (L)                                   | 0,0                                | 0,0  | 0,0                          |                       |                                |               |
| Test time (min)                                  | 1,0                                | 1,0  | 1,0                          |                       |                                |               |
| Flow Rate (L/min)                                | 0,0                                | 0,0  | 0,0                          |                       |                                |               |
| L/min/m  | 0,0                                | 0,0  | 0,0                          |                       |                                |               |
| Start pressure (bar)                             | 6,0                                | 9,0  | 12,0                         |                       |                                |               |
| End pressure (bar)                               | 6,0                                | 9,0  | 12,0                         |                       |                                |               |
| H <sub>pump</sub> (bar)                          | 6,0                                | 9,0  | 12,0                         |                       |                                |               |
| H <sub>elevation</sub> (bar)                     | 0,1                                | 0,1  | 0,1                          |                       |                                |               |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 6,1                                | 9,1  | 12,1                         |                       |                                |               |
| H <sub>loss</sub> (bar)                          | 0,0                                | 0,0  | 0,0                          |                       |                                |               |
| H <sub>total</sub> (bar)                         | 6,1                                | 9,1  | 12,1                         |                       |                                |               |
| LU   | 0,0                                | 0,0  | 0,0                          |                       |                                |               |
| k (m/s)  | 0,0E+00                            | 0,0E+00                                    | 0,0E+00                      |                       |                                |               |

FH-01 225,5m to 255,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure guage estimated.

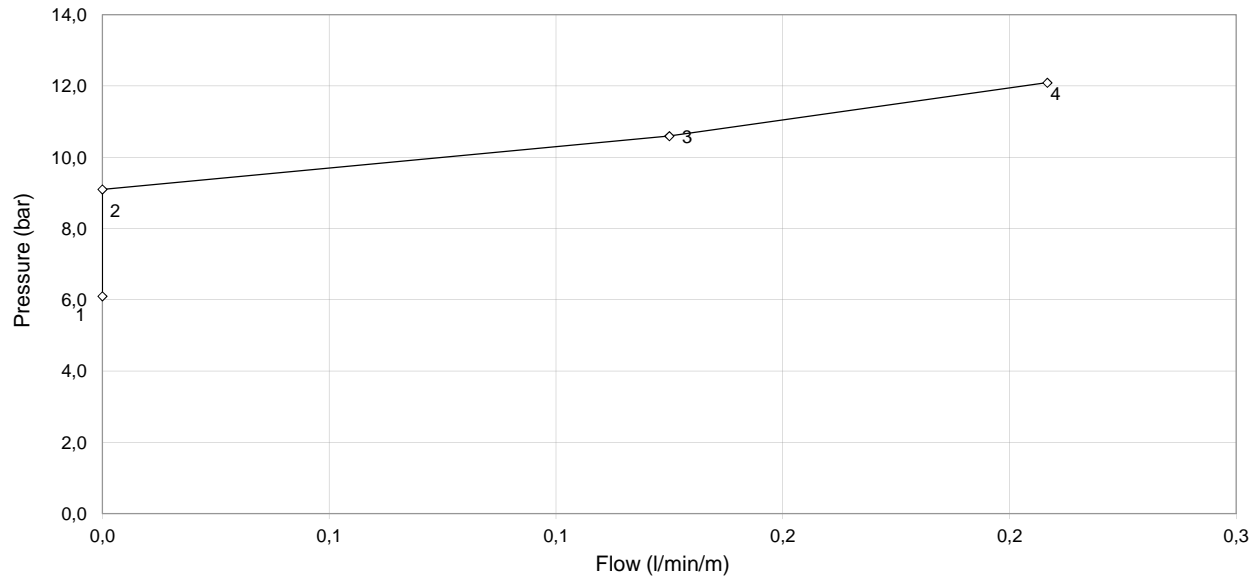
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |  |                    |  |          |                                  |                            |           |         |                            |                              |        |   |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|-----------|---------|----------------------------|------------------------------|--------|---|--|
|  |  | Project            |  |          | Date                             |                            | 14.7.2014 |         | Drill type                 |                              | NQ     |   |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 17:15     |         | Paker                      |                              | Johnny |   |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 17:30     |         | Water meter                |                              |        |   |  |
|  |  | Water pumping test |  |          | Time                             |                            | 00:15     |         | Tester                     |                              | AgG    |   |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0         |         | Inclined length to GWT (m) |                              | 0      |   |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076     |         | Depth to GWT (m)           |                              | 0,00   |   |  |
| Inclined   |  | To (m)             |  | 285,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |           | 1000    |                            | (no dim.)                    |        |   |  |
| Depth  |  | From (m)           |  | 255,5 m  |                                  |                            |           |         |                            |                              |        |   |  |
| Test length (m)                                  |  |                    |  | 30 m     |                                  |                            |           |         |                            | height of pressure gauge (m) |        | 1 |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |           | 4       |                            |                              |        |   |  |
| Water meter End (L)                              |  | 970533,0           |  | 970533,0 |                                  | 970548,0                   |           |         |                            |                              |        |   |  |
| Water meter Start (L)                            |  | 970533,0           |  | 970533,0 |                                  | 970533,0                   |           |         |                            |                              |        |   |  |
| Total Flow (L)                                   |  | 0,0                |  | 0,0      |                                  | 15,0                       |           | 12,5    |                            |                              |        |   |  |
| Test time (min)                                  |  | 1,0                |  | 1,0      |                                  | 4,0                        |           | 2,0     |                            |                              |        |   |  |
| Flow Rate (L/min)                                |  | 0,0                |  | 0,0      |                                  | 3,8                        |           | 6,3     |                            |                              |        |   |  |
| L/min/m  |  | 0,0                |  | 0,0      |                                  | 0,1                        |           | 0,2     |                            |                              |        |   |  |
| Start pressure (bar)                             |  | 6,0                |  | 9,0      |                                  | 10,0                       |           | 12,0    |                            |                              |        |   |  |
| End pressure (bar)                               |  | 6,0                |  | 9,0      |                                  | 11,0                       |           | 12,0    |                            |                              |        |   |  |
| H <sub>pump</sub> (bar)                          |  | 6,0                |  | 9,0      |                                  | 10,5                       |           | 12,0    |                            |                              |        |   |  |
| H <sub>elevation</sub> (bar)                     |  | 0,1                |  | 0,1      |                                  | 0,1                        |           | 0,1     |                            |                              |        |   |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 6,1                |  | 9,1      |                                  | 10,6                       |           | 12,1    |                            |                              |        |   |  |
| H <sub>loss</sub> (bar)                          |  | 0,0                |  | 0,0      |                                  | 0,0                        |           | 0,0     |                            |                              |        |   |  |
| H <sub>total</sub> (bar)                         |  | 6,1                |  | 9,1      |                                  | 10,6                       |           | 12,1    |                            |                              |        |   |  |
| LU   |  | 0,0                |  | 0,0      |                                  | 0,1                        |           | 0,2     |                            |                              |        |   |  |
| k (m/s)  |  | 0,0E+00            |  | 0,0E+00  |                                  | 4,2E-08                    |           | 6,2E-08 |                            |                              |        |   |  |

FH-01 255,5m to 285,5m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

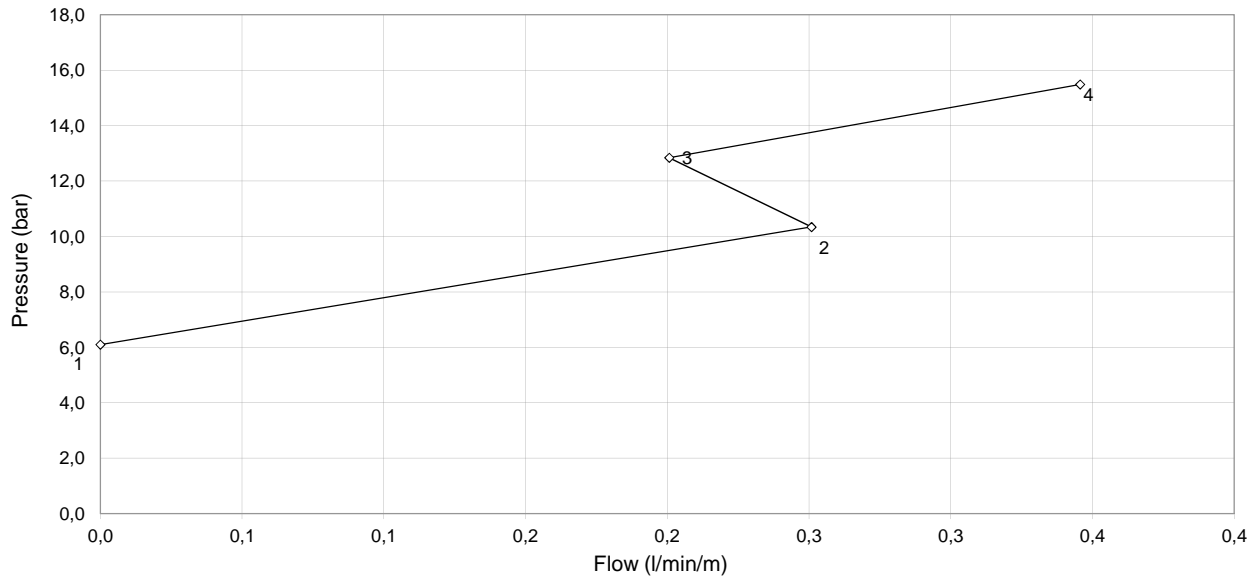
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



|  |          |            |          |                            |                                  |           |                            |           |                              |        |
|--|----------|------------|----------|----------------------------|----------------------------------|-----------|----------------------------|-----------|------------------------------|--------|
|  |          | Project    |          |                            | Fjarðarheiði Tunnel Project      |           | Date                       | 17.7.2014 | Drill type                   | NQ     |
| Client   |          | Vegagerðin |          |                            | Water pumping test               |           | Start                      | 01:05     | Paker                        | Johnny |
| Contractor                                       |          | RFS        |          |                            |                                  |           | End                        | 01:25     | Water meter                  |        |
|  |          |            |          |                            |                                  |           | Time                       | 00:20     | Tester                       | HJ     |
| Borehole   |          | FH-01      |          |                            | Hole inclination (fom vertical)° | 0         | Inclined length to GWT (m) | 0         | height of pressure gauge (m) | 1      |
|  |          |            |          |                            | Borehole diameter (m)            | 0,076     | Depth to GWT (m)           | 0,00      |                              |        |
| Inclined   | To (m)   | 315,33 m   |          | m: (k/kp) <sup>0.5</sup> = | 1000                             | (no dim.) |                            |           |                              |        |
| Depth  | From (m) | 285,43 m   |          |                            |                                  |           |                            |           |                              |        |
| Test length (m)                                  | 29,9 m   |            |          |                            |                                  |           |                            |           |                              |        |
| Test stage                                       | 1        | 2          | 3        | 4                          |                                  |           |                            |           |                              |        |
| Water meter End (L)                              | 971705,0 | 971735,0   | 971753,0 | 971784,0                   |                                  |           |                            |           |                              |        |
| Water meter Start (L)                            | 971705,0 | 971705,0   | 971735,0 | 971753,0                   |                                  |           |                            |           |                              |        |
| Total Flow (L)                                   | 0,0      | 30,0       | 18,0     | 31,0                       |                                  |           |                            |           |                              |        |
| Test time (min)                                  | 1,0      | 4,0        | 3,0      | 3,0                        |                                  |           |                            |           |                              |        |
| Flow Rate (L/min)                                | 0,0      | 7,5        | 6,0      | 10,3                       |                                  |           |                            |           |                              |        |
| L/min/m  | 0,0      | 0,3        | 0,2      | 0,3                        |                                  |           |                            |           |                              |        |
| Start pressure (bar)                             | 6,0      | 9,0        | 12,0     | 15,0                       |                                  |           |                            |           |                              |        |
| End pressure (bar)                               | 6,0      | 11,5       | 13,5     | 15,8                       |                                  |           |                            |           |                              |        |
| H <sub>pump</sub> (bar)                          | 6,0      | 10,3       | 12,8     | 15,4                       |                                  |           |                            |           |                              |        |
| H <sub>elevation</sub> (bar)                     | 0,1      | 0,1        | 0,1      | 0,1                        |                                  |           |                            |           |                              |        |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 6,1      | 10,4       | 12,9     | 15,5                       |                                  |           |                            |           |                              |        |
| H <sub>loss</sub> (bar)                          | 0,0      | 0,0        | 0,0      | 0,0                        |                                  |           |                            |           |                              |        |
| H <sub>total</sub> (bar)                         | 6,1      | 10,3       | 12,8     | 15,5                       |                                  |           |                            |           |                              |        |
| LU   | 0,0      | 0,2        | 0,2      | 0,2                        |                                  |           |                            |           |                              |        |
| k (m/s)  | 0,0E+00  | 8,7E-08    | 5,6E-08  | 8,0E-08                    |                                  |           |                            |           |                              |        |

FH-01 285,43m to 315,43m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

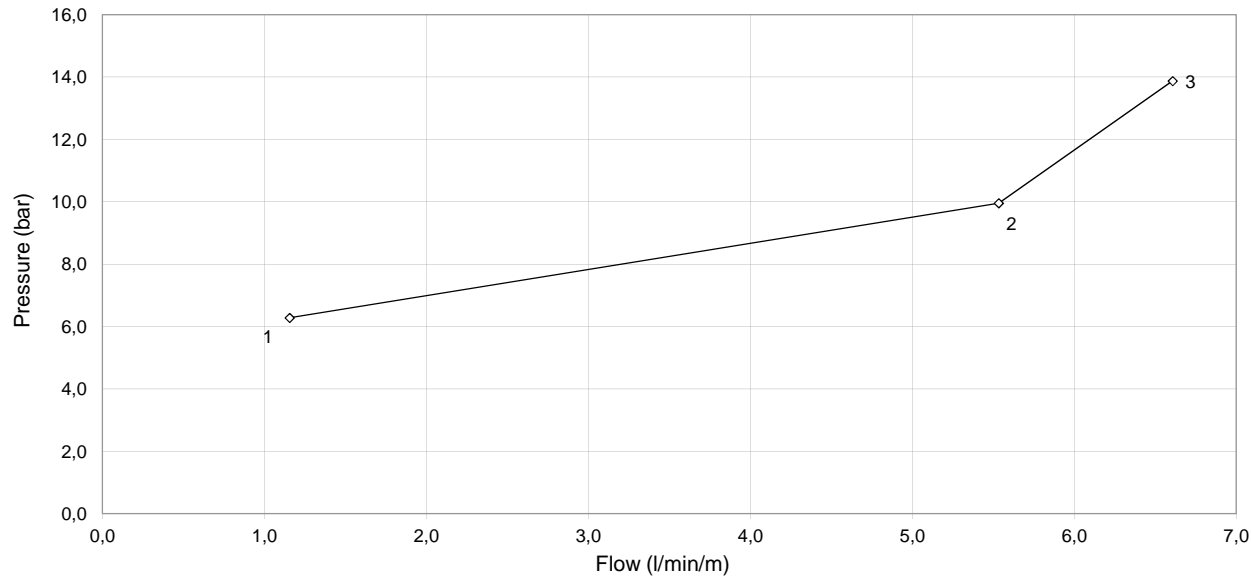
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10°.



|  |                             |  |                                |             |                    |               |
|--|-----------------------------|--|--------------------------------|-------------|--------------------|---------------|
|  |                             | Project <b>Fjarðarheiði Tunnel Project</b> |                                |             | Date 18.7.2014     | Drill type NQ |
| Client <b>Vegagerðin</b>                         | Water pumping test          |  |                                | Start 22:30 | Paker Johnny       |               |
| Contractor <b>RFS</b>                            |                             |  |                                | End 23:05   | Water meter Tester |               |
|  |                             | Hole inclination (fom vertical)° 0         | Inclined length to GWT (m) 0   | Time 00:35  | Tester HJ          |               |
| <b>Borehole FH-01</b>                            | Borehole diameter (m) 0,076 | Depth to GWT (m) 0,00                      | height of pressure gauge (m) 1 |             |                    |               |
| Inclined To (m) 345,6 m                          | m: $(k/kp)^{0.5} = 1000$    |  | (no dim.)                      |             |                    |               |
| Depth From (m) 315,33 m                          |                             |  |                                |             |                    |               |
| Test length (m) 30,27 m                          |                             |  |                                |             |                    |               |
| Test stage                                       | 1                           | 2  | 3                              |             |                    |               |
| Water meter End (L)                              | 974919,0                    | 975589,0                                   | 975789,0                       |             |                    |               |
| Water meter Start (L)                            | 974709,0                    | 974919,0                                   | 975589,0                       |             |                    |               |
| Total Flow (L)                                   | 210,0                       | 670,0                                      | 200,0                          |             |                    |               |
| Test time (min)                                  | 6,0                         | 4,0  | 1,0                            |             |                    |               |
| Flow Rate (L/min)                                | 35,0                        | 167,5                                      | 200,0                          |             |                    |               |
| L/min/m  | 1,2                         | 5,5  | 6,6                            |             |                    |               |
| Start pressure (bar)                             | 6,0                         | 9,0  | 15,0                           |             |                    |               |
| End pressure (bar)                               | 6,5                         | 12,5                                       | 15,0                           |             |                    |               |
| H <sub>pump</sub> (bar)                          | 6,3                         | 10,8                                       | 15,0                           |             |                    |               |
| H <sub>elevation</sub> (bar)                     | 0,1                         | 0,1  | 0,1                            |             |                    |               |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) | 6,4                         | 10,9                                       | 15,1                           |             |                    |               |
| H <sub>loss</sub> (bar)                          | 0,1                         | 0,9  | 1,2                            |             |                    |               |
| H <sub>total</sub> (bar)                         | 6,3                         | 10,0                                       | 13,9                           |             |                    |               |
| LU   | 1,8                         | 5,6  | 4,8                            |             |                    |               |
| k (m/s)  | 6,6E-07                     | 2,0E-06                                    | 1,7E-06                        |             |                    |               |

FH-01 315,33m to 345,6m



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

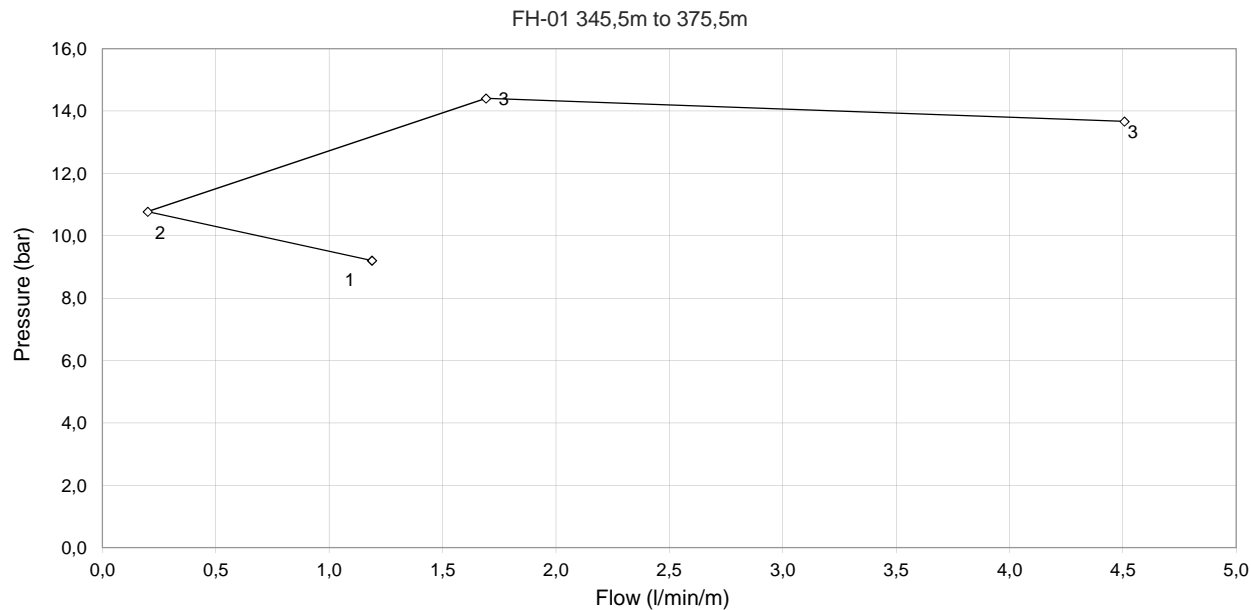
H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.





|  |  |                    |  |          |                                  |                            |           |         |                            |           |        |  |
|--|--|--------------------|--|----------|----------------------------------|----------------------------|-----------|---------|----------------------------|-----------|--------|--|
|  |  | Project            |  |          | Date                             |                            | 19.7.2014 |         | Drill type                 |           | NQ     |  |
| Client   |  | Vegagerðin         |  |          | Start                            |                            | 21:15     |         | Paker                      |           | Johnny |  |
| Contractor                                       |  | RFS                |  |          | End                              |                            | 22:35     |         | Water meter                |           | Tester |  |
|  |  | Water pumping test |  |          | Time                             |                            | 01:20     |         | Tester                     |           | HJ     |  |
| Borehole   |  | FH-01              |  |          | Hole inclination (fom vertical)° |                            | 0         |         | Inclined length to GWT (m) |           | 36,79  |  |
|  |  |                    |  |          | Borehole diameter (m)            |                            | 0,076     |         | Depth to GWT (m)           |           | 36,79  |  |
| Inclined   |  | To (m)             |  | 375,5 m  |                                  | m: (k/kp) <sup>0.5</sup> = |           | 1000    |                            | (no dim.) |        |  |
| Depth  |  | From (m)           |  | 345,5 m  |                                  |                            |           |         |                            |           |        |  |
| Test length (m)                                  |  |                    |  | 30 m     |                                  |                            |           |         |                            |           |        |  |
| Test stage                                       |  | 1                  |  | 2        |                                  | 3                          |           | 3       |                            |           |        |  |
| Water meter End (L)                              |  | 979114,0           |  | 979132,0 |                                  | 979335,0                   |           |         |                            |           |        |  |
| Water meter Start (L)                            |  | 979007,0           |  | 979114,0 |                                  | 979132,0                   |           |         |                            |           |        |  |
| Total Flow (L)                                   |  | 107,0              |  | 18,0     |                                  | 203,0                      |           | 676,0   |                            |           |        |  |
| Test time (min)                                  |  | 3,0                |  | 3,0      |                                  | 4,0                        |           | 5,0     |                            |           |        |  |
| Flow Rate (L/min)                                |  | 35,7               |  | 6,0      |                                  | 50,8                       |           | 135,2   |                            |           |        |  |
| L/min/m  |  | 1,2                |  | 0,2      |                                  | 1,7                        |           | 4,5     |                            |           |        |  |
| Start pressure (bar)                             |  | 5,0                |  | 7,0      |                                  | 9,0                        |           | 11,0    |                            |           |        |  |
| End pressure (bar)                               |  | 6,0                |  | 7,0      |                                  | 12,5                       |           | 10,0    |                            |           |        |  |
| H <sub>pump</sub> (bar)                          |  | 5,5                |  | 7,0      |                                  | 10,8                       |           | 10,5    |                            |           |        |  |
| H <sub>elevation</sub> (bar)                     |  | 3,8                |  | 3,8      |                                  | 3,8                        |           | 3,8     |                            |           |        |  |
| H <sub>pump</sub> + H <sub>elevation</sub> (bar) |  | 9,3                |  | 10,8     |                                  | 14,5                       |           | 14,3    |                            |           |        |  |
| H <sub>loss</sub> (bar)                          |  | 0,1                |  | 0,0      |                                  | 0,1                        |           | 0,6     |                            |           |        |  |
| H <sub>total</sub> (bar)                         |  | 9,2                |  | 10,8     |                                  | 14,4                       |           | 13,7    |                            |           |        |  |
| LU   |  | 1,3                |  | 0,2      |                                  | 1,2                        |           | 3,3     |                            |           |        |  |
| k (m/s)  |  | 4,7E-07            |  | 6,7E-08  |                                  | 4,2E-07                    |           | 1,2E-06 |                            |           |        |  |



Notes:

Hole inclination not measured and assumed here to be vertical.

Height of pressure gauge estimated.

H<sub>loss</sub> (bar) is determined using data from a packer test performed by RFS at Sprengisandur (2014), with the equation (best fit polyline MSEXcel):  
 Loss (bar) = 0,0000247822\*(L/min)<sup>2</sup> + 0,0011837362\*(L/min)

k is determined using equation Nr 38 page 142, Hoekand Bray (Rock slope engineering)  
 'm' is assumed to be 10<sup>3</sup>.



| Elev. m a.s.l. | Depth m | Description of corehole FH - 02   | Depth m | Rock column | Core % | RQD %       | Q | GWT | Perm. (LU) |
|----------------|---------|---|---------|-------------|--------|-------------|---|-----|------------|
| 134,62         | 0       | Drilled slightly inclined (between 8° to 10° from vertical) towards West. The borehole is located at Dalhús in Eyvindarárdalur.   | 0       |             |        |             |   |     |            |
|                | 2       | Casing rods, 3,5" drilled down to 9m depth.   | 2       |             |        |             |   |     |            |
|                | 4       |   | 4       |             |        |             |   |     |            |
|                | 6       |   | 6       |             |        |             |   |     |            |
|                | 8       |   | 8       |             |        |             |   |     |            |
| 125,82         |         | NQ triple tube. 45mm core.  |         |             |        |             |   |     |            |
|                | 10      | Olivine basalt, very vesicular, dark alteration colour, with black chlorophaeite coatings on vesicles with small white zeolites.  | 10      | (R)         | 100    | 81/63/37/0  |   |     |            |
| 124,27         |         | Scoriaceous basalt Sandstone, red brown, 3cm  |         |             | 100    | 0/0/0/0     |   |     |            |
| 124,24         |         | Scoriaceous basalt, mixed with minor inclusions of sandstone (<1cm)   |         | (R)         | 35     | 17/0/0/0    |   |     |            |
|                | 12      | Olivine basalt, dark grey, microporous flow-banded, with scattered vesicles. Rough and undulating joint surfaces, coated with black clay.   | 12      | (R)         | 92     | 74/65/40/40 |   |     |            |
|                | 14      |   | 14      | (R)         | 86     | 46/28/12/12 |   |     |            |
|                | 16      |   | 16      | (R)         | 100    | 28/0/0/0    |   |     |            |
|                | 18      |   | 18      | (R)         | 92     | 69/50/0/0   |   |     |            |
| 115,42         |         | Sandstone, red brown, 5cm   |         |             | 100    | 20/0/0/0    |   |     |            |
| 115,37         |         | Scoriaceous basalt, dark grey, vesicular, vesicles coated with black clay and with small white zeolites. Moderately altered rock (lower strength).  |         | (R)         | 100    | 0/0/0/0     |   |     |            |
|                | 20      | Olivine - Tholeiite Intermediate  | 20      | (R)         | 100    | 84/27/0/0   |   |     |            |
|                | 22      | Dark grey, frequently flow-banded with micropores and scattered vesicles. Joint surfaces rough and undulating, and coated with black clay.  | 22      | (R)         | 100    | 40/0/0/0    |   |     |            |
|                | 24      | 2m core loss  | 24      | (R)         | 83     | 0/0/0/0     |   |     |            |
|                | 26      | 6 cm scoria at base   | 26      | (R)         | 45     | 5/0/0/0     |   |     |            |
|                | 28      | Sandstone, brown, 2 to 3cm  | 28      | (R)         | 74     | 38/9/0/0    |   |     |            |
|                | 30      | Olivine basalt, dark grey, microporous. Many pores filled with black clay. Scattered vesicles coated with zeolites. Joint surfaces rough and undulating, and coated with black and light blue clay. | 30      | (R)         | 60     | 38/0/0/0    |   |     |            |
| 105,12         |         | Scoriaceous basalt, light purple grey, porous. Almost all pores filled with white zeolites.   |         |             | 93     | 72/28/0/0   |   |     |            |
|                | 32      | Tholeiite basalt, vesicular.  | 32      | (R)         | 97     | 14/0/0/0    |   |     |            |
|                | 34      | Medium grey, hard and brittle. Scattered vesicles (5%) coated with black clay and half-filled with white zeolites. Frequent micropore flow-banding.   | 34      | (R)         | 100    | 0/0/0/0     |   |     |            |
|                | 36      | Scattered very thin joints healed with black clay. Joint surfaces rough and undulating.   | 36      | (R)         | 100    | 67/39/0/0   |   |     |            |
|                | 38      |   | 38      | (R)         | 100    | 71/35/0/0   |   |     |            |
|                | 40      |   | 40      | (R)         | 100    | 52/52/0/0   |   |     |            |
|                | 42      |   | 42      | (R)         | 100    | 97/52/0/0   |   |     |            |
| 90,62          |         | Siltstone - Claystone, red brown, argillaceous, weak to very weak rock.   |         |             | 100    | 52/0/0/0    |   |     |            |
| 89,37          |         | Core loss   |         |             | 100    | 72/46/0/0   |   |     |            |
|                | 46      | Scoriaceous basalt, purple grey, well compressed and consolidated, competent rock. Porous, most pores filled with small zeolites.   | 46      | (R)         | 100    | 16/0/0/0    |   |     |            |
|                | 48      | Tholeiite basalt, medium grey, hard and brittle, frequently flow-banded. Pattern of black thin veins (formed as a result of tectonic stress), healed with black clay.                               | 48      | (R)         | 100    | 56/0/0/0    |   |     |            |
|                | 50      |   | 50      | (R)         | 100    | 67/34/15/0  |   |     |            |

GWT at 50,45m and 110,8m hole depth

0,6 LU at 2,8 bar

**Eyvindarárdalur at Dalhús**

Empl.



**Corehole FH - 02 50 - 100 m**

Coord. X: 717902,3 Y: 534222,6 Elev.: 134,62

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02  | Depth | Rock column | Core % | RQD %       | Q  | GWT | Perm. (LU) |
|----------------|---------|--|-------|-------------|--------|-------------|--|-----|------------|
|                | 50      | Tholeiite basalt   | 50    |             | 100    | 15/0/0/0    |  |     |            |
|                | 52      |  | 52    | (R)         | 100    | 71/15/0/0   |  |     |            |
|                | 54      |  | 54    | (A)         | 100    | 66/29/12/0  | <b>Q = 4,5 - 15</b><br>$Q = \frac{66}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |            |
|                | 56      |  | 56    |             | 100    | 73/31/0/0   |  |     |            |
|                | 58      | Irregular pattern of thin joints, caused by tectonic stress, healed with black clay. | 58    | (R)         | 100    | 72/31/0/0   |  |     |            |
|                | 60      | Sandstone dark grey at the top and red on the bottom, moderately weak.               | 60    |             | 100    | 38/0/0/0    |  |     |            |
| 75,02<br>74,89 | 60      | Scoriaceous basalt   | 60    | (R)         | 100    | 85/0/0/0    |  |     |            |
|                | 62      | Tholeiite basalt   | 62    |             | 100    | 87/42/11/0  |  |     |            |
|                | 64      |  | 64    |             | 100    | 70/22/22/0  |  |     |            |
|                | 66      |  | 66    |             | 100    | 77/30/12/0  |  |     |            |
|                | 68      |  | 68    | (R)         | 100    | 77/28/0/0   | <b>Q = 5 - 17</b><br>$Q = \frac{77}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |            |
|                | 70      |  | 70    |             | 100    | 70/11/0/0   |  |     |            |
|                | 72      |  | 72    |             | 100    | 81/62/41/0  |  |     |            |
| 61,42<br>60,62 | 74      | Scoria, porous, vesicles filled with white zeolites                                  | 74    |             | 100    | 88/71/71/0  |  |     |            |
|                | 74      | Sandstone, red, in the upper part, moderately strong                                 | 74    |             | 97     | 40/0/0/0    |  |     |            |
|                | 74      | Claystone (in the last 25 cm). Red, very weak, slickenside near the base             | 74    |             | 100    | 95/82/0/0   |  |     |            |
|                | 76      | Scoria - Scoriaceous basalt  | 76    | (R)         | 100    | 70/0/0/0    |  |     |            |
|                | 78      | Tholeiite basalt   | 78    |             | 100    | 30/0/0/0    |  |     |            |
|                | 80      |  | 80    |             | 100    | 31/0/0/0    |  |     |            |
|                | 82      | Microporous zone   | 82    |             | 100    | 35/0/0/0    |  |     |            |
|                | 84      |  | 84    | (R)         | 96     | 60/31/11/0  |  |     |            |
|                | 86      | Scoria - Scoriaceous basalt  | 86    |             | 100    | 47/15/0/0   | <b>Q = 4 - 13</b><br>$Q = \frac{60}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |            |
|                | 88      | Sandstone, dark red, weak but not clayey   | 88    |             | 100    | 46/27/0/0   |  |     |            |
| 48,07<br>47,89 | 90      | Scoria - Scoriaceous basalt  | 90    | (R)         | 100    | 40/0/0/0    |  |     |            |
|                | 92      | Tholeiite basalt   | 92    |             | 84     | 79/56/56/0  |  |     |            |
|                | 94      |  | 94    |             | 100    | 100/81/68/0 | <b>Q = 4 - 13</b><br>$Q = \frac{57}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |            |
|                | 96      |  | 96    | (R)         | 95     | 57/22/11/0  |  |     |            |
|                | 98      |  | 98    |             | 100    | 43/14/0/0   |  |     |            |
| 34,87          | 100     | Core loss. Crushed, brecciated rock, Probably fault breccia                          | 100   |             | 44     | 0/0/0/0     |  |     |            |

Eyvindarárdalur at Dalhús

Date June 2017

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Empl.



Corehole FH - 02 100 - 150 m

Design AgG

Drawn AgG/TW

Coord. X: 717902,3 Y: 534222,6 Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02  | Depth        | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q   | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|--------------|-------------|--------|-----------------------------|---|-----|---------------------------|
| 34,57<br>34,02 | 100     | Sandstone - Claystone, red brown, weak to very weak rock.  | K-20         |             | 44     | 18/0/0/0                    |   |     |                           |
|                |         | Scoriaceous basalt, well compressed and consolidated.  |              | (R)         | 100    | 57/0/0/0                    |   |     |                           |
|                | 102     | Tholeiite basalt   |              |             | 100    | 93/40/0/0                   |   |     |                           |
|                |         | Medium grey, hard and brittle. Intensely jointed and tectonised. Core loss, probably in a fault breccia. Black clay coatings and fillings. Zones of broken and crushed rock.                                       |              | (R)         | 69     | 0/0/0/0                     | Q = 2 - 6   |     |                           |
|                | 104     |  |              |             | 65     | 28/7/0/0                    |   |     |                           |
|                |         |  |              |             | 42     | 0/0/0/0                     |   |     |                           |
|                | 106     |  |              |             | 34     | 19/0/0/0                    |   |     |                           |
| 28,02          |         | Tectonised, breccia, mix of basalt and some dyke   | K-21         |             | 100    | 0/0/0/0                     |   |     |                           |
|                |         | Tectonic breccia, mix of basalt and scoria   |              |             | 83     | 0/0/0/0                     |   |     |                           |
|                | 108     | Tholeiite basalt   |              |             | 73     | 29/0/0/0                    |   |     |                           |
|                |         | Intensely broken and crushed rock. Dark grey (moderately altered from lighter grey), thinly micropore flow-banded, with some olivine basalt character.   |              | (R)         | 80     | 13/0/0/0                    |   |     |                           |
|                | 110     |  |              |             | 50     | 0/0/0/0                     |   |     |                           |
|                |         |  |              |             | 100    | 0/0/0/0                     |   |     |                           |
|                |         |  |              |             | 73     | 0/0/0/0                     |   |     |                           |
|                | 112     | Very thin bottom scoria (10cm)   | K-21<br>K-22 |             | 92     | 14/0/0/0                    | Q = 0,9 - 3   |     |                           |
| 22,37<br>21,87 |         | Sandstone, red sandstone, some siltstone   |              |             | 70     | 0/0/0/0                     |   |     |                           |
|                |         | Scoria - Scoriaceous basalt, red brown, well compressed and consolidated. Partly breaks up during drilling and handling.   |              | (R)         | 100    | 100/100/100/0               |   |     |                           |
|                | 114     | Scoriaceous basalt   |              |             | 100    | 96/96/96/96                 |   |     |                           |
| 19,47          |         | Intermediate Tholeiite - Olivine basalt  |              |             | 100    | 85/68/50/50                 |   |     |                           |
|                | 116     | Dark grey, with microporous zones, pores filled with black clay, scattered vesicles filled with black clay.  | K-22<br>K-23 |             | 81     | 22/0/0/0                    |   |     |                           |
|                |         | Orange brown alteration of joint wall rock   |              | (R)         | 99     | 62/23/0/0                   |   |     |                           |
|                | 118     |  |              |             | 96     | 49/10/0/0                   | Q = 3,3 - 11  |     |                           |
|                |         |  |              |             |        |                             | $Q = \frac{49}{9 \cdot 10^x} \cdot \frac{2 \cdot 4}{2 \cdot 3} \cdot \frac{1}{1}$ |     |                           |
|                | 120     |  |              |             | 100    | 47/0/0/0                    |   |     |                           |
| 12,77<br>12,74 | 122     | Sandstone, (2 to 3cm), red, moderately strong  | K-23<br>K-24 |             | 100    | 36/0/0/0                    |   |     |                           |
|                |         | Scoria - Scoriaceous basalt  |              | (R)         | 100    | 0/0/0/0 - 80/0/0/0          |   |     |                           |
|                | 124     | Purple grey, very well compressed and consolidated, with zeolites and possibly fragments of rock originated much deeper from the strata.   |              |             | 100    | 98/76/45/0                  |   |     |                           |
| 9,92           |         | Porphyritic basalt - Cumulative  |              |             | 100    | 91/78/35/0                  |   |     |                           |
|                | 126     | Medium grey, hard and brittle, with an olivine basalt character. Phenocrysts up to 15mm in diameter. Some vesicles, which are filled with black clay. Black and some yellow brown clay coatings on joint surfaces. | K-24<br>K-25 |             | 100    | 87/80/29/0                  |   |     |                           |
|                |         | Becoming thinly micropore flow-banded, with a tholeiite basalt character   |              | (R)         | 100    | 33/0/0/0                    |   |     |                           |
|                | 130     | Phenocrysts practically disappear.   | K-25<br>K-26 |             | 99     | 61/0/0/0                    |   |     |                           |
|                |         | Becoming very fine grained at the base   |              |             | 100    | 64/50/50/0                  |   |     |                           |
|                | 134     | Scoriaceous basalt, purple grey, very well compressed, moderately strong.  |              |             | 100    | 68/34/18/0                  | Q = 4,5 - 15  |     |                           |
|                |         | Conglomerate dark grey, sandy matrix, small rounded gravel (<6mm) clasts, well cemented, moderately strong.  |              | (R)         |        |                             | $Q = \frac{68}{9 \cdot 10^x} \cdot \frac{2 \cdot 4}{2 \cdot 3} \cdot \frac{1}{1}$ |     |                           |
|                | 136     | Fine grained conglomerate with little matrix   |              |             | 100    | 81/63/37/0                  |   |     |                           |
|                |         | Siltstone, red, moderately weak  |              |             | 100    | 82/28/0/0                   |   |     |                           |
|                | 138     | Scoria, with inclusions of acidic tephra.  | K-26         |             | 100    | 65/27/0/0                   |   |     |                           |
|                |         | Porphyritic basalt - Cumulative  |              |             | 100    | 97/97/0/0                   |   |     |                           |
|                | 140     | Light grey, 30% plagioclase phenocrysts (up to 15mm in diameter) becoming medium dark grey   | K-26<br>K-27 |             | 100    | 99/99/81/81                 |   |     |                           |
|                |         | voids filled with zeolites   |              | (R)         | 100    | 100/100/100/100             |   |     |                           |
|                | 142     | Occasional scattered vesicles filled with zeolites.  | K-27<br>K-28 |             | 99     | 93/88/66/43                 |   |     |                           |
|                |         |  |              |             | 99     | 94/76/56/40                 | Q = 6 - 20  |     |                           |
|                | 144     |  |              |             |        |                             | $Q = \frac{94}{6 \cdot 10^x} \cdot \frac{2 \cdot 4}{2 \cdot 3} \cdot \frac{1}{1}$ |     |                           |
|                |         | Sandstone, dark red  |              |             | 100    | 96/78/78/61                 |   |     |                           |
|                | 146     | Porphyritic basalt - Cumulative  | K-28<br>K-29 |             | 100    | 100/0/0/0                   |   |     |                           |
|                |         | Slightly pink and brown grey, scoriaceous, massive strong rock, with few original joints. Some scattered vesicles, filled with zeolites.   |              | (R)         | 100    | 80/0/0/0                    |   |     |                           |
|                | 148     | Plagioclase phenocrysts (40% to 50%), phenocrysts up to 20mm in diameter, mostly rounded anhedral and sub-hedral, some euhedral.   |              |             | 100    | 97/97/97/97                 |   |     |                           |
|                | 150     |  |              |             | 100    | 94/90/90/71                 |   |     |                           |

1,3 LU at 2,8 bar

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
| -15,43         | 150     | Colour change at 150,5m from pink grey to grey  | 150   | (R)         | 100    | 89/56/42/42                 |   |     |                           |
|                | 152     | Porphyritic basalt - Cumulative<br>30% to 40% plagioclase phenocrysts, up to 15mm in diameter and mostly rounded. Slightly microporous zones, with dark clay in the pores.  | 152   | (R)         | 100    | 80/60/22/0                  |   |     |                           |
|                | 154     |   | 154   | (R)         | 100    | 79/79/56/56                 |   |     |                           |
|                | 156     | Some joints formed by tectonic stress.<br>Joints coated and healed with black clay, joint aperture 1mm to occasionally 4mm. Some brown-red yellow (metallic lustre) coatings.   | 156   | (R)         | 100    | 87/55/0/0                   |   |     |                           |
|                | 158     | Joints surfaces rough and undulating.<br>At 157,5m some red to orange brown joint wall alteration.<br>Short intervals with up to 50% phenocrysts from 150m to 168m.   | 158   | (R)         | 100    | 82/58/40/29                 |   |     |                           |
|                | 160     |   | 160   | (R)         | 100    | 65/24/24/0                  |   |     |                           |
|                | 162     |   | 162   | (R)         | 100    | 72/37/25/0                  |   |     |                           |
|                | 164     |   | 164   | (R)         | 100    | 71/36/0/0                   |   |     |                           |
|                | 166     | Plagioclase phenocrysts becoming larger, up to 25mm in diameter.  | 166   | (R)         | 100    | 89/54/0/0                   |   |     |                           |
|                | 168     | No bottom scoria  | 168   | (R)         | 100    | 73/0/0/0                    |   |     |                           |
| -33,98         | 170     | Sandstone - Siltstone, red, argillaceous, (the top 30cm are sandy), stratified with fragments of tephra, becoming clayey, weak to very weak. Slickensides in the lowest 1m.   | 170   | (S)         | 100    | 58/40/40/40                 |   |     |                           |
| -35,63         | 170     | Scoria - Scoriaceous basalt Top mixed with sediment about 15cm.   | 170   | (N)         | 100    | 87/87/61/0                  |   |     |                           |
|                | 172     | Purple grey, moderately jointed, very well compressed and consolidated.   | 172   | (N)         | 100    | 57/0/0/0                    |   |     |                           |
|                | 174     |   | 174   | (N)         | 100    | 24/0/0/0                    |   |     |                           |
|                | 176     | Tholeiite basalt<br>Medium grey, very finely crystalline, hard and brittle. Zones of micropore flow-banding. Below 180m frequently micropore flow-banded. Frequently jointed, joint surfaces rough and undulating. Joints coated and healed with black clay and some brown-red yellow (metallic lustre) coatings. | 176   | (N)         | 100    | 8/0/0/0                     |   |     |                           |
|                | 178     |   | 178   | (N)         | 100    | 77/17/0/0                   |   |     |                           |
|                | 180     |   | 180   | (N)         | 100    | 56/29/22/7                  |   |     |                           |
|                | 182     |   | 182   | (N)         | 100    | 66/26/26/0                  |   |     |                           |
|                | 184     |   | 184   | (N)         | 100    | 44/28/28/0                  |   |     |                           |
|                | 186     |   | 186   | (N)         | 100    | 75/56/31/0                  |   |     |                           |
| -53,68         | 188     | Mix of Scoria and Sediment, very well compress. and consolid.   | 188   | (N)         | 100    | 100/100/0/0                 |   |     |                           |
|                | 190     | Scoria - Scoriaceous basalt<br>Purple grey, well compressed and consolidated.   | 190   | (N)         | 95     | 95/95/0/0                   |   |     |                           |
|                | 192     | Tholeiite basalt<br>Medium grey, intensely jointed, very hard and brittle. Joint surfaces rough and undulating, coated with black, light blue and red brown clay. Some 1cm thick breccia infillings of fine sand and gravel, cemented in black clay.<br>Faulted and tectonized rock. Very high intact strength.   | 192   | (N)         | 100    | 11/0/0/0                    |   |     |                           |
|                | 194     |   | 194   | (N)         | 100    | 0/0/0/0                     |   |     |                           |
|                | 196     |   | 196   | (N)         | 100    | 18/0/0/0                    |   |     |                           |
|                | 198     | Frequent micropore flow-banding in the lower part.  | 198   | (N)         | 97     | 23/0/0/0                    |   |     |                           |
|                | 200     |   | 200   | (N)         | 98     | 24/4/0/0                    |   |     |                           |

**Eyvindarárdalur at Dalhús**

Date June 2017

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Empl.



**VEGAGERÐIN**

**Corehole FH - 02 200 - 250 m**

Design AgG

Drawn AgG/TW

Coord. X: 717902,3

Y: 534222,6

Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02  | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
| -66,48         | 200     | Scoria - Scoriaceous basalt, grey purple   | 200   |             | 93     | 46/28/0/0                   |   |     |                           |
|                | 202     | Sandstone, 30cm of red and brown sandstone, then 60cm of brown grey sandstone with fragments of rhyolite<br>Ignimbrite, welded down to 203,30m. Grey in the upper 1m, green in the lower part. With flat white pumice fragments. | 202   |             | 100    | 80/65/25/0                  |   |     |                           |
|                | 204     | Sandstone, green, tephra rich.<br>Sandstone - claystone  | 204   |             | 97     | 50/27/17/0                  |   |     |                           |
|                | 206     | Argillaceous stratified tephra. Waxy, green and red and purple brown lenses. Very low strength.<br>Slickensides from 205m to 207m.   | 206   |             | 93     | 29/0/0/0                    |   |     |                           |
| -72,38         | 208     | Scoriaceous basalt - Scoria<br>Purple brown grey, very well compressed and consolidated with few original joints.  | 208   |             | 100    | 100/100/100/100             |   |     |                           |
|                | 210     |  | 210   |             | 100    | 88/77/61/53                 |   |     |                           |
|                | 212     |  | 212   |             | 100    | 83/67/53/35                 |   |     |                           |
| -79,08         | 214     | Tholeiite basalt<br>Medium grey, very hard and brittle, moderately jointed, joint surfaces rough and undulating. Joints healed with black clay. Some light green, and some blue, clay coatings.                                  | 214   |             | 100    | 54/40/0/0                   |   |     |                           |
|                | 216     |  | 216   |             | 100    | 71/55/34/0                  |   |     |                           |
|                | 218     |  | 218   |             | 100    | 71/71/22/0                  |   |     |                           |
|                | 220     | More frequently flow-banded. At 203,3m brecciated joint, 2cm thick, with light green and light blue clay.  | 220   |             | 100    | 70/37/0/0                   |   |     |                           |
|                | 222     | Frequently micropore flow-banded. Moderately to highly jointed. Very hard and brittle rock.  | 222   |             | 100    | 80/60/48/34                 |   |     |                           |
|                | 224     |  | 224   |             | 100    | 68/41/16/5                  |   |     |                           |
|                | 226     |  | 226   |             | 100    | 69/24/0/0                   |   |     |                           |
|                | 228     |  | 228   |             | 100    | 73/60/22/0                  |   |     |                           |
|                | 230     |  | 230   |             | 100    | 71/13/0/0                   |   |     |                           |
|                | 232     |  | 232   |             | 100    | 14/0/0/0                    |   |     |                           |
| -100,28        | 234     | 1cm thick breccia joint infilling (angular gravel and sand in black clay).<br>Scoria, 15cm.  | 234   |             | 92     | 49/0/0/0                    |   |     |                           |
| -101,13        | 236     | Sandstone, red, stratified, dark in upper part, bright red in lower part. Moderately weak to weak.   | 236   |             | 100    | 91/91/0/0                   |   |     |                           |
|                | 238     | Olivine basalt, dark brown grey, very vesicular - filled with zeolites and black clay. Up to 5mm thick joint infillings of black clay. Light blue and brown clay coatings.   | 238   |             | 100    | 96/96/60/0                  |   |     |                           |
|                | 240     | Tectonic breccia, broken and crushed rock.   | 240   |             | 100    | 26/0/0/0                    |   |     |                           |
|                | 242     |  | 242   |             | 100    | 87/63/63/63                 |   |     |                           |
| -106,78        | 244     | Sandstone, red, weak. Slickensides at base.  | 244   |             | 100    | 70/0/0/0                    |   |     |                           |
| -107,08        | 246     | Porphyritic basalt - Cumulative<br>Between 30% and 50% plagioclase phenocrysts.  | 246   |             | 100    | 96/96/96/96                 |   |     |                           |
| -109,08        | 248     | Mix of basalt and sediment, basalt with green and brown argillaceous, tuffaceous, sandstone inclusions. Slickensides at base.  | 248   |             | 100    | 70/0/0/0                    |   |     |                           |
|                | 250     | Porphyritic basalt - Cumulative<br>Massive with few original joints. 30% plagioclase phenocrysts. Zones of 40% to 50% phenocrysts. Phenocrysts mostly <10mm in diameter.<br>Highly vesicular zones filled with zeolites.         | 250   |             | 100    | 86/73/58/0                  |   |     |                           |

**Eyvindarárdalur at Dalhús**

Date June 2017

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Empl.



**VEGAGERÐIN**

**Corehole FH - 02 250 - 300 m**

Design AgG

Drawn AgG/TW

Coord. X: 717902,3

Y: 534222,6

Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02   | Depth | Rock column | Core % | RQD % |     |         | GWT | Perm. (LU) |     |     |
|----------------|---------|---|-------|-------------|--------|-------|-----|---------|-----|------------|-----|-----|
|                |         |   |       |             |        | 10    | 30  | 50/100  |     | 2,5        | 5,0 | 7,5 |
|                | 250     | Porphyritic basalt - Cumulative   | 250   |             | 100    | 90    | 90  | 90/58   |     |            |     |     |
|                | 252     | Olivine basalt - scoriaceous, purple grey, becoming grey. Well compacted and consolidated, with zeolites.   | 252   |             | 100    | 0     | 0   | 0/0     |     |            |     |     |
|                | 254     | Olivine basalt - porphyritic<br>5% to 7% plagioclase phenocrysts, <8mm, not very visible. Microporous, pores filled with black clay. Highly vesicular zones, vesicles filled with white zeolites in the upper part, and then from 257m depth vesicles half-filled and coated with black clay. | 254   |             | 78     | 63    | 23  | 23/0    |     |            |     |     |
|                | 256     | Brecciated. Zones recemented with black clay and with light blue and green grey coatings.   | 256   |             | 100    | 99    | 60  | 19/0    |     |            |     |     |
|                | 258     | Dark grey porphyritic olivine basalt  | 258   |             | 100    | 70    | 39  | 0/0     |     |            |     |     |
|                | 260     |   | 260   |             | 100    | 23    | 0   | 0/0     |     |            |     |     |
|                | 262     |   | 262   |             | 100    | 57    | 50  | 0/0     |     |            |     |     |
|                | 264     |   | 264   |             | 97     | 74    | 47  | 30/15   |     |            |     |     |
|                | 266     |   | 266   |             | 100    | 100   | 100 | 100/100 |     |            |     |     |
|                | 268     |   | 268   |             | 98     | 76    | 52  | 35/0    |     |            |     |     |
|                | 270     |   | 270   |             | 100    | 86    | 39  | 39/0    |     |            |     |     |
|                | 272     |   | 272   |             | 100    | 52    | 38  | 0/0     |     |            |     |     |
|                | 274     | Sandstone, brown red, moderately weak   | 274   |             | 100    | 72    | 32  | 32/0    |     |            |     |     |
|                | 276     | Siltstone - Claystone, red, weak  | 276   |             | 100    | 58    | 0   | 0/0     |     |            |     |     |
|                | 278     | Pumice, light yellow brown, compressed, weak  | 278   |             | 100    | 60    | 44  | 0/0     |     |            |     |     |
|                | 280     | Claystone, green and brown, waxy, very weak. Slickensides.  | 280   |             | 100    | 69    | 41  | 0/0     |     |            |     |     |
|                | 282     | In the top 20cm scoriaceous, porous, with green clay infillings.  | 282   |             | 100    | 69    | 41  | 0/0     |     |            |     |     |
|                | 284     | Olivine basalt - Porphyritic<br>5% to 7% of plagioclase phenocrysts. Vesicles filled with zeolites.   | 284   |             | 100    | 100   | 0   | 0/0     |     |            |     |     |
|                | 286     | Sandstone, colourful, dark brown, yellow and orange, stratified, in the lower part tuffaceous, moderately weak.   | 286   |             | 100    | 97    | 82  | 82/53   |     |            |     |     |
|                | 288     | Intermediate Olivine - Tholeiite basalt<br>Very vesicular in the upper part, vesicles filled with zeolites. Frequently micropore flow-banded in the middle and lower parts.   | 288   |             | 100    | 70    | 46  | 31/0    |     |            |     |     |
|                | 290     |   | 290   |             | 100    | 72    | 50  | 40/24   |     |            |     |     |
|                | 292     |   | 292   |             | 100    | 72    | 50  | 40/24   |     |            |     |     |
|                | 294     |   | 294   |             | 100    | 58    | 21  | 0/0     |     |            |     |     |
|                | 296     |   | 296   |             | 100    | 0     | 0   | 0/0     |     |            |     |     |
|                | 298     | Scoriaceous basalt, pink and brown grey, well cemented and consolidated. Pores filled with zeolites.  | 298   |             | 100    | 98    | 98  | 98/98   |     |            |     |     |
|                | 300     | Sandstone, red, stratified, moderately strong. Sample UCS=17,8 MPa  | 300   |             | 100    | 89    | 30  | 0/0     |     |            |     |     |
|                |         | Claystone, dark red brown, waxy. Sandstone, green and light brown.  |       |             | 100    | 100   | 0   | 0/0     |     |            |     |     |
|                |         | Tholeiite basalt<br>Medium grey. Vesicular in the upper part. Vesicles mostly filled with zeolites, black clay and partly quartz. Moderately jointed. Joint surfaces rough and undulating. Joints coated with black and green clay. Very hard and brittle rock.                               |       |             | 100    | 65    | 39  | 39/0    |     |            |     |     |
|                |         |   |       |             | 100    | 62    | 31  | 22/0    |     |            |     |     |
|                |         |   |       |             | 100    | 62    | 31  | 22/0    |     |            |     |     |
|                |         |   |       |             | 100    | 56    | 22  | 0/0     |     |            |     |     |
|                |         |   |       |             | 100    | 32    | 0   | 0/0     |     |            |     |     |
|                |         |   |       |             | 100    | 46    | 0   | 0/0     |     |            |     |     |
|                |         |   |       |             | 100    | 94    | 84  | 84/84   |     |            |     |     |

**Eyvindarárdalur at Dalhús**

Date June 2017

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Empl.



**VEGAGERÐIN**

**Corehole FH - 02 300 - 350 m**

Design AgG

Drawn AgG/TW

Coord. X: 717902,3

Y: 534222,6

Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02  | Depth | Rock column | Core % | RQD %       | Q                         | GWT | Perm. (LU) |
|----------------|---------|--|-------|-------------|--------|-------------|---------------------------|-----|------------|
|                | 300     | Igimbrite, green, welded, matrix of flattened grains of tephra. Lapilli size flattened fragments. Moderately strong to strong rock.  | 300   |             | 100    | 91/85/69/40 |                           |     |            |
|                | 302     | Pumice and Tephra, green, not welded, weak. Dark brown green becoming green grey claystone. Dark red brown claystone. Sample   | 302   |             | 100    | 89/85/56/0  | Q = 3 - 5                 |     |            |
| -168,08        | 304     | Claystone, dark green and purple brown, stratified argillaceous tephra. Waxy core surface. Very weak. About 25 subhorizontal and subvertical (45°) slickens. at 304m to 306m. Sample   | 304   |             | 100    | 90/0/0/0    | Q = 0,5 - 2               |     |            |
| -170,98        | 306     | Scoriaceous basalt, well compressed and consolidated. Tholeiite - Porphyritic basalt. Medium grey. Around 7% small plagioclase phenocrysts (<4mm). Moderately jointed, joint surfaces rough and undulating, coated with black clay. Vesicular, in the upper part vesicles filled with zeolites, in the lower part, vesicles filled with black clay. Very hard and brittle basalt. Sample | 306   |             | 100    | 93/93/0/0   |                           |     |            |
|                | 310     | Some sections of highly jointed basalt. Sample   | 310   |             | 100    | 80/49/33/0  | Q = 4,5 - 15              |     |            |
|                | 312     | Tectonic breccia, angular sand and gravel of crushed basalt, well cemented by black clay, but breaks up during drilling. Sandstone, red brown, 2cm. Sample   | 312   |             | 100    | 66/40/22/13 | Q = 66/9-10 x 2-4/2-3 x 1 |     |            |
| -179,18        | 314     | Scoria, purple grey, moderately strong to strong rock. Sample  | 314   |             | 100    | 45/22/0/0   |                           |     |            |
| -181,08        | 316     | Tholeiite basalt. Medium grey. Frequently flow-banded. Moderately jointed, joint surfaces rough and undulating. Very hard and brittle rock. Sample   | 316   |             | 96     | 88/88/88/88 |                           |     |            |
|                | 318     |  | 318   |             | 95     | 85/85/55/55 |                           |     |            |
|                | 320     |  | 320   |             | 94     | 81/81/0/0   |                           |     |            |
|                | 322     | Tectonic zone. Brecciated basalt. Subvertical joints healed with black clay. Some light-blue and some brown-red-yellow (metallic lustre) coatings. Sample  | 322   |             | 100    | 77/26/26/0  |                           |     |            |
|                | 324     |  | 324   |             | 99     | 57/31/19/0  |                           |     |            |
|                | 326     |  | 326   |             | 99     | 68/50/20/0  | Q = 4,5 - 15              |     |            |
|                | 328     |  | 328   |             | 100    | 66/32/10/0  | Q = 66/9-10 x 2-4/2-3 x 1 |     |            |
|                | 330     |  | 330   |             | 100    | 74/24/0/0   |                           |     |            |
|                | 332     | Scoria - Scoriaceous basalt, purple grey, well compressed and consolidated. Sandstone, brown (40cm) Sample   | 332   |             | 100    | 61/17/0/0   |                           |     |            |
| -198,18        | 334     | Claystone, red brown and green, argillaceous, stratified, acidic tephra. Waxy surface. Fractured. Sample   | 334   |             | 100    | 75/75/0/0   |                           |     |            |
| -200,08        | 336     | Olivine basalt. Dark grey, microporous and vesicular, most pores filled with black clay. Sample  | 336   |             | 100    | 56/16/0/0   | Q = 0,5 - 2               |     |            |
|                | 338     | Section of fractured rock with polished black clay infillings. Sample  | 338   |             | 100    | 47/0/0/0    |                           |     |            |
| -205,38        | 340     | Claystone, green and brown, stratified, argillaceous, compressed tephra. Very weak, highly fractured and broken - possibly partly by drilling. Sample  | 340   |             | 100    | 72/47/0/0   |                           |     |            |
|                | 342     | Sandstone - Conglomerate, grey, sand and fine gravel. Possibly aeolian but reworked by water. Subangular and subrounded clasts. Massive rock, moderately strong. Sample  | 342   |             | 100    | 71/43/12/0  | Q = 2,3 - 16              |     |            |
| -208,88        | 344     | Claystone, purple brown and green, argillaceous, stratified, compressed tephra. Waxy, very weak. Slickensides. Sample  | 344   |             | 100    | 71/43/12/0  | Q = 71/9-10 x 2-4/2-3 x 1 |     |            |
|                | 346     | Olivine basalt. Light grey in the top 2m, then dark grey. Microporous and vesicular. Most vesicles half-filled with zeolites in the top 3m. Most micropores filled with black clay in the central and lower part. Sample   | 346   |             | 100    | 76/52/36/0  |                           |     |            |
|                | 348     | Large chabazite crystals up to 10mm in size. Dyke, subvertical thin dyke, 4cm to 5cm thick. Sample   | 348   |             | 100    | 0/0/0/0     |                           |     |            |
|                | 350     |  | 350   |             | 100    | 76/76/76/0  |                           |     |            |



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Date June 2017

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Empl.



**Corehole FH - 02 350 - 400 m**

Design AgG

Drawn AgG/TW

Coord. X: 717902,3

Y: 534222,6

Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q  | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|--|-----|---------------------------|
| -217,68        | 350     | Olivine basalt<br>Vesicular and scoriaceous from 351,6m. Becoming slightly brown grey. Vesicles filled and part-filled with zeolites.               | 350   | (N)         | 100    | 76/54/54/0                  |  |     |                           |
|                | 352     | Sandstone, red<br>Claystone, green and brown, stratified, argillaceous, Sample compressed tephra. Very weak, breaks up during drilling and handling | 352   | (N)         | 100    | 42/0/0/0<br>37/11/0/0       | <b>Q = 0,1 - 1</b>   |     |                           |
| -220,48        | 354     | Intensely fractured and broken rock. Polished slickensides on nearly all fracture surfaces.   | 354   | (N)         | 100    | 37/11/0/0                   |  |     |                           |
|                | 356     | Scoria - Scoriaceous basalt<br>Tholeiite basalt, with frequent thin dyke intrusions.  | 356   | (N)         | 100    | 90/42/0/0                   |  |     |                           |
|                | 358     |   | 358   | (N)         | 100    | 76/73/20/0                  |  |     |                           |
|                | 360     | Dyke breccia, recemented with hard black clay.  | 360   | (N)         | 100    | 76/46/23/0                  | <b>Q = 5 - 18</b><br>$Q = \frac{76}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |                           |
|                | 362     | intensely fractured rock (80cm).<br>recemented breccia (40cm). Chilled contact  | 362   | (N)         | 100    | 86/45/45/0                  |  |     |                           |
| -229,08        | 364     | Tholeiite basalt<br>Medium grey, fine grained, very hard and brittle. Pattern of thin black veins of healed joints.                                 | 364   | (N)         | 100    | 89/67/47/0                  |  |     |                           |
|                | 366     | Scoriaceous basalt, very well compressed and consolidated.  | 366   | (N)         | 100    | 87/59/20/0                  |  |     |                           |
| -232,68        | 368     | Scoriaceous basalt, pink brown, vesicular. Unclear layer contact<br>Olivine - Tholeiite basalt, light brown, vesicular (10%-15%).                   | 368   | (N)         | 100    | 100/82/82/0                 |  |     |                           |
|                | 370     | Colour gradually changes from light brown to grey. Rock becomes more like tholeiite basalt.   | 370   | (N)         | 100    | 95/95/95/77                 |  |     |                           |
|                | 372     | Massive rock.   | 372   | (N)         | 100    | 96/88/74/58                 |  |     |                           |
|                | 374     | Tholeiite basalt<br>Very hard and brittle. Faint irregular thin tectonic veins healed with zeolites and black clay.                                 | 374   | (N)         | 100    | 97/95/80/80                 | <b>Q = 6,5 - 33</b><br>$Q = \frac{96}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                           |
|                | 376     |   | 376   | (N)         | 100    | 97/90/73/73                 |  |     |                           |
|                | 378     |   | 378   | (N)         | 100    | 94/71/71/55                 |  |     |                           |
|                | 380     |   | 380   | (N)         | 100    | 100/89/33/0                 |  |     |                           |
| -248,08        | 382     | Sandstone, red brown (20cm). 5cm scoria at base   | 382   | (N)         | 100    | 0/0/0/0                     |  |     |                           |
| -248,28        | 384     | Scoriaceous basalt<br>Purple grey, becoming mainly grey, well compressed and consolidated. Pores mostly filled with zeolites.                       | 384   | (N)         | 100    | 91/37/0/0                   |  |     |                           |
|                | 386     | Massive scoriaceous basalt.   | 386   | (N)         | 100    | 99/86/86/57                 |  |     |                           |
|                | 388     |   | 388   | (N)         | 100    | 98/79/73/62                 |  |     |                           |
| -254,08        | 390     | Tholeiite basalt<br>Fine grained, very hard and brittle. Few original joints, but broken in handling and transport.                                 | 390   | (N)         | 100    | 98/84/84/0                  |  |     |                           |
|                | 392     |   | 392   | (N)         | 100    | 77/57/0/0                   |  |     |                           |
|                | 394     | Darker, and slightly red grey   | 394   | (N)         | 100    | 99/63/63/37                 |  |     |                           |
|                | 396     | Becomes grey again  | 396   | (N)         | 100    | 93/66/53/35                 | <b>Q = 6,5 - 33</b><br>$Q = \frac{93}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                           |
| -263,18        | 398     | Dyke<br>Porphyritic, 5% small plagioclase crystals  | 398   | (N)         | 100    | 92/62/62/34                 |  |     |                           |
|                | 400     | Intensely jointed, but well healed and cemented (399,8 - 400,0m)  | 400   | (N)         | 100    | 96/83/59/59                 |  |     |                           |

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Empl.



**VEGAGERÐIN**

**Corehole FH - 02 400 - 450 m**

Design AgG

Drawn AgG/TW

Coord. X: 717902,3

Y: 534222,6

Elev.: 134,62

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 02  | Depth | Rock column  | Core % | RQD %<br>10 / 30 / 50 / 100  | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|-------|--------------|--------|--|---|-----|---------------------------|
|                | 400     | Dyke, porphyritic, 10% small plagioclase crystals.   | 400   |              | 100    | 65/40/40/0   |   |     |                           |
|                | 402     |  | 402   |              |        |  |   |     |                           |
|                | 404     |  | 404   | K-83<br>K-84 | 100    | 57/16/0/0  |   |     |                           |
|                | 406     | Highly jointed, most joints coated with black clay.  | 406   |              | 100    | 57/15/0/0<br>48/14/9/0   |   |     |                           |
|                | 408     |  | 408   | K-84<br>K-85 | 100    | <b>Q = 3,2 - 10</b><br>$Q = \frac{48}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$                                   |   |     |                           |
|                | 410     |  | 410   |              | 100    | 41/0/0/0   |   |     |                           |
|                | 412     |  | 412   | K-85<br>K-86 | 100    | 17/0/0/0   |   |     |                           |
|                | 414     |  | 414   |              | 100    | 39/0/0/0   |   |     |                           |
|                | 416     | Brecciated zone, well cemented.  | 416   | K-86         | 100    | 26/0/0/0   |   |     |                           |
| -282,28        | 418     | Scoria - Scoriaceous basalt, light to medium pink purple grey. Weak contact to scoria  | 418   | K-87         | 100    | <b>90/60/60/0</b>  |   |     |                           |
| -283,28        | 420     | Dyke, dark grey, with chilled margins. Welded and cemented brecciated contact  | 420   |              | 100    | 30/0/0/0<br><b>65/52/22/0</b><br>92/92/38/0  |   |     |                           |
| -285,58        | 422     | Tholeiite basalt<br>Medium grey, extremely hard and brittle, intensely jointed, tectonised rock. Joints rough and undulating, with many joints healed with black clay.   | 422   | K-87<br>K-88 | 100    | 32/0/0/0<br>30/0/0/0<br>9/0/0/0  |   |     |                           |
|                | 424     | Some orange brown discolouration on joint walls (420,2m - 421,5m)  | 424   |              | 100    | 36/15/0/0  |   |     |                           |
|                | 426     |  | 426   | K-88<br>K-89 | 100    | 45/0/0/0   |   |     |                           |
|                | 428     |  | 428   |              | 100    | <b>43/17/0/0</b><br><b>Q = 2,9 - 9,5</b><br>$Q = \frac{43}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$              |   |     |                           |
|                | 430     | Orange brown discolouration on some joint walls (429,3m - 433,2m)  | 430   | K-89<br>K-90 | 100    | 73/63/0/0  |   |     |                           |
|                | 432     |  | 432   |              | 100    | 47/0/0/0<br>36/0/0/0   |   |     |                           |
| -298,58        | 434     | Sandstone, red (2cm). Scoriaceous basalt, red brown, vesicular, well compressed and consolidated. Vesicles filled with zeolites and blue green clay.   | 434   | K-90         | 100    | <b>0/0/0/0</b><br>85/75/48/0   |   |     |                           |
| -298,60        | 436     | Porphyritic basalt<br>Slightly brown, light-medium grey, with about 10% plagioclase phenocrysts <6mm. Vesicles and pores with blue green clay infillings. Joint surfaces with blue green clay coatings.  | 436   | K-91         | 100    | 94/74/74/0<br><b>91/64/53/13</b><br><b>Q = 6 - 19</b><br>$Q = \frac{91}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                           |
|                | 438     |  | 438   |              | 100    | 91/69/53/39  |   |     |                           |
|                | 440     | Tectonized, subvertical joints, healed with zeolites and orange brown alteration of joint wall rock to 441,1m.   | 440   | K-91<br>K-92 | 100    | 88/0/0/0   |   |     |                           |
| -307,38        | 442     | Sandstone, dark red brown.   | 442   |              | 100    | <b>65/0/0/0</b>  |   |     |                           |
| -307,61        | 444     | Scoria<br>Brown at the top, becoming purple grey. Very well compressed and consolidated. Few original joints.  | 444   |              | 100    | 94/94/67/67  |   |     |                           |
|                | 446     |  | 446   | K-92<br>K-93 | 100    | <b>98/88/65/28</b><br><b>Q = 6,5 - 33</b><br>100/83/64/0   |   |     |                           |
| -311,78        | 448     | Tholeiite basalt, medium grey, very fine grained, thinly micropore flow-banded, very hard and brittle. Moderately jointed, joint surfaces rough and undulating. With zones of intensely veined and jointed rock cemented and healed with black clay. | 448   |              | 100    | 60/0/0/0<br><b>91/50/32/0</b><br>97/60/38/0  |   |     |                           |
| -315,38        | 450     | Bottom of hole august 16. 2014   | 450   | K-93<br>K-94 | 100    | <b>Q = 6 - 19</b>  |   |     |                           |

| Elev. m a.s.l.   | Depth m | Description of corehole FH - 03  | Depth m | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2.5 5.0 7.5 |
|------------------|---------|--|---------|-------------|--------|-----------------------------|---|-----|---------------------------|
| 409,8            | 0       | NQ triple tube. 45mm core. Drilled vertically directly on the rock surface.<br>The borehole is located on the same rock as Neðri-stafur - at the track to Bjölfur in Seyðisfjörður.  | 0       |             | 100    | 71/52/24/0                  |   |     |                           |
|                  | 2       | Colour changes from dark grey to red grey.   | 2       |             | 90     | 70/56/0/0                   |   |     |                           |
|                  | 4       | <b>Porphyritic basalt</b>  | 4       |             | 96     | 70/57/0/0                   |   |     |                           |
|                  | 6       | Red-brown, grey, slightly scoriaceous with about 30% cumulative plagioclase phenocrysts, up to 8 mm in diameter. The layer is varying between very porous zones rather weak zones and denser and stronger zones. Porous zones, mostly filled with zeolites.                                  | 6       |             | 100    | 86/63/46/46                 |   |     |                           |
|                  | 8       | Colour changes to medium dark grey.<br>10% to 15% vesicles, mostly filled with zeolites.   | 8       |             |        |                             |   |     |                           |
|                  | 10      | Denser zone with very few vesicles.  | 10      |             | 85     | 66/55/0/0                   |   |     |                           |
|                  | 12      |  | 12      |             | 97     | 84/69/42/20                 |   |     |                           |
|                  | 14      |  | 14      |             | 98     | 97/90/90/50                 |   |     |                           |
|                  | 16      | Slightly red-brown, grey, very porous and vesicular basalt.  | 16      |             | 100    | 95/77/77/0                  |   |     |                           |
|                  | 18      | Medium dark grey basalt, gradually fewer pores and vesicles. Dense and porous zones indicate a compound flow.  | 18      |             | 100    | 98/88/35/0                  |   |     |                           |
|                  | 20      | Medium dark grey basalt.   | 20      |             | 100    | 95/67/67/67                 |   |     |                           |
|                  | 22      |  | 22      |             | 100    | 95/67/67/67                 |   |     |                           |
| 386,25<br>386,00 | 24      | <b>Sandstone</b> , red brown, <b>Claystone</b> , in the lower part, dark, erodes stratified, 15cm.   | 24      |             | 68     | 0/0/0/0                     |   |     |                           |
|                  | 26      | <b>Porphyritic basalt</b><br>Grey basalt, 25% to 30% cumulative plagioclase phenocrysts, <8mm in diameter, porous zones. Massive basalt, few original joints.  | 26      |             | 100    | 93/71/47/47                 |   |     |                           |
|                  | 28      | Relatively dense, medium grey, microporous rock.   | 28      |             | 100    | 100/100/67/37               |   |     |                           |
|                  | 30      |  | 30      |             | 100    | 92/79/66/33                 |   |     |                           |
|                  | 32      | Medium dark, slightly brown grey, massive basalt.  | 32      |             | 100    | 97/87/87/41                 |   |     |                           |
|                  | 34      |  | 34      |             | 100    | 72/57/57/40                 |   |     |                           |
|                  | 36      | Short dense zone to 36,5m  | 36      |             |        |                             |   |     |                           |
|                  | 38      | Vesicular porous zone. Pores half-filled with zeolites.  | 38      |             | 100    | 99/79/74/0                  |   |     |                           |
| 371,15<br>371,00 | 38      | <b>Sandstone</b> , orange red, tuffaceous. Some minor core loss.   | 38      |             | 80     | 0/0/0/0                     |   |     |                           |
|                  | 40      | <b>Porphyritic basalt</b> , dark grey basalt, 25% cumulative plagioclase phenocrysts, <8mm in diameter, porous, most pores half-filled with zeolites. Somewhat altered, with zeolites and black clay in micropores. Scattered thin irregular joints, healed with black clay. Competent rock. | 40      |             | 100    | 97/65/18/0                  |   |     |                           |
|                  | 42      | <b>Claystone</b> , light brown, well-compressed, argillaceous tephra, very weak rock. Turns to green at the base. Slickensides.  | 42      |             | 100    | 100/80/0/0                  |   |     |                           |
| 367,4<br>366,65  | 42      | <b>Claystone</b> , light brown, well-compressed, argillaceous tephra, very weak rock. Turns to green at the base. Slickensides.  | 42      |             | 77     | 13/0/0/0                    |   |     |                           |
|                  | 44      | <b>Scoriaceous basalt with sedimentary infiltration</b><br>Medium dark, slightly purple, grey. Very well compressed and consolidated. Few original joints. Moderately weak to moderately strong rock.  | 44      |             | 100    | 91/56/56/0                  |   |     |                           |
|                  | 46      | Medium purple grey, massive rock.  | 46      |             | 99     | 87/73/73/0                  |   |     |                           |
|                  | 48      |  | 48      |             |        |                             |   |     |                           |
|                  | 50      | Light, pink-purple, grey, massive rock.  | 50      |             | 98     | 97/97/97/97                 |   |     |                           |

GWT at 71,15 m hole depth

GWT at 152,8 m and 220,9 m hole depth

GWT at 297,45 m and 340 m hole depth

$Q = 5,5 - 28$   
 $Q = \frac{84}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$

$Q = 6 - 30$   
 $Q = \frac{92}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$

TS=2,45 MPa  
 TS=1,19 MPa  
 TS=1,61 MPa

| Jarðfræðistofan Ehf<br>JFS Geological services Ltd |         | Fjarðarheiðargöng  |       | JFS-84                    | Drwg. FH-03_b     |   |   |     |            |
|--|---------|--|-------|---------------------------|-------------------|---|---|-----|------------|
| Empl. VEGAGERÐIN                                   |         | Seyðisfjörður north from Neðri-Stafur  |       | Date June 2017            | Page 2 of 7       |   |   |     |            |
|  |         | Corehole FH - 03 50 - 100 m  |       | Design AgG                | Drawn AgG/TW      |   |   |     |            |
|  |         | Coord. X: 729 310,2 Y: 535 805,1 Elev.: 409,8  |       | Driller Alvarr / Drillcon | Drilled July 2016 |   |   |     |            |
| Elev. m a.s.l.                                     | Depth m | Description of corehole FH - 03  | Depth | Rock column               | Core %            | RQD %   | Q | GWT | Perm. (LU) |
| 359,4  | 50      | Light, pink-purple, grey, scoriaceous basalt.  | 50    |                           | 100               | 75/0/0/0  |   |     |            |
|  |         | <b>Tholeiite basalt</b>  |       |                           |                   |   |   |     |            |
|  | 52      | Very fine grained, medium dark grey. Micropore flow-banded in the central part. Extremely hard and brittle rock. Moderately to highly jointed, joint surfaces rough and undulating and coated with black clay.                               | 52    |                           | 100               | 47/22/22/0  |   |     |            |
|  |         |  |       |                           | <b>99</b>         | <b>67/40/14/0</b>   |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 4,5 - 15</b>   |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{67}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
|  | 54      |  | 54    |                           | 100               | 75/48/0/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 56      |  | 56    |                           | 94                | 81/20/0/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 58      |  | 58    |                           | 100               | 62/48/0/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 60      | Frequently micropore flow-banded.  | 60    |                           | 100               | 88/78/49/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 62      |  | 62    |                           | 99                | 24/0/0/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 347,0  |         | <b>Sandstone</b> , red, brown colourful, stratified, moderately weak.  |       |                           |                   |   |   |     |            |
|  |         | <b>Siltstone - Claystone</b> , red & dark grey, stratified, moderately weak.   |       |                           | <b>100</b>        | <b>77/48/0/0</b>  |   |     |            |
|  |         | <b>Claystone</b> , argillaceous, stratified, tephra, very weak rock.   |       |                           |                   |   |   |     |            |
| 345,5  | 64      |  | 64    |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 66      | <b>Scoriaceous basalt</b><br>Dark grey, vesicular and vuggy. All pores coated with black clay and small zeolites.  | 66    |                           | 97                | 73/58/33/0  |   |     |            |
|  |         |  |       |                           | <b>97</b>         | <b>72/38/22/0</b>   |   |     |            |
|  |         |  |       |                           | 99                | 70/0/0/0  |   |     |            |
| 343,2  |         | <b>Tholeiite basalt</b>  |       |                           |                   |   |   |     |            |
|  | 68      | Medium dark grey, very hard and brittle, thinly flow-banded in the central and lower parts. Scattered small vesicles, filled with black clay. Moderately to highly jointed, joint surfaces rough and undulating, and coated with black clay. | 68    |                           | 100               | 64/56/0/0   |   |     |            |
|  |         |  |       |                           | 99                | 50/32/0/0   |   |     |            |
|  | 70      |  | 70    |                           | 100               | 56/0/0/0  |   |     |            |
|  |         |  |       |                           | <b>92</b>         | <b>48/17/0/0</b>  |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 3,2 - 10</b>   |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{48}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
|  | 72      |  | 72    |                           | 94                | 63/18/0/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 74      | <b>Scoriaceous basalt</b> , well compressed and consolidated, moderately weak, breaks during drilling  | 74    |                           | 55                | 22/0/0/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 334,6  |         | <b>Sandstone</b> , dark red and brown.   |       |                           | 100               | 0/0/0/0   |   |     |            |
| 334,4  |         |  |       |                           |                   |   |   |     |            |
|  | 76      | <b>Scoria</b> Scoria with green sandstone - claystone inclusions   | 76    |                           | 97                | 43/13/0/0   |   |     |            |
|  |         |  |       |                           | <b>98</b>         | <b>67/42/26/26</b>  |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 4,5 - 15</b>   |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{67}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
|  | 78      |  | 78    |                           | 100               | 95/73/54/54   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 80      | <b>Porphyritic basalt</b>  | 80    |                           | 100               | 59/44/0/0   |   |     |            |
|  |         |  |       |                           | <b>93</b>         | <b>42/33/0/0</b>  |   |     |            |
|  |         |  |       |                           | 89                | 33/26/0/0   |   |     |            |
| 329,8  |         | Dark grey, flow-banded like tholeiite basalt. About 10% to 15% small plagioclase phenocrysts.  |       |                           |                   |   |   |     |            |
|  | 82      | <b>Tectonic breccia</b>  | 82    |                           | 97                | 63/35/35/0  |   |     |            |
|  |         |  |       |                           | <b>94</b>         | <b>63/30/30/0</b>   |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 1 - 1,4</b>  |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{63}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
|  | 84      | Highly tectonised and crushed. Fragments of porphyritic basalt recemented in black clay.   | 84    |                           | 88                | 44/0/0/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 86      | <b>Scoriaceous basalt</b> , purple grey.   | 86    |                           | 100               | 100/81/81/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 323,3  |         | Red sandstone (top 20cm).  |       |                           |                   |   |   |     |            |
|  |         | <b>Claystone</b> , brown and green, stratified, tephra. Very weak rock.  |       |                           | <b>74</b>         | <b>22/0/0/0</b>   |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 0,2 - 1</b>  |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{22}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
| 321,55   | 88      | Several slickensides at base.  | 88    |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 90      | <b>Scoria - Scoriaceous basalt</b>   | 90    |                           | 98                | 98/98/98/98   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 319,0  |         | <b>Tholeiite basalt</b>  |       |                           |                   |   |   |     |            |
|  | 92      | Medium grey, very hard and brittle, zones of micropore flow-banding. Moderately to highly jointed. Joint surfaces rough and undulating, coated with black clay.  | 92    |                           | 100               | 40/0/0/0  |   |     |            |
|  |         |  |       |                           | 100               | 61/47/28/0  |   |     |            |
|  |         |  |       |                           | <b>99</b>         | <b>59/28/22/0</b>   |   |     |            |
|  |         |  |       |                           |                   | <b>Q = 4 - 13</b>   |   |     |            |
|  |         |  |       |                           |                   | $Q = \frac{59}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |            |
|  | 94      |  | 94    |                           | 100               | 58/27/27/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 313,4  | 96      |  | 96    |                           | 92                | 73/0/0/0  |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  | 98      | <b>Scoria</b>  | 98    |                           | 100               | 100/81/43/0   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
|  |         |  |       |                           |                   |   |   |     |            |
| 311,8  | 98      | <b>Tectonic breccia</b> , brecciated tholeiite basalt. Angular basalt fragments recemented with black clay (98m to 99m). Partly crushed, uncemented basalt fragments (99m to 102,75m). Core loss.  | 98    |                           | 98                | 85/70/70/0  |   |     |            |
|  |         |  |       |                           | <b>(63</b>        | <b>19/12/12/0)</b>  |   |     |            |
|  |         |  |       |                           | 68                | 11/0/0/0  |   |     |            |
|  | 100     |  | 100   |                           |                   |   |   |     |            |

0,3 LU at  
10,4 bar  
(4 L/min)

| Elev. m a.s.l. | Depth m | Description of corehole FH - 03   | Depth | Rock column | Core %   | RQD %      | Q | GWT | Perm. (LU)  |
|----------------|---------|---|-------|-------------|--|------------|---|-----|-------------|
|                |         |   |       |             | 10 / 30 / 50 / 100   |            |   |     | 2,5 5,0 7,5 |
| 307,05         | 100     | Tectonic breccia<br>Partly crushed, uncemented basalt (99m to 102,75m).<br>Core loss.   | 100   |             | 63   | 19/12/12/0 |   |     |             |
|                | 102     |   | 102   |             | 80 0/0/0/0<br>93 0/0/0/0   |            |   |     |             |
| 304,75         | 104     | Tholeiite basalt<br>Medium dark grey, very hard and brittle, finely micropore flow-banded, pores filled with black clay.  | 104   |             | 98 30/0/0/0<br>99 53/17/0/0<br>100 74/32/0/0   |            |   |     |             |
| 304,5          | 106     | Sandstone - Claystone, dark red brown, stratified, partly argillaceous, slightly waxy.<br>Scoria - Scoriaceous basalt, dark red grey.   | 106   |             | 100 100/0/0/0<br>100 93/0/0/0<br>100 67/38/0/0   |            |   |     |             |
| 303,8          | 108     | Tholeiite basalt<br>Dark to medium grey, hard and brittle, with frequent micropore flow-banding. With about 5% plagioclase phenocrysts, <5mm in diameter. Intensely jointed, most joint surfaces coated with black clay. From 106,85m to 107,40m broken and crushed rock, with up to 5mm thick black clay infillings.   | 108   |             | 45 0/0/0/0<br>100 43/30/0/0<br>98 18/0/0/0   |            |   |     |             |
|                | 110     | Some joints filled and coated with firm green and yellow clay, up to 5mm thick (108,75m to 111,80m).<br>Highly jointed.   | 110   |             | 53 9/0/0/0<br>100 27/0/0/0   |            |   |     |             |
|                | 112     |   | 112   |             | 100 37/0/0/0   |            |   |     |             |
|                | 114     |   | 114   |             | 92 41/20/0/0<br>100 47/28/0/0  |            |   |     |             |
|                | 116     | Some light blue joint coatings. Most joints with 0,5mm to 1mm black clay infillings, some up to 3mm.  | 116   |             | 93 28/0/0/0<br>94 0/0/0/0<br>97 51/20/0/0  |            |   |     |             |
|                | 118     | Highly jointed, highly flow-banded. Hard and brittle rock.  | 118   |             | 100 66/60/0/0  |            |   |     |             |
|                | 120     | Scoriaceous basalt, well compressed and consolidated.<br>Sandstone, 2cm, dark red.  | 120   |             | 100 75/0/0/0<br>100 100/67/0/0   |            |   |     |             |
| 289,2          | 122     | Scoriaceous basalt, dark purple grey. Very well compressed and consolidated. Porous, pores half-filled and coated with zeolites and green clay. Moderately weak.  | 122   |             | 100 77/60/32/0<br>100 74/45/24/0   |            |   |     |             |
| 289,18         | 124     | Tholeiite basalt<br>Medium dark grey. Highly flow-banded. About 5% to 7% plagioclase phenocrysts, <3mm in diameter. Moderately to highly jointed, subvertical joints. Joint surfaces rough and undulating. Very hard and brittle rock. Very vesicular in the top 50cm. From 124m to 125m blue green and yellow, stiff and hard clay infillings (0,5mm to 2mm), which are occasionally polished. | 124   |             | 99 15/0/0/0<br>92 32/0/0/0<br>100 60/0/0/0   |            |   |     |             |
|                | 126     |   | 126   |             |  |            |   |     |             |
|                | 128     | Becoming much less jointed. From 125m some joints with coatings and infillings, up to 1mm thick, of hard black clay or with some light blue clay.   | 128   |             | 99 60/27/24/0<br>Q = 4 - 13,3<br>Q = $\frac{60}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |            |   |     |             |
|                | 130     | Some 1mm to 2mm infillings of hard, blue and grey, clay. Zone of broken rock.   | 130   |             | 100 88/54/54/0<br>100 0/0/0/0<br>100 63/55/55/0  |            |   |     |             |
| 277,65         | 132     | Scoriaceous tholeiite basalt, dark purple grey.<br>Sandstone, Claystone, red, stratified. Moderately weak in the upper part. Weak, waxy and argillaceous, in the lower part.  | 132   |             | 100 100/55/0/0<br>100 87/87/0/0  |            |   |     |             |
| 277,25         | 134     | Scoriaceous basalt, purple grey, well compressed and consolidated. Porous, pores filled with small zeolites. At 132,7m, slickenside in a 5cm thick red sandstone inclusion.   | 134   |             | 94 73/55/42/0  |            |   |     |             |
| 275,0          | 136     | Tholeiite - Porphyritic basalt<br>Tectonic breccia<br>Intensely jointed and brecciated. Mix of tectonic breccia and basalt clasts cemented by stiff black clay.   | 136   |             | 100 69/31/0/0<br>70 0/0/0/0<br>98 73/49/0/0  |            |   |     |             |
|                | 138     | From 137,8m to 138,6m, moderately to highly jointed. All joints coated with black and green clay. Some clay infillings of 1mm to 2mm.   | 138   |             | 100 39/0/0/0   |            |   |     |             |
|                | 140     | Tholeiite - Porphyritic basalt<br>Medium dark grey. Frequently flow-banded. Hard and brittle. About 10% to 15% small plagioclase phenocrysts in the central part - less in the top and bottom parts of the flow. Porous, all pores filled with black clay.  | 140   |             | 98 60/41/28/0<br>100 70/38/24/0  |            |   |     |             |
|                | 142     |   | 142   |             | 98 61/30/15/0<br>Q = 4,1 - 13,6<br>Q = $\frac{61}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |            |   |     |             |
|                | 144     |   | 144   |             | 100 84/39/23/0   |            |   |     |             |
|                | 146     |   | 146   |             |  |            |   |     |             |
|                | 148     | Scoria, 10cm at the base.<br>Sandstone, red.  | 148   |             | 100 28/0/0/0<br>100 100/100/100/0  |            |   |     |             |
| 261,15         | 150     | Scoriaceous basalt, slightly brown to medium grey.  | 150   |             | 100 83/55/0/0  |            |   |     |             |

0,3 LU at 10,5 bar (4 L/min)

| Elev. m a.s.l.  | Depth m | Description of corehole FH - 03   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2.5 5.0 7.5 |
|-----------------|---------|---|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
|                 | 150     | Scoriaceous basalt, very vesicular, vesicles filled with zeolites. 8 $\Sigma$ 11 38 $\downarrow$<br>Tholeiite - Porphyritic basalt, all pores filled with zeolites 7,7 kN K-32<br>(150,5m to 151,5m) $I_s$ (50) 3,63 MPa  | 150   |             | 100    | 89/64/54/34                 |   |     |                           |
|                 | 152     | From 151,5m, vesicles and pores unfilled, some coated with green clay at 150,05m (scoriaceous basalt) K-33  | 152   |             | 100    | 70/34/34/0                  |   |     |                           |
|                 | 154     | Tholeiite - porphyritic basalt<br>About 10% small plagioclase phenocrysts, crystals not obvious.  | 154   |             | 100    | 76/46/36/19                 |   |     |                           |
|                 | 156     | Dark grey. Vesicles almost disappear, but micropore flow-banded, micropores filled with black clay. Moderately to highly jointed (most joints subvertical). Joints coated and filled (1mm to 2mm) with stiff black and light blue clay. Some joint surfaces polished. K-33 K-34   | 156   |             | 100    | 66/13/0/0                   |   |     |                           |
|                 | 158     |   | 158   |             | 100    | 29/0/0/0                    |   |     |                           |
|                 | 160     |   | 160   |             | 100    | 75/49/28/0                  |   |     |                           |
|                 | 162     | ----- subhorizontal slickenside<br>Few original joints from 162m<br>----- subvertical slickenside 9 $\Sigma$ 9 49 $\downarrow$<br>$I_s$ (50) 7,82 MPa   | 162   |             | 100    | 89/80/70/70                 |   |     |                           |
|                 | 164     |   | 164   |             | 100    | 100/78/78/0                 |   |     |                           |
| 244,1<br>243,5  | 166     | ----- Bottom 20cm scoriaceous<br>Sandstone, red, stratified, some grey lenses. Weak, at 166m (Sandstone): 8 $\Sigma$ 8<br>Lowest 15cm argillaceous, weak. $I_s$ (50) 1,40 MPa   | 166   |             | 100    | 80/0/0/0                    |   |     |                           |
|                 | 168     | Scoriaceous basalt<br>Brown grey, vesicular, pores mainly filled with zeolites. Well compressed and consolidated, brecciated scoria, with sedimentary tuffaceous inclusions. K-36   | 168   |             | 100    | 70/43/0/0                   |   |     |                           |
|                 | 170     | Tectonic breccia, brecciated basalt recemented with black clay. K-37  | 170   |             | 100    | 68/48/48/48                 |   |     |                           |
| 238,05<br>237,4 | 172     | Claystone, red brown, then brown yellow and green below, tuffaceous, stratified, argillaceous waxy core. Very weak.   | 172   |             | 100    | 56/34/27/27                 |   |     |                           |
|                 | 174     | Scoriaceous basalt, v. porous. Pores half-filled with zeolites and black clay<br>Porphyritic basalt, very vesicular. at 174,6m: 5 $\Sigma$ 29,8 kN K-37<br>Dense, medium grey, very to extremely hard and brittle, $I_s$ (50) 14,05 MPa K-38<br><10% small plagioclase phenocrysts. Extremely strong. $\rightarrow$   | 174   |             | 91     | 60/42/31/0                  |   |     |                           |
|                 | 176     | Scoriaceous basalt, very well compressed and consolidated.  | 176   |             | 98     | 63/48/42/24                 |   |     |                           |
| 232,0           | 178     | Sediment - Scoriaceous breccia<br>Subangular and angular sand and gravel sized scoriaceous fragments, with angular fragments of various origin. K-38 K-39   | 178   |             | 86     | 23/0/0/0                    |   |     |                           |
| 229,05          | 180     | Scoriaceous basalt<br>Medium dark purple grey, becoming purple pink grey, very well compressed and consolidated. Massive rock.  | 180   |             | 92     | 51/22/0/0                   |   |     |                           |
| 225,0           | 182     | ----- Section of brecciated, broken rock.<br>Tholeiite basalt<br>----- Section of brecciated, broken rock, cemented with black clay.<br>Medium grey, very hard and brittle, with about 7% small plagioclase phenocrysts. Thinly micropore flow-banded. Moderately to highly jointed. Joint surfaces rough and undulating, with coatings and some infillings (~1mm) of black and green clay. 8 $\Sigma$ 18,3 kN 9 47 $\downarrow$<br>$I_s$ (50) 8,63 MPa K-40 K-41 | 182   |             | 99     | 60/42/31/0                  |   |     |                           |
|                 | 184     |   | 184   |             | 100    | 63/48/42/24                 |   |     |                           |
|                 | 186     |   | 186   |             | 99     | 92/84/84/84                 |   |     |                           |
|                 | 188     |   | 188   |             | 96     | 49/24/0/0                   |   |     |                           |
|                 | 190     |   | 190   |             | 100    | 39/16/0/0                   |   |     |                           |
|                 | 192     |   | 192   |             | 97     | 68/46/23/9                  |   |     |                           |
|                 | 194     | From 194,4m to 197,5m, few original joints. 6 $\Sigma$ 11 53 $\downarrow$<br>20,2 kN $I_s$ (50) 9,50 MPa K-41 K-42  | 194   |             | 100    | 67/44/18/0                  |   |     |                           |
|                 | 196     |   | 196   |             | 92     | 87/87/74/74                 |   |     |                           |
|                 | 198     | at 199,9m: 8 $\Sigma$ 20,4 kN K-42 K-43<br>$I_s$ (50) 9,59 MPa  | 198   |             | 100    | 81/64/19/0                  |   |     |                           |
|                 | 200     | Medium grey, very hard and brittle, medium to widely spaced joints.   | 200   |             |        |                             |   |     |                           |

| Elev. m a.s.l. | Depth m | Description of corehole FH - 03   | Depth | Rock column | Core % | RQD %              | Q | GWT | Perm. (LU)  |
|----------------|---------|---|-------|-------------|--------|--------------------|---|-----|-------------|
|                |         |   |       |             |        | 10 / 30 / 50 / 100 |   |     | 2,5 5,0 7,5 |
|                | 200     | Tholeiite basalt  | 200   |             |        |                    |   |     |             |
|                | 202     | Medium grey, extremely hard and brittle, mostly with thin micropore flow-banding. Moderately jointed. Joint surfaces rough and undulating, with coatings of black and light blue clay.  | 202   |             | 96     | 84/52/18/0         |   |     |             |
|                | 204     |   | 204   |             | 97     | 68/46/23/9         |   |     |             |
|                | 206     |   | 206   |             | 100    | 78/28/28/0         |   |     |             |
|                | 208     |   | 208   |             | 99     | 72/56/41/0         |   |     |             |
|                | 210     | Scoriaceous basalt  | 210   |             | 100    | 78/58/0/0          |   |     |             |
| 199,90         | 210     | Sandstone, red sandstone, (2cm), no visible weakness.   | 210   |             | 100    | 0/0/0/0            |   |     |             |
| 199,88         | 210     | Scoriaceous basalt  | 210   |             | 100    | 97/49/0/0          |   |     |             |
|                | 212     | Porous, but almost all pores filled with zeolites.  | 212   |             |        |                    |   |     |             |
|                | 214     | Tholeiite - Porphyritic basalt  | 214   |             | 100    | 60/40/24/0         |   |     |             |
|                | 216     | Medium grey, thinly flow-banded, hard and brittle. Zeolites and infillings disappear. Tholeiite basalt, with small white plagioclase phenocrysts.   | 216   |             | 100    | 71/48/23/0         |   |     |             |
|                | 218     |   | 218   |             | 100    | 66/48/24/0         |   |     |             |
| 190,5          | 220     | Scoriaceous basalt at base (5cm).   | 220   |             | 100    | 75/65/45/0         |   |     |             |
| 190,47         | 220     | Sandstone - Siltstone, red (3cm).   | 220   |             | 100    | 0/0/0/0            |   |     |             |
|                | 222     | Scoriaceous basalt, very well compressed and consolidated. Vesicular.   | 222   |             | 100    | 72/45/0/0          |   |     |             |
|                | 224     | Tholeiite basalt, red grey, vesicular basalt, vesicles empty, but coated with black and green clay.   | 224   |             | 95     | 28/21/0/0          |   |     |             |
|                | 226     | Moderately jointed from 225m.   | 226   |             | 100    | 28/0/0/0           |   |     |             |
|                | 228     |   | 228   |             | 98     | 70/53/39/0         |   |     |             |
| 178,7          | 230     | Sandstone, red (3cm).   | 230   |             | 100    | 93/65/0/0          |   |     |             |
| 178,67         | 230     | Dark grey scoriaceous basalt at base (5cm).   | 230   |             | 100    | 0/0/0/0            |   |     |             |
|                | 232     | Scoriaceous basalt, purple grey, very well compressed and consolidated. Red sandstone infiltrations in the top 20cm.  | 232   |             | 98     | 91/39/0/0          |   |     |             |
|                | 234     | Porphyritic basalt  | 234   |             | 98     | 94/87/72/72        |   |     |             |
|                | 236     | Brecciated zones, but cemented in black clay.   | 236   |             | 99     | 94/80/54/40        |   |     |             |
|                | 238     |   | 238   |             | 100    | 98/98/78/38        |   |     |             |
|                | 240     | Claystone, red, argillaceous, well compressed tephra, (sandstone at top).   | 240   |             | 100    | 32/0/0/0           |   |     |             |
| 170,1          | 240     | Tholeiite basalt  | 240   |             | 100    | 82/48/30/0         |   |     |             |
| 169,7          | 242     | Medium dark grey, hard and brittle, very vesicular. Most vesicles empty or coated with black clay, some vesicles filled with zeolites. Becoming less vesicular from 243m.   | 242   |             | 83     | 25/0/0/0           |   |     |             |
|                | 244     | Highly tectonised basalt, recemented with black clay.   | 244   |             | 96     | 41/12/6/0          |   |     |             |
|                | 246     | Moderately, to highly tectonised basalt. Sections of intact basalt and sections of breccia consisting of angular sand, gravel and cobble basalt fragments recemented or healed with zeolites, black and dark green clay, which is often polished. | 246   |             | 96     | 26/0/0/0           |   |     |             |
|                | 248     |   | 248   |             | 99     | 55/19/0/0          |   |     |             |
|                | 250     |   | 250   |             | 100    | 0/0/0/0            |   |     |             |

0,5 LU at 10,5 bar (17 L/min)

**Seyðisfjörður north from Neðri-Stafur**

Date June 2017

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Empl.



**Corehole FH - 03 250 - 300 m**

Design AgG

Drawn AgG/TW

Coord. X: 729 310,2 Y: 535 805,1 Elev.: 409,8

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 03   | Depth | Rock column | Core % | RQD %                     |   |     |     | GWT | Perm. (LU) |  |  |
|----------------|---------|---|-------|-------------|--------|---------------------------|---|-----|-----|-----|------------|--|--|
|                |         |   |       |             |        | 10 / 30 / 50 / 100        | Q | 2.5 | 5.0 |     | 7.5        |  |  |
| 157.9          | 250     | Moderately to highly tectonised tholeiite basalt.   | 250   | (N)         | 96     | 46/0/0/0                  |   |     |     |     |            |  |  |
| 157.88         | 252     | Scoriaceous basalt, porous, with light green clay filling pores.<br>Sandstone, red brown sandstone (2cm).   | 252   | (N)         | 100    | 47/0/0/0                  |   |     |     |     |            |  |  |
| 156.8          |         | Scoriaceous basalt, dark red grey, most pores half-filled with zeolites. K-54   |       |             | 100    | 0/0/0/0                   |   |     |     |     |            |  |  |
|                | 254     | Tholeiite basalt<br>Relatively dense basalt, with some vesicles. at 254,3m: 7 6 20.1 kN 47 ↓  | 254   | (N)         | 87     | 62/0/0/0                  |   |     |     |     |            |  |  |
|                |         | Scoriaceous basalt<br>Very porous and scoriaceous. Vesicles coated with black clay, some vesicles filled with zeolites. Is (50) 9,44 MPa TS=1,15 MPa  |       |             | 100    | 59/27/0/0                 |   |     |     |     |            |  |  |
| 153.3          | 256     | Claystone, brown, red green and yellow, stratified, argillaceous, well compressed tephra, very weak. K-55   | 256   | (N)         | 100    | 0/0/0/0                   |   |     |     |     |            |  |  |
| 152.7          | 258     | Scoriaceous basalt<br>Purple grey, and vesicular, with green clay infiltrations up to 257,5m. Is (50) 1,59 MPa  | 258   | (N)         | 100    | 83/75/75/51               |   |     |     |     |            |  |  |
|                | 260     | Porphyritic basalt<br>Medium grey, ~ 10 to 15% plagioclase phenocrysts, hard and brittle, with tholeiite character micropore flow-banding. Scattered large vesicles filled with black clay.   | 260   | (N)         | 98     | 48/14/0/0                 |   |     |     |     |            |  |  |
|                | 262     | Moderately to highly jointed. Joint surfaces rough and undulating, and coated with black clay. K-56   | 262   | (N)         | 98     | 66/47/41/14               |   |     |     |     |            |  |  |
|                | 264     | Scoria, brown grey scoria (10cm), well compressed and consolidated. at 263,9m: 6 17,3 kN Is (50) 8,16 MPa   | 264   | (N)         | 98     | 67/51/51/0                |   |     |     |     |            |  |  |
| 144.50         | 266     | Sandstone, brown sandstone (3cm).<br>Scoria - scoriaceous basalt very well compressed and consolidated. Some brown sandstone infiltrations. Porous, most pores filled and half-filled with black, brown and green clay. K-57  | 266   | (N)         | 100    | 89/89/89/0                |   |     |     |     |            |  |  |
| 144.47         |         | Tholeiite basalt<br>Medium dark grey, hard and brittle, micropore flow-banded. Is (50) 7,94 MPa   |       |             | 100    | 0/0/0/0                   |   |     |     |     |            |  |  |
| 143.60         | 268     | Brown grey scoria (10cm), well compressed and consolidated. K-58  | 268   | (N)         | 100    | 69/43/0/0                 |   |     |     |     |            |  |  |
|                | 270     | Sandstone - Claystone, brown and green, stratified, slightly waxy, argillaceous, well compressed tephra, Weak. K-59   | 270   | (N)         | 100    | 0/0/0/0                   |   |     |     |     |            |  |  |
|                | 272     | Scoriaceous basalt - Tholeiite basalt<br>Medium dark, slightly purple, grey, vesicular. Well compressed and consolidated. Two short (0,5m) sections of grey, crystalline, vesicular, tholeiite basalt. at 272,5m (Sandstone): 5 Is (50) 1,18 MPa                                  | 272   | (N)         | 100    | 92/57/35/0                |   |     |     |     |            |  |  |
| 137.35         | 274     | Sandstone, red, with black angular fragments (up to 1cm) of scoria and basalt, moderately strong, no weakness at contacts. Is (50) 1,85 MPa   | 274   | (N)         | 100    | 96/60/45/0                |   |     |     |     |            |  |  |
| 137.23         | 276     | Scoriaceous basalt<br>Medium dark grey, vesicular basalt mixed with short sections of tholeiite basalt (about 25%). Very well compressed and consolidated. Most vesicles filled with zeolites. K-59   | 276   | (N)         | 99     | 88/52/36/0                |   |     |     |     |            |  |  |
|                | 278     | Zones of pink grey scoriaceous basalt from 276m to 280m. K-60   | 278   | (N)         | 100    | 92/70/19/0                |   |     |     |     |            |  |  |
|                | 280     | scoriaceous well compressed, vesicular, vesicles filled and half-filled with white zeolites and black clay. at 279,9m: 8 Is (50) 2,46 MPa   | 280   | (N)         | 100    | 89/68/37/0                |   |     |     |     |            |  |  |
|                | 282     | Tholeiite basalt, medium grey, vesicular, highly jointed, with thin black veins of healed joints. Vesicles coated with black clay. at 283,1m: 8 Is (50) 1,16 MPa  | 282   | (N)         | 99     | 86/82/56/0                |   |     |     |     |            |  |  |
| 126.80         | 284     | Sandstone - Claystone, brown sandstone (20cm), brown and green, stratified claystone (25cm), moderately weak. K-61  | 284   | (N)         | 100    | 100/0/0/0                 |   |     |     |     |            |  |  |
| 126.35         |         | Scoriaceous basalt, well compressed and consolidated. Relatively continuous core. K-62  |       |             | 98     | 54/0/0/0                  |   |     |     |     |            |  |  |
|                | 286     | Tholeiite basalt<br>Very hard and brittle, vesicular in the upper part, microporous and few vesicles in the lower part. Moderately to highly jointed. Joint surfaces rough and undulating with coatings and thin infillings of black clay. at 289,65m: 3 17,4 kN Is (50) 8,19 MPa | 286   | (N)         | 100    | 100/100/0/0               |   |     |     |     |            |  |  |
|                | 288     | Some 10cm of scoriaceous basalt. K-63   | 288   | (N)         | 99     | 41/0/0/0                  |   |     |     |     |            |  |  |
| 119.65         | 290     | Sandstone, 3cm of brown sandstone, continuous core. K-64  | 290   | (N)         | 99     | 56/23/16/16               |   |     |     |     |            |  |  |
| 119.62         |         | Scoriaceous basalt, dark grey, well compressed and consolidated, porous. Pores half-filled and coated with black clay and zeolites. K-65  |       |             | 99     | Q = 56/9-10 x 2-4/2-3 x 1 |   |     |     |     |            |  |  |
|                | 292     | Olivine basalt, crystalline, vesicular. K-62  | 292   | (N)         | 100    | 51/16/0/0                 |   |     |     |     |            |  |  |
|                | 294     | Scoriaceous basalt<br>Dark grey, porous. Pores filled with zeolites (mesolite-scolecite group), and with coatings of black clay. K-63   | 294   | (N)         | 100    | 98/81/81/81               |   |     |     |     |            |  |  |
| 117.90         | 296     | Scoriaceous basalt<br>Dark grey, porous. Pores filled with zeolites (mesolite-scolecite group), and with coatings of black clay. at 296,2m: 9 Is (50) 1,96 MPa  | 296   | (N)         | 100    | 42/0/0/0                  |   |     |     |     |            |  |  |
|                | 298     | Slightly purple grey in the last 1m<br>Tholeiite - Porphyritic basalt<br>Medium grey, hard and brittle, with about 10% phenocrysts. Moderately jointed, joint surfaces rough and undulating. at 299,4m: 5 23,2 kN Is (50) 10,94 MPa   | 298   | (N)         | 100    | 97/63/43/0                |   |     |     |     |            |  |  |
|                | 300     | Tholeiite - Porphyritic basalt<br>Medium grey, hard and brittle, with about 10% phenocrysts. Moderately jointed, joint surfaces rough and undulating. K-64  | 300   | (N)         | 99     | Q = 94/6-10 x 2-4/2-3 x 1 |   |     |     |     |            |  |  |



**Seyðisfjörður north from Neðri-Stafur**

Date June 2017

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Empl.



**Corehole FH - 03 300 - 350 m**

Design AgG

Drawn AgG/TW

Coord. X: 729 310,2 Y: 535 805,1 Elev.: 409,8

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l.        | Depth m | Description of corehole FH - 03  | Depth | Rock column | Core % | RQD %              | Q | GWT                           | Perm. (LU)                    |
|-----------------------|---------|--|-------|-------------|--------|--------------------|---|-------------------------------|-------------------------------|
|                       |         |  |       |             |        | 10 / 30 / 50 / 100 |   |                               | 2,5 5,0 7,5                   |
|                       | 300     | <b>Tholeiite basalt - Porphyritic</b><br>Medium grey, hard and brittle, with about 10% phenocrysts. Moderately jointed, joint surfaces rough and undulating and coated with black clay. Short sections of micropore flow-banding. Few vesicles.  | 300   |             | 99     | 58/13/0/0          |   |                               | 0,3 LU at 9,6 bar (3,3 L/min) |
|                       | 302     |  | 302   |             | 99     | 70/44/27/11        |   |                               |                               |
|                       | 304     | Vesicular, vesicles mostly filled with black clay.   | 304   |             | 100    | 32/21/0/0          |   |                               |                               |
|                       | 306     |  | 306   |             | 98     | 61/27/0/0          |   |                               |                               |
| 102,6<br>102,59       | 308     | <b>Sandstone</b> - - - - - <b>Lowest 20cm vesicular and scoriaceous.</b><br>red sandstone (1cm). Continuous core. $I_s(50) 3,44 \text{ MPa}$   | 308   |             | 100    | 0/0/0/0            |   | 0,3 LU at 9,6 bar (3,3 L/min) |                               |
|                       | 310     | <b>Scoriaceous basalt</b><br>Purple grey, with small red sandstone infiltrations in the top 40cm. Very well compressed and consolidated.   | 310   |             | 100    | 87/65/42/0         |   |                               |                               |
|                       | 312     | <b>Tholeiite basalt - Porphyritic</b><br>Medium grey, about 10% small plagioclase phenocrysts. Highly jointed, joint surfaces rough and undulating and coated and filled with black clay. Some infillings up to 7mm thick of black polished clay. Some slickensides.   | 312   |             | 100    | 100/88/63/47       |   |                               |                               |
| 98,9                  | 314     | Intensely jointed from 313,5m to 314,2m  | 314   |             | 98     | 37/8/0/0           |   |                               |                               |
|                       | 316     | <b>Sandstone</b> , red (3cm). Continuous core. $I_s(50) 3,44 \text{ MPa}$  | 316   |             | 100    | 0/0/0/0            |   | 0,3 LU at 9,6 bar (3,3 L/min) |                               |
| 93,95<br>93,92        | 318     | <b>Scoriaceous basalt</b> , vesicular. Most vesicles filled with black clay & zeolites   | 318   |             | 85     | 74/64/64/0         |   |                               |                               |
|                       | 320     | <b>Tholeiite basalt</b> , medium purple grey, 5% to 10% small plagioclase phenocrysts; vesicular in the upper part, up to 10%, vesicles filled with zeolites, black and green clay. $UCS=35,9 \text{ MPa}$   | 320   |             | 95     | 70/20/20/0         |   |                               |                               |
| 90,7<br>90,4          | 322     | <b>Sandstone - Claystone</b> , sandy top (5cm). Green and brown, stratified, waxy, argillaceous, silty, sandy.   | 322   |             | 100    | 90/0/0/0           |   |                               |                               |
|                       | 324     | <b>Scoriaceous basalt</b> , at top   | 324   |             | 100    | 50/0/0/0           |   | 0,3 LU at 9,8 bar (5,3 L/min) |                               |
|                       | 326     | <b>Porphyritic basalt</b><br>Dark grey, about 20% small plagioclase phenocrysts <5mm. Vesicular down to 320,6m. $I_s(50) 6,52 \text{ MPa}$   | 326   |             | 100    | 67/39/28/28        |   |                               |                               |
| 86,7                  | 328     | <b>Scoriaceous basalt</b> , very well compressed and consolidated.   | 328   |             | 100    | 70/46/33/33        |   |                               |                               |
| 84,6                  | 330     | <b>Scoriaceous basalt</b> , very well compressed and consolidated. $I_s(50) 2,26 \text{ MPa}$  | 330   |             | 99     | 58/47/0/0          |   |                               |                               |
|                       | 332     | <b>Tholeiite basalt</b><br>Hard and brittle, with about 3% to 5% small (<5mm) plagioclase phenocrysts. About 10% vesicles, filled with black clay. Moderately jointed, joints coated and healed with black clay. Slickenside at 328,5m. $I_s(50) 10,30 \text{ MPa}$  | 332   |             | 100    | 71/47/12/0         |   | 0,3 LU at 9,8 bar (5,3 L/min) |                               |
|                       | 334     |  | 334   |             | 100    | 78/63/39/15        |   |                               |                               |
|                       | 336     | <b>Scoriaceous basalt</b> , purple grey  | 336   |             | 99     | 95/72/25/0         |   |                               |                               |
|                       | 338     | <b>Porphyritic basalt</b><br>Medium dark grey, rather coarsely crystalline - similar to olivine basalt. About 25% to 30% plagioclase phenocrysts <6mm. Scattered vesicles of various size, filled or half-filled with zeolites (Amalcine). Moderately jointed, joint surfaces rough and undulating and coated with black clay. possible layer contact $I_s(50) 3,15 \text{ MPa}$ | 338   |             | 100    | 60/20/0/0          |   |                               |                               |
| 77,9<br>77,2<br>77,19 | 340     | <b>Sandstone</b> , red sandstone (1cm). $I_s(50) 3,24 \text{ MPa}$   | 340   |             | 100    | 0/0/0/0            |   | 0,3 LU at 9,8 bar (5,3 L/min) |                               |
|                       | 342     | <b>Scoriaceous basalt</b> , very porous pores filled with zeolites at 334,95m: 8 $I_s(50) 5,97 \text{ MPa}$  | 342   |             | 100    | 100/100/100/0      |   |                               |                               |
|                       | 344     | <b>Porphyritic basalt</b><br>Medium dark grey, rather coarsely crystalline - similar to olivine basalt. About 25% to 30% plagioclase phenocrysts <6mm. Scattered vesicles of various size, filled or half-filled with zeolites (Amalcine). Moderately jointed, joint surfaces rough and undulating and coated with black clay.   | 344   |             | 98     | 96/96/59/59        |   |                               |                               |
|                       | 346     | <b>Scoriaceous basalt</b> , very well compressed and consolidated.   | 346   |             | 100    | 51/20/20/0         |   |                               |                               |
|                       | 348     | <b>Porphyritic basalt</b> , about 20% plagioclase phenocrysts <5mm.  | 348   |             | 100    | 78/63/39/15        |   | 0,3 LU at 9,8 bar (5,3 L/min) |                               |
| 72,3                  | 350     | Bottom of the hole 340,05m   | 350   |             | 100    | 78/63/39/15        |   |                               |                               |
|                       | 352     |  | 352   |             | 100    | 96/91/46/0         |   |                               |                               |
|                       | 354     |  | 354   |             |        |                    |   |                               |                               |
|                       | 356     |  | 356   |             |        |                    |   |                               |                               |
|                       | 358     |  | 358   |             |        |                    |   |                               |                               |
|                       | 360     |  | 360   |             |        |                    |   |                               |                               |

**Seyðisfjörður - Road cut in Efri-Stafur**

Date June 2017

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**Corehole FH - 04 0 - 50 m**

Design AgG

Drawn AgG/TW

Empl.



Coord. X: 728 084,3 Y: 534 785,5 Elev.: 475,1

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 04  | Depth m | Rock column | Core % | RQD %      | Q | GWT | Perm. (LU) |
|----------------|---------|--|---------|-------------|--------|------------|---|-----|------------|
| 475,1          | 0       | Drilled straight into rock at the road in Efri-Stafur Seyðisfjörður. 3,5" casing drilled down to 3,14m depth. NQ tripple tube, 45mm core   | 0       |             | 71     | 0/0/0/0    |   |     |            |
|                | 2       | <b>Tholeiite basalt</b> , rock starts probably at 0,5m depth. Light grey, intensely jointed, with blue green clay infillings ~5mm thick, and black green clay (in first meter) coatings, then brown clay coatings.   | 2       | (R)         | 88     | 4/0/0/0    |   |     |            |
| 472,1          |         | <b>Scoriaceous basalt</b> , purple grey, former pores mostly filled with zeolites and other secondary minerals. at 4m: 5   |         |             | 100    | 0/0/0/0    |   |     |            |
| 471,2          | 4       | <b>Sandstone</b> , stratified brown and green, tuffaceous. $I_s(50)$ 1,19 MPa  | 4       |             | 100    | 70/0/0/0   |   |     |            |
| 470,8          |         | <b>Scoria - Sandstone - Siltstone</b> Dark grey scoria mixed with 40% to 50% of green tuffaceous infillings. Well compressed. at 4,7m (scoria-sandstone): 5  |         |             | 99     | 86/59/33/0 |   |     |            |
| 469,2          | 6       | <b>Scoriaceous basalt</b> , slightly purple grey, well compressed and consolidated. $I_s(50)$ 0,42 MPa   | 6       | (R)         | 100    | 86/67/37/0 |   |     |            |
| 468,3          |         | <b>Tholeiite - Porphyritic basalt</b> Medium grey. Between 7% and 10% phenocrysts, crystal size variable (occasionally up to 10mm). Frequently micropore flow-banded. Highly jointed, joint surfaces rough and undulating, with black clay coatings, and brown-red yellow (metallic lustre) coatings. Scattered vesicles up to 6mm, mostly filled with black clay. |         |             | 95     | 90/0/0/0   |   |     |            |
|                | 8       | Highly jointed.  | 8       | (R)         | 100    | 55/0/0/0   |   |     |            |
|                | 10      |  | 10      | (R)         | 92     | 35/35/0/0  |   |     |            |
|                | 12      |  | 12      | (R)         | 100    | 49/21/0/0  |   |     |            |
|                | 14      |  | 14      | (R)         | 100    | 16/0/0/0   |   |     |            |
|                | 16      |  | 16      | (R)         | 100    | 32/0/0/0   |   |     |            |
| 457,95         | 18      | <b>Sandstone</b> , dark red purple brown, moderately weak to moderately strong. Conglomerate, grey brown red, fine grained gravel conglomerate. Sample UCS=7,6 MPa at 17,2m: 7   | 18      |             | 100    | 89/89/0/0  |   |     |            |
|                | 20      | <b>Sandstone</b> Stratified red sandstone, not waxy, somewhat friable. Weak to moderately weak. Core loss.   | 20      |             | 100    | 0/0/0/0    |   |     |            |
| 454,7          |         | <b>Scoria - Claystone</b> , brown grey, weak, breaks up during drilling.   |         |             | 66     | 42/31/0/0  |   |     |            |
| 454,1          |         | <b>Scoriaceous basalt</b> Very well compressed and consolidated, relatively massive in the lower half.   |         |             | 54     | 27/13/0/0  |   |     |            |
| 452,6          | 22      | <b>Scoria - Claystone</b> Mix of compressed scoria and green sediment infiltrations. Fragments of different scoria types, indicating possibly varied origin. Inclined contact  | 22      | (R)         | 100    | 0/0/0/0    |   |     |            |
| 450,7          | 24      | <b>Tholeiite basalt</b> Light grey, very hard and brittle, thinly micropore flow-banded in the central part. Highly jointed, joint surfaces rough and undulating and coated with black clay.   | 24      | (R)         | 87     | 51/44/0/0  |   |     |            |
|                | 26      | Highly jointed and broken rock (29,7m to 30,9m).   | 26      | (R)         | 85     | 56/56/0/0  |   |     |            |
|                | 28      |  | 28      | (R)         | 98     | 30/0/0/0   |   |     |            |
| 443,9          | 32      | <b>Conglomerate</b> , red grey in the top 30cm, then a slightly green grey sandy matrix (20%) with clasts (<30mm) of various origin (mostly sediments, scoria and basalt). Weak. at 31,8m: 3   | 32      |             | 100    | 88/57/36/4 |   |     |            |
| 442,25         | 34      | <b>Claystone</b> Stratified, brown green, argillaceous, waxy, well compressed tephra. Core loss.   | 34      |             | 100    | 0/0/0/0    |   |     |            |
| 440,5          | 36      | <b>Scoria - Claystone</b> , scoria with infiltrations of green argillaceous tephra.  | 36      |             | 66     | 7/0/0/0    |   |     |            |
| 437,3          | 38      | <b>Tholeiite basalt</b> Medium grey, very hard and brittle, scattered large vesicles - mostly empty or coated with black clay. Frequently flow-banded in the lower part. Highly jointed, joints with black and green clay coatings and infillings (up to 2mm), often polished, and with brown-red yellow (metallic lustre) coatings.                               | 38      |             | 62     | 8/0/0/0    |   |     |            |
|                | 40      |  | 40      | (N)         | 95     | 11/0/0/0   |   |     |            |
|                | 42      |  | 42      | (N)         | 44     | 0/0/0/0    |   |     |            |
|                | 44      |  | 44      | (N)         | 67     | 4/0/0/0    |   |     |            |
| 429,5          | 46      | <b>Sandstone - Claystone</b> , red sandstone (25cm), red and grey claystone. <b>Sandstone</b> , light grey, volcanic, probably welded. Moderately strong. at 46,9m: 11   | 46      |             | 59     | 0/0/0/0    |   |     |            |
|                | 48      | <b>Claystone</b> , stratified, argillaceous tuff. Very weak.   | 48      |             | 90     | 40/0/0/0   |   |     |            |
|                | 50      | <b>Claystone</b> Red, brown, green, and grey, stratified, argillaceous tephra. Very weak rock. Core loss (0,3m) Sample   | 50      |             | 100    | 75/55/0/0  |   |     |            |
|                |         |  |         |             | 100    | 59/25/0/0  |   |     |            |
|                |         |  |         |             | 100    | 0/0/0/0    |   |     |            |
|                |         |  |         |             | 100    | 89/67/0/0  |   |     |            |
|                |         |  |         |             | 80     | 38/27/0/0  |   |     |            |
|                |         |  |         |             | 81     | 21/10/0/0  |   |     |            |
|                |         |  |         |             | 90     | 13/0/0/0   |   |     |            |

**Seyðisfjörður - Road cut in Efri-Stafur**  
**Corehole FH - 04 50 - 100 m**

Date June 2017

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Empl.



Design AgG

Drawn AgG/TW

Coord. X: 728 084,3 Y: 534 785,5 Elev.: 475,1

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 04   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
| 423,2          | 50      | <b>Claystone</b><br>Red, brown, compressed tephra. Very weak rock.  | 50    |             | 90     | 13/0/0/0                    |   |     |                           |
|                | 52      | <b>Porphyritic basalt</b><br>Dark grey, with an olivine basalt character. Relatively high alteration, originally very porous, but almost all pores and vesicles filled with zeolites. Between 15% and 20% plagioclase phenocrysts (up to 5mm) in size. Compound flow - alternates between dense and porous zones. | 52    |             | 56     | 0/0/0/0                     |   |     |                           |
|                | 54      |   | 54    |             | 100    | 100/92/56/0                 |   |     |                           |
|                | 56      |   | 56    |             | 100    | 99/85/59/40                 |   |     |                           |
|                | 58      |   | 58    |             | 98     | 89/76/62/0                  |   |     |                           |
|                | 60      |   | 60    |             | 100    | 100/100/100/70              |   |     |                           |
|                | 62      |   | 62    |             | 100    | 93/75/56/17                 |   |     |                           |
|                | 64      |   | 64    |             | 100    | 93/72/31/0                  |   |     |                           |
|                | 66      |   | 66    |             | 99     | 81/38/27/0                  |   |     |                           |
|                | 68      |   | 68    |             | 100    | 96/74/57/0                  |   |     |                           |
| 403,6          | 72      | <b>Sandstone - Siltstone - Claystone</b><br>Brown, argillaceous, well compressed tephra, waxy, weak to very weak.   | 72    |             | 80     | 50/0/0/0                    |   |     |                           |
|                | 74      |   | 74    |             | 100    | 70/0/0/0                    |   |     |                           |
| 400,4          | 76      | <b>Olivine basalt</b><br>Dark grey, highly vesicular, most vesicles filled with zeolites.   | 76    |             | 100    | 0/0/0/0                     |   |     |                           |
|                | 78      | <b>Scoriaceous basalt</b><br>Dark, slightly red grey, very well compressed. Abundant small pores, all filled with white zeolites.   | 78    |             | 100    | 92/75/47/0                  |   |     |                           |
|                | 80      | <b>Tholeiite basalt</b> , medium dark grey, dense, hard and brittle.  | 80    |             | 100    | 89/77/60/17                 |   |     |                           |
|                | 82      | <b>Scoriaceous basalt</b><br>Slightly red grey core, very well compressed and consolidated. Pores well-filled with zeolites.  | 82    |             | 100    | 100/100/100/100             |   |     |                           |
|                | 84      | <b>Tholeiite basalt</b><br>Dark grey with about 10% pores in micropore flow-bands, pores all well-filled with zeolites. Very hard and brittle, low to moderately jointed. 3% to 5% small plagioclase phenocrysts.   | 84    |             | 100    | 86/73/45/0                  |   |     |                           |
|                | 86      |   | 86    |             | 100    | 64/0/0/0                    |   |     |                           |
|                | 88      |   | 88    |             | 100    | 100/100/0/0                 |   |     |                           |
|                | 90      |   | 90    |             | 100    | 94/94/94/0                  |   |     |                           |
|                | 92      |   | 92    |             | 100    | 100/100/100/0               |   |     |                           |
|                | 94      |   | 94    |             | 100    | 94/85/61/0                  |   |     |                           |
| 382,7          | 96      | <b>Sediment</b><br>red brown sandstone in the upper 15cm. Thereafter, red and green tephra silt- claystone. Very weak. Slickensides.  | 96    |             | 80     | 53/53/0/0                   |   |     |                           |
|                | 98      | <b>Tephra</b><br>orange brown and green, stratified, compressed, thinly bedded, argillaceous. Very weak. Core erodes to 40mm diameter.  | 98    |             | 90     | 58/24/0/0                   |   |     |                           |
| 381,35         | 99      | <b>Ignimbrite</b><br>very light grey pink. Abundant flattened pumice fragments. Moderately jointed. Joint surfaces rough and undulating. Moderately strong.   | 99    |             | 97     | 61/0/0/0                    |   |     |                           |
|                | 100     | <b>Very light green grey ignimbrite.</b>  | 100   |             | 100    | 90/64/33/0                  |   |     |                           |

**Seyðisfjörður - Road cut in Efri-Stafur**

Date June 2017

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Empl.



**VEGAGERÐIN**

**Corehole FH - 04 100 - 150 m**

Design AgG

Drawn AgG/TW

Coord. X: 728 084,3 Y: 534 785,5 Elev.: 475,1

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 04  | Depth | Rock column | Core %    | RQD %                      | Q  | GWT | Perm. (LU)  |
|----------------|---------|--|-------|-------------|-----------|----------------------------|--|-----|-------------|
|                |         |  |       |             |           | 10 / 30 / 50 / 100         |  |     | 2,5 5,0 7,5 |
| 374,4          | 100     | At 100,7m bottom of ignimbrite. Grey green, at base stratified.  | 100   |             | 100       | 35/0/0/0                   |  |     |             |
| 373,1          | 102     | Tephra, stratified brown green, top 15cm very dark, argillaceous, compressed. Very weak, erodes and crumbles during drying. Eroded 'slim' core. Core loss probably 1m. <b>Sample</b> at 102,4m: 8<br>Is (50) 1,06 MPa  | 102   |             | 80<br>63  | 50/0/0/0<br>9/0/0/0        | <b>Q = 0,1 - 0,3</b>   |     |             |
|                | 104     | Scoriaceous basalt<br>Dark slightly red grey. Well compressed and consolidated. <b>TS=1,03 MPa</b><br><b>TS=0,68 MPa</b><br><b>TS=0,49 MPa</b>   | 104   |             | 100       | 87/77/77/77                | <b>Q = 6 - 30</b><br>$Q = \frac{93}{6-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$     |     |             |
|                | 106     | Is (50) 0,75 MPa   | 106   | (R)         | 100       | 93/72/51/36                |  |     |             |
| 367,9          | 108     | Tholeiite basalt<br>Grey, finely crystalline, thinly micropore flow-banded in the central and lower part. Moderately jointed, joint surfaces rough and undulating, and coated and filled with black clay, and occasionally zeolites. <b>19,1 kN</b><br>Is (50) 9,0 MPa   | 108   | (A)         | 100<br>79 | 75/43/0/0<br>46/0/0/0      |  |     |             |
|                | 110     | <b>11</b><br><b>61</b>   | 110   |             | 100       | 68/15/0/0                  |  |     |             |
|                | 112     |  | 112   |             | 96<br>97  | 85/85/85/0<br>61/30/16/0   | <b>Q = 4,1 - 13,6</b><br>$Q = \frac{61}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |             |
|                | 114     |  | 114   |             | 100       | 26/0/0/0                   |  |     |             |
|                | 116     |  | 116   |             |           |                            |  |     |             |
|                | 118     | <b>4</b><br><b>21,0 kN</b><br>Is (50) 9,9 MPa  | 118   |             | 97        | 60/24/0/0                  |  |     |             |
|                | 120     |  | 120   | (R)         | 100       | 70/29/0/0                  |  |     |             |
| 353,6          | 122     | Siltstone - Claystone<br>Stratified red brown and partly green. Argillaceous, waxy core surface. Very well compacted. Weak to very weak rock. Breaks up during drilling and shrinks somewhat during drying. Slickensides. <b>Sample</b> K-25<br><b>Sample</b> K-26<br><b>TS=1,03 MPa</b><br><b>TS=0,68 MPa</b><br><b>TS=0,49 MPa</b> | 122   |             | 100<br>94 | 0/0/0/0<br>19/0/0/0        | <b>Q = 0,1 - 0,5</b><br>$Q = \frac{11}{6-9} \times \frac{1-2}{3-4} \times \frac{1}{2,5}$ |     |             |
|                | 124     |  | 124   |             | 97        | 11/0/0/0                   |  |     |             |
| 349,8          | 126     | Scoriaceous basalt<br>Dark red grey. 10% to 15% pores, most pores filled with zeolites. <b>Is (50) 2,52 MPa</b>  | 126   | (N)         | 100       | 100/100/100/0              |  |     |             |
|                | 128     |  | 128   |             | 92<br>95  | 90/85/85/63<br>93/90/90/43 |  |     |             |
| 345,4          | 130     | Tholeiite basalt<br>Medium grey. In the central part short zone of micropore flow-banding. 5% to 10% vesicles, <6mm in diameter, filled with black clay. Moderately jointed, joint surfaces rough and undulating, and coated with black clay.  | 130   |             | 100       | 100/100/100/0              |  |     |             |
|                | 132     |  | 132   |             | 100       | 86/46/33/0                 |  |     |             |
|                | 134     |  | 134   |             | 100       | 54/22/0/0                  | <b>Q = 2,3 - 16</b><br>$Q = \frac{69}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |             |
|                | 136     |  | 136   |             | 99        | 69/48/42/24                |  |     |             |
|                | 138     | <b>8</b><br><b>18,4 kN</b><br>Is (50) 8,7 MPa  | 138   | (N)         | 94        | 87/87/87/35                |  |     |             |
|                | 140     |  | 140   |             | 100       | 94/88/88/63                |  |     |             |
|                | 142     |  | 142   |             | 99        | 29/0/0/0                   |  |     |             |
|                | 144     |  | 144   |             | 100       | 42/0/0/0<br>28/0/0/0       |  |     |             |
| 329,5          | 146     | Scoriaceous basalt<br>Red dark grey. 15% to 20% pores, pores, well-filled with zeolites. <b>Is (50) 1,87 MPa</b>   | 146   | (N)         | 97        | 95/95/95/95                |  |     |             |
|                | 148     |  | 148   |             | 99        | 98/87/72/31                |  |     |             |
| 326,3          | 150     | Tholeiite basalt<br>Medium grey. Finely crystalline. Micropore flow-banded. Very hard and brittle.   | 150   |             | 100       | 72/51/0/0                  |  |     |             |

**Seyðisfjörður - Road cut in Efri-Stafur**

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**Corehole FH - 04 150 - 200 m**

Design AgG

Drawn AgG/TW

Empl.



Coord. X: 728 084,3 Y: 534 785,5 Elev.: 475,1

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 04   | Depth | Rock column | Core % | RQD %  |    |          | Q | GWT | Perm. (LU) |     |     |
|----------------|---------|---|-------|-------------|--------|--|----|----------|---|-----|------------|-----|-----|
|                |         |   |       |             |        | 10   | 30 | 50 / 100 |   |     | 2,5        | 5,0 | 7,5 |
|                | 150     | <b>Tholeiite basalt</b><br>Medium grey. Finely crystalline. Micropore flow-banded.<br>Very hard and brittle. Highly jointed, joint surfaces rough and undulating.<br>Joints frequently healed with white zeolites and black clay. | 150   |             | 99     | 61/37/37/0   |    |          |   |     |            |     |     |
|                | 152     |   | 152   |             | 94     | 52/31/12/0   |    |          |   |     |            |     |     |
|                | 154     |   | 154   |             |        | <b>Q = 3,4 - 11</b><br>$Q = \frac{52}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |    |          |   |     |            |     |     |
|                | 156     |   | 156   |             | 99     | 73/54/0/0  |    |          |   |     |            |     |     |
|                | 158     |   | 158   |             | 98     | 54/13/0/0  |    |          |   |     |            |     |     |
|                | 160     | The core is damaged, owing to drilling problems.  | 160   |             | 97     | 57/42/42/0   |    |          |   |     |            |     |     |
|                | 162     |   | 162   |             | 100    | 56/38/0/0  |    |          |   |     |            |     |     |
|                | 164     |   | 164   |             | 72     | 11/0/0/0   |    |          |   |     |            |     |     |
| 310,1          | 165     | Bottom of the hole at 165m.   | 165   |             |        |  |    |          |   |     |            |     |     |
|                | 166     |   | 166   |             |        |  |    |          |   |     |            |     |     |
|                | 168     |   | 168   |             |        |  |    |          |   |     |            |     |     |
|                | 170     |   | 170   |             |        |  |    |          |   |     |            |     |     |
|                | 172     |   | 172   |             |        |  |    |          |   |     |            |     |     |
|                | 174     |   | 174   |             |        |  |    |          |   |     |            |     |     |
|                | 176     |   | 176   |             |        |  |    |          |   |     |            |     |     |
|                | 178     |   | 178   |             |        |  |    |          |   |     |            |     |     |
|                | 180     |   | 180   |             |        |  |    |          |   |     |            |     |     |
|                | 182     |   | 182   |             |        |  |    |          |   |     |            |     |     |
|                | 184     |   | 184   |             |        |  |    |          |   |     |            |     |     |
|                | 186     |   | 186   |             |        |  |    |          |   |     |            |     |     |
|                | 188     |   | 188   |             |        |  |    |          |   |     |            |     |     |
|                | 190     |   | 190   |             |        |  |    |          |   |     |            |     |     |
|                | 192     |   | 192   |             |        |  |    |          |   |     |            |     |     |
|                | 194     |   | 194   |             |        |  |    |          |   |     |            |     |     |
|                | 196     |   | 196   |             |        |  |    |          |   |     |            |     |     |
|                | 198     |   | 198   |             |        |  |    |          |   |     |            |     |     |
|                | 200     |   | 200   |             |        |  |    |          |   |     |            |     |     |

7  
11,9 kN  
Is (50) 5,6 MPa



**Fjarðarheiði - Hérað við Miðhúsaá**  
**Corehole FH - 05 0 - 50 m**

Date June 2017

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Empl.



Design AgG

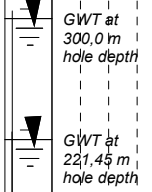
Drawn AgG/TW

Coord. X: 719 169,9 Y: 538 156,7 Elev.: 382,7

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 05  | Depth m | Rock column | Core %             | RQD %       | Q  | GWT | Perm. (LU)  |
|----------------|---------|--|---------|-------------|--------------------|-------------|--|-----|-------------|
|                |         |  |         |             | 10 / 30 / 50 / 100 |             |  |     | 2,5 5,0 7,5 |
| 382,7          | 0       | Drilled in an old gravel borrow pit near Miðhúsaá. some 50m west from the road over Fjarðarheiði.  | 0       |             |                    |             |  |     |             |
|                | 2       | 3,5" casing drilled down to 6,7m depth.  | 2       |             |                    |             |  |     |             |
|                | 4       |  | 4       |             |                    |             |  |     |             |
|                | 6       | NQ triple tube, 45mm core, vertically drilled.   | 6       |             |                    |             |  |     |             |
| 375,95         | 8       | <b>Porphyritic basalt - Cumulative</b><br>Medium grey. Plagioclase phenocrysts 30% to 40%, up to 15mm thick, vesicles in the upper part, vesicles filled with zeolites. Few original joints, massive.                      | 8       |             | 100                | 86/75/75/75 |  |     |             |
|                | 10      |  | 10      |             | 100                | 86/71/71/55 |  |     |             |
|                | 12      |  | 12      |             | 100                | 99/84/84/84 | <b>Q = 5,7 - 19</b><br>$Q = \frac{86}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |             |
|                | 14      | Several subvertical joints, joint surfaces rough and undulating, and coated with black clay. No bottom scoria. $I_s (50) 6,54 \text{ MPa}$   | 14      |             | 100                | 71/52/52/0  |  |     |             |
| 368,25         | 16      | <b>Sediment - Claystone</b> , stratified, dark red, brown and green, argillaceous, compressed tephra. Very weak rock. <b>Sample TS=1,08 MPa</b>  | 16      |             | 0                  | 0/0/0/0     | <b>Q = &lt; 0,1</b>  |     |             |
|                | 16      | Between 15,25m and 15,85m light green brown claystone. From 15,85m to 16,7m argillaceous, coarser grained, very weak. Slickensides   | 16      |             | 82                 | 0/0/0/0     |  |     |             |
| 366,00         | 18      | <b>Scoriaceous basalt</b><br>Dark grey, very vesicular, vesicles coated with both yellow and green clay. Intensely jointed. Subvertical and subhorizontal slickensides.  | 18      |             | 94                 | 29/0/0/0    |  |     |             |
| 364,20         | 20      | <b>Sediment - Claystone</b><br>Red brown, at the top green, argillaceous, compressed tephra, very-weak-rock. <b>Sample TS=1,26 MPa</b><br><b>Sample TS=2,01 MPa</b><br><b>Sample TS=1,35 MPa</b>                           | 20      |             | 17                 | 0/0/0/0     | <b>Q = &lt; 0,1</b>  |     |             |
|                | 20      | Stratified red and green, waxy. Compressed tephra. Very weak rock.   | 20      |             | 61                 | 3/0/0/0     |  |     |             |
|                | 22      | Mainly green, at the base dark red brown. Very weak rock.  | 22      |             | 87                 | 9/0/0/0     |  |     |             |
| 360,75         | 24      | <b>Ignimbrite</b> , light grey (top 0,7m), welded, moderately strong rock. $I_s (50) 2,42 \text{ MPa}$   | 24      |             | 91                 | 0/0/0/0     |  |     |             |
|                | 24      | Light green<br>Pink<br>Light green. Compressed elongated pumice fragments of various origin.   | 24      |             | 99                 | 88/83/83/83 | <b>Q = 2 - 8</b><br><b>84/64/64/64</b>   |     |             |
|                | 26      | <b>Claystone</b><br>Brown, red, green, stratified, argillaceous, compressed tephra. Very weak rock. Slickensides at base. <b>Sample TS=0,87 MPa</b><br><b>Sample TS=0,93 MPa</b><br><b>Sample TS=0,56 MPa</b>              | 26      |             | 100                | 72/0/0/0    |  |     |             |
| 356,15         | 28      | <b>Scoria - Scoriaceous basalt</b><br>Dark purple grey, porous and vesicular, vesicles mainly filled with black clay, well compressed.   | 28      |             | 89                 | 11/0/0/0    | <b>Q = &lt; 1</b>  |     |             |
| 354,20         | 30      | <b>Tholeiite basalt</b><br>Medium grey, very hard and brittle. Highly jointed with thin black veins. Frequent red-brown discoloration of joint wall rock (29,5m to 38,5m). $I_s (50) 5,84 \text{ MPa}$                     | 30      |             | 100                | 96/71/0/0   |  |     |             |
|                | 32      |  | 32      |             | 100                | 73/32/0/0   |  |     |             |
|                | 34      | From 35,0m to 35,3m inclined dyke vein, 5cm thick, extending 25cm subvertically, porphyritic.  | 34      |             | 100                | 67/20/0/0   |  |     |             |
|                | 36      | Tectonic rock, intensely jointed, healed black veins.  | 36      |             | 100                | 54/0/0/0    |  |     |             |
|                | 38      | Steeply inclined joints, joint surfaces rough and undulating, coated with black clay and sheens of brown-red yellow, metallic (lustre), sometimes iridescent, coatings. $I_s (50) 9,14 \text{ MPa}$                        | 38      |             | 100                | 92/66/22/0  | <b>Q = 4 - 13</b><br>$Q = \frac{59}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$   |     |             |
|                | 40      | Section of broken and recemented rock.   | 40      |             | 100                | 61/19/0/0   |  |     |             |
|                | 42      |  | 42      |             | 100                | 59/26/4/0   |  |     |             |
|                | 44      |  | 44      |             | 100                | 20/0/0/0    |  |     |             |
|                | 46      | No bottom scoria $I_s (50) 9,76 \text{ MPa}$   | 46      |             | 100                | 20/0/0/0    |  |     |             |
| 336,10         | 48      | <b>Sandstone</b> , dark red, 30cm. <b>Tephra - Claystone</b> , red and orange, stratified, argillaceous tephra. <b>UCS=15,5 MPa</b><br><b>Sample TS=0,50 MPa</b><br><b>Sample TS=0,43 MPa</b><br><b>Sample TS=0,76 MPa</b> | 48      |             | 74                 | 46/0/0/0    | <b>Q = 0,3 - 1</b>   |     |             |
| 335,80         | 50      | <b>Tephra - Claystone</b> , orange brown and green argillaceous, well compressed, very weak. Breaks up, and damaged during drilling, possibly owing to high drilling pressure.   | 50      |             | 93                 | 18/10/0/0   |  |     |             |



| Elev. m a.s.l. | Depth m | Description of corehole FH - 05  | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q   | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|-------|-------------|--------|-----------------------------|---|-----|---------------------------|
|                | 50      | Tephra - Claystone<br>UCS=14,8 MPa K-10  | 50    |             |        |                             |   |     |                           |
|                | 52      | Sandstone<br>Medium, becoming dark, green. Coarse grained, between 51m and 52m fine-grained conglomerate lenses.<br>Is (50) 0,51 MPa   | 52    |             | 94     | 33/14/8/0                   |   |     |                           |
|                | 54      | Sample UCS=4,2 MPa   | 54    |             | 99     | 57/37/25/0                  | Q = 1,5 - 6   |     |                           |
|                | 56      | Siltstone - Sandstone<br>Stratified, green, mainly fine grained siltstone. Very low strength. Shrinks slightly during drying.<br>K-10<br>K-11  | 56    |             | 100    | 16/0/0/0                    | Q = $\frac{33}{6.9} \times \frac{1.2}{3.4} \times \frac{1}{1}$  |     |                           |
| 326,3          | 58      | Mix of scoria and sediment<br>Stratified green sandstone - siltstone, mixed about equally with dark grey very porous, scoria. Sample   | 58    |             | 92     | 20/0/0/0                    |   |     |                           |
| 324,4          | 60      | Scoriaceous basalt<br>Dark grey, well compressed, highly porous, pores coated with black clay. Probable layer contact. K-11  | 60    | (N)         | 100    | 36/0/0/0                    | Q = 4,4 - 15  |     |                           |
| 321,0          | 62      | Scoriaceous basalt, dark grey, very vesicular, most vesicles coated with black clay. Several inclined joints, joint surfaces rough and undulating, coated with black clay, moderately strong basalt. No weakness. K-12   | 62    | (N)         | 100    | 66/44/25/0                  | Q = $\frac{66}{9.10} \times \frac{2.4}{2.3} \times \frac{1}{1}$ |     |                           |
|                | 64      | Olivine basalt, grey, microporous, relatively coarse grained crystals. Some small plagioclase phenocrysts. Occasional scattered vesicles, vesicles filled with black clay. Some steeply inclined, planar and stepped, rough joints. Strong basalt. 19,0 kN Is (50) 8,95 MPa K-12 K-13      | 64    | (N)         | 100    | 92/66/51/0                  |   |     |                           |
|                | 66      |  | 66    | (N)         | 100    | 80/32/0/0                   |   |     |                           |
|                | 68      |  | 68    | (N)         | 100    | 95/77/51/0                  |   |     |                           |
| 313,35         | 70      | Scoriaceous basalt, medium to dark grey and purple grey. Well compressed and consolidated. Some vesicles, coated with zeolites, but mostly coated with black clay. Possible dyke 70,2m to 70,4m. At 71,3m inclined joint with sandstone infilling. 1cm very dark grey sandstone. K-13 K-14 | 70    | (N)         | 100    | 77/47/27/0                  | Q = 5 - 18  |     |                           |
|                | 72      | Olivine basalt, dark grey, microporous, very vesicular in the top 1m. Porphyritic dyke, chilled margins. UCS=27,8 MPa at 72,9m: 7,8,3 kN Is (50) 3,90 MPa K-14 K-15  | 72    | (N)         | 100    | 70/19/0/0                   | Q = $\frac{77}{9.10} \times \frac{2.4}{2.3} \times \frac{1}{1}$ |     |                           |
| 308,45         | 74      | Scattered pores, pores coated with black clay, white zeolites and light blue coatings. K-14 K-15   | 74    | (N)         | 100    | 86/0/0/0                    |   |     |                           |
| 307,1          | 76      | Sandstone, green, with pumice lenses. Weak to very weak rock. TS=1,70 MPa Sample TS=1,46 MPa   | 76    |             | 100    | 83/69/44/0                  |   |     |                           |
|                | 78      | Tholeiite basalt<br>Medium grey, vesicular in the topmost 1m. Below this, dense, hard and brittle. Inclined joints, coated with black clay. Flow-banded in the lower part. K-15 K-16   | 78    | (N)         | 100    | 70/43/24/0                  | Q = 2,3 - 16  |     |                           |
|                | 80      |  | 80    | (N)         | 100    | 55/13/0/0                   | Q = $\frac{70}{9.10} \times \frac{2.4}{2.3} \times \frac{1}{1}$ |     |                           |
| 300,5          | 82      | Highly jointed - -81,1m, possible bottom of basalt, depending on interpretation of core loss (below)<br>Core loss, possibly at the top of the sediment   | 82    |             | 100    | 53/0/0/0                    |   |     |                           |
|                | 84      | Sandstone - Siltstone, stratified, green and purple brown. Weak to very weak rock. at 83,2m: 7,8,3 kN Is (50) 0,44 MPa TS=0,82 MPa Sample TS=0,92 MPa K-16 K-17  | 84    |             | 100    | 56/0/0/0                    |   |     |                           |
| 297,6          | 86      | Claystone, green and purple brown, argillaceous, compressed tephra. Very weak rock. Slickensides. Sample TS=0,69 MPa K-17  | 86    |             | 100    | 60/0/0/0                    | Q = < 0,1 - 0,4   |     |                           |
|                | 88      | Scoriaceous basalt - Sediment<br>Scoriaceous basalt with green tephra sedimentary infiltrations in the upper part down to 87,8m. Well compressed and consolidated, with zeolites coating most voids in addition to thin black clay coatings K-17 K-18                                      | 88    | (N)         | 99     | 63/19/0/0                   |   |     |                           |
| 291,5          | 90      | Brecciated basalt. Angular fragments of various basaltic origin (scoria, hard basalt). Probably tectonized rock, cemented in a crushed basaltic matrix. Originally porous, but most pores filled / cemented with zeolites. Permeable rock. Is (50) 1,62 MPa K-18 K-19                      | 90    | (N)         | 100    | 77/39/0/0                   | Q = 4 - 8,5   |     |                           |
|                | 92      | Tholeiite basalt<br>Medium grey, very fine grained, extremely hard and brittle. Moderately jointed. Micropore flow-banded in the middle part, rather amorphous in the lower part. UCS=15,8 MPa K-18 K-19   | 92    | (N)         | 100    | 84/67/0/0                   | Q = $\frac{77}{9.10} \times \frac{2.4}{3.4} \times \frac{1}{1}$ |     |                           |
|                | 94      |  | 94    | (N)         | 100    | 80/0/0/0                    |   |     |                           |
|                | 96      |  | 96    | (N)         | 100    | 82/45/28/0                  |   |     |                           |
|                | 98      |  | 98    | (N)         | 100    | 53/21/0/0                   |   |     |                           |
|                | 100     |  | 100   | (N)         | 100    | 63/29/6/0                   | Q = 4,3 - 14  |     |                           |
|                |         |  |       |             | 100    | 65/12/0/0                   | Q = $\frac{63}{9.10} \times \frac{2.4}{2.3} \times \frac{1}{1}$ |     |                           |

**Fjarðarheiði - Hérað við Miðhúsaá**  
**Corehole FH - 05 100 - 150 m**

Date June 2017

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Empl.



Design AgG

Drawn AgG/TW

Coord. X: 719 169,9 Y: 538 156,7 Elev.: 382,7

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 05   | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100 | Q  | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|---|-------|-------------|--------|-----------------------------|--|-----|---------------------------|
| 281,7          | 100     | Tholeiite basalt, highly jointed (stress from dyke), healed with zeolites.  | 100   |             | 100    | 82/44/0/0                   |  |     |                           |
| 280,7          | 102     | Dyke - Tholeiite basalt, very steeply inclined contacts.  | K-20  |             | 100    |                             |  |     |                           |
|                | 104     | Dyke - with basalt inclusions<br>Dark grey, dyke, probably thin, with steeply inclined contacts to medium grey basalt inclusions. Contacts mostly weak and frequently break up. The dyke is porphyritic with about 10% small plagioclase crystals <5mm. | K-21  |             | 100    | 45/28/18/0                  | <b>Q = 4,3 - 14</b><br>$Q = \frac{63}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                           |
|                | 106     |   | K-21  |             | 100    | 63/29/6/0                   |  |     |                           |
| 275,3          | 108     | Tholeiite basalt<br>Medium grey, tiny micropores and micropore flow-banding in the middle part. Very hard and brittle.  | K-22  |             | 100    | 42/0/0/0                    |  |     |                           |
|                | 110     | Some red brown discoloration of joint wall rock.  | K-23  |             | 100    | 56/12/0/0                   |  |     |                           |
|                | 112     |   |       |             | 100    | 54/14/0/0                   |  |     |                           |
|                | 114     |   | K-23  |             | 100    | 60/21/0/0                   | <b>Q = 4 - 13,3</b><br>$Q = \frac{60}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                           |
|                | 116     |   | K-24  |             | 100    | 73/32/0/0                   |  |     |                           |
|                | 118     |   |       |             | 100    | 59/31/0/0                   |  |     |                           |
| 263,1          | 120     | Dyke - porphyritic<br>About 8% to 10% small plagioclase phenocrysts <=5mm.  | K-24  |             | 100    | 62/0/0/0                    |  |     |                           |
|                | 122     |   | K-25  |             | 100    | 70/36/17/0                  |  |     |                           |
|                | 124     | Highly jointed (122,5m to 125,65m), as a result of tectonic stress.   | K-26  |             | 100    | 44/11/0/0                   |  |     |                           |
|                | 126     | Moderately jointed  |       |             | 100    | 71/47/20/0                  |  |     |                           |
|                | 128     |   | K-27  |             | 100    | 53/26/0/0                   |  |     |                           |
|                | 130     |   | K-28  |             | 100    | 53/24/0/0                   |  |     |                           |
|                | 132     | Highly jointed  |       |             | 100    | 81/59/38/17                 | <b>Q = 5,4 - 18</b><br>$Q = \frac{81}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |     |                           |
|                | 134     |   | K-29  |             | 100    | 92/70/31/0                  |  |     |                           |
|                | 136     | New magma stream, with about 20% plagioclase phenocrysts <=10mm. Composite dyke   | K-30  |             | 100    | 88/60/47/47                 |  |     |                           |
|                | 138     | Contact between different phases of dyke intrusions   |       |             | 100    | 92/77/39/39                 |  |     |                           |
|                | 140     |   |       |             | 100    | 81/68/50/0                  |  |     |                           |
|                | 142     | Contact between different phases of dyke intrusions   | K-31  |             | 100    | 67/17/0/0                   |  |     |                           |
|                | 144     |   |       |             | 100    |                             |  |     |                           |
|                | 146     | Moderately jointed, 0,3m to 0,5m joint spacing (along core line)  |       |             | 100    |                             |  |     |                           |
|                | 148     |   |       |             | 100    |                             |  |     |                           |
|                | 150     |   |       |             | 100    |                             |  |     |                           |



| Elev. m a.s.l. | Depth m | Description of corehole FH - 05  | Depth | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100  | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|-------|-------------|--------|--|---|-----|---------------------------|
| (232,7)        | 150     | Dyke - porphyritic   | 150   |             | 100    | 84/56/43/43  |   |     |                           |
|                | 152     |  | 152   |             | 100    | 81/67/42/0   |   |     |                           |
|                | 154     |  | 154   |             | 100    | 86/55/27/0   |   |     |                           |
|                | 156     | ----- Fine grained phase contact<br>Darker grey, moderately jointed. About 20% to 25% phenocrysts <=10mm | 156   |             | 100    | 95/94/94/67  |   |     |                           |
|                | 158     | Particularly massive rock (158m to 164m)   | 158   |             | 100    | 95/90/90/90  |   |     |                           |
|                | 160     |  | 160   |             | 100    | 87/59/24/0   |   |     |                           |
|                | 162     |  | 162   |             | 100    | 93/67/43/0   |   |     |                           |
|                | 164     | Slightly lighter   | 164   |             | 100    | 81/59/38/17  |   |     |                           |
|                | 166     |  | 166   |             | 100    | <b>Q = 5,4 - 18</b><br>$Q = \frac{81}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                           |
|                | 168     |  | 168   |             | 100    | 88/79/46/46  |   |     |                           |
|                | 170     |  | 170   |             | 100    | 98/82/82/55  |   |     |                           |
|                | 172     | Slightly darker  | 172   |             | 100    | 97/93/67/0   |   |     |                           |
|                | 174     |  | 174   |             | 100    | 97/93/67/0   |   |     |                           |
|                | 176     |  | 176   |             | 100    | 87/48/48/0   |   |     |                           |
|                | 178     |  | 178   |             | 100    | 90/56/17/0   |   |     |                           |
|                | 180     |  | 180   |             | 100    | 71/33/27/0   |   |     |                           |
|                | 182     | Probably a new dyke phase. Up to 20% phenocrysts <5mm  | 182   |             | 100    | 84/64/35/0   |   |     |                           |
|                | 184     |  | 184   |             | 100    | 100/98/98/98   |   |     |                           |
|                | 186     |  | 186   |             | 100    | 95/89/55/0   |   |     |                           |
|                | 188     | The borehole is on the margin of a dyke intrusion. Intensely jointed/brecciated, healed with black clay  | 188   |             | 100    | 93/62/26/0   |   |     |                           |
|                | 190     | Dyke - porphyritic   | 190   | 100         |        |  |   |     |                           |
|                | 192     |  | 192   | 100         |        |  |   |     |                           |
|                | 194     |  | 194   | 100         |        |  |   |     |                           |
|                | 196     | Becoming slightly lighter, phenocrysts slightly larger (up to 7mm).                                      | 196   | 100         |        |  |   |     |                           |
|                | 198     |  | 198   | 100         |        |  |   |     |                           |
| (184,75)       | 200     |  | 200   | 100         |        |  |   |     |                           |

| Elev. m a.s.l. | Depth m | Description of corehole FH - 05  | Depth        | Rock column | Core % | RQD %<br>10 / 30 / 50 / 100                                     | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|---------|--|--------------|-------------|--------|---|---|-----|---------------------------|
| (181,70)       | 200     | Dyke - porphyritic   | K-42         | 200         | 100    | 83/73/35/0  |   |     |                           |
|                | 202     |  |              | 202         | 100    | 81/59/38/17   |   |     |                           |
|                | 204     | Plagioclase phenocrysts, about 20% <=10mm long   | K-42<br>K-43 | 204         | 100    | <b>Q = 5,4 - 18</b>   |   |     |                           |
|                | 206     | 17,5 kN<br>Is (50) 8,24 MPa  | 13<br>55     | 206         | 100    | $Q = \frac{81}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                           |
|                | 208     |  |              | 208         | 100    | 84/80/30/0  |   |     |                           |
|                | 210     | Fine grained zones, representing new dyke phases. Highly jointed, owing to tectonic stress. White infillings <=1mm thick. Joints becoming healed and infilled with black clay with increasing depth.                 | K-43<br>K-44 | 210         | 100    | 62/39/39/39   |   |     |                           |
|                | 212     |  |              | 212         | 100    | 53/27/27/0  |   |     |                           |
|                | 214     | Lower limit of dyke  | K-44<br>K-45 | 214         | 100    | 33/0/0/0  |   |     |                           |
| 169,00         | 214     | Tectonic breccia, mix of tholeiite basalt and dyke fragments, cemented in black clay. Fragments mostly fine gravel (<3cm), but occasional larger fragments. Moderately weak, breaks up during drilling and handling. |              | 214         | 100    | 44/31/31/0  |   |     |                           |
|                | 216     |  |              | 216         | 100    | <b>Q = 0,25 - 0,4</b>   |   |     |                           |
| 166,70         | 216     | Tholeiite basalt   |              | 216         | 100    | 39/27/27/0  |   |     |                           |
|                | 218     | Intensely jointed and fractured basalt, with joints healed with very thin black clay infillings. Boundary with dyke  | K-45<br>K-46 | 218         | 100    | 0/0/0/0   |   |     |                           |
| 164,20         | 218     |  |              | 218         | 100    | 50/17/0/0   |   |     |                           |
|                | 220     | Dyke - porphyritic   |              | 220         | 100    | 47/16/0/0   |   |     |                           |
|                | 222     | From 218,5m to 222,0m, intensely jointed, with broken and crushed sections. Joints partly recemented with thin black clay infillings. Porphyritic, about 10% to 15% plagioclase phenocrysts (<4mm). Highly jointed.  | K-46<br>K-47 | 222         | 100    | 0/0/0/0   |   |     |                           |
|                | 224     | 19,8 kN<br>Is (50) 9,31 MPa  | 4<br>48      | 224         | 100    | <b>Q = 3,5 - 11,8</b>   |   |     |                           |
|                | 226     | Tectonic breccia, tectonised zone. Mix of dyke fragments and crushed fragments from chilled dyke-margin. Recemented with hard black clay. Moderately strong.   |              | 226         | 100    | $Q = \frac{53}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                           |
| 155,90         | 226     |  |              | 226         | 100    | 93/75/24/0  |   |     |                           |
|                | 228     | Dyke - porphyritic   | K-47<br>K-48 | 228         | 100    | 100/61/0/0  |   |     |                           |
|                | 230     | About 15% plagioclase phenocrysts (<4mm). Moderately jointed.  |              | 230         | 100    | 73/62/21/0  |   |     |                           |
|                | 232     | Short section with mostly only very small phenocrysts.   |              | 232         | 100    | 84/44/20/0  |   |     |                           |
|                | 234     | About 10% to 15% plagioclase phenocrysts.  | K-48<br>K-49 | 234         | 100    | 48/13/0/0   |   |     |                           |
|                | 236     | Highly jointed, from 234m to 243m. Joint spacing 10cm to 30cm.   |              | 236         | 100    | 39/10/0/0   |   |     |                           |
|                | 238     |  | K-49<br>K-50 | 238         | 100    | 62/34/12/0  |   |     |                           |
|                | 240     |  |              | 240         | 100    | <b>Q = 4,2 - 13,8</b>   |   |     |                           |
|                | 242     | Dyke - porphyritic   | K-50<br>K-51 | 242         | 100    | $Q = \frac{62}{9-10} \times \frac{2-4}{2-3} \times \frac{1}{1}$ |   |     |                           |
|                | 244     | Plagioclase phenocrysts almost disappear from 242,6m and begin to reappear at 247m. Moderately jointed. Joint surfaces rough and undulating and coated with black clay.  |              | 244         | 100    | 52/19/19/0  |   |     |                           |
|                | 246     | 23,8 kN<br>Is (50) 11,19 MPa   | 5<br>54      | 246         | 100    | 69/29/18/0  |   |     |                           |
|                | 248     | About 10% plagioclase phenocrysts <=3mm  | K-51<br>K-52 | 248         | 100    | 82/61/0/0   |   |     |                           |
| (133,70)       | 248     |  |              | 248         | 100    |   |   |     |                           |
|                | 250     |  |              | 250         | 100    |   |   |     |                           |

1,1 LU at  
14,5 bar  
(23,3 L/min)

Empl.



**Fjarðarheiði - Hérað við Miðhúsaá**  
**Corehole FH - 05 250 - 300 m**

Date June 2017

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Design AgG

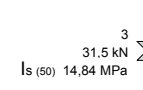
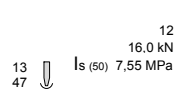
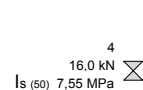
Drawn AgG/TW

Coord. X: 719 169,9 Y: 538 156,7 Elev.: 382,7

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m  | Description of corehole FH - 05  | Depth        | Rock column | Core %     | RQD %<br>10 / 30 / 50 / 100 | Q | GWT | Perm. (LU)<br>2,5 5,0 7,5 |
|----------------|--|--|--------------|-------------|------------|-----------------------------|---|-----|---------------------------|
| 130,70         | 250  | Dyke - porphyritic<br>About 10% plagioclase phenocrysts <math>\leq 3\text{mm}</math>                 | K-52<br>K-53 | 250         | 100        | 71/40/11/0                  |   |     |                           |
|                | 252  | -----<br>Increased plagioclase phenocrysts - at least 25%, up to 8mm long. Becoming lighter grey.    |              | 252         | 100        | 79/72/56/0                  |   |     |                           |
|                | 254  | -----<br>Becoming slightly darker grey. Between 10% and 15% plagioclase phenocrysts, up to 5mm long. | K-53<br>K-54 | 254         | 100        | 48/24/0/0                   |   |     |                           |
|                | 256  |  |              | 256         | 100        | 78/45/19/0                  |   |     |                           |
|                | 258  |  |              | 258         | 100        | 74/62/17/0                  |   |     |                           |
|                | 260  |  |              | 260         | 100        | 0/0/0/0                     |   |     |                           |
|                | 262  |  |              | 262         | 100        | 79/79/37/0                  |   |     |                           |
|                | 264  | Intensely jointed zone   | K-55<br>K-56 | 264         | 100        | 74/54/0/0                   |   |     |                           |
|                | 266  |  |              | 266         | 100        | 62/34/12/0                  |   |     |                           |
|                | 268  | Dark grey core. Few, and small, phenocrysts (<math>< 5\%</math>), 1mm to 2mm long                    |              | 268         | 100        | 74/54/0/0                   |   |     |                           |
|                | 270  | Highly jointed section from 270m to 274m. Phenocrysts up to 5mm long (5% to 10%).                    |              | 270         | 100        | 21/0/0/0                    |   |     |                           |
|                | 272  |  |              | 272         | 100        | 57/10/0/0                   |   |     |                           |
| 274            | Dyke - porphyritic   | K-57<br>K-58   | 274          | 100         | 74/38/24/0 |                             |   |     |                           |
| 276            | Very dark grey dyke, marginal zone (chilled). Tectonised. Dyke fragments recemented in black clay.   |  | 276          | 100         | 22/0/0/0   |                             |   |     |                           |
| 278            |  |  | 278          | 100         | 53/17/0/0  |                             |   |     |                           |
| 280            | Composite dyke intrusion (chilled margins).  |  | 280          | 100         | 30/0/0/0   |                             |   |     |                           |
| 282            | Aphyric texture (no phenocrysts)   | K-59<br>K-60   | 282          | 100         | 66/24/0/0  |                             |   |     |                           |
| 284            | -----<br>Broken, uncemented rock (284,0m to 284,4m)<br>Porphyritic. Broken, recemented rock (284,4m to 285m)<br>About 10% phenocrysts, <math>\leq 7\text{mm}</math>                                  |  | 284          | 100         | 66/31/0/0  |                             |   |     |                           |
| 286            |  |  | 286          | 100         | 67/67/0/0  |                             |   |     |                           |
| 288            | Dyke - porphyritic   |  | 288          | 100         | 42/14/0/0  |                             |   |     |                           |
| 290            |  |  | 290          | 100         | 25/6/0/0   |                             |   |     |                           |
| 292            | Tectonic dyke breccia<br>Medium dark grey. Mostly fine to coarse grained porphyritic-dyke gravel fragments, well cemented in a light to medium grey basalt matrix. Moderately strong to strong rock. | K-61<br>K-62   | 292          | 100         | 67/67/0/0  |                             |   |     |                           |
| 294            | Mainly fragments of grey porphyritic dyke.   |  | 294          | 100         | 42/14/0/0  |                             |   |     |                           |
| 296            | Dyke - aphyric<br>None, or few, phenocrysts. Highly- to intensely, jointed.  | K-62<br>K-63   | 296          | 100         | 25/6/0/0   |                             |   |     |                           |
| 298            |  |  | 298          | 100         | 11/0/0/0   |                             |   |     |                           |
| 300            | Bottom of the hole at 300,0m   |  | 300          | 100         |            |                             |   |     |                           |



2,5 LU at 14,0 bar (72L/min)

**Fjarðarheiði**

Date June 2017

Page 1 of 1

Empl.



**Corehole FH - 06 0 - 25 m**

Design AgG

Drawn AgG/TW

Coord. X: 730 668,x Y: 536 007,x Elev.: 158,3

Driller Alvarr / Drillcon

Drilled July 2016

| Elev. m a.s.l. | Depth m | Description of corehole FH - 06   | Depth m | Rock column | Core % | RQD %         | Q | GWT | Perm. (LU) |
|----------------|---------|---|---------|-------------|--------|---------------|---|-----|------------|
| 158,3          | 0       | Drilled on a rock outcrop some 30m west from the road over Fjarðarheiði. The x- y- coordinates might be slightly inaccurate (few tens of cm)  | 0       |             | 100    | 0/0/0/0       |   |     |            |
|                | 2       | NQ triple tube, 45mm core.<br><b>Tholeiite - Porphyritic basalt</b><br>Medium grey. Frequently microporous, flow-banded. ~10% small (<4mm) plagioclase phenocrysts. Vertical joints split the core.           | 2       |             | 100    | 67/29/0/0     |   |     |            |
|                | 4       | Is (50) 7,44 MPa  | 4       |             | 100    | 49/16/0/0     |   |     |            |
|                | 6       |   | 6       |             | 100    | 0/0/0/0       |   |     |            |
|                | 8       |   | 8       |             | 100    | 47/0/0/0      |   |     |            |
|                | 10      | Practically no bottom scoria.   | 10      |             | 100    | 51/0/0/0      |   |     |            |
| 147,5          | 12      | <b>Sediment, Sandstone</b> , 7cm dark red, strong.<br><b>Scoriaceous basalt</b> , very well compressed and consolidated.  | 12      |             | 100    | 0/0/0/0       |   |     |            |
|                | 14      | <b>Olivine basalt</b> , slightly brown grey, vesicular, vesicles partly filled with zeolites or dark grey clay. Medium dark grey, vesicular and microporous. Vesicles up to ~1cm, filled with white zeolites. | 14      |             | 100    | 100/100/100/0 |   |     |            |
|                | 16      | <b>Sediment, Siltstone</b> , green and brown, tuffaceous, waxy. Very weak rock.   | 16      |             | 100    | 0/0/0/0       |   |     |            |
| 142,9          | 18      | <b>Porphyritic basalt</b><br>Olivine type, with scoriaceous zones. slightly brown grey, vesicular. Vesicles filled with zeolites or dark grey clay.   | 18      |             | 100    | 93/39/0/0     |   |     |            |
| 138,6          | 20      | <b>Scoriaceous basalt</b> , green purple grey, then purple grey. Frequent voids, partly filled with white zeolites, partly coated with black clay. Very well compressed and consolidated.                     | 20      |             | 95     | 87/87/0/0     |   |     |            |
| 83,6           | 22      | <b>Tectonic breccia</b> , irregular basalt fragments, 2cm to 4cm, cemented in a crushed basalt matrix; porous, 10% to 15% pores, mostly filled with zeolites.   | 22      |             | 94     | 79/62/25/0    |   |     |            |
| 137,5          | 24      | <b>Tholeiite basalt</b><br>Medium grey. Zones of minor flow-banding. 8% to 10% small (<4mm) plagioclase phenocrysts.  | 24      |             | 100    | 77/56/31/0    |   |     |            |
|                | 26      | Bottom of the hole at 25.2m.  | 26      |             | 100    | 94/52/52/0    |   |     |            |
|                | 28      |   | 28      |             | 100    | 87/0/0/0      |   |     |            |
|                | 30      |   | 30      |             | 100    | 72/22/0/0     |   |     |            |
|                | 32      |   | 32      |             | 100    | 74/33/0/0     |   |     |            |
|                | 34      |   | 34      |             | 100    | 73/45/0/0     |   |     |            |
|                | 36      |   | 36      |             |        |               |   |     |            |
|                | 38      |   | 38      |             |        |               |   |     |            |
|                | 40      |   | 40      |             |        |               |   |     |            |
|                | 42      |   | 42      |             |        |               |   |     |            |
|                | 44      |   | 44      |             |        |               |   |     |            |
|                | 46      |   | 46      |             |        |               |   |     |            |
|                | 48      |   | 48      |             |        |               |   |     |            |
|                | 50      |   | 50      |             |        |               |   |     |            |

# Fjarðarheiðargöng

Jarðfræðirannsóknir

## Viðauki B

### Prófanir á borkjörnum samhliða kjarnagreiningu

Brotþolspróf með Point Load Tester tæki og  
frákastsharka prófuð með Schmidt Hammer Test tæki  
ásamt

### Rannsóknir á bergsýnum á rannsóknastofu MANNVIT

Borholur FH-01 til FH-06

Holurnar voru boraðar 2014 og 2016



Júní 2017

Unnið fyrir Vegagerðina

## Borhola FH-01

| Prófanir á bergstyrk borkjarna úr borholu FH-01 með PLT tæki /<br>Field test on core from borehole FH-01 - Point Load Test |                |              |                              |              |                          |                    |
|--|----------------|--------------|------------------------------|--------------|--------------------------|--------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                    | No. of Tests | I <sub>s(50)</sub> [MPa] | Apparent UCS [MPa] |
| FH-01  | 4,1            | 4,4          | Porphyritic Basalt           | 10           | 3,48                     | 49                 |
| FH-01  | 15,3           | 15,6         | Porphyritic Basalt           | 10           | 7,22                     | 118                |
| FH-01  | 23             | 23,25        | Sand/Claystone               | 8            | 1,62                     | 20                 |
| FH-01  | 27,2           | 27,5         | Scoriaceous Basalt           | 11           | 2,34                     | 31                 |
| FH-01  | 30,2           | 30,5         | Tholeiite Basalt             | 9            | 10,23                    | 179                |
| FH-01  | 39,3           | 39,6         | Tholeiite Basalt             | 12           | 9,30                     | 160                |
| FH-01  | 44,8           | 45           | Sandstone                    | 8            | 2,26                     | 29                 |
| FH-01  | 45,6           | 45,8         | Scoriaceous Basalt           | 8            | 2,08                     | 27                 |
| FH-01  | 52,7           | 53           | Porphyritic Basalt           | 11           | 4,62                     | 69                 |
| FH-01  | 58,7           | 59           | Scoriaceous Basalt           | 10           | 1,88                     | 24                 |
| FH-01  | 63,6           | 63,9         | Scoriaceous Basalt           | 10           | 1,78                     | 22                 |
| FH-01  | 72             | 72,3         | Tholeiite Basalt             | 9            | 9,55                     | 165                |
| FH-01  | 82,2           | 82,6         | Tholeiite Basalt             | 7            | 10,87                    | 193                |
| FH-01  | 88,83          | 88,97        | Sandstone                    | 6            | 2,26                     | 29                 |
| FH-01  | 91,3           | 91,6         | Olivine Basalt               | 10           | 2,57                     | 34                 |
| FH-01  | 95,2           | 95,5         | Olivine Basalt               | 12           | 3,11                     | 43                 |
| FH-01  | 103,1          | 103,4        | Olivine Basalt               | 8            | 3,42                     | 49                 |
| FH-01  | 107,55         | 107,7        | Silt-, Claystone             | 6            | 1,19                     | 14                 |
| FH-01  | 113,4          | 113,8        | Olivine Basalt               | 12           | 4,55                     | 68                 |
| FH-01  | 126,9          | 127,3        | Scoriaceous Basalt           | 8            | 2,96                     | 40                 |
| FH-01  | 130,2          | 130,5        | Olivine Basalt               | 9            | 7,31                     | 120                |
| FH-01  | 141,2          | 141,5        | Olivine/Tholeiite Basalt     | 8            | 6,40                     | 102                |
| FH-01  | 143,2          | 143,5        | Scoriaceous Basalt           | 8            | 3,02                     | 42                 |
| FH-01  | 149,6          | 149,9        | Olivine Basalt               | 10           | 5,68                     | 88                 |
| FH-01  | 155,7          | 156          | Scoriaceous Basalt           | 10           | 1,27                     | 15                 |
| FH-01  | 160,8          | 161,2        | Tholeiite Basalt             | 8            | 10,04                    | 175                |
| FH-01  | 167,4          | 168          | Tholeiite Basalt             | 9            | 10,09                    | 176                |
| FH-01  | 174,9          | 175,2        | Tholeiite Basalt             | 10           | 9,43                     | 163                |
| FH-01  | 176,2          | 176,3        | Silt-, Sandstone             | 6            | 2,19                     | 28                 |
| FH-01  | 177,2          | 177,5        | Scoriaceous Basalt           | 11           | 1,89                     | 24                 |
| FH-01  | 184,4          | 184,7        | Scoriaceous Basalt           | 8            | 1,50                     | 18                 |
| FH-01  | 191,7          | 192,2        | Tholeiite Basalt             | 9            | 10,06                    | 176                |
| FH-01  | 197,15         | 197,25       | Claystone                    | 4            | 3,69                     | 53                 |
| FH-01  | 197,7          | 198          | Scoriaceous Tholeiite Basalt | 10           | 3,33                     | 47                 |
| FH-01  | 203,7          | 203,9        | Scoriaceous Basalt           | 9            | 2,86                     | 39                 |
| FH-01  | 208,1          | 208,4        | Tholeiite Basalt             | 9            | 10,61                    | 188                |

|       |        |        |                              |    |       |     |
|-------|--------|--------|------------------------------|----|-------|-----|
| FH-01 | 216,5  | 216,9  | Tholeiite Basalt             | 10 | 11,21 | 200 |
| FH-01 | 218,6  | 219    | Ignimbrite                   | 10 | 2,71  | 36  |
| FH-01 | 222,9  | 223,2  | Porphyritic Basalt           | 10 | 1,77  | 22  |
| FH-01 | 226,2  | 226,5  | Porphyritic Basalt           | 5  | 9,84  | 172 |
| FH-01 | 230,7  | 230,9  | Siltstone                    | 7  | 1,99  | 25  |
| FH-01 | 231,5  | 231,9  | Scoriaceous Basalt           | 8  | 1,02  | 11  |
| FH-01 | 240,5  | 240,8  | Porphyritic Basalt           | 10 | 7,77  | 129 |
| FH-01 | 248,3  | 248,6  | Olivine - Tholeiite Basalt   | 4  | 10,13 | 177 |
| FH-01 | 258,8  | 259,1  | Tholeiite Basalt             | 7  | 9,70  | 168 |
| FH-01 | 263,3  | 263,48 | Sandstone                    | 6  | 2,33  | 30  |
| FH-01 | 264,5  | 264,8  | Olivine - Tholeiite Basalt   | 9  | 2,22  | 29  |
| FH-01 | 268    | 268,4  | Olivine - Tholeiite Basalt   | 8  | 10,68 | 189 |
| FH-01 | 274,9  | 275,3  | Ignimbrite (pink top)        | 11 | 2,00  | 26  |
| FH-01 | 276    | 276,4  | Ignimbrite (green bottom)    | 9  | 2,72  | 37  |
| FH-01 | 278,48 | 278,6  | Siltstone                    | 5  | 1,24  | 14  |
| FH-01 | 285,1  | 285,4  | Scoriaceous Basalt           | 11 | 2,69  | 36  |
| FH-01 | 286,2  | 286,5  | Scoriaceous Basalt           | 9  | 1,38  | 16  |
| FH-01 | 294,4  | 294,8  | Porphyritic Olivine Basalt   | 10 | 7,18  | 117 |
| FH-01 | 300,7  | 301,1  | Porphyritic Olivine Basalt   | 11 | 7,90  | 132 |
| FH-01 | 301,7  | 301,8  | Clay-, Sandstone             | 6  | 0,72  | 7   |
| FH-01 | 310,5  | 310,7  | Ignimbrite                   | 8  | 0,77  | 8   |
| FH-01 | 313,4  | 313,8  | Scoria & Sediment            | 14 | 1,03  | 11  |
| FH-01 | 317,5  | 317,9  | Scoria & Sediment            | 11 | 1,74  | 21  |
| FH-01 | 321,5  | 321,8  | Tholeiite Basalt             | 10 | 1,91  | 24  |
| FH-01 | 330,6  | 330,9  | Olivine Basalt               | 10 | 2,61  | 35  |
| FH-01 | 335,9  | 336,2  | Olivine Basalt               | 10 | 6,42  | 103 |
| FH-01 | 342,1  | 342,4  | Olivine Basalt               | 6  | 6,06  | 96  |
| FH-01 | 350,7  | 351,1  | Scoriaceous Tholeiite Basalt | 10 | 3,15  | 44  |
| FH-01 | 358,2  | 358,6  | Scoriaceous Basalt           | 10 | 3,56  | 51  |
| FH-01 | 369,6  | 370    | Tectonic Breccia & Sandstone | 11 | 2,90  | 40  |
| FH-01 | 373,8  | 374,1  | Fault Breccia                | 5  | 3,39  | 48  |
| FH-01 | 380,7  | 381    | Dyke & Breccia               | 6  | 4,34  | 65  |
| FH-01 | 387,1  | 387,4  | Porphyritic Basalt           | 6  | 2,37  | 31  |
| FH-01 | 392,5  | 392,9  | Tholeiite Basalt             | 7  | 5,18  | 79  |
| FH-01 | 397,9  | 398,2  | Tholeiite Basalt             | 7  | 7,87  | 131 |
| FH-01 | 401,45 | 401,65 | Sand-, Siltstone             | 4  | 2,59  | 34  |
| FH-01 | 402,1  | 402,4  | Scoriaceous Basalt           | 8  | 2,14  | 27  |
| FH-01 | 411,6  | 412    | Scoriaceous Tholeiite Basalt | 10 | 2,84  | 39  |
| FH-01 | 414,9  | 415,1  | Tholeiite Basalt             | 4  | 10,01 | 175 |
| FH-01 | 425,3  | 425,6  | Olivine Basalt               | 11 | 3,25  | 45  |

**Prófanir á frákastshörku borkjarna úr borholu FH-01 með PLT tæki /  
Field test on rebound hardness on core from borehole FH-01**

| <b>Borehole</b> | <b>Depth From [m]</b> | <b>Depth To [m]</b> | <b>Rock Type</b>           | <b>No. of Tests</b> | <b>Average 'Rock Hardness'</b> |
|-----------------|-----------------------|---------------------|----------------------------|---------------------|--------------------------------|
| FH-01           | 3,86                  | 4,1                 | Porphyritic Basalt         | 11                  | 46                             |
| FH-01           | 15,57                 | 15,77               | Porphyritic Basalt         | 12                  | 51                             |
| FH-01           | 39,1                  | 39,24               | Tholeiite Basalt           | 8                   | 51                             |
| FH-01           | 45,86                 | 46,06               | Porphyritic Basalt         | 8                   | 37                             |
| FH-01           | 52,45                 | 52,65               | Porphyritic Basalt         | 9                   | 43                             |
| FH-01           | 63,37                 | 63,57               | Scoriaceous Basalt         | 9                   | 33                             |
| FH-01           | 72,4                  | 72,6                | Tholeiite Basalt           | 8                   | 60                             |
| FH-01           | 82,6                  | 82,76               | Tholeiite Basalt           | 14                  | 57                             |
| FH-01           | 91                    | 91,3                | Olivine Basalt             | 7                   | 34                             |
| FH-01           | 95,65                 | 95,85               | Olivine Basalt (ves.)      | 10                  | 41                             |
| FH-01           | 102,37                | 102,57              | Olivine Basalt             | 14                  | 38                             |
| FH-01           | 113,2                 | 113,38              | Olivine Basalt             | 12                  | 49                             |
| FH-01           | 130,53                | 130,7               | Olivine Basalt             | 12                  | 52                             |
| FH-01           | 142,3                 | 142,45              | Olivine Basalt             | 11                  | 63                             |
| FH-01           | 149,35                | 149,5               | Olivine Basalt             | 10                  | 53                             |
| FH-01           | 160,5                 | 160,7               | Tholeiite Basalt           | 9                   | 55                             |
| FH-01           | 168,1                 | 168,3               | Tholeiite Basalt           | 10                  | 60                             |
| FH-01           | 174,5                 | 174,78              | Tholeiite Basalt           | 14                  | 58                             |
| FH-01           | 191,24                | 191,29              | Tholeiite Basalt           | 10                  | 51                             |
| FH-01           | 208,45                | 208,55              | Tholeiite Basalt           | 14                  | 61                             |
| FH-01           | 219                   | 219,15              | Igimbrite                  | 4                   | 42                             |
| FH-01           | 222,34                | 222,49              | Porphyritic Basalt         | 5                   | 48                             |
| FH-01           | 239,57                | 239,8               | Porphyritic Basalt         | 8                   | 53                             |
| FH-01           | 249,5                 | 249,65              | Olivine/Tholeiite          | 12                  | 58                             |
| FH-01           | 259,1                 | 259,25              | Tholeiite Basalt           | 10                  | 61                             |
| FH-01           | 268,38                | 268,53              | Olivine/Tholeiite          | 10                  | 57                             |
| FH-01           | 294,8                 | 294,98              | Porphyritic Olivine Basalt | 7                   | 56                             |
| FH-01           | 299,81                | 299,99              | Porphyritic Olivine Basalt | 10                  | 56                             |
| FH-01           | 345                   | 345,2               | Olivine Basalt             | 9                   | 53                             |
| FH-01           | 386,95                | 387,12              | Porphyritic Basalt         | 10                  | 36                             |
| FH-01           | 412,7                 | 413                 | Scoriaceous/Tholeiite      | 11                  | 45                             |
| FH-01           | 417,05                | 417,3               | Tholeiite Basalt           | 3                   | 53                             |



## Borhola FH-01

| Sýnataka úr borkjarna holu FH-01 til prófana á rannsóknastofu /<br>Core samples from hole FH-01 for laboratory tests |                |              |                 |                  |
|--|----------------|--------------|-----------------|------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type       | Date of Sampling |
| FH-01  | 23,5           | 23,63        | Sandstone       | 22/02/2017       |
| FH-01  | 55,6           | 55,75        | Siltstone       | 21/02/2017       |
| FH-01  | 107,7          | 107,9        | Siltstone       | 22/02/2017       |
| FH-01  | 135,48         | 135,73       | Clay/Sandstone  | 21/02/2017       |
| FH-01  | 162,8          | 162,9        | Claystone       | 21/02/2017       |
| FH-01  | 219,9          | 220          | Clay/Siltstone  | 21/02/2017       |
| FH-01  | 243,94         | 244,07       | Clay/Siltstone  | 21/02/2017       |
| FH-01  | 280,75         | 280,85       | Tuff            | 21/02/2017       |
| FH-01  | 302            | 302,07       | Sand-/Claystone | 21/02/2017       |
| FH-01  | 307,3          | 307,45       | Sand/Claystone  | 21/02/2017       |
| FH-01  | 312,55         | 312,74       | Scoria/Tuff     | 21/02/2017       |
| FH-01  | 327,13         | 327,35       | Claystone       | 21/02/2017       |
| FH-01  | 392,04         | 392,1        | Claystone       | 21/02/2017       |
| FH-01  | 425,05         | 425,18       | Sand/Siltstone  | 21/02/2017       |

Kleyfnitogstyrkur borkjarna úr borholu FH-01 mældur á rannsóknastofu Mannvits.

| Kleyfnitogstyrkur borkjarna |               |             |                        |                    |           |                                    |                        |                               |
|-----------------------------|---------------|-------------|------------------------|--------------------|-----------|------------------------------------|------------------------|-------------------------------|
| Borhola                     | Dýpi<br>m     | Sýni<br>nr. | Þvermál<br>sýnis<br>mm | Hæð<br>sýnis<br>mm | Raki<br>% | Þurr rúmpyngd<br>kg/m <sup>3</sup> | Hámarks-<br>álag<br>kN | Kleyfni-<br>togstyrkur<br>MPa |
| FH-01                       | 23,5-23,63    | 1           | 44,3                   | 28,6               | 9,1       | 1858,3                             | 1,99                   | 1,00                          |
| FH-01                       | 23,5-23,63    | 2           | 44,1                   | 32,1               | 12,0      | 1737,7                             | 0,90                   | 0,40                          |
| FH-01                       | 55,6-55,75    | 1           | 44,3                   | 21,7               | 9,9       | 1906,9                             | 2,59                   | 1,71                          |
| FH-01                       | 55,6-55,75    | 2           | 44,2                   | 24,8               | 10,4      | 1861,9                             | 1,70                   | 0,99                          |
| FH-01                       | 55,6-55,75    | 3           | 44,5                   | 21,6               | 9,5       | 1875,6                             | 3,24                   | 2,15                          |
| FH-01                       | 107,7-107,9   | 1           | 43,8                   | 15,8               | 7,6       | 1810,8                             | 1,94                   | 1,79                          |
| FH-01                       | 107,7-107,9   | 2           | 42,6                   | 17,7               | 9,0       | 1825,3                             | 2,50                   | 2,11                          |
| FH-01                       | 219,9-220     | 1           | 44,3                   | 16,9               | 9,9       | 1869,8                             | 0,69                   | 0,59                          |
| FH-01                       | 243,94-244,07 | 1           | 43,5                   | 19,4               | 10,5      | 1980,2                             | 2,29                   | 1,72                          |
| FH-01                       | 280,75-280,85 | 1           | 44,0                   | 18,1               | 6,3       | 1800,2                             | 2,50                   | 2,00                          |
| FH-01                       | 280,75-280,85 | 2           | 44,0                   | 21,4               | 11,7      | 1784,6                             | 0,96                   | 0,65                          |
| FH-01                       | 327,13-327,35 | 1           | 43,2                   | 11,8               | 16,1      | 1549,8                             | 0,66                   | 0,82                          |
| FH-01                       | 327,13-327,35 | 2           | 43,4                   | 21,6               | 16,6      | 1653,2                             | 0,74                   | 0,50                          |
| FH-01                       | 327,13-327,35 | 3           | 43,4                   | 13,4               | 16,4      | 1685,4                             | 0,54                   | 0,59                          |

Athugasemdir: Það gekk illa að saga sýnin í rétta stærð skv. staðli. Sýni eru mjög viðkvæm og það brotnar og kvarnast úr þeim við sögun og slipun.

## Borhola FH-02

| Prófanir á bergstyrk borkjarna úr borholu FH-02 með PLT tæki /<br>Field test on core from borehole FH-02 - Point Load Test |                |              |                             |              |                          |                    |
|--|----------------|--------------|-----------------------------|--------------|--------------------------|--------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                   | No. of Tests | I <sub>s(50)</sub> [MPa] | Apparent UCS [MPa] |
| FH-02  | 10,45          | 10,75        | Scoriaceous Basalt          | 3            | 2,67                     | 36                 |
| FH-02  | 17,4           | 17,6         | Olivine Basalt              | 7            | 8,36                     | 141                |
| FH-02  | 24,6           | 24,95        | Olivine - Tholeiite Basalt  | 7            | 7,84                     | 130                |
| FH-02  | 29,3           | 29,6         | Olivine Basalt              | 7            | 7,70                     | 128                |
| FH-02  | 34             | 34,3         | Tholeiite Basalt            | 7            | 6,81                     | 110                |
| FH-02  | 47,4           | 47,8         | Scoriaceous Basalt          | 8            | 0,99                     | 11                 |
| FH-02  | 50,55          | 50,8         | Tholeiite Basalt            | 8            | 10,66                    | 188                |
| FH-02  | 59,6           | 59,7         | Siltstone - Sandstone       | 4            | 2,42                     | 32                 |
| FH-02  | 59,95          | 60,1         | Scoriaceous Basalt          | 8            | 1,88                     | 24                 |
| FH-02  | 66,2           | 66,5         | Tholeiite - Olivine Basalt  | 6            | 7,81                     | 130                |
| FH-02  | 73,2           | 73,4         | Sandstone                   | 8            | 2,68                     | 36                 |
| FH-02  | 81,35          | 81,7         | Tholeiite Basalt            | 5            | 10,33                    | 181                |
| FH-02  | 84,7           | 85           | Scoriaceous Basalt          | 7            | 1,36                     | 16                 |
| FH-02  | 89,5           | 90           | Scoriaceous Basalt          | 9            | 1,47                     | 17                 |
| FH-02  | 105            | 105,4        | Tholeiite Basalt            | 9            | 9,97                     | 174                |
| FH-02  | 112,25         | 112,3        | Sandstone                   | 1            | 3,04                     | 42                 |
| FH-02  | 112,85         | 113,2        | Scoria - Scoriaceous Basalt | 10           | 2,00                     | 25                 |
| FH-02  | 116,4          | 116,7        | Olivine - Tholeiite Basalt  | 2            | 9,14                     | 156                |
| FH-02  | 122,7          | 123          | Scoriaceous Basalt          | 7            | 1,66                     | 20                 |
| FH-02  | 127,4          | 127,6        | Porphyritic Basalt          | 7            | 9,00                     | 154                |
| FH-02  | 135            | 135,2        | Conglomerate - Sandstone    | 8            | 1,46                     | 17                 |
| FH-02  | 141,35         | 141,55       | Porphyritic Basalt          | 8            | 5,56                     | 86                 |
| FH-02  | 143,45         | 143,55       | Sandstone                   | 5            | 1,53                     | 18                 |
| FH-02  | 143,55         | 143,65       | Claystone                   | 5            | 0,67                     | 7                  |
| FH-02  | 149,7          | 150          | Porphyritic Basalt          | 7            | 2,68                     | 36                 |
| FH-02  | 153,23         | 153,42       | Porphyritic Basalt          | 6            | 7,85                     | 131                |
| FH-02  | 155,6          | 155,9        | Porphyritic Basalt          | 7            | 8,94                     | 152                |
| FH-02  | 168,05         | 168,27       | Porphyritic Basalt          | 6            | 3,36                     | 47                 |
| FH-02  | 168,7          | 168,9        | Sandstone - Siltstone       | 7            | 1,71                     | 21                 |
| FH-02  | 174,3          | 174,45       | Scoriaceous Basalt          | 6            | 3,89                     | 56                 |
| FH-02  | 174,3          | 174,45       | Scoriaceous Basalt          | 4            | 3,74                     | 54                 |
| FH-02  | 180,2          | 180,5        | Tholeiite Basalt            | 5            | 10,10                    | 177                |
| FH-02  | 184,4          | 184,7        | Tholeiite Basalt            | 4            | 9,50                     | 164                |
| FH-02  | 189,8          | 190,1        | Scoriaceous Basalt          | 9            | 1,06                     | 12                 |
| FH-02  | 201,8          | 202          | Ignimbrite                  | 8            | 0,81                     | 9                  |
| FH-02  | 203,7          | 204          | Ignimbrite                  | 9            | 0,91                     | 10                 |

|       |        |        |                                |    |       |     |
|-------|--------|--------|--------------------------------|----|-------|-----|
| FH-02 | 209,05 | 209,45 | Scoria                         | 6  | 3,33  | 47  |
| FH-02 | 209,05 | 209,45 | Scoria                         | 7  | 2,78  | 38  |
| FH-02 | 218,4  | 218,7  | Tholeiite Basalt               | 8  | 8,30  | 139 |
| FH-02 | 228,4  | 228,8  | Tholeiite Basalt               | 7  | 10,51 | 185 |
| FH-02 | 229    | 229,3  | Tholeiite Basalt               | 7  | 9,89  | 172 |
| FH-02 | 234,9  | 235,15 | Sandstone                      | 10 | 1,71  | 21  |
| FH-02 | 235,6  | 235,75 | Sandstone                      | 7  | 0,45  | 4   |
| FH-02 | 236    | 236,2  | Olivine Basalt                 | 6  | 4,28  | 63  |
| FH-02 | 240,45 | 240,8  | Olivine Basalt                 | 3  | 8,24  | 138 |
| FH-02 | 241,4  | 241,47 | Sandstone                      | 2  | 2,05  | 26  |
| FH-02 | 241,47 | 241,7  | Sandstone                      | 6  | 1,14  | 13  |
| FH-02 | 246    | 246,1  | Porphyritic Basalt             | 6  | 2,15  | 28  |
| FH-02 | 246    | 246,1  | Porphyritic Basalt             | 3  | 2,04  | 26  |
| FH-02 | 255,3  | 255,55 | Olivine - Porphyritic Basalt   | 6  | 1,91  | 24  |
| FH-02 | 265,6  | 265,9  | Olivine - Porphyritic Basalt   | 6  | 9,23  | 158 |
| FH-02 | 272,85 | 273    | Olivine - Porphyritic Basalt   | 8  | 7,46  | 123 |
| FH-02 | 273,6  | 273,8  | Sandstone                      | 5  | 2,23  | 29  |
| FH-02 | 274,45 | 274,8  | Tholeiite Basalt               | 6  | 10,44 | 184 |
| FH-02 | 275,18 | 275,28 | Tephra                         | 4  | 0,32  | 3   |
| FH-02 | 278,9  | 279    | Sandstone                      | 5  | 1,98  | 25  |
| FH-02 | 279    | 279,15 | Scoria                         | 4  | 0,78  | 8   |
| FH-02 | 284,05 | 284,25 | Olivine - Tholeiite Basalt     | 4  | 7,71  | 128 |
| FH-02 | 288,95 | 289,15 | Scoriaceous Basalt             | 5  | 1,48  | 18  |
| FH-02 | 289,5  | 289,63 | Sandstone                      | 5  | 1,98  | 25  |
| FH-02 | 294,45 | 294,7  | Tholeiite Basalt               | 4  | 11,82 | 213 |
| FH-02 | 297,62 | 297,82 | Ignimbrite                     | 7  | 2,96  | 40  |
| FH-02 | 302,1  | 302,2  | Ignimbrite                     | 8  | 5,73  | 89  |
| FH-02 | 305,75 | 306    | Scoriaceous Basalt             | 7  | 3,20  | 46  |
| FH-02 | 310,7  | 311    | Tholeiite - Porphyritic Basalt | 6  | 9,71  | 169 |
| FH-02 | 314,2  | 314,5  | Scoria                         | 8  | 1,90  | 24  |
| FH-02 | 321    | 321,25 | Tholeiite Basalt               | 3  | 12,65 | 231 |
| FH-02 | 329,8  | 330,02 | Tholeiite Basalt               | 5  | 9,77  | 170 |
| FH-02 | 335,3  | 335,5  | Scoriaceous Basalt             | 5  | 1,91  | 24  |
| FH-02 | 339,2  | 339,55 | Olivine Basalt                 | 9  | 1,51  | 18  |
| FH-02 | 339,92 | 340,15 | Claystone                      | 5  | 2,36  | 31  |
| FH-02 | 341,7  | 341,9  | Conglomerate - Sandstone       | 7  | 1,98  | 25  |
| FH-02 | 342,95 | 343,1  | Conglomerate - Claystone       | 5  | 2,13  | 27  |
| FH-02 | 343,9  | 344,1  | Olivine Basalt                 | 7  | 3,30  | 46  |
| FH-02 | 350    | 350,2  | Olivine Basalt                 | 6  | 6,57  | 106 |
| FH-02 | 353,45 | 353,6  | Sandstone - Claystone          | 9  | 0,69  | 7   |
| FH-02 | 358,5  | 358,7  | Dyke                           | 5  | 10,44 | 184 |

|       |        |        |                    |   |       |     |
|-------|--------|--------|--------------------|---|-------|-----|
| FH-02 | 367,37 | 367,6  | Scoriaceous Basalt | 7 | 3,91  | 57  |
| FH-02 | 376,8  | 377    | Tholeiite Basalt   | 7 | 6,73  | 109 |
| FH-02 | 382,7  | 382,85 | Sandstone          | 4 | 2,21  | 28  |
| FH-02 | 385    | 385,26 | Scoriaceous Basalt | 5 | 5,44  | 84  |
| FH-02 | 392,4  | 392,8  | Tholeiite Basalt   | 7 | 10,39 | 183 |
| FH-02 | 396    | 396,3  | Tholeiite Basalt   | 4 | 13,42 | 248 |
| FH-02 | 414,45 | 414,65 | Dyke               | 3 | 8,05  | 135 |
| FH-02 | 416,5  | 416,9  | Scoria             | 7 | 6,22  | 99  |
| FH-02 | 421,75 | 422,2  | Tholeiite Basalt   | 5 | 11,50 | 206 |
| FH-02 | 431,35 | 431,75 | Tholeiite Basalt   | 5 | 11,43 | 205 |
| FH-02 | 434,7  | 435    | Scoriaceous Basalt | 6 | 6,25  | 99  |
| FH-02 | 437,8  | 438,1  | Porphyritic Basalt | 8 | 7,28  | 119 |
| FH-02 | 442,5  | 442,7  | Scoria             | 5 | 3,01  | 42  |
| FH-02 | 445,3  | 445,7  | Scoriaceous Basalt | 7 | 4,33  | 64  |
| FH-02 | 447,85 | 448,07 | Tholeiite Basalt   | 4 | 13,01 | 240 |

## Borhola FH-02

| Prófanir á frákastshörku borkjarna úr borholu FH-02 með PLT tæki /<br>Field test on rebound hardness on core from borehole FH-02 |                |              |                                |              |                         |
|--|----------------|--------------|--------------------------------|--------------|-------------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                      | No. of Tests | Average 'Rock Hardness' |
| FH-02  | 17,6           | 17,75        | Olivine Basalt                 | 10           | 57                      |
| FH-02  | 24,95          | 25,15        | Olivine - Tholeiite Basalt     | 9            | 53                      |
| FH-02  | 29             | 29,35        | Olivine Basalt                 | 15           | 44                      |
| FH-02  | 35,7           | 35,85        | Tholeiite Basalt               | 10           | 45                      |
| FH-02  | 50,8           | 51           | Tholeiite Basalt               | 11           | 54                      |
| FH-02  | 67             | 67,1         | Tholeiite - Olivine Basalt     | 9            | 54                      |
| FH-02  | 81,85          | 82           | Tholeiite Basalt               | 10           | 58                      |
| FH-02  | 105,6          | 105,7        | Tholeiite Basalt               | 2            | 51                      |
| FH-02  | 141,55         | 141,65       | Porphyritic Basalt             | 9            | 49                      |
| FH-02  | 153,42         | 153,56       | Porphyritic Basalt             | 7            | 49                      |
| FH-02  | 158,68         | 158,8        | Porphyritic Basalt             | 10           | 53                      |
| FH-02  | 180,07         | 180,2        | Tholeiite Basalt               | 12           | 57                      |
| FH-02  | 183,6          | 183,7        | Tholeiite Basalt               | 11           | 56                      |
| FH-02  | 226,9          | 227          | Tholeiite Basalt               | 11           | 56                      |
| FH-02  | 266            | 266,2        | Olivine - Porphyritic Basalt   | 10           | 58                      |
| FH-02  | 271,9          | 272,2        | Olivine - Porphyritic Basalt   | 18           | 45                      |
| FH-02  | 277            | 277,1        | Olivine - Porphyritic Basalt   | 6            | 55                      |
| FH-02  | 284,5          | 284,6        | Olivine - Tholeiite Basalt     | 8            | 53                      |
| FH-02  | 294,35         | 294,45       | Tholeiite Basalt               | 9            | 59                      |
| FH-02  | 301,95         | 302,1        | Ignimbrite                     | 10           | 57                      |
| FH-02  | 310,05         | 310,3        | Tholeiite - Porphyritic Basalt | 11           | 58                      |
| FH-02  | 320,8          | 320,9        | Tholeiite Basalt               | 8            | 58                      |
| FH-02  | 329,6          | 329,8        | Tholeiite Basalt               | 11           | 60                      |
| FH-02  | 343,7          | 343,8        | Olivine Basalt                 | 8            | 31                      |
| FH-02  | 350,3          | 350,6        | Olivine Basalt                 | 11           | 54                      |
| FH-02  | 363            | 363,2        | Tholeiite - Basaltic Dyke      | 7            | 58                      |
| FH-02  | 377            | 377,1        | Tholeiite Basalt               | 10           | 56                      |
| FH-02  | 396,32         | 396,55       | Tholeiite Basalt               | 9            | 56                      |
| FH-02  | 431,1          | 431,35       | Tholeiite Basalt               | 10           | 59                      |
| FH-02  | 438,1          | 438,2        | Porphyritic Basalt             | 10           | 53                      |

Kleyfnitogstyrkur borkjarna úr borholu FH-02 mældur á rannsóknastofu Mannvits.

| <b>Kleyfnitogstyrkur borkjarna</b> |               |             |                        |                    |           |                                    |                        |                               |
|------------------------------------|---------------|-------------|------------------------|--------------------|-----------|------------------------------------|------------------------|-------------------------------|
| Borhola                            | Dýpi<br>m     | Sýni<br>nr. | Þvermál<br>sýnis<br>mm | Hæð<br>sýnis<br>mm | Raki<br>% | Þurr rúmpyngd<br>kg/m <sup>3</sup> | Hámarks-<br>álag<br>kN | Kleyfni-<br>togstyrkur<br>MPa |
| FH-02                              | 44,46-44,56   | 1           | 44,5                   | 17,2               | 16,5      | 1904,2                             | 3,05                   | 2,54                          |
| FH-02                              | 44,46-44,56   | 2           | 44,2                   | 24,2               | 16,4      | 1907,2                             | 2,39                   | 1,42                          |
| FH-02                              | 44,46-44,56   | 3           | 44,4                   | 22,1               | 16,2      | 1901,3                             | 1,60                   | 1,04                          |
| FH-02                              | 73,8-73,95    | 1           | 44,8                   | 24,6               | 11,0      | 1988,5                             | 4,32                   | 2,49                          |
| FH-02                              | 73,8-73,95    | 2           | 44,8                   | 21,6               | 11,5      | 1967,4                             | 2,33                   | 1,53                          |
| FH-02                              | 73,8-73,95    | 3           | 44,9                   | 23,8               | 9,8       | 1983,6                             | 6,32                   | 3,77                          |
| FH-02                              | 169,68-169,95 | 1           | 44,4                   | 18,1               | 13,5      | 1935,9                             | 1,90                   | 1,51                          |
| FH-02                              | 169,68-169,95 | 2           | 44,5                   | 20,3               | 14,5      | 1889,7                             | 3,59                   | 2,53                          |
| FH-02                              | 303,21-303,44 | 1           | 44,5                   | 20,4               | 13,9      | 1875,1                             | 1,30                   | 0,91                          |
| FH-02                              | 303,21-303,44 | 2           | 44,2                   | 18,4               | 13,9      | 1851,2                             | 1,22                   | 0,96                          |
| FH-02                              | 303,21-303,44 | 3           | 44,8                   | 20,2               | 12,0      | 1855,8                             | 0,89                   | 0,63                          |
| FH-02                              | 303,21-303,44 | 4           | 44,9                   | 18,9               | 10,3      | 1932,8                             | 1,53                   | 1,15                          |
| FH-02                              | 305,28-305,5  | 1           | 44,6                   | 16,9               | 14,6      | 1857,2                             | 1,26                   | 1,06                          |
| FH-02                              | 305,28-305,5  | 2           | 44,6                   | 17,1               | 14,3      | 1907,4                             | 0,97                   | 0,81                          |
| FH-02                              | 305,28-305,5  | 3           | 44,6                   | 19,1               | 14,1      | 1932,7                             | 1,67                   | 1,25                          |
| FH-02                              | 334,2-334,36  | 1           | 44,6                   | 19,0               | 14,7      | 1869,3                             | 0,88                   | 0,66                          |
| FH-02                              | 334,2-334,36  | 2           | 44,6                   | 26,1               | 14,3      | 1920,7                             | 1,79                   | 0,98                          |
| FH-02                              | 343,1-343,3   | 1           | 44,8                   | 12,5               | 15,1      | 1911,1                             | 2,97                   | 3,36                          |
| FH-02                              | 343,1-343,3   | 2           | 45,0                   | 22,6               | 11,5      | 2062,9                             | 4,41                   | 2,77                          |
| FH-02                              | 343,1-343,3   | 3           | 44,9                   | 15,4               | 13,6      | 2001,5                             | 3,51                   | 3,24                          |
| FH-02                              | 353,76-353,96 | 1           | 44,8                   | 18,5               | 12,7      | 1990,4                             | 1,79                   | 1,37                          |
| FH-02                              | 353,76-353,96 | 2           | 45,0                   | 19,9               | 10,8      | 2018,1                             | 3,39                   | 2,40                          |
| FH-02                              | 353,76-353,96 | 3           | 45,0                   | 18,6               | 7,0       | 2099,1                             | 7,29                   | 5,56                          |
| FH-02                              | 354,36-354,55 | 1           | 44,5                   | 18,6               | 16,4      | 1879,0                             | 2,98                   | 2,29                          |
| FH-02                              | 354,36-354,55 | 2           | 44,5                   | 19,1               | 15,4      | 1897,2                             | 1,68                   | 1,26                          |
| FH-02                              | 354,36-354,55 | 3           | 44,6                   | 20,6               | 14,7      | 1923,0                             | 1,56                   | 1,08                          |
| FH-02                              | 296,57-296,9  | 1           | 44,6                   | 19,1               | 11,0      | 2012,8                             | 3,85                   | 2,87                          |
| FH-02                              | 296,57-296,9  | 2           | 44,6                   | 18,2               | 11,2      | 2021,8                             | 3,90                   | 3,06                          |
| FH-02                              | 296,57-296,9  | 3           | 44,9                   | 20,1               | 11,1      | 2110,3                             | 3,38                   | 2,39                          |

Athugasemdir: Það gekk illa að saga sýnin í rétta stærð skv. staðli. Sýni eru mjög viðkvæm og það brotnar og kvarnast úr þeim við sögun og slípun.

## Borhola FH-02

| <b>Sýnataka úr borkjarna holu FH-02 til prófana á rannsóknastofu /<br/>Core samples from hole FH-02 for laboratory tests</b> |                       |                     |                       |                         |
|--|-----------------------|---------------------|-----------------------|-------------------------|
| <b>Borehole</b>  | <b>Depth From [m]</b> | <b>Depth To [m]</b> | <b>Rock Type</b>      | <b>Date of Sampling</b> |
| FH-02  | 44,46                 | 44,56               | Siltstone - Claystone | 20/02/2017              |
| FH-02  | 73,8                  | 73,95               | Siltstone - Sandstone | 20/02/2017              |
| FH-02  | 86,59                 | 86,7                | Sandstone             | 20/02/2017              |
| FH-02  | 112,34                | 112,56              | Siltstone - Sandstone | 20/02/2017              |
| FH-02  | 136,33                | 136,5               | Conglomerate          | 20/02/2017              |
| FH-02  | 169,68                | 169,95              | Siltstone - Sandstone | 20/02/2017              |
| FH-02  | 169,68                | 169,95              | Siltstone - Sandstone | 20/02/2017              |
| FH-02  | 205,27                | 205,5               | Claystone             | 20/02/2017              |
| FH-02  | 274,27                | 274,5               | Claystone - Sandstone | 20/02/2017              |
| FH-02  | 290,05                | 290,35              | Claystone             | 20/02/2017              |
| FH-02  | 296,57                | 296,9               | Claystone             | 20/02/2017              |
| FH-02  | 303,21                | 303,44              | Claystone             | 20/02/2017              |
| FH-02  | 305,28                | 305,5               | Claystone             | 20/02/2017              |
| FH-02  | 333,73                | 333,9               | Claystone             | 20/02/2017              |
| FH-02  | 334,2                 | 334,36              | Claystone             | 20/02/2017              |
| FH-02  | 340,45                | 340,7               | Claystone             | 20/02/2017              |
| FH-02  | 343,1                 | 343,3               | Claystone             | 20/02/2017              |
| FH-02  | 352,51                | 352,7               | Sandstone             | 20/02/2017              |
| FH-02  | 353,76                | 353,96              | Claystone             | 20/02/2017              |
| FH-02  | 354,36                | 354,55              | Claystone             | 20/02/2017              |

## Borhola FH-03

| Prófanir á bergstyrk borkjarna úr borholu FH-03 með PLT tæki /<br>Field test on core from borehole FH-03 - Point Load Test |                |              |                                  |              |                          |                    |
|--|----------------|--------------|----------------------------------|--------------|--------------------------|--------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                        | No. of Tests | I <sub>s(50)</sub> [MPa] | Apparent UCS [MPa] |
| FH-03  | 0,98           | 1,3          | Porphyritic Basalt               | 9            | 8,02                     | 134                |
| FH-03  | 8,13           | 8,42         | Porphyritic - Scoriaceous Basalt | 8            | 2,59                     | 35                 |
| FH-03  | 13,53          | 13,85        | Porphyritic Basalt               | 8            | 9,85                     | 171                |
| FH-03  | 23,55          | 23,65        | Sandstone                        | 3            | 2,95                     | 40                 |
| FH-03  | 25             | 25,3         | Porphyritic - Scoriaceous Basalt | 7            | 4,22                     | 62                 |
| FH-03  | 29,8           | 30,12        | Porphyritic Basalt               | 8            | 6,25                     | 99                 |
| FH-03  | 36,05          | 36,36        | Porphyritic Basalt               | 9            | 3,75                     | 55                 |
| FH-03  | 41,23          | 41,5         | Porphyritic Basalt               | 2            | 2,64                     | 35                 |
| FH-03  | 41,23          | 41,5         | Porphyritic Basalt               | 4            | 3,65                     | 53                 |
| FH-03  | 45,9           | 46,18        | Scoriaceous Basalt               | 8            | 1,10                     | 12                 |
| FH-03  | 48,63          | 48,9         | Scoriaceous Basalt               | 9            | 2,04                     | 26                 |
| FH-03  | 54,52          | 54,95        | Tholeiite Basalt                 | 10           | 9,16                     | 157                |
| FH-03  | 62,8           | 62,95        | Siltstone - Sandstone            | 7            | 1,15                     | 13                 |
| FH-03  | 72,2           | 72,45        | Tholeiite Basalt                 | 8            | 7,93                     | 132                |
| FH-03  | 77,8           | 78,2         | Scoriaceous Basalt               | 8            | 0,72                     | 7                  |
| FH-03  | 83,5           | 83,8         | Tectonic Breccia                 | 5            | 1,84                     | 24                 |
| FH-03  | 88,65          | 88,85        | Scoria                           | 9            | 1,35                     | 16                 |
| FH-03  | 93             | 93,2         | Tholeiite Basalt                 | 3            | 9,87                     | 172                |
| FH-03  | 104,25         | 104,55       | Tholeiite Basalt                 | 4            | 8,65                     | 147                |
| FH-03  | 105,2          | 105,3        | Sandstone - Claystone            | 5            | 1,60                     | 20                 |
| FH-03  | 119,6          | 119,8        | Tholeiite Basalt                 | 6            | 7,63                     | 126                |
| FH-03  | 123,1          | 123,3        | Scoriaceous Basalt               | 5            | 0,94                     | 10                 |
| FH-03  | 129,3          | 129,6        | Tholeiite Basalt                 | 8            | 7,81                     | 130                |
| FH-03  | 132,15         | 132,3        | Sandstone                        | 6            | 2,15                     | 28                 |
| FH-03  | 132,42         | 132,52       | Claystone                        | 2            | 1,53                     | 19                 |
| FH-03  | 138,6          | 138,9        | Tholeiite - Porphyritic Basalt   | 7            | 9,08                     | 156                |
| FH-03  | 146,3          | 146,6        | Tholeiite - Porphyritic Basalt   | 8            | 9,63                     | 167                |
| FH-03  | 148,65         | 148,83       | Sandstone                        | 6            | 1,71                     | 21                 |
| FH-03  | 149,8          | 150,3        | Scoriaceous - Porphyritic Basalt | 8            | 3,63                     | 52                 |
| FH-03  | 160,9          | 161,3        | Tholeiite - Porphyritic Basalt   | 9            | 7,82                     | 130                |
| FH-03  | 165,9          | 166,1        | Sandstone                        | 8            | 1,40                     | 17                 |
| FH-03  | 174,5          | 174,77       | Porphyritic Basalt               | 5            | 14,05                    | 262                |
| FH-03  | 182,8          | 183,2        | Scoriaceous Basalt               | 8            | 3,68                     | 53                 |
| FH-03  | 187,95         | 188,35       | Tholeiite Basalt                 | 8            | 8,63                     | 146                |
| FH-03  | 194,85         | 195,1        | Tholeiite Basalt                 | 6            | 9,50                     | 164                |
| FH-03  | 199,75         | 200,06       | Tholeiite Basalt                 | 8            | 9,59                     | 166                |



|       |        |        |                                |   |       |     |
|-------|--------|--------|--------------------------------|---|-------|-----|
| FH-03 | 207,15 | 207,55 | Tholeiite Basalt               | 7 | 10,88 | 193 |
| FH-03 | 210,85 | 211,25 | Scoriaceous Basalt             | 8 | 1,85  | 23  |
| FH-03 | 217,15 | 217,35 | Tholeiite - Porphyritic Basalt | 4 | 8,52  | 144 |
| FH-03 | 219,6  | 219,9  | Scoriaceous Basalt             | 7 | 0,93  | 10  |
| FH-03 | 229,4  | 229,8  | Tholeiite Basalt               | 8 | 9,15  | 157 |
| FH-03 | 231,4  | 231,7  | Scoriaceous Basalt             | 7 | 2,02  | 26  |
| FH-03 | 233,85 | 234,05 | Porphyritic Basalt             | 7 | 7,48  | 123 |
| FH-03 | 254,1  | 254,4  | Tholeiite Basalt               | 7 | 9,44  | 163 |
| FH-03 | 262,4  | 262,64 | Scoriaceous Basalt             | 8 | 1,59  | 19  |
| FH-03 | 263,7  | 264    | Porphyritic Basalt             | 6 | 8,16  | 137 |
| FH-03 | 267,8  | 268,35 | Tholeiite Basalt               | 9 | 7,94  | 132 |
| FH-03 | 272,45 | 272,57 | Sandstone                      | 5 | 1,18  | 13  |
| FH-03 | 274,1  | 274,4  | Scoriaceous Basalt             | 8 | 1,85  | 23  |
| FH-03 | 279,7  | 280    | Scoriaceous Basalt             | 8 | 2,46  | 33  |
| FH-03 | 283    | 283,2  | Sandstone - Claystone          | 8 | 1,16  | 13  |
| FH-03 | 289,5  | 289,8  | Tholeiite Basalt               | 3 | 8,19  | 138 |
| FH-03 | 296,05 | 296,41 | Scoriaceous Basalt             | 9 | 1,96  | 25  |
| FH-03 | 299,2  | 299,6  | Tholeiite - Porphyritic Basalt | 5 | 10,94 | 194 |
| FH-03 | 308    | 308,3  | Scoriaceous Basalt             | 7 | 3,44  | 49  |
| FH-03 | 320,8  | 321,3  | Porphyritic Basalt             | 8 | 6,52  | 104 |
| FH-03 | 324,06 | 324,4  | Scoriaceous Basalt             | 8 | 2,26  | 29  |
| FH-03 | 326,66 | 326,89 | Tholeiite Basalt               | 4 | 10,30 | 181 |
| FH-03 | 332,6  | 333    | Scoriaceous Basalt             | 8 | 3,24  | 45  |
| FH-03 | 334,8  | 335,09 | Porphyritic Basalt             | 8 | 5,97  | 94  |
| FH-03 | 337,5  | 337,8  | Scoriaceous Basalt             | 7 | 3,15  | 44  |

## Borhola FH-03

| Prófanir á frákastshörku borkjarna úr borholu FH-03 með PLT tæki /<br>Field test on rebound hardness on core from borehole FH-03 |                |              |                                  |              |                         |
|--|----------------|--------------|----------------------------------|--------------|-------------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                        | No. of Tests | Average 'Rock Hardness' |
| FH-03  | 1,3            | 1,45         | Porphyritic Basalt               | 9            | 49                      |
| FH-03  | 12,87          | 13,02        | Porphyritic Basalt               | 11           | 58                      |
| FH-03  | 30,67          | 30,8         | Porphyritic Basalt               | 10           | 48                      |
| FH-03  | 35,23          | 35,53        | Porphyritic Basalt               | 11           | 55                      |
| FH-03  | 54,2           | 54,33        | Tholeiite Basalt                 | 11           | 59                      |
| FH-03  | 73,2           | 73,4         | Tholeiite Basalt                 | 7            | 55                      |
| FH-03  | 129,5          | 129,6        | Tholeiite Basalt                 | 6            | 52                      |
| FH-03  | 138,9          | 139,05       | Tholeiite Basalt                 | 10           | 56                      |
| FH-03  | 146,2          | 146,3        | Tholeiite Basalt                 | 14           | 55                      |
| FH-03  | 149,55         | 149,75       | Scoriaceous - Porphyritic Basalt | 12           | 36                      |
| FH-03  | 150,3          | 150,42       | Scoriaceous - Porphyritic Basalt | 11           | 38                      |
| FH-03  | 161,7          | 161,85       | Tholeiite Basalt                 | 9            | 49                      |
| FH-03  | 188,35         | 188,45       | Tholeiite Basalt                 | 9            | 47                      |
| FH-03  | 194,6          | 194,9        | Tholeiite Basalt                 | 11           | 53                      |
| FH-03  | 200,2          | 200,4        | Tholeiite Basalt                 | 7            | 55                      |
| FH-03  | 208,2          | 208,3        | Tholeiite Basalt                 | 11           | 61                      |
| FH-03  | 217,3          | 217,4        | Tholeiite - Porphyritic Basalt   | 10           | 57                      |
| FH-03  | 229,2          | 229,4        | Tholeiite Basalt                 | 9            | 58                      |
| FH-03  | 231,7          | 231,9        | Scoriaceous Basalt               | 6            | 23                      |
| FH-03  | 233,1          | 233,3        | Porphyritic Basalt               | 9            | 51                      |
| FH-03  | 253,95         | 254,1        | Tholeiite Basalt                 | 6            | 47                      |
| FH-03  | 263,5          | 263,7        | Porphyritic Basalt               | 14           | 54                      |
| FH-03  | 266,9          | 267          | Tholeiite Basalt                 | 7            | 49                      |
| FH-03  | 275,25         | 275,4        | Scoriaceous Basalt               | 9            | 34                      |
| FH-03  | 289,12         | 289,36       | Tholeiite Basalt                 | 13           | 56                      |
| FH-03  | 299,02         | 299,2        | Tholeiite Basalt                 | 12           | 59                      |
| FH-03  | 308            | 308,7        | Scoriaceous Basalt               | 11           | 35                      |
| FH-03  | 320,55         | 320,8        | Porphyritic Basalt               | 11           | 51                      |
| FH-03  | 324,8          | 325,05       | Scoriaceous Basalt               | 9            | 40                      |
| FH-03  | 327,7          | 327,85       | Tholeiite Basalt                 | 11           | 60                      |
| FH-03  | 332,85         | 332,95       | Scoriaceous Basalt               | 9            | 36                      |
| FH-03  | 335,05         | 335,21       | Porphyritic Basalt               | 7            | 47                      |

## Borhola FH-03

| Sýnataka úr borkjarna holu FH-03 til prófana á rannsóknastofu /<br>Core samples from hole FH-03 for laboratory tests |                |              |                       |                  |
|--|----------------|--------------|-----------------------|------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type             | Date of Sampling |
| FH-03  | 37,88          | 38,08        | Sandstone             | 20/02/2017       |
| FH-03  | 63,85          | 64,05        | Claystone - Siltstone | 20/02/2017       |
| FH-03  | 87,12          | 87,4         | Claystone - Sandstone | 20/02/2017       |
| FH-03  | 166,12         | 166,3        | Siltstone - Sandstone | 20/02/2017       |
| FH-03  | 171,75         | 171,95       | Claystone             | 20/02/2017       |
| FH-03  | 239,77         | 240,1        | Claystone - Sandstone | 20/02/2017       |
| FH-03  | 256,9          | 257,1        | Claystone             | 20/02/2017       |
| FH-03  | 268,92         | 269,1        | Claystone - Sandstone | 20/02/2017       |
| FH-03  | 283,23         | 283,4        | Claystone - Sandstone | 20/02/2017       |
| FH-03  | 319,2          | 319,38       | Claystone - Sandstone | 20/02/2017       |

Kleyfnitogstyrkur borkjarna úr borholu FH-03 mældur á rannsóknastofu Mannvits.

| Kleyfnitogstyrkur borkjarna |             |             |                        |                    |           |                                    |                        |                               |
|-----------------------------|-------------|-------------|------------------------|--------------------|-----------|------------------------------------|------------------------|-------------------------------|
| Borhola                     | Dýpi<br>m   | Sýni<br>nr. | Þvermál<br>sýnis<br>mm | Hæð<br>sýnis<br>mm | Raki<br>% | Þurr rúmpyngd<br>kg/m <sup>3</sup> | Hámarks-<br>álag<br>kN | Kleyfni-<br>togstyrkur<br>MPa |
| FH-03                       | 37,88-38,08 | 1           | 44,2                   | 12,5               | 17,5      | 1689,3                             | 2,13                   | <b>2,45</b>                   |
| FH-03                       | 37,88-38,08 | 2           | 44,0                   | 13,3               | 18,6      | 1717,3                             | 1,10                   | <b>1,19</b>                   |
| FH-03                       | 37,88-38,08 | 3           | 44,2                   | 14,5               | 16,8      | 1690,5                             | 1,62                   | <b>1,61</b>                   |
| FH-03                       | 87,12-87,4  | 1           | 43,8                   | 20,2               | 17,7      | 1705,3                             | 2,54                   | <b>1,83</b>                   |
| FH-03                       | 87,12-87,4  | 2           | 44,3                   | 19,9               | 16,6      | 1731,0                             | 1,58                   | <b>1,14</b>                   |
| FH-03                       | 256,9-257,1 | 1           | 44,2                   | 30,5               | 14,1      | 1783,2                             | 2,44                   | <b>1,15</b>                   |

Athugasemdir: Það gekk illa að saga sýnin í rétta stærð skv. staðli. Sýni eru mjög viðkvæm og það brotnar og kvarnast úr þeim við sögun og slipun.

## Borhola FH-04

| Prófanir á bergstyrk borkjarna úr borholu FH-04 með PLT tæki /<br>Field test on core from borehole FH-04 - Point Load Test |                |              |                                |              |                   |                    |
|--|----------------|--------------|--------------------------------|--------------|-------------------|--------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                      | No. of Tests | $I_{s(50)}$ [MPa] | Apparent UCS [MPa] |
| FH-04  | 3,9            | 4,08         | Sandstone                      | 5            | 1,19              | 14                 |
| FH-04  | 4,63           | 4,83         | Scoria - Sandstone             | 5            | 0,42              | 4                  |
| FH-04  | 16,3           | 16,68        | Tholeiite - Porphyritic Basalt | 6            | 9,00              | 154                |
| FH-04  | 17,15          | 17,32        | Sandstone                      | 7            | 3,10              | 43                 |
| FH-04  | 26,75          | 27,2         | Tholeiite Basalt               | 8            | 10,18             | 178                |
| FH-04  | 31,75          | 31,85        | Conglomerate                   | 3            | 0,35              | 3                  |
| FH-04  | 45,15          | 45,5         | Tholeiite Basalt               | 2            | 7,65              | 127                |
| FH-04  | 46,7           | 47           | Sandstone                      | 11           | 1,70              | 21                 |
| FH-04  | 54,8           | 55,15        | Porphyritic Basalt             | 8            | 8,63              | 147                |
| FH-04  | 62,5           | 62,74        | Porphyritic Basalt             | 6            | 3,13              | 43                 |
| FH-04  | 69,9           | 70,3         | Porphyritic Basalt             | 9            | 8,83              | 150                |
| FH-04  | 78             | 78,2         | Scoriaceous Basalt             | 7            | 2,01              | 25                 |
| FH-04  | 78             | 78,2         | Scoriaceous Basalt             | 5            | 2,17              | 28                 |
| FH-04  | 82,43          | 82,7         | Scoriaceous Basalt             | 7            | 1,94              | 24                 |
| FH-04  | 88,3           | 88,6         | Tholeiite Basalt               | 7            | 7,04              | 115                |
| FH-04  | 94,2           | 94,44        | Ignimbrite                     | 7            | 1,43              | 17                 |
| FH-04  | 96,74          | 96,92        | Ignimbrite                     | 8            | 1,71              | 21                 |
| FH-04  | 102,26         | 102,62       | Tephra                         | 8            | 1,06              | 12                 |
| FH-04  | 105,6          | 105,9        | Scoriaceous Basalt             | 8            | 0,75              | 8                  |
| FH-04  | 109,37         | 109,69       | Tholeiite Basalt               | 4            | 8,98              | 154                |
| FH-04  | 118,9          | 119,15       | Tholeiite Basalt               | 4            | 9,90              | 172                |
| FH-04  | 126            | 126,25       | Scoriaceous Basalt             | 8            | 2,52              | 33                 |
| FH-04  | 137,45         | 137,75       | Tholeiite Basalt               | 8            | 8,67              | 147                |
| FH-04  | 146,3          | 146,65       | Scoriaceous Basalt             | 9            | 1,87              | 23                 |
| FH-04  | 156,37         | 156,73       | Tholeiite Basalt               | 7            | 5,59              | 87                 |

## Borhola FH-04

| Prófanir á frákastshörku borkjarna úr borholu FH-04 með PLT tæki /<br>Field test on rebound hardness on core from borehole FH-04 |                |              |                               |              |                         |
|--|----------------|--------------|-------------------------------|--------------|-------------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                     | No. of Tests | Average 'Rock Hardness' |
| FH-04  | 16,1           | 16,28        | Tholeiite Basalt              | 8            | 54                      |
| FH-04  | 27,2           | 27,35        | Tholeiite Basalt              | 8            | 56                      |
| FH-04  | 55,16          | 55,4         | Porphyritic basalt            | 10           | 39                      |
| FH-04  | 78,2           | 78,7         | Scoriaceous Basalt - Sediment | 12           | 21                      |
| FH-04  | 88,9           | 89,1         | Tholeiite Basalt              | 9            | 52                      |
| FH-04  | 109,69         | 109,89       | Tholeiite Basalt              | 11           | 61                      |
| FH-04  | 118,7          | 118,9        | Tholeiite Basalt              | 10           | 59                      |
| FH-04  | 137,78         | 138          | Tholeiite Basalt              | 15           | 56                      |
| FH-04  | 157,3          | 157,5        | Tholeiite Basalt              | 9            | 47                      |

## Borhola FH-04

| Sýnataka úr borkjarna holu FH-04 til prófana á rannsóknastofu /<br>Core samples from hole FH-04 for laboratory tests |                |              |                               |                  |
|--|----------------|--------------|-------------------------------|------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type                     | Date of Sampling |
| FH-04  | 18,65          | 18,8         | Sandstone                     | 21/02/2017       |
| FH-04  | 33,45          | 33,57        | Tephra                        | 21/02/2017       |
| FH-04  | 49,05          | 49,15        | Tephra                        | 21/02/2017       |
| FH-04  | 50,4           | 50,6         | Tephra                        | 21/02/2017       |
| FH-04  | 72             | 72,2         | Claystone Siltstone Sandstone | 21/02/2017       |
| FH-04  | 73,1           | 73,32        | Claystone Siltstone Sandstone | 21/02/2017       |
| FH-04  | 92,6           | 92,75        | Sandstone                     | 21/02/2017       |
| FH-04  | 93,1           | 93,3         | Claystone - Tephra            | 21/02/2017       |
| FH-04  | 100,85         | 101,05       | Ignimbrite                    | 21/02/2017       |
| FH-04  | 122,38         | 122,6        | Siltstone - Claystone         | 21/02/2017       |
| FH-04  | 124,65         | 124,85       | Siltstone - Claystone         | 21/02/2017       |

## Kleyfnitogstyrkur borkjarna úr borholu FH-04 mældur á rannsóknastofu Mannvits.

### Kleyfnitogstyrkur borkjarna

| Borhola | Dýpi<br>m     | Sýni<br>nr. | Þvermál<br>sýnis<br>mm | Hæð<br>sýnis<br>mm | Raki<br>% | Þurr rúmpyngd<br>kg/m <sup>3</sup> | Hámarks-<br>álag<br>kN | Kleyfni-<br>togstyrkur<br>MPa |
|---------|---------------|-------------|------------------------|--------------------|-----------|------------------------------------|------------------------|-------------------------------|
| FH-04   | 33,45-33,57   | 1           | 42,6                   | 12,9               | 13,6      | 1721,4                             | 0,58                   | <b>0,66</b>                   |
| FH-04   | 33,45-33,57   | 2           | 42,6                   | 17,0               | 13,7      | 1729,7                             | 0,97                   | <b>0,85</b>                   |
| FH-04   | 49,05-49,15   | 1           | 43,6                   | 15,5               | 18,0      | 1797,2                             | 1,66                   | <b>1,56</b>                   |
| FH-04   | 49,05-49,15   | 2           | 43,5                   | 13,8               | 17,4      | 1797,6                             | 0,31                   | <b>0,33</b>                   |
| FH-04   | 49,05-49,15   | 3           | 42,8                   | 16,0               | 18,0      | 1787,3                             | 0,86                   | <b>0,80</b>                   |
| FH-04   | 73,1-73,32    | 1           | 44,5                   | 15,4               | 17,3      | 1793,9                             | 2,25                   | <b>2,09</b>                   |
| FH-04   | 73,1-73,32    | 2           | 44,4                   | 15,9               | 16,4      | 1847,7                             | 1,69                   | <b>1,52</b>                   |
| FH-04   | 73,1-73,32    | 3           | 44,5                   | 26,8               | 16,7      | 1841,8                             | 2,15                   | <b>1,15</b>                   |
| FH-04   | 92,6-92,75    | 1           | 44,3                   | 22,3               | 17,6      | 1808,1                             | 1,90                   | <b>1,23</b>                   |
| FH-04   | 92,6-92,75    | 2           | 44,3                   | 21,7               | 17,4      | 1817,2                             | 1,68                   | <b>1,12</b>                   |
| FH-04   | 92,6-92,75    | 3           | 44,3                   | 30,2               | 17,8      | 1805,2                             | 1,99                   | <b>0,95</b>                   |
| FH-04   | 100,85-101,05 | 1           | 44,4                   | 19,9               | 19,3      | 1727,8                             | 1,44                   | <b>1,03</b>                   |
| FH-04   | 100,85-101,05 | 2           | 44,1                   | 21,7               | 19,3      | 1696,2                             | 1,02                   | <b>0,68</b>                   |
| FH-04   | 100,85-101,05 | 3           | 44,3                   | 16,2               | 17,1      | 1784,9                             | 0,55                   | <b>0,49</b>                   |
| FH-04   | 124,65-124,85 | 1           | 44,7                   | 16,7               | 16,0      | 1904,2                             | 0,64                   | <b>0,55</b>                   |
| FH-04   | 124,65-124,85 | 2           | 44,6                   | 20,8               | 16,1      | 1905,1                             | 1,08                   | <b>0,74</b>                   |
| FH-04   | 124,65-124,85 | 3           | 44,6                   | 18,4               | 16,4      | 1828,8                             | 0,85                   | <b>0,66</b>                   |

Athugasemdir: Það gekk illa að saga sýnin í rétta stærð skv. staðli. Sýni eru mjög viðkvæm og það brotnar og kvarnast úr þeim við sögun og slípun.

## Borhola FH-05

| Prófanir á bergstyrk borkjarna úr borholu FH-05 með PLT tæki /<br>Field test on core from borehole FH-05 - Point Load Test |                |              |                       |              |                          |                    |
|--|----------------|--------------|-----------------------|--------------|--------------------------|--------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type             | No. of Tests | I <sub>s(50)</sub> [MPa] | Apparent UCS [MPa] |
| FH-05  | 12             | 12,25        | Porphyritic Basalt    | 8            | 6,54                     | 105                |
| FH-05  | 22,54          | 22,81        | Ignimbrite            | 13           | 2,42                     | 32                 |
| FH-05  | 30             | 30,27        | Tholeiite Basalt      | 3            | 5,84                     | 92                 |
| FH-05  | 40,3           | 40,55        | Tholeiite Basalt      | 6            | 9,14                     | 157                |
| FH-05  | 45             | 45,5         | Tholeiite Basalt      | 3            | 9,76                     | 170                |
| FH-05  | 51,14          | 51,22        | Tephra Sandstone      | 6            | 0,51                     | 5                  |
| FH-05  | 62,95          | 63,3         | Olivine Basalt        | 9            | 8,95                     | 153                |
| FH-05  | 72,76          | 73,06        | Olivine Basalt        | 7            | 3,90                     | 57                 |
| FH-05  | 83,02          | 83,4         | Sandstone - Siltstone | 7            | 0,44                     | 4                  |
| FH-05  | 90,8           | 91,1         | Scoria Breccia        | 8            | 1,62                     | 20                 |
| FH-05  | 109,8          | 110,1        | Tholeiite Basalt      | 6            | 11,57                    | 208                |
| FH-05  | 118,25         | 118,75       | Tholeiite Basalt      | 7            | 10,95                    | 195                |
| FH-05  | 126,9          | 127,27       | Porphyritic Dyke      | 5            | 8,60                     | 146                |
| FH-05  | 141            | 141,36       | Porphyritic Dyke      | 8            | 9,32                     | 160                |
| FH-05  | 149,43         | 149,7        | Porphyritic Dyke      | 3            | 9,00                     | 154                |
| FH-05  | 158,72         | 159          | Porphyritic Dyke      | 9            | 8,12                     | 136                |
| FH-05  | 167,42         | 167,72       | Porphyritic Dyke      | 10           | 9,33                     | 161                |
| FH-05  | 180,22         | 180,5        | Porphyritic Dyke      | 8            | 7,92                     | 132                |
| FH-05  | 183,1          | 183,6        | Porphyritic Dyke      | 9            | 7,78                     | 129                |
| FH-05  | 194,8          | 195          | Porphyritic Dyke      | 8            | 9,57                     | 165                |
| FH-05  | 204,9          | 205,22       | Porphyritic Dyke      | 8            | 8,24                     | 138                |
| FH-05  | 221,95         | 222,35       | Porphyritic Dyke      | 4            | 9,31                     | 160                |
| FH-05  | 227,3          | 227,6        | Porphyritic Dyke      | 3            | 7,46                     | 123                |
| FH-05  | 243,15         | 243,45       | Porphyritic Dyke      | 5            | 11,19                    | 200                |
| FH-05  | 248,2          | 248,6        | Porphyritic Dyke      | 8            | 8,72                     | 148                |
| FH-05  | 260,73         | 261          | Porphyritic Dyke      | 4            | 7,55                     | 125                |
| FH-05  | 267,8          | 268,2        | Porphyritic Dyke      | 12           | 7,55                     | 125                |
| FH-05  | 288,1          | 288,45       | Porphyritic Dyke      | 3            | 14,84                    | 280                |

## Borhola FH-05

| Prófanir á frákastshörku borkjarna úr borholu FH-05 með PLT tæki /<br>Field test on rebound hardness on core from borehole FH-05 |                |              |                    |              |                         |
|--|----------------|--------------|--------------------|--------------|-------------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type          | No. of Tests | Average 'Rock Hardness' |
| FH-05  | 11,8           | 12           | Porphyritic Basalt | 11           | 49                      |
| FH-05  | 31,8           | 32,1         | Tholeiite Basalt   | 5            | 51                      |
| FH-05  | 38,8           | 38,9         | Tholeiite Basalt   | 4            | 60                      |
| FH-05  | 46,06          | 46,36        | Tholeiite Basalt   | 7            | 60                      |
| FH-05  | 64             | 64,2         | Olivine Basalt     | 9            | 54                      |
| FH-05  | 72             | 72,31        | Olivine Basalt     | 9            | 42                      |
| FH-05  | 93,64          | 93,88        | Tholeiite Basalt   | 10           | 49                      |
| FH-05  | 109,62         | 109,9        | Tholeiite Basalt   | 10           | 54                      |
| FH-05  | 118,72         | 119          | Tholeiite Basalt   | 10           | 58                      |
| FH-05  | 143,1          | 143,26       | Porphyritic Dyke   | 13           | 58                      |
| FH-05  | 151,3          | 151,45       | Porphyritic Dyke   | 9            | 56                      |
| FH-05  | 157,8          | 158,02       | Porphyritic Dyke   | 11           | 48                      |
| FH-05  | 166,45         | 166,75       | Porphyritic Dyke   | 14           | 49                      |
| FH-05  | 180,55         | 180,8        | Porphyritic Dyke   | 13           | 53                      |
| FH-05  | 183,22         | 183,5        | Porphyritic Dyke   | 14           | 52                      |
| FH-05  | 195,03         | 195,24       | Porphyritic Dyke   | 13           | 55                      |
| FH-05  | 205,22         | 205,37       | Porphyritic Dyke   | 13           | 55                      |
| FH-05  | 222,35         | 222,5        | Porphyritic Dyke   | 5            | 48                      |
| FH-05  | 227,6          | 227,9        | Porphyritic Dyke   | 10           | 54                      |
| FH-05  | 247,15         | 247,37       | Porphyritic Dyke   | 12           | 46                      |
| FH-05  | 259            | 259,3        | Porphyritic Dyke   | 7            | 48                      |
| FH-05  | 268,2          | 268,4        | Porphyritic Dyke   | 13           | 47                      |
| FH-05  | 287,1          | 287,4        | Porphyritic Dyke   | 6            | 48                      |



## Borhola FH-05

| Sýnataka úr borkjarna holu FH-05 til prófana á rannsóknastofu /<br>Core samples from hole FH-05 for laboratory tests |                |              |                       |                  |
|--|----------------|--------------|-----------------------|------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type             | Date of Sampling |
| FH-05  | 15,35          | 15,43        | Claystone             | 21/02/2017       |
| FH-05  | 19,9           | 20           | Claystone - Siltstone | 21/02/2017       |
| FH-05  | 24,85          | 24,95        | Claystone             | 21/02/2017       |
| FH-05  | 47,5           | 47,72        | Siltstone             | 21/02/2017       |
| FH-05  | 49,2           | 49,45        | Claystone             | 21/02/2017       |
| FH-05  | 53,35          | 53,58        | Siltstone - Sandstone | 21/02/2017       |
| FH-05  | 57,05          | 57,3         | Claystone - Siltstone | 21/02/2017       |
| FH-05  | 74,5           | 74,65        | Claystone             | 21/02/2017       |
| FH-05  | 83,5           | 83,65        | Claystone             | 21/02/2017       |

Kleyfnitogstyrkur borkjarna úr borholu FH-05 mældur á rannsóknastofu Mannvits.

| Kleyfnitogstyrkur borkjarna |             |             |                        |                    |           |                                    |                        |                               |
|-----------------------------|-------------|-------------|------------------------|--------------------|-----------|------------------------------------|------------------------|-------------------------------|
| Borhola                     | Dýpi<br>m   | Sýni<br>nr. | Þvermál<br>sýnis<br>mm | Hæð<br>sýnis<br>mm | Raki<br>% | Þurr rúmþyngd<br>kg/m <sup>3</sup> | Hámarks-<br>álag<br>kN | Kleyfni-<br>togstyrkur<br>MPa |
| FH-05                       | 15,35-15,43 | 1           | 44,0                   | 16,6               | 14,8      | 1843,3                             | 1,15                   | <b>1,00</b>                   |
| FH-05                       | 15,35-15,43 | 2           | 44,1                   | 15,2               | 15,1      | 1845,8                             | 1,14                   | <b>1,08</b>                   |
| FH-05                       | 19,9-20,0   | 1           | 43,9                   | 18,4               | 16,8      | 1812,5                             | 1,60                   | <b>1,26</b>                   |
| FH-05                       | 19,9-20,0   | 2           | 43,9                   | 13,6               | 17,0      | 1790,9                             | 1,89                   | <b>2,01</b>                   |
| FH-05                       | 19,9-20,0   | 3           | 43,7                   | 12,3               | 17,0      | 1777,8                             | 1,14                   | <b>1,35</b>                   |
| FH-05                       | 24,85-24,95 | 1           | 43,2                   | 20,9               | 19,8      | 1635,7                             | 1,23                   | <b>0,87</b>                   |
| FH-05                       | 24,85-24,95 | 2           | 43,0                   | 19,6               | 19,9      | 1621,3                             | 1,23                   | <b>0,93</b>                   |
| FH-05                       | 24,85-24,95 | 3           | 43,4                   | 24,1               | 18,9      | 1657,7                             | 0,92                   | <b>0,56</b>                   |
| FH-05                       | 49,2-49,45  | 1           | 43,9                   | 18,8               | 14,7      | 1642,1                             | 0,65                   | <b>0,50</b>                   |
| FH-05                       | 49,2-49,45  | 2           | 43,8                   | 21,6               | 14,3      | 1597,6                             | 0,64                   | <b>0,43</b>                   |
| FH-05                       | 49,2-49,45  | 3           | 44,0                   | 20,1               | 14,7      | 1631,3                             | 1,06                   | <b>0,76</b>                   |
| FH-05                       | 57,05-57,3  | 1           | 42,8                   | 16,0               | 13,5      | Náðist ekki að mæla                | 1,48                   | <b>1,37</b>                   |
| FH-05                       | 74,5-74,65  | 1           | 44,5                   | 20,7               | 13,4      | 1707,3                             | 2,46                   | <b>1,70</b>                   |
| FH-05                       | 74,5-74,65  | 2           | 44,5                   | 21,3               | 13,6      | 1695,3                             | 2,18                   | <b>1,46</b>                   |
| FH-05                       | 83,5-83,65  | 1           | 44,3                   | 24,0               | 13,3      | 1633,6                             | 1,36                   | <b>0,82</b>                   |
| FH-05                       | 83,5-83,65  | 2           | 44,2                   | 19,0               | 14,1      | 1669,2                             | 1,22                   | <b>0,92</b>                   |
| FH-05                       | 83,5-83,65  | 3           | 44,0                   | 20,7               | 15,5      | 1671,2                             | 0,99                   | <b>0,69</b>                   |

Athugasemdir: Það gekk illa að saga sýnin í rétta stærð skv. staðli. Sýni eru mjög viðkvæm og það brotnar og kvarnast úr þeim við sögun og slipun.

## Borhola FH-06

| Prófanir á bergstyrk borkjarna úr borholu FH-065 með PLT tæki /<br>Field test on core from borehole FH-06 - Point Load Test |                |              |                                |              |                          |                    |
|---|----------------|--------------|--------------------------------|--------------|--------------------------|--------------------|
| Borehole  | Depth From [m] | Depth To [m] | Rock Type                      | No. of Tests | I <sub>s(50)</sub> [MPa] | Apparent UCS [MPa] |
| FH-06   | 2,36           | 2,8          | Tholeiite - Porphyritic Basalt | 7            | 8,22                     | 138                |
| FH-06   | 2,36           | 2,8          | Tholeiite - Porphyritic Basalt | 7            | 7,44                     | 122                |
| FH-06   | 8              | 8,33         | Tholeiite - Porphyritic Basalt | 7            | 10,70                    | 190                |
| FH-06   | 12,55          | 13           | Olivine Basalt                 | 8            | 7,83                     | 130                |
| FH-06   | 15,63          | 15,86        | Porphyritic Basalt             | 8            | 3,06                     | 42                 |
| FH-06   | 18,1           | 18,64        | Scoriaceous Basalt             | 16           | 1,28                     | 15                 |
| FH-06   | 21,75          | 22,2         | Tholeiite Basalt               | 5            | 12,12                    | 220                |

## Borhola FH-06

| Prófanir á frákastshörku borkjarna úr borholu FH-06 með PLT tæki /<br>Field test on rebound hardness on core from borehole FH-06 |                |              |                    |              |                         |
|--|----------------|--------------|--------------------|--------------|-------------------------|
| Borehole   | Depth From [m] | Depth To [m] | Rock Type          | No. of Tests | Average 'Rock Hardness' |
| FH-06  | 2,05           | 2,36         | Tholeiite Basalt   | 15           | 55                      |
| FH-06  | 7,8            | 8            | Tholeiite Basalt   | 9            | 57                      |
| FH-06  | 12,8           | 13           | Olivine Basalt     | 11           | 55                      |
| FH-06  | 15,4           | 15,6         | Porphyritic Basalt | 8            | 41                      |
| FH-06  | 22,3           | 22,5         | Tholeiite Basalt   | 10           | 55                      |

Á næstu síðu er yfirlit yfir bergsýni sem tekin voru til prófana á rannsóknastofu MANNVIT.

