THE STATE ELECTRICITY AUTHORITY (S.E.A.)

BÚRFELL

GENERAL GEOLOGY

by

Dr. Thorleifur Einarsson, geologist
The University Research Institute
and
Fil. cand. Haukur Tómasson, geologist, S.E.A.

Reykjavík, May 1962.

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PREFACE

This report on the geology of the Búrfell area is based on field work carried out by Thorleifur Einarsson during the summer 1960 and subsurface exploration in the year 1961 under supervision of the undersigned. During the mounths June-August the latter was assisted by geology student Elsa G. Vilmundardóttir who did field logs of drillholes and also some detailed geological mappings, which are partly included in the geological map herewith.

Reykjavík, 6th April 1962.

Haukur S. Tómasson

FJÖLRITUNARSTOFA
DANÍELS HALLDÓRSSONAR
REYKJAVÍK

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F I G U R E S

BÚRFELL
GENERAL GEOLOGY

1. -1. Introduction

The oldest rocks in Iceland, outcropping mainly in Eastern- and Western-Iceland, are of early Tertiary age ; the Tertiary-Plateau-Basalts or TPB.

Discordant on the TPB lies a formation of grey basalts, Die Graue Stufe (GS) with intercalated tillites, probably of late Tertiary age.

In the Central Icelandic Graben, which cuts through the Middle of Iceland from north to south, there is a formation of basalts with much intercalated sediments - the Hreppar-formation - of Pleistocene age and the Palagonite-Tuff -Formation, which is mainly built up beneath glaciers (i. e. subglacial) during the Glacials.

In Late Glacial Times and in the Holocene there have been formed thick layers of moraines, fluvioglacial, fluviatile and deltaic deposits, loessy (eolic) soils and volcanic ashes and last but not least lavas and pyroclastics.

1. -2. Hrepparformation

The oldest series of the Búrfell area belong to the Pleistocene Hrepparformation. It forms the hills and mountains west of the Thjórsá-river. In Búrfell the Hrepparformation (HF) devides into 4 series :

1) The Búrfell Basalt -Series (BS) -(oldest)
2) The Búrfell Sedimentary-Series (SS)
3) The Búrfell Middle - Doleritic - Series (MD) and
4) The Búrfell Pillow -Lava - Series (PS) (youngest)

1.-2.1 The Búrfell Basalt-Series (BS)

In the lowest slope of southwestern Búrfell (Búrfellsskógur) a series of thin basalt lava layers outcrops with some few and generally thin sedimentary or/and pyroclastic interbeds. In other parts of the mountain these series (BS) are not visible because the dip of the layers to NE.

This Búrfell-Basalt-Series have at least a thickness of 150 m. The basalts are dark, dense and nonporphyritic. Most of the layers show columnar joints and irregular scoriaeous bottom breccia. A typical section of these series is on profile 1 and in drillholes BH 7, BH 8 and BH 9, which were drilled at the proposed power house and tailrace tunnel.

1.-2.2 The Búrfell Sedimentary-Series (SS) can be divided into 3 subdivisions or members.

a. The lower sediment, SS_a

b. The intercalated lava layers, SS_b and

c. The higher sediments, SS_c

The whole thickness of the Búrfell Sedimentary-Series is in southern Búrfell ca. 100 m, but in the middle and northern Búrfell more than 200 m. A discordance must be somewhere between BS and MD (i.e. the Middle Doleritic Basalts), perhaps inside the SS.

SS_a consists of more or less bedded and often cross bedded conglomerates, sandstones, siltstones and varved-claystones. The facies of this sedimentary beds are changing from place to place in Búrfell. The lowest part of SS_a in SW of Búrfell consists of ca. 20 m thick boulder conglomerate and above lies a 20 m thick bed of finer conglomerates, sandstones and tuffsandstones (i.e. rebedded tuff). In drillhole BH 5 the corresponding beds consist of conglomerates and varved-claystones. The SS gradually thickens to the NE. In drillhole BH 5 there are 3 thin basalt lava layers and a 20 m thick bed of pillowy basalt.

The SS_b is made of basalt lava layers varying highly in thickness and number. In the south of Búrfell (profile 1) there are three lava layers, south of Midgil (profile 2) there are ca. 10 layers, but in Skálarfell (profile 5) and in drillholes BH 14 at least 2. In the eastern part of Búrfell the basalt layers seem to be at least 2. Beneath the lower layers of this there is a sheet of pillowy lava, which could be a part of the lower lava layer.

At the beginning of sedimentation of SS_a there was probably a higher elevation to the south and the sediments are therefore coarser there than farther north.

In the middle parts of Búrfell and especially in the middle eastern parts, there has obviously been a lake. The situation farther north is unknown.

A depression in the middle and northern Búrfell has more or less been filled by lava flows forming the intercalated basalt layers (SS_b). This basalt varies from dense basalt with glassy groundmass to fine grained porphyritic basalt.

The higher sediments (SS_c) were formed when higher elevation was to the north of the Búrfell area and seems to be an alluvial fan, that was evidently built up on the lavaplain of SS_b-lavas and therefore this fanglomerates are much thicker and coarser at Sámstadaklif (BH-14 ; 60 m thick) than in southern Búrfell (profile 1 ; 5 m thick).

In the highest beds of SS_c are numerous rhyolitic pebbles which decrease in number to the south.

Often irregular basaltic intrusions veins or/and small dikes are present in the sediments.

<u>1.-2.3 The Middle Doloeritic Basalts (MD)</u> are two lava-layers which can be followed around the whole of Búrfell and Skálarfell and perhaps in the mountains to the north. These layers vary highly in thickness and are much thicker in the east (70 m) than in the west (20 m).

The rock is medium grained gray (doleritic) basalt. These lava layers are generally columnar jointed but in the north they tend to be irregular cube jointed and brecciated. No interbed is seen between the layers but at the contacts they are often scorious and locally pillowy.

These MD layers are probably a part of a somewhat thicker basalt series on the top of the mountains north of Búrfell (Sámstadamúli, Skeljafell, Stangarfjall, Sandafell). The dip is variable from place to place according to following reasons: a) The layers are lava-flows with a primary slope of such layers flowing in a pre existing landscape, b) to the different thickness of the lavas, c) but mainly it comes from a tectonic movement. The dip seems to be 2,3° ± 0,2 N 60°E, perhaps decreasing to north and east.

1.-2.4 The Búrfell Pillow Lava Series (PS) form the top of Búrfell and Skálarfell. These series are mostly pillow-lava and volcanic breccia. The volcanic breccia dominates especially in the northern part. A tillite-bed is usually intercalated between the pillow-lava and the underlying MD lava, which is smoothed but striaes were not observed. The PS is formed subglacial or/and englacial as the lava extruded beneath a glacier. In PS are many small basaltic intrusions and veins. The greatest thickness of the pillow lava is about 300 m.

The lavas of the oldest series (BS and SS_b) could be flown from a long distance, but for the very thick Pillow Lava Series, the case will be different. It is probably extruded in Búrfell itself, from a fissure that is cutting the mountain from south-west to north-east. The only dike cutting the MD is in that fissure in Fremstagil and lies probably beneath the crest of the mountain to the NE.

1.-2.5 Intrusions. In the Hreppar-formation rhyolitic intrusions are found. The greatest rhyolitic intrusions in vicinity of Búrfell are those of Fossárdalur valley (Fossalda, Stangarfjall and Rauðu-skriður) and Skeljafell. In Sámstadaklif east of the main fault there is outcroping a small rhyolitic (obsidian) bed. It was not traced in drillhole BH-14 a short distance west of the fault.

1.-2.6 Tectonic. The main tectonic direction in Búrfell area, as generally in southern Iceland is the very prominent NNE - SSW direction. Most of the fractures are apparently only fissures but other are normal faults (graben tectonic). Such tensions fractures have often been used as feeder dikes.

Still more prominent in Búrfell and Skálarfell is the N 60°E tectonic direction. There are at least 5 such faults in Búrfell. The most prominent one is the Thjófagil-Midgil fault, which is a strike-slip-fault (tear fault). In some of this strike-slip-faults, there was also a vertical movement (a dip-slip-strike-fault). On many of the fault-surfaces clear slickensides are to be seen.

In many places in the sediments and especially in the finer one, cleavages are seen in the same directions as the faults.

In Southern-Iceland earthquakes are frequent and in the last centuries there had occured some rather strong earthquakes. The last ones in 1896 and 1912. The epicentrum of the first was probably 15 km west of Búrfell and of the second ca. 15 km south of it. The magnitude of this earthquakes was approximately 7.

1.-3. Palagonite - Tuff Formation

The mountains east of Rangá-river (The Hekla-massiv)were mainly built up beneath the glaciers of the last Glacial and consists of volcanic-breccia and pillow lava. Inside our area where is only one mountain, Saudafell, with its western extension Saudafellsalda, of this formation. It consist mainly of very loose porous pillow lavas and volcanic breccias.

Saudafellsalda is covered with a dense and tight tillite. The Rangá river has in late postglacial times eroded the tillite-cover in some places at the river-side.

1.-4 Evidents of last Glacial

The whole Búrfell-area was overrun by the glaciers in the last Glacial, as is apparent from numerous rochs moutonnées, striaes and erratic boulders. The striation indicates a movement to the west-southwest. Also the consolidated morainic cover of Saudafellsalda is of this age. No workable morainic or clay deposits have been found in the Búrfell-area or in the vicinity.

1.-4.1 Late Glacial alluvial deposits.

Along Fossá, below Hjálp, and Thjórsá south of Búrfell are extensive sand plains, probably of Late Glacial age. The surface elevation of this sand flats reaches 130 m at Trjávidarlækur. This is mostly fine and medium sand with a few thin gravel-horizons.. The sand is generally unconsolidated but the surface layer, 2 or 3 m, are semented by bog iron. A hole was drilled in this sand deposits at Trjávidarlækur BH 16. The thickness of the deposits was more than 20 m but the bottom layers of the sand was not reached.

This alluvial deposits are probably built up as a delta or/and aggradation by braided streams in Late Glacial Times as the sea-level was standing as high as 110-120 m higher than today in the vicinity of Búrfell.

The crust was depressed by the load of the great glacial ice sheets, but according to the lag of the isostatic movements, there was formed higher strandlines in Southern-Iceland in the Late Glacial, i.e. 13000-10000 years B.P. (Before Present). The isostatic recovery was very rapid and the present sealevel was reached already for 9-8000 years B.P.

1.-5. The Holocene Lava flows

The Holocene lave flows in Búrfell-area can be divided into two groups.

a) The Thjórsá-lavas
b) The Hekla-lavas

1.-5.1 The Thjórsá-lavas. In the drillholes on the profile line between Búrfell over Tröllkonuhlaup to Saudafellsalda (east of Rangá river) we have evidently 7 lava sheets, i.e. perhaps 7 different lava flows, but one of these lavasheets could be an overflow.

The distinction of the different lava sheets can be made through: 1) the different size and number of feldsparphenocrysts, 2) the colour of the lavarock, 3) the interbeds which lie between the lava sheets, 4) high permeability and much grout-take of the contacts of the different lava flows.

The phenocrysts are varying in number in a way shown in fig. 1.-6. The lava VI has occasionally great clusters of phenocrysts. The phenocryst have still not been studied.

As is indicated on fig. 1.-6 the groundmass of the different Thjórsá-lavas becomes darker with the age, i.e. the groundmass of the uppermost lava sheet is macroscopically grey but in the deeper ones it becomes darker; in the deepest lava flow it is bluish-grey.

The interbeds consists generally of loose sands, gravels and loessy soils. Between all of the lava flows there are interbeds except between V and VI there are none. Between the lava flows I and II there are thick layers of rhyolithic Hekla-pumice. The contacts are also clearly indicated in the drillholes from the high permeability and much grout-take, as can be seen from the drillhole profile BH-2, BH-1, BH-4 and BH-6. The lava contacts are also apparent in the core recovery.

The Thjórsá-lavas have been poured out from fissures (crater-rows), which strike NNE-SSW and cross Tungnaá-river at Hófsvad west of Vatnaöldur, ca. 50 km from Tröllkonuhlaup.

The Thjórsá-lavas have flown down the riverbed of the Tungnaá and Thjórsá-rivers. All of them have flown in Holocene time (i.e. post-glacial). It seems probably that all of them, except the second oldest, have ended short south of Búrfell as indicated by some lavaedges south and southwest of the mountain.

All the lava flows seems to be found in the drillhole BH-4. Only the second oldest Thjórsá-lava (VI) has flown further. It has flown in the riverbed of Thjórsá- and Hvítá-river to the coast between the present mouth of this rivers. This lavaflow is over 130 km long and covers an area of 770 km^2.

The age of the second oldest Thjórsá-lava (VI) is according to C_{14}-datings of a peat layer beneath the lava at Thjórsá-bridge ca. 8000 B.P.

The youngest Thjórsá-lava (I) has flown like the older ones in the riverbed of Tungnaá and Thjórsá. But as the older Thjórsá-lavas east of Búrfell had filled the valley to the height of the Raudá-gap a part of the youngest lava flow succeeded in flowing through the gap to the Thjórsárdalur-valley and spread to the present Thjórsá-river and perhaps came in contact with the lava, that had flown around Búrfell in the riverbed of Thjórsá. The lava-stream, which has flown through the Raudá-gap met water-soaked land in the valley floor and there was therefore formed the pseudocraters Raudhólar.

The Thjórsá-river north of Tröllkonuhlaup flows now in the bed of the lava river of the youngest Thjórsá-lava (I).

The youngest Thjórsá-lava overlies the Hekla-thephra layer H_4 (= 4000 B.P.) and underlies the Hekla-thephra layer H_3 (= 2700 B.P.) and is therefore younger than 4000 and older than 2700 years old.

Previous to the oldest Thjórsá-lava-flow, the valley floor east of Búrfell was at similar elevation as the floor of the Thjórsárdalur-valley west of it. So it can be said with reason that all the head in Thjórsá at Búrfell is created by the Thjórsá-lavas during the period 9000-3000 years B.P.

The total thickness of the Thjórsá-lavas at Búrfell is 95-100 m.

1.-5.2 Hekla volcanism. The famous volcano-ridge Hekla (1491m) lies 11 km SE of Tröllkonuhlaup. The present volcanism of Hekla seems to start 6600 B.P. as indicated by tephrachronological studies. Hekla has been a great producent of pyroclastics, volcanic ashes and lavas. Only one of the Hekla lavas - Sölvahraun - has reached into the Búrfell area (in the scope of this report). This lava has flown from the east, north of Saudafell, and overlies the youngest Thjórsá-lava (I). The westernmost part of the lava-flow has flown down to the sources of Rangá-river in Rangárbotnar eystri, along the Saudafellsalda.

The volcanism of Hekla shows a typical periodicity. Each cycle started with a violent rhyolitic initial-eruption, followed by less powerful andesite- and basalt - eruptions. There seems to be 4 such cycles. The first cycle started 6600 years B.P. (the tephra layer H_5), the second ca. 4000 B.P. (H_4), the third 2700 B.P. (H_3) and the last (H_1) 860 years ago, i.e. 1104 A.D. which wasted the habitation in the district of Thjórsárdalur. All this tephra layers have been carried to the north.

Since 1104 A.D. there have been ca. 15 eruptions in the Hekla, the last one 1947-´48.

In the Búrfell area, especially on the Thjórsá lavas and in the lower slopes of the mountains, there are thick layers of primary and rebedded tephra. The talus of Búrfell and the mountains in the vicinity consists mainly of rebedded pumice which locally can be 30 m thick.

Typical sections through this tephra soil are shown on fig. 1.-7.1 to 1.-7,3. The thickest layer is H_3 that mainly forms the pumice-flats (vikrar) on the lavas around Tröllkonuhlaup (Haf). The thickness of this pumice-layer is at the lower damsite about 7 m and it corresponds approximately to the axis of the tephra sector. In northern Iceland, 200-300 km away from Hekla this layer is still 10 cm thick. As previously mentioned H_4, the second thickest tephra layer underlies the youngest Thjórsárlava and had a similar sector as H_3.

The pumice of H_1 often forms the surface layer today.
The ash-sector was similar to the two previously mentioned,

1.-6. Soils

Because of the neighbourhood to Hekla the loessy soils in the Búrfell area is unusually rich in colcanic ashes and pumice and this fact unfavours the use of these soils as impervious material in fill dams both because the pumice increases the permeability and decreases the unit weight.

An extensive wind erosion (deflation) has taken place in the vicinity of Búrfell in the last centuries and has completely removed the loessy soils in extensive areas around Búrfell. But at the same time the remains of the loessy soils south of Búrfell have thickened very rapidly, especially at Galtalækur og Skarfanes (12 km from Tröllkonuhlaup). At these localities the thepra layers are not so numerous as at Búrfell and usually much thinner. Also due to the faster thickening of the loessy soils there during the last two centuries, the ash content has become much lower.

1.-7. Geomorphology and summary

The major relief forms in the Búrfell area are mainly formed in two ways: 1) built up by voncanic activity 2) a) erosion fluviatile and glacial, b) marine abrasion.

The Hrepparformation was built up as a continental facies in the early and middle Pleistocene. The fairly horizontal layers of sedimentary beds and basalt lava flows are formed in a landscape. In this formation there also exists smaller intrusions of basalts (dikes and sills) and rhyolites. This formation has been strongly eroded by rivers and glaciers in the late Pleistocene. The present landscape have been eroded along the main tectonic lines (N 30° E) of Southern-Iceland. In the Búrfell area we have two old valleys, i.e. the valleys of the Thjórsá- and Fossá-rivers. Between them lies the Búrfell and the mountains north of it as erosion remains. Also some marine erosion have taken place in Late Glacial Times in Búrfell and especially south of it.

Also along the N 60° E tectonic direction there have been some erosion in the Búrfell area (i.e. Sámstadaklif and Raudá-gap).

In the last Glacial there have been built up subglacial ridges of palagonite tuff breccias and pillow-lava in the area east of Thjórsá. This ridges have hardly suffered any river erosion because they are too pervious as to admit any surface run-off.

The Thjórsá-lavas have changed the drainage pattern of Southern-Iceland, i.e. it has almost filled the valley of the Thjórsá river east and north-east of Búrfell and created the head in Thjórsá at Búrfell. Probably in the times previous to the first Thjórsá-lava-flow (VII) the river has flown in the river-bed of Rangá river, but has then been diverted to the west by this lava flow. The second oldest (VI) lava has then flown in this "new" river course all the way to the coast. Since that time no radical changes have taken place in the river systems.

Fig. 1-1

Geological Map of the Búrfell area

Hreppar Formation:

Unspecified Hrepparformation, mainly basalts

The Búrfell Basalt - Series (BS)

The Búrfell sedimentary series (SS)

The Búrfell middle - doleritic - series (MD)

The Búrfell pillow-lava-series (PS)

Rhyolit

Palagonite - Tuff Formation:

Pillow - lawa, Breccia and Tuff, usually with a Tillite cover.

Holocene:

Alluvial deposits

Lavas, One Hekla lava and Thjórsá lavas I and II

$H_3 \sim 7$ m approximate Thickness of Thepra layer H_3

Strike-slip-faults (Wrench-fault, tear Fault)

Other faults

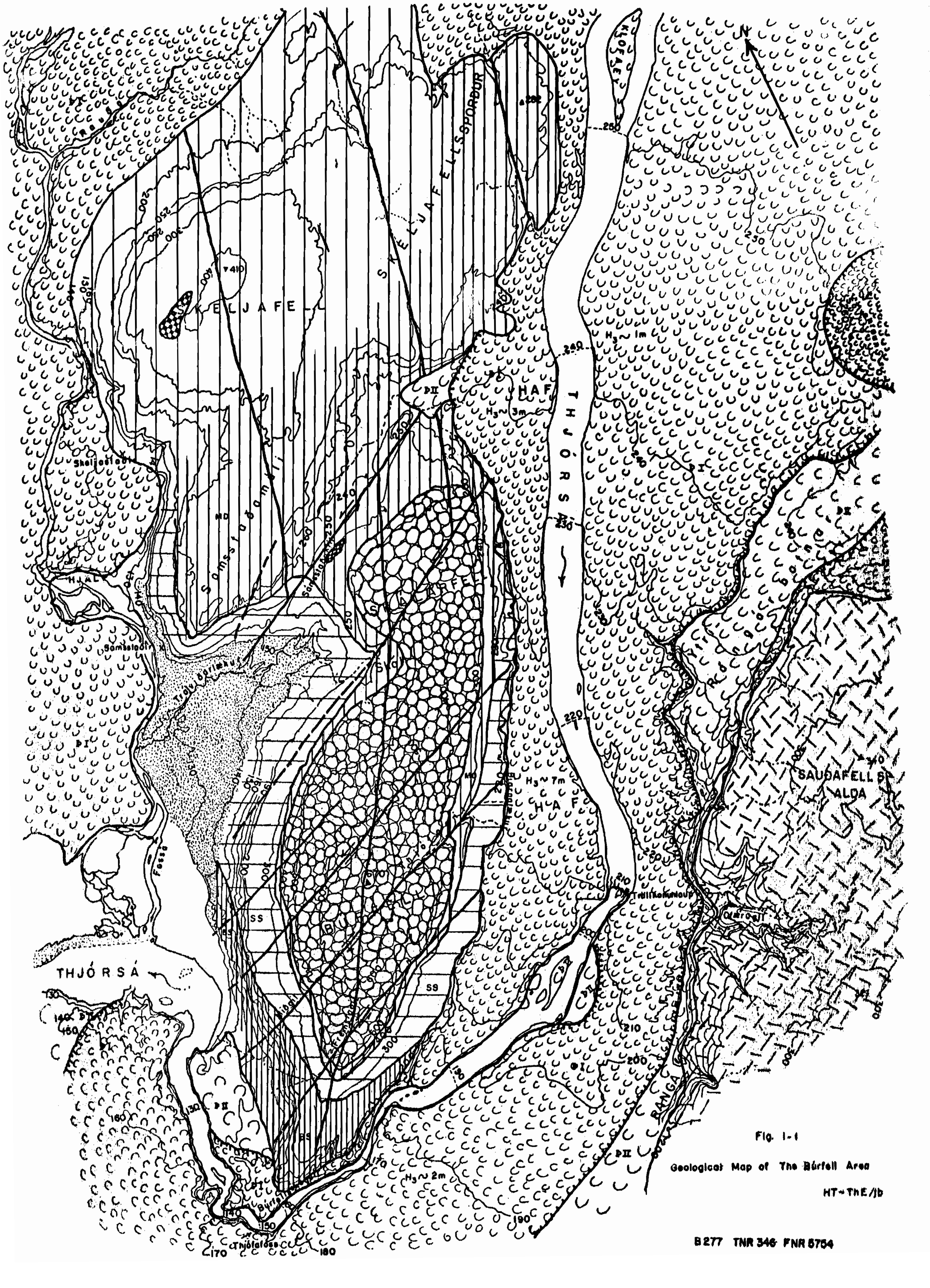


Fig. 1-1

Geological Map of The Búrfell Area

HT-ThE/Ib

B277 TNR 346 FNR 5754

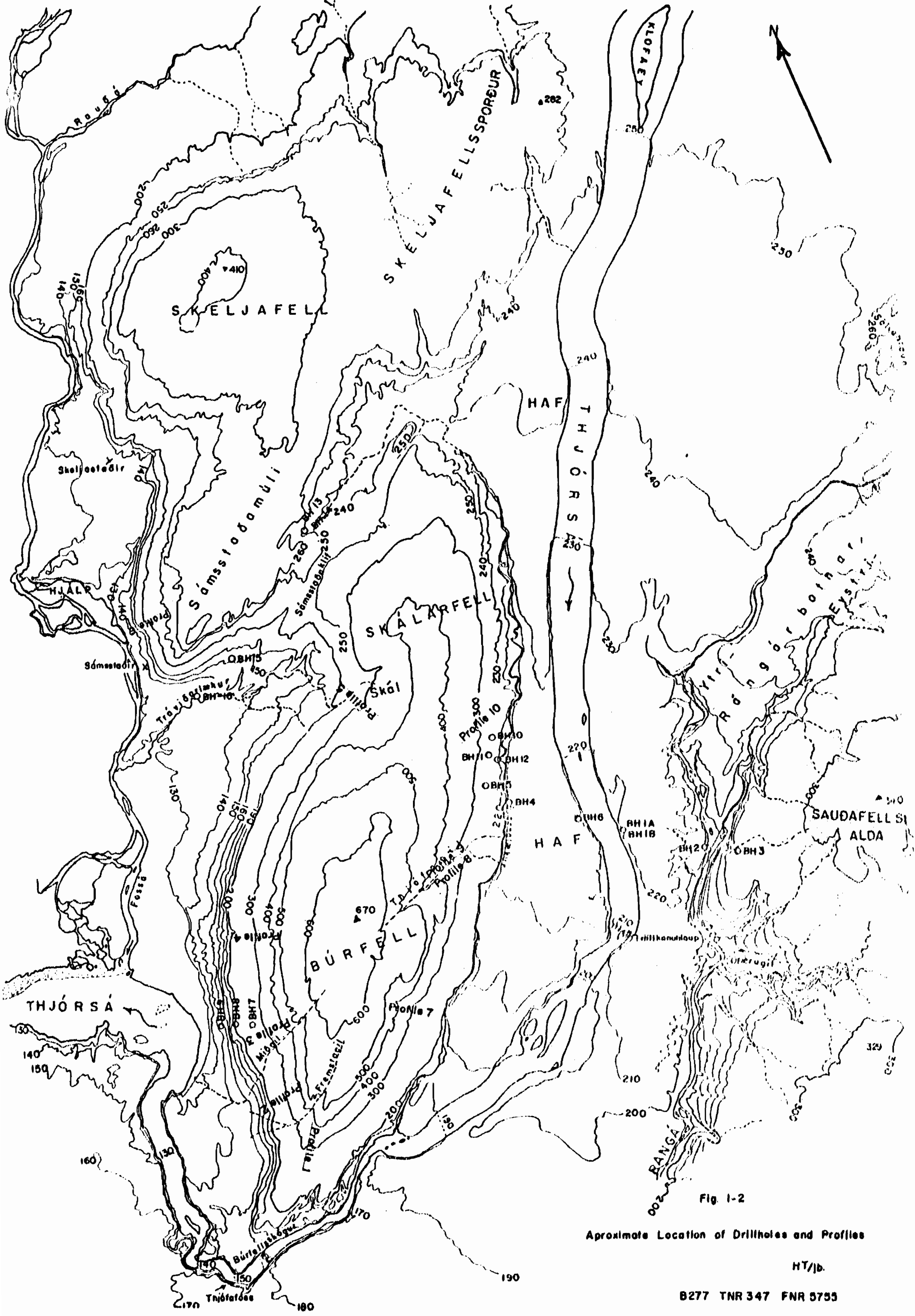


Fig. 1-2

Aproximate Location of Drillholes and Profiles

HT/Jb.

B277 TNR 347 FNR 5755

Tákn á þverskurðum – Symbols on profiles

Óharnað – unconsolidated

- Fokjarðvegur - loessy soil
- Mór - peat
- Lífræn leðja - organic silt
- Hvarfleir - varved clay
- Deigul mór -
- Siltur - silt
- Sandur - sand
- Möl - gravel
- Steinar - boulders
- Jökulurð - moraine
- Grófur vikur - coarse lapilli
- Fínn vikur og aska - ash and fine thepra

Millistig eru táknuð með því að setja saman tvö eða fleiri af ofangreindum táknum.

Mixed symboles are made by combining two or more of above liested symbols.

Harnað – consolidated

Set-sediments

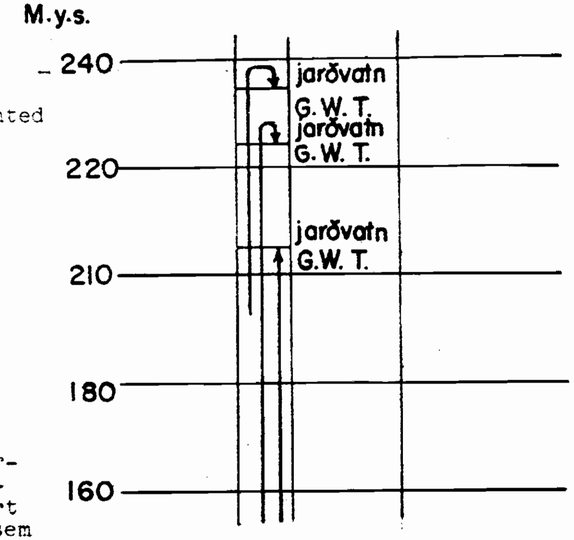
- Siltsteinn - siltstone
- Hvarfleir - varved claystone
- Sandsteinn - sandstone
- Völuberg - conglomerate
- **Þursaberg** boulder conglomerate
- Jökulberg - tillite
- Tuff - tuff

Eldfjallamyndanir – Igneous rocks

- Blágrýti, grágrýti - basalt, dolerit
- Kubbaberg - cube jointed basalt
- Bólstraberg - pillow lava
- Basalt hreunbasalt lava
- Þursaberg - breccia
- Tuff - tuff
- líparít - **rhyolit**

Athugasemd um jarðvatn á borholuþverskurðum. Jarðvatnsborð er sýnt með striki þvert yfir dálkinn í þeirri hæð, sem jarðvatnið stóð, þegar það er athugað. Við jarðvatnsstrikið endar ör, en leggur hennar nær þangað niður sem borun var komin, þegar breyting varð á jarðvatni. Ef enginn breyting varð á jarðvatni meðan á borun stóð nær leggur örvarinnar til botns. Þegar mörg jarðvatnsborð eru í holu er örvunum raðað frá vinstri til hægri í sömu röð og tilsvarandi jarðvatnsborð komu fyrir í borun.

Remarks on ground water table in drillholes profiles. Ground water tables are indicated with a horizontal line across respective column in the elevation it was observed in drilling. An arrow point is at this line but the leg of the arrow reaches the elevation which drilling stood when a change in ground water table was observed. If no change is observed the leg reaches to the bottom. When many ground water tables are observed in drilling the arrows are arranged from left to right in the same order as respective ground water tables was observed in drilling.



Dæmi um jarðvatnsmerkingu. Fyrst er jarðvatn fundið í hæð 235. Þegar komið er niður í hæð 193 í borun hefur jarðvatnsyfirborð breyzt og er komið niður í hæð 225.
Þegar komið er niður undir 154 í borun hefur jarðvatnsborð breyzt og er í hæð 205 o.s.frv.

Example of signatures for ground water tables: Ground water table is first observed at elev. 235. When drilling has proceeded down to elev. 193, a change is observed and a ground water table is observed at elev. 225. When drilling has proceeded down to elev. 154 a ground water table is observed at elev. 205 e.t.c.

Fig. I.-3.	RAFORKUMÁLASTJÓRI Orkudeild BOROMETER-PROFILES AND DRILLHOLES ON THE WESTSIDE OF BÚRFELL FROM N.-S.	6.3.'62 Th.E.H.T./O.H. TNR. 336 B-277 Fnr. 5664

The symbols are the same as on drillholes profiles

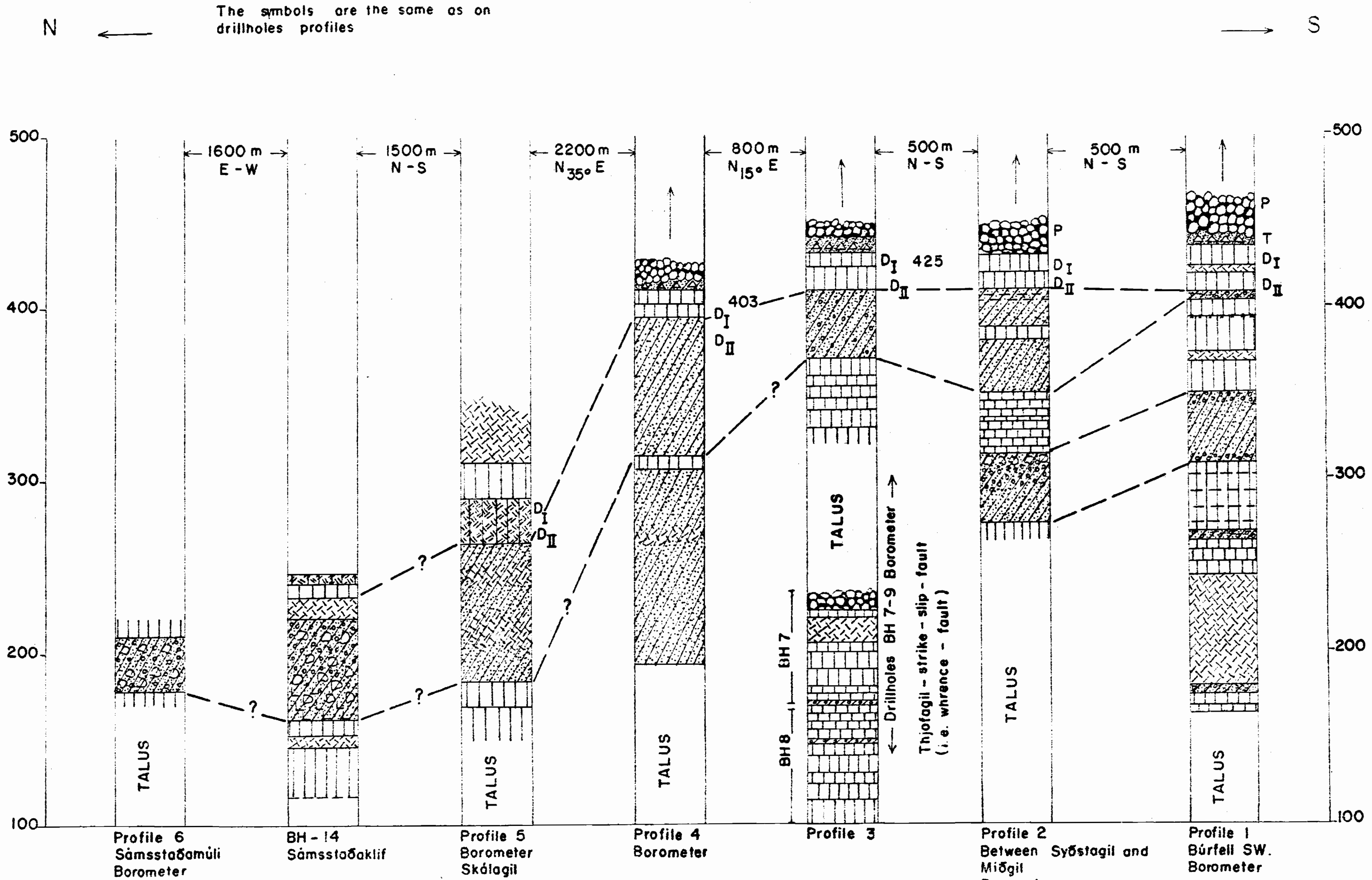
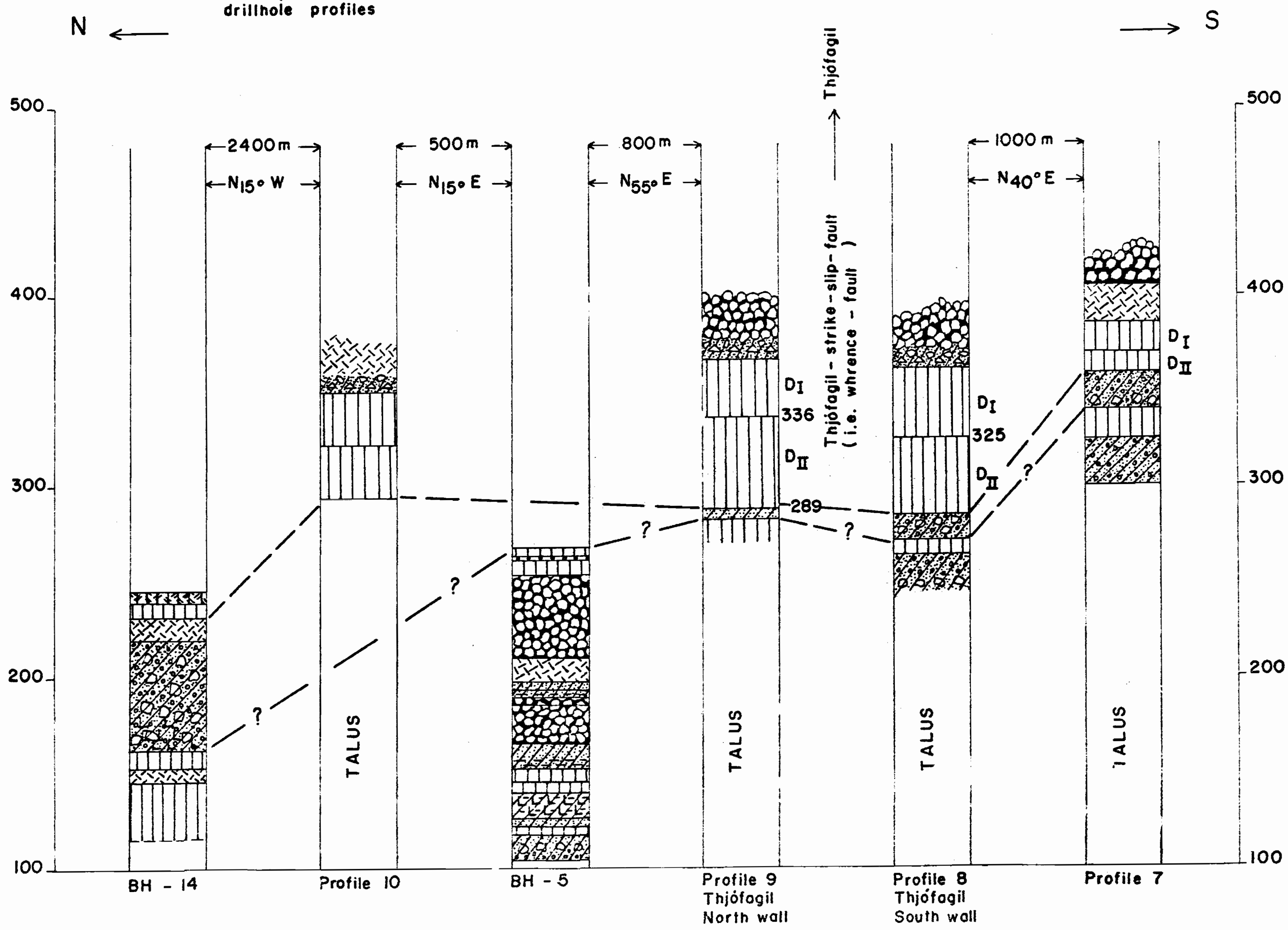
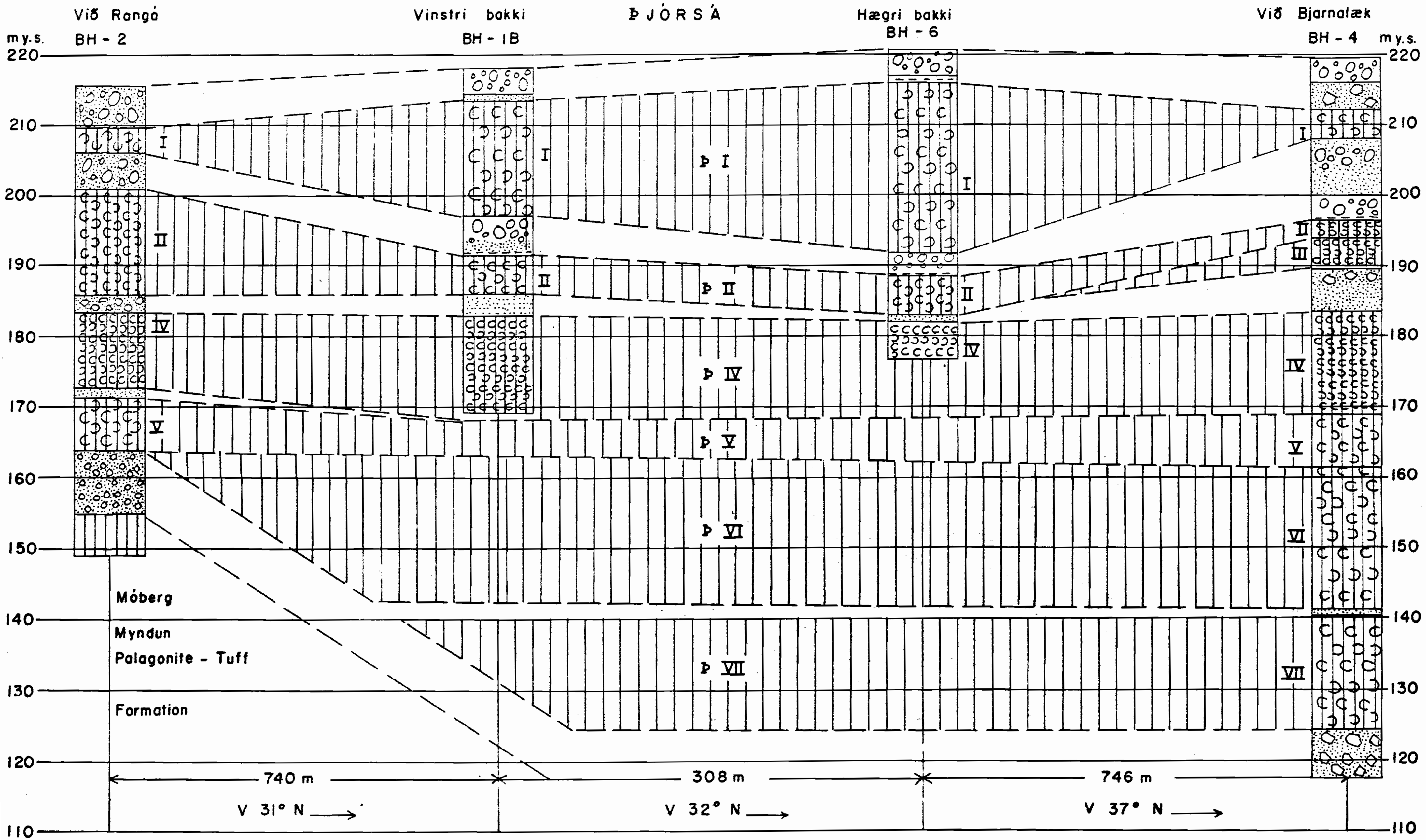


Fig. 1-4	RAFORKUMÁLASTJÓRI Orkudeild BOROMETER-PROFILES AND DRILLHOLES ON THE EASTSIDE OF BÚRFELL FROM N-S	14.3.62 Th.E.H.T./O.H. TNR. 335 B - 277 FNR. 5662

The symbols are the same as on drillhole profiles



Mynd Fig.	I - 5	RAFORKUMÁLASTJÓRI Orkudeild BÚRFELL Borholur Drillholes BH-2, BH-1B, BH-6 og BH-4	26.3.62 HT./O.H. Tnr 337 B - 217 Fnr. 5667

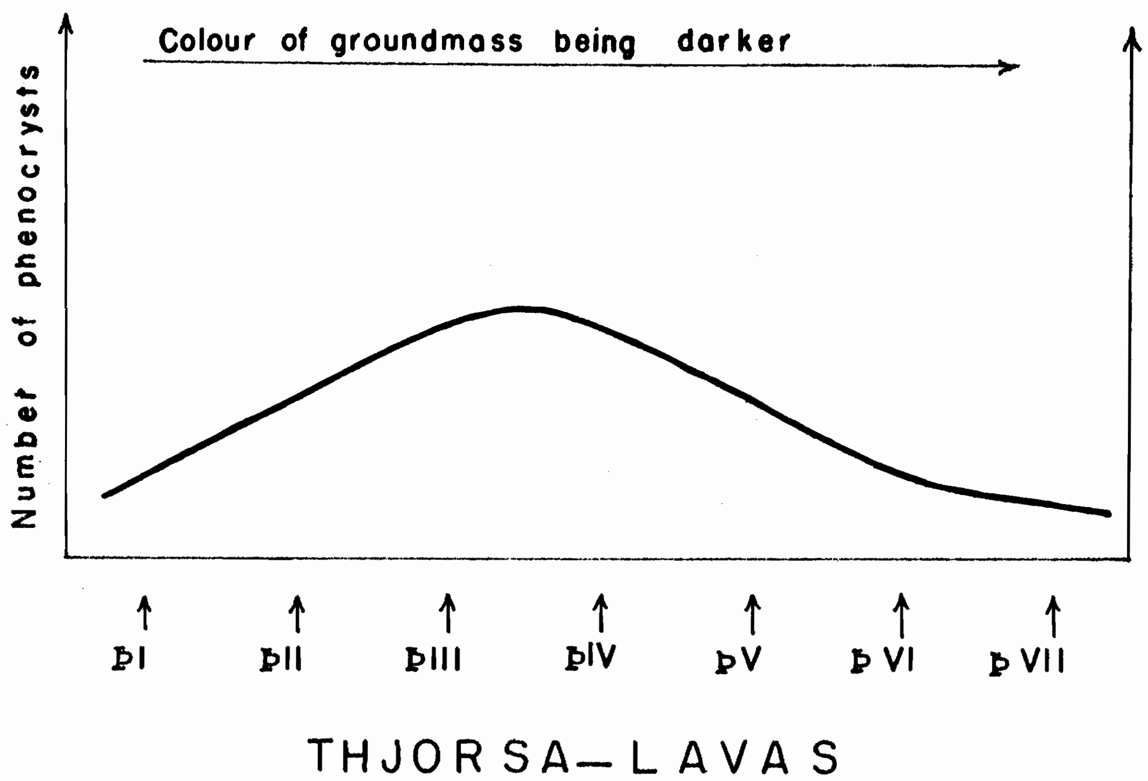


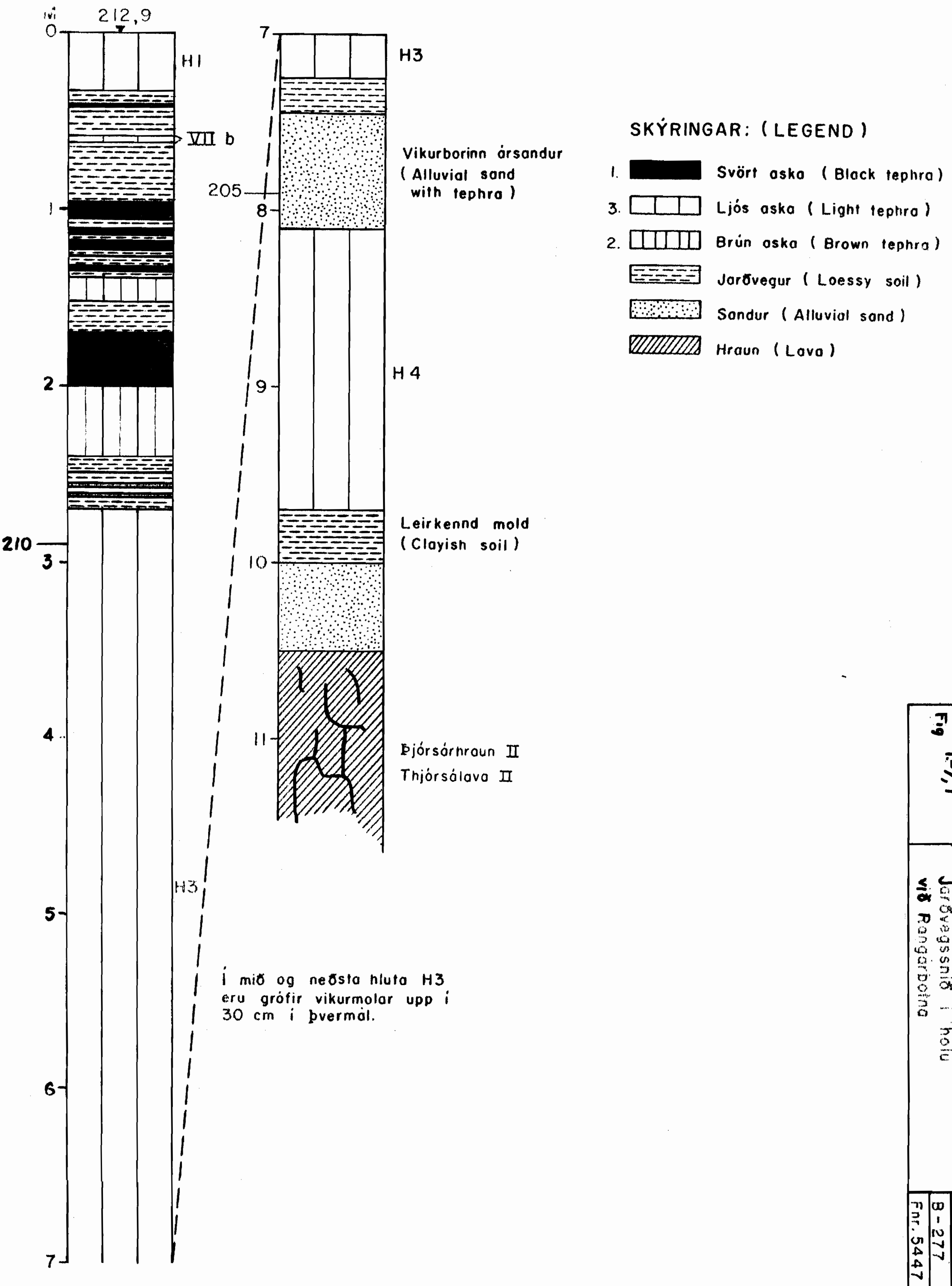
Borholur í Þjórsárhraunum milli Búrfells og Sauðafellsöldu, megindrættir.
Drillholes in the Thjórsálavas between Búrfell and Sauðafellsalda, schematic interpretation.

Mynd Fig. 1 - 6	RAFORKUMÁLASTJÓRI Orkudeild NUMBER OF PHENOCRYSTS.	26.2.62 HT/ PJ TNR. 332 B— 277 FNR. 5647

Number of phenocrysts and colour of groundmass in the different Thjorsá-lavas.

This diagram shows only the general trend and is not accurate.

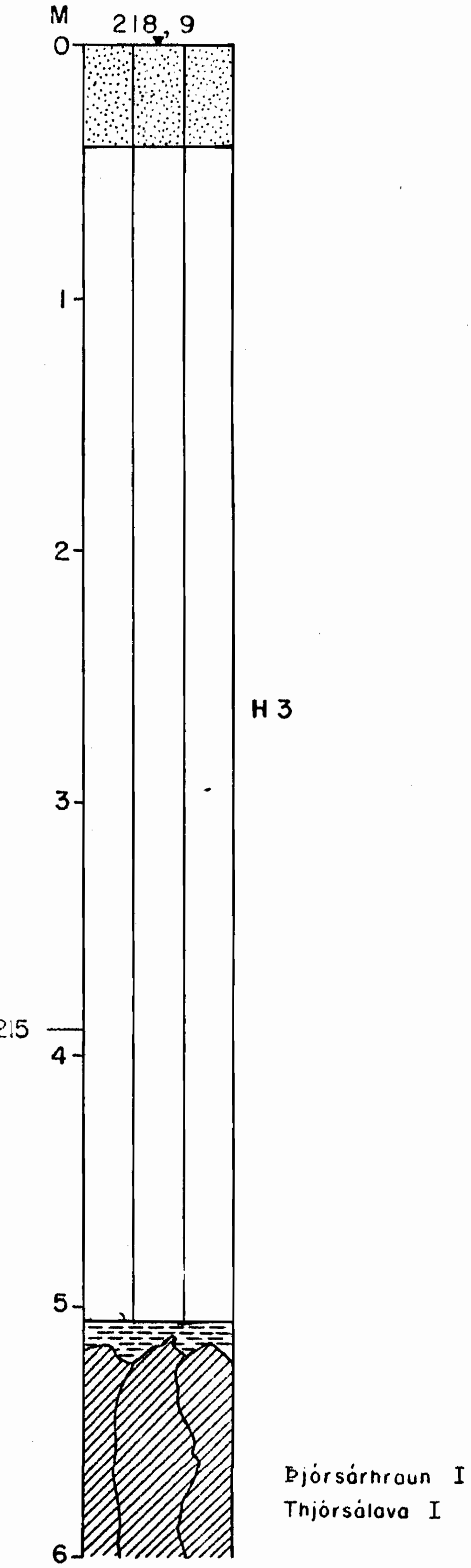




Mynd
Fig 1-7,1

RAFORKUMÁLASTJÓRI
Jarðvegssnið í holu
við Rangárbotna

28.6.'61 S.P.J./O.H.
Tnr. 247
B-277
Fnr. 5447



SKÝRINGAR: (LEGEND)

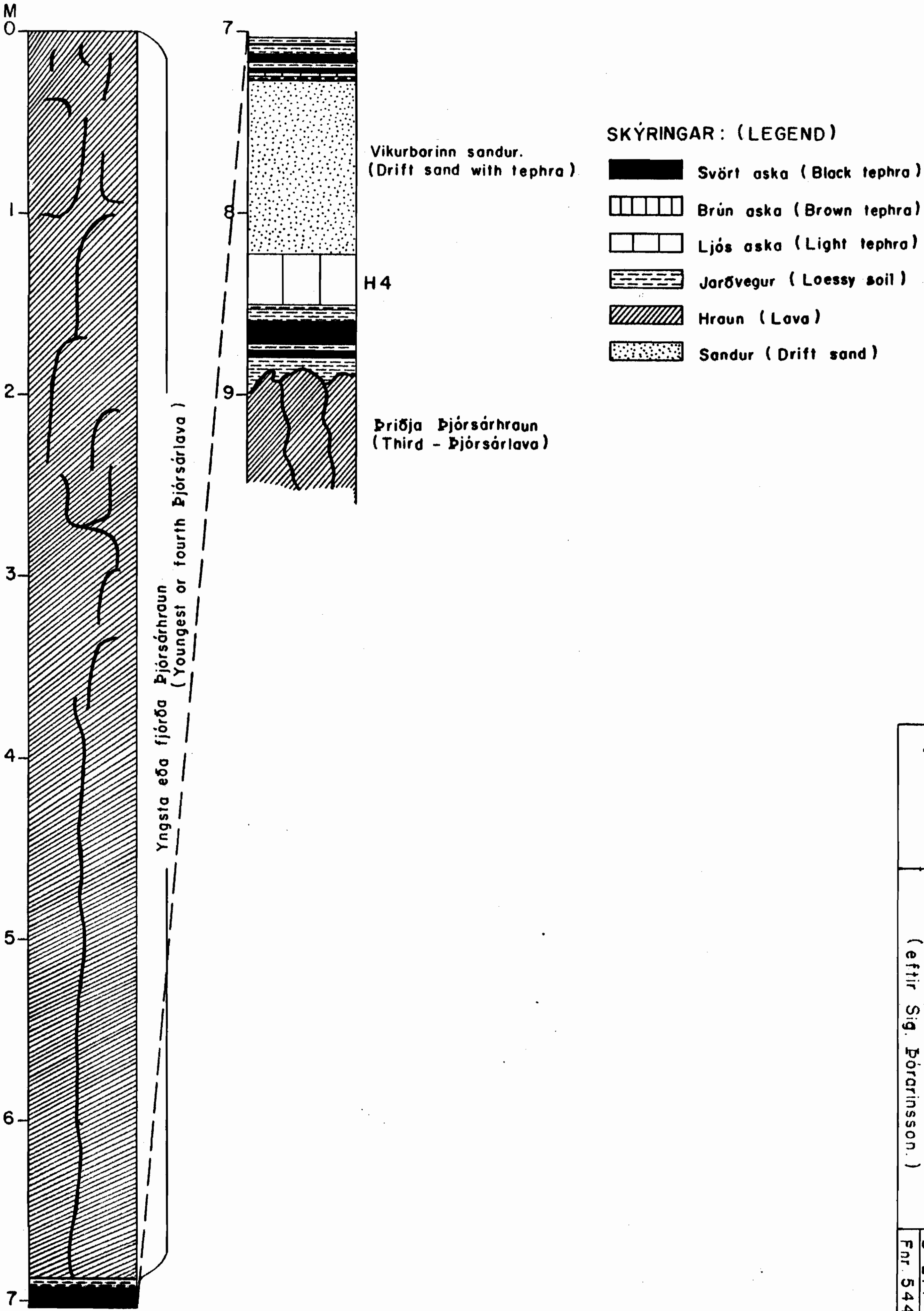
- Ljós aska (Light tephra)
- Sandur blandaður ösku (Sand mixed with tephra)
- Jarðvegur (Loessy soil)
- Hraun (Lava)

RAFORKUMÁLASTJÓRI

Jarðvegssnið mitt á milli Rangár og Þjórsár.

Mynd Fig. I-7,2

28.6.'61 S.P.J./O.H.
Tnr. 246
B-277
Fnr. 5446



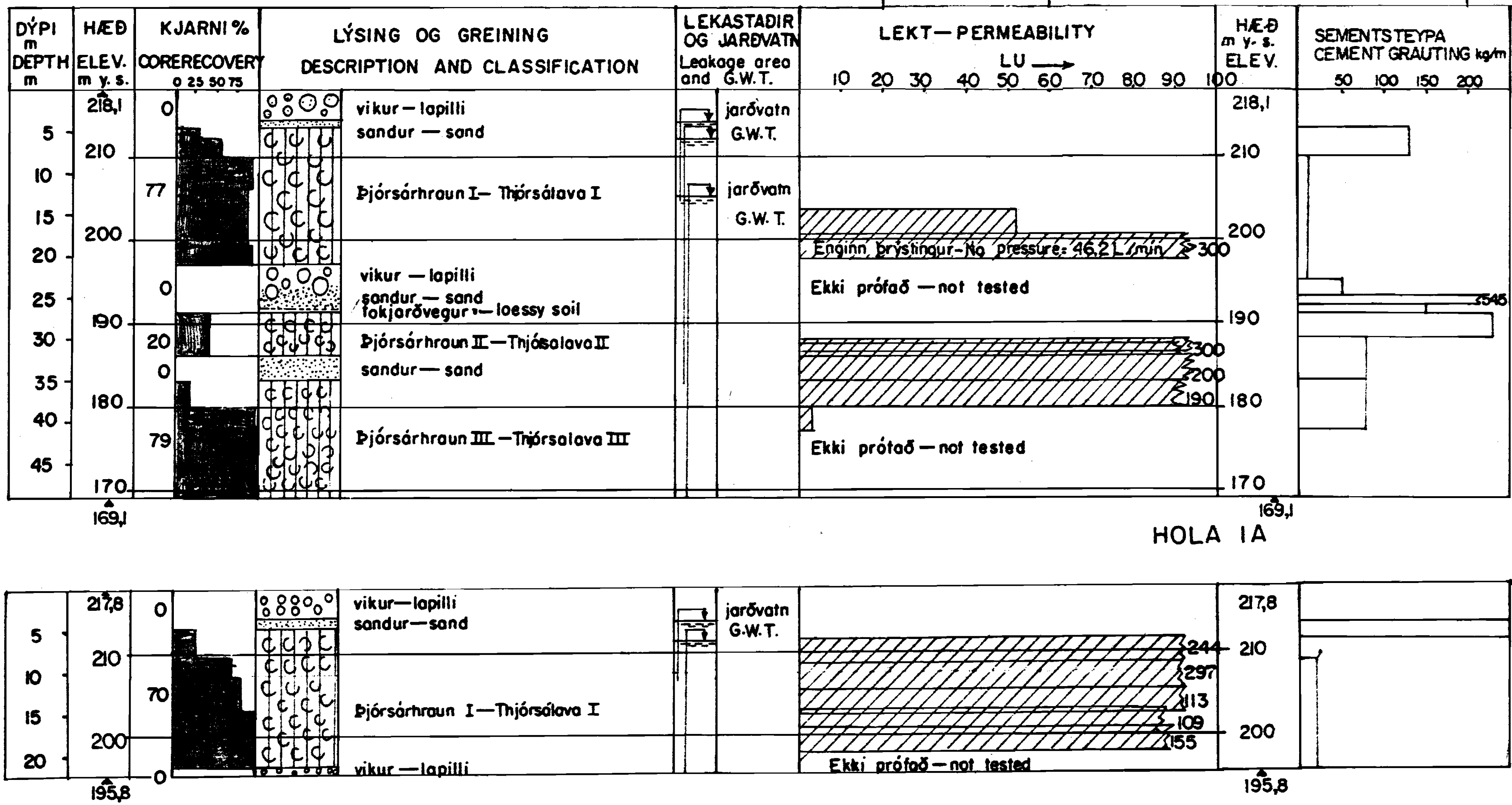
Mynd
Fig. 1-7,3

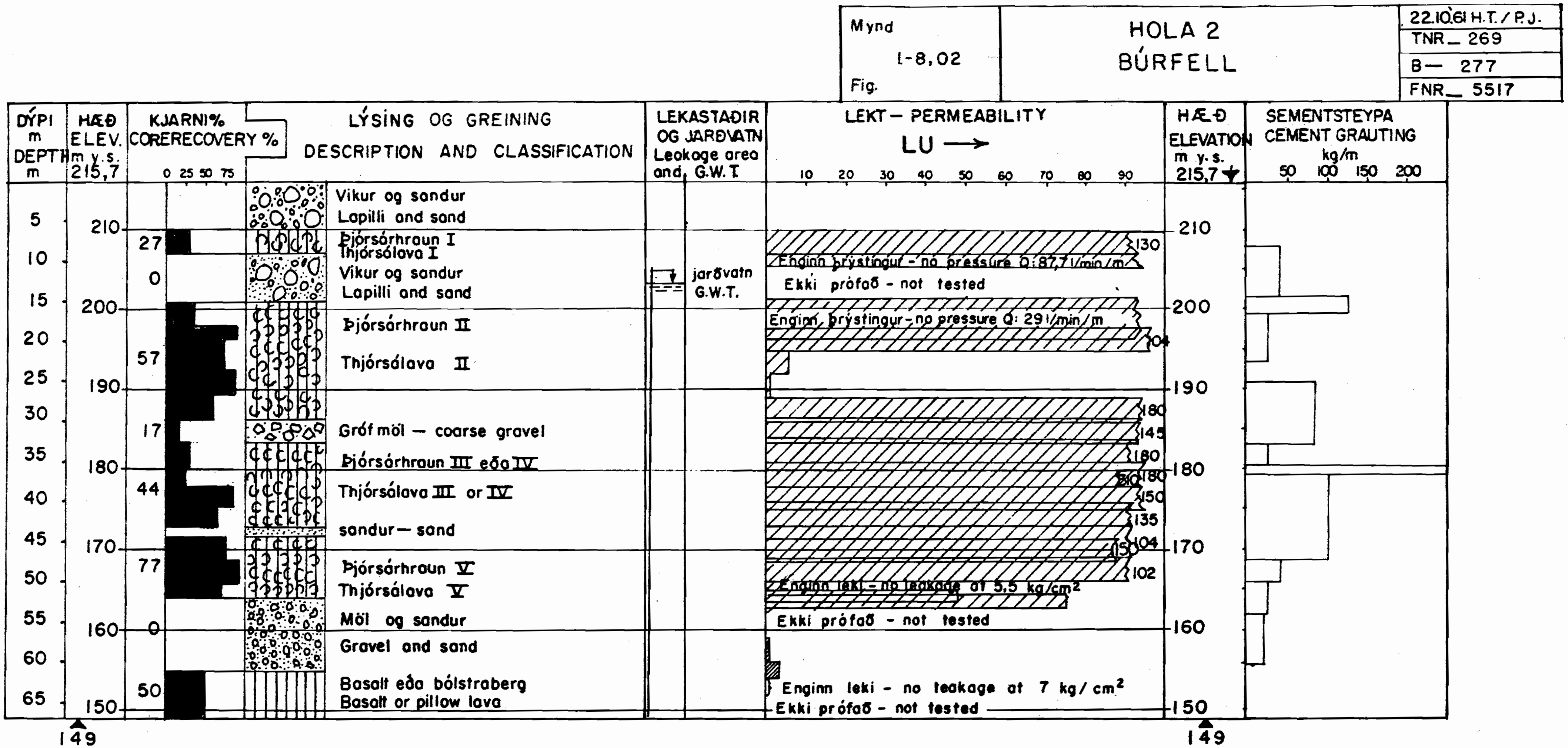
RAFORKUMÁLASTJÓRI

Jarðvegssnið við Þjófafoss
(eftir Sig. Þórarinsson.)

29.6.'61 S.P.J./O.H
Tnr. 248
B-277
Fnr. 5449

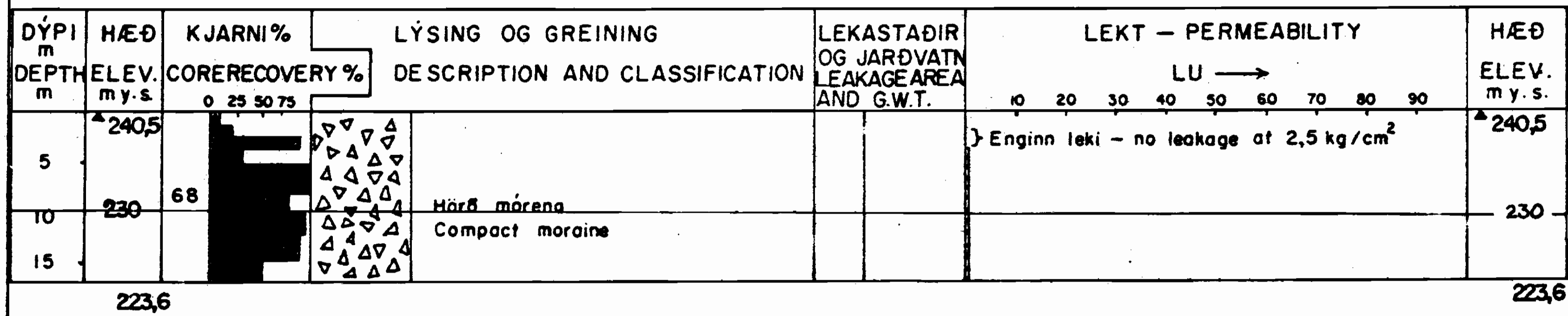
Mynd / Fig.	HOLA IB OG IA BÚRFELL	
1.-3.01		13.10'61 H.T. / P.J.
		TNR. 267
		B — 277
		FNR. 5515



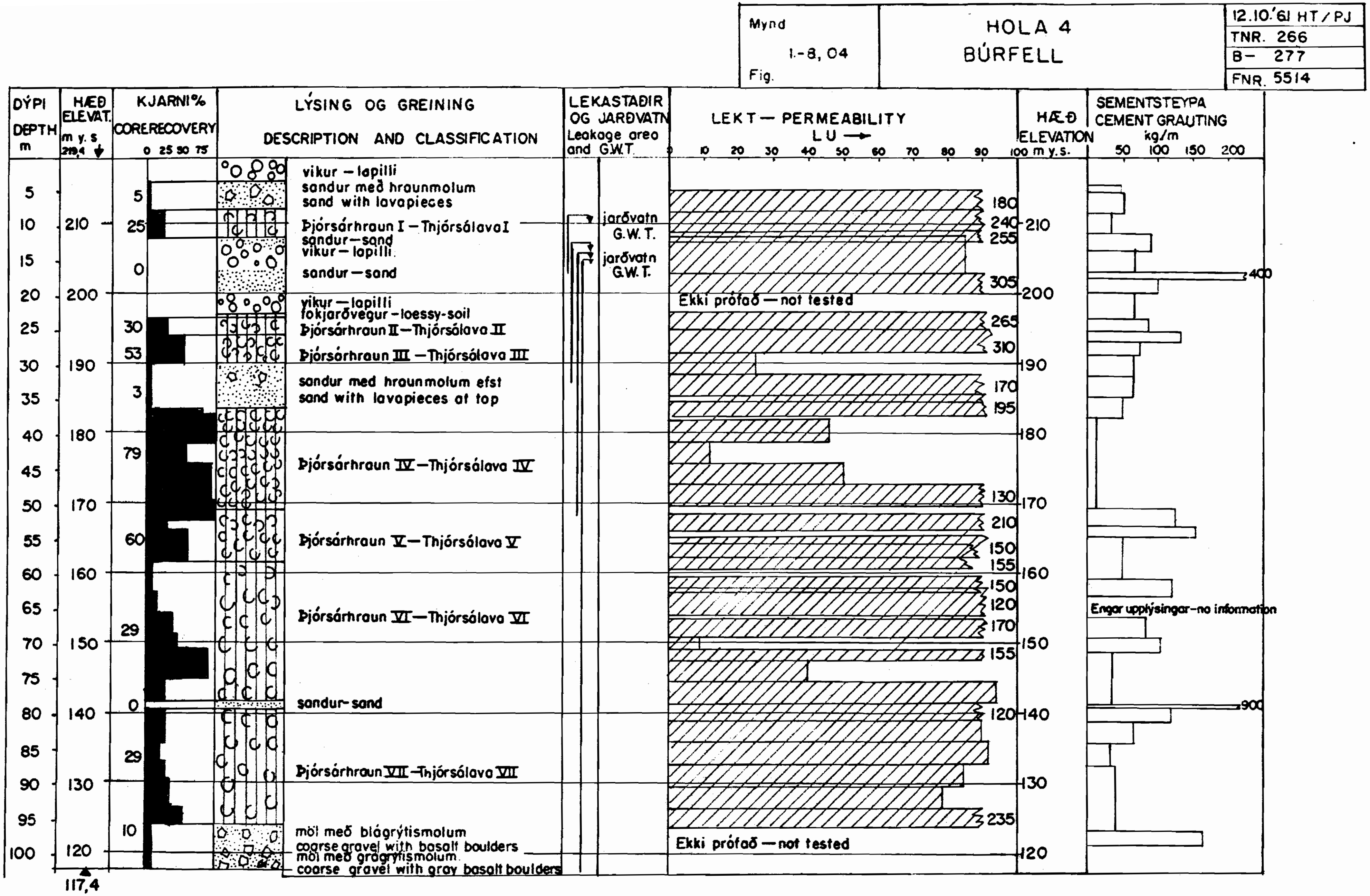


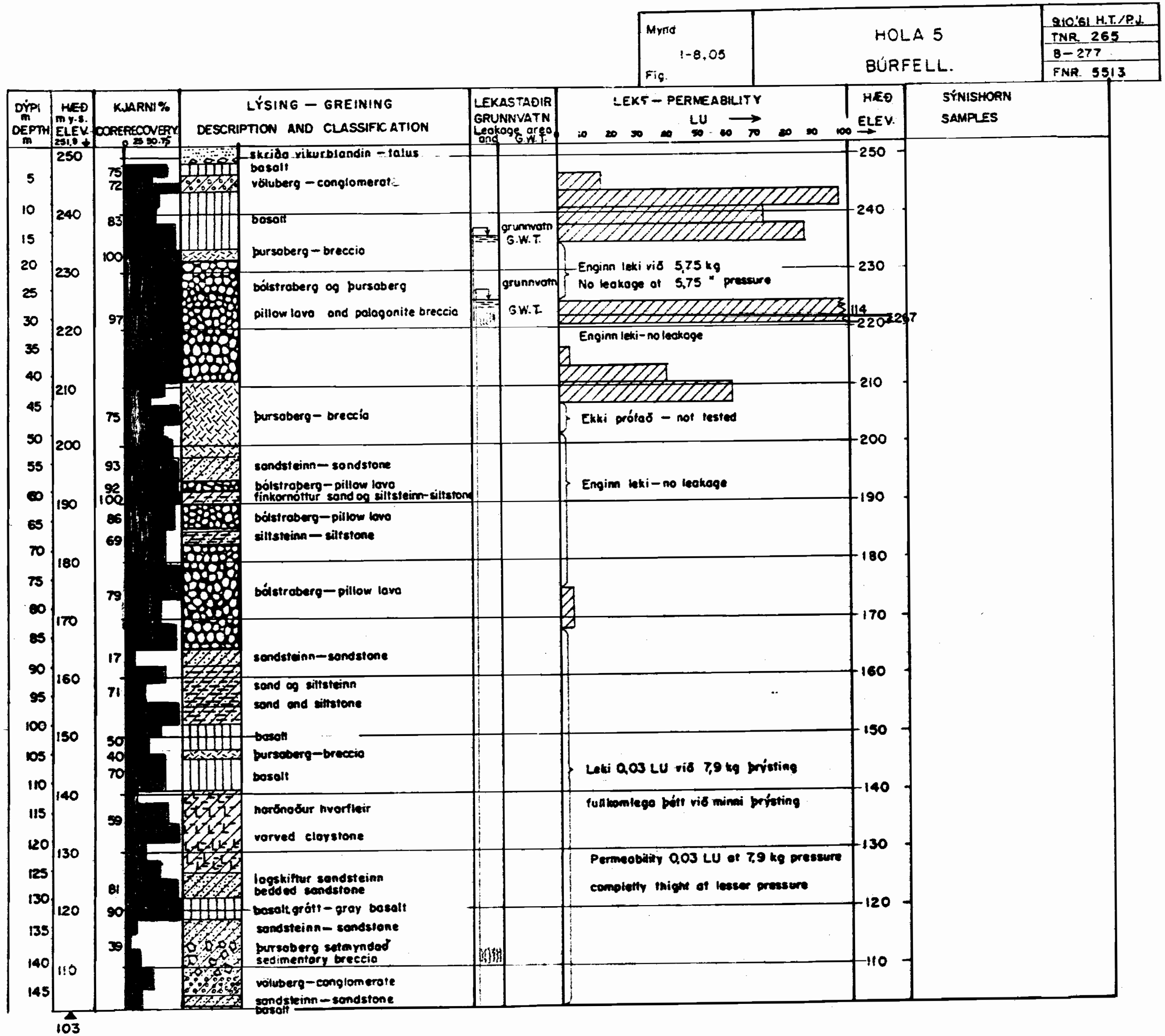
Mynd
1-8,02
Fig.
HOLA 2
BÚRFELL
22.10.61 H.T. / P.J.
TNR_ 269
B— 277
FNR_ 5517
DÝPI m DEPTH m
HÆÐ ELEV. m y.s. 215,7
KJARNI% CORERECOVERY %
LÝSING OG GREINING
DESCRIPTION AND CLASSIFICATION
LEKASTAÐIR OG JARÐVATN Leakage area and G.W.T.
LEKT – PERMEABILITY
LU →
HÆÐ ELEVATION m y.s. 215,7
SEMENTSTEYPA CEMENT GRAUTING kg/m
Vikur og sandur
Lapilli and sand
Þjórsárhraun I
Thjórsálava I
Vikur og sandur
Lapilli and sand
Þjórsárhraun II
Thjórsálava II
Gróf möl — coarse gravel
Þjórsárhraun III eða IV
Thjórsálava III or IV
sandur — sand
Þjórsárhraun V
Thjórsálava V
Möl og sandur
Gravel and sand
Basalt eða bólstraberg
Basalt or pillow lava
jarðvatn
G.W.T.
Enginn þrýstingur - no pressure Q: 87,7 l/min/m
Ekki prófað - not tested
Enginn þrýstingur - no pressure Q: 29 l/min/m
Enginn leki - no leakage at 5,5 kg/cm²
Ekki prófað - not tested
Enginn leki - no leakage at 7 kg/cm²
Ekki prófað - not tested
149

Mynd / Fig.	HOLA 3 BÚRFELL	23.10.'61 H.T./O.H.
I.-8, 03		TNR. 270
		B - 277
		FNR. 5518

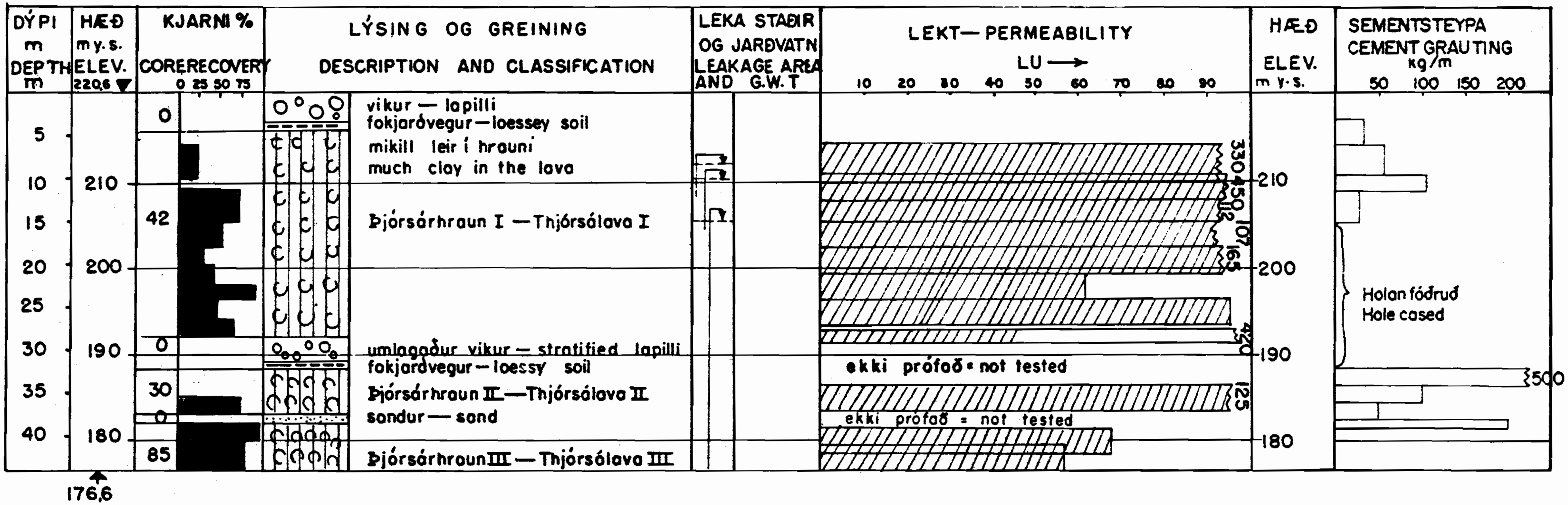


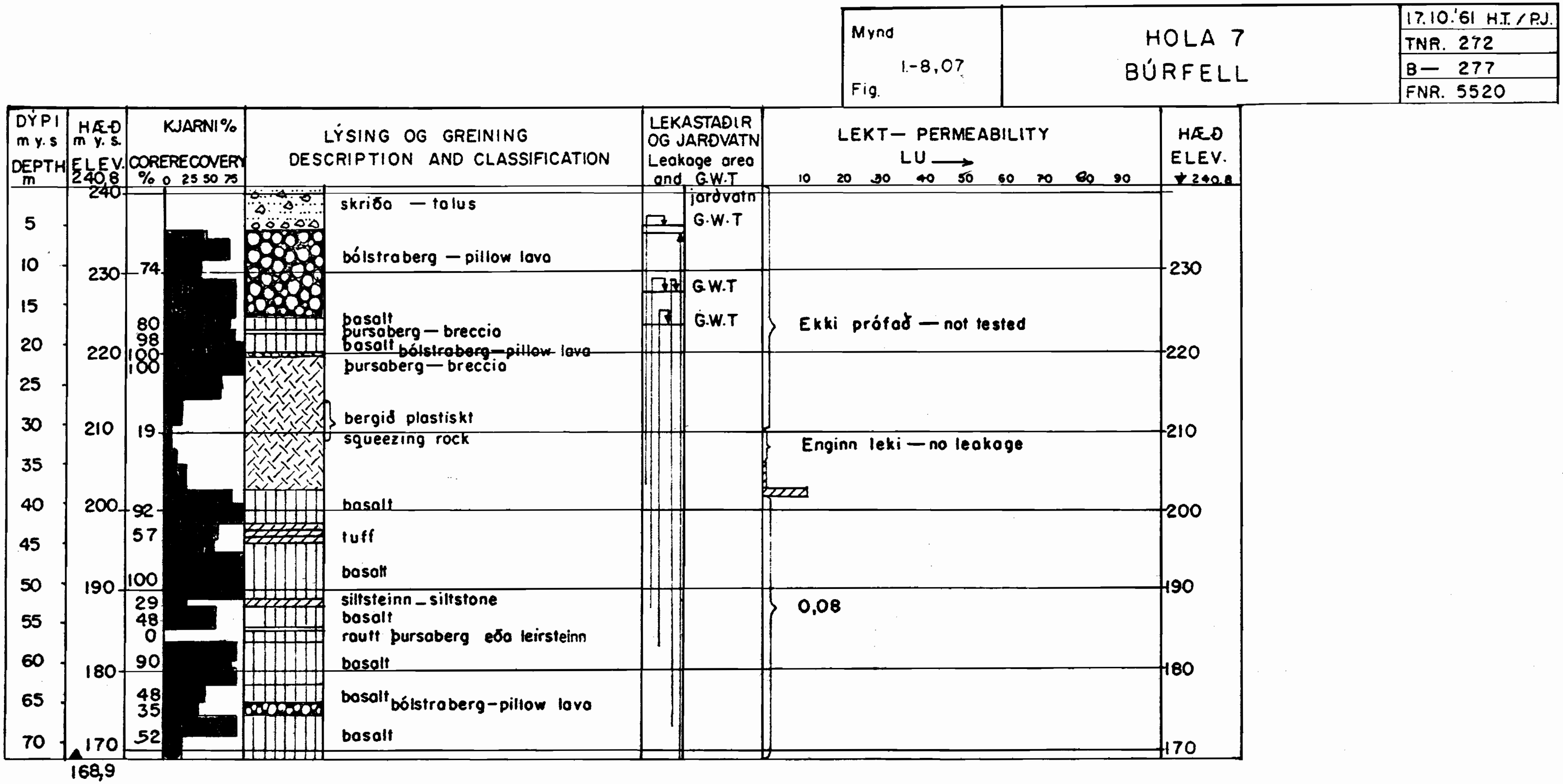
V
Λ


Mynd
Fig.
1-8, 04
HOLA 4
BÚRFELL
12.10.'61 HT / PJ
TNR. 266
B- 277
FNR. 5514
DÝPI
DEPTH
m
HÆÐ
ELEVAT.
m y. s
219,4
KJARNI%
CORERECOVERY
0 25 50 75
LÝSING OG GREINING
DESCRIPTION AND CLASSIFICATION
LEKASTAÐIR
OG JARÐVATN
Leakage area
and G.W.T.
LEKT — PERMEABILITY
LU →
HÆÐ
ELEVATION
m y.s.
SEMENTSTEYPA
CEMENT GRAUTING
kg/m
50 100 150 200
vikur — lapilli
sandur með hraunmolum
sand with lavapieces
Þjórsárhraun I — Thjórsálava I
sandur — sand
vikur — lapilli
sandur — sand
vikur — lapilli
fokjarðvegur - loessy-soil
Þjórsárhraun II — Thjórsálava II
Þjórsárhraun III — Thjórsálava III
sandur með hraunmolum efst
sand with lavapieces at top
Þjórsárhraun IV — Thjórsálava IV
Þjórsárhraun V — Thjórsálava V
Þjórsárhraun VI — Thjórsálava VI
sandur - sand
Þjórsárhraun VII — Thjórsálava VII
möl með blágrýtismolum
coarse gravel with basalt boulders
möl með grágrýtismolum
coarse gravel with gray basalt boulders
jarðvatn
G.W.T.
jarðvatn
G.W.T.
Ekki prófað — not tested
Ekki prófað — not tested
Engar upplýsingar - no information
117,4


Mynd
1-8,05
Fig.
HOLA 5
BÚRFELL.
9.10.'61 H.T./P.J.
TNR. 265
8-277
FNR. 5513
DÝPI m DEPTH m
HÆÐ m y.s. ELEV. 251,9
KJARNI % CORERECOVERY
LÝSING — GREINING
DESCRIPTION AND CLASSIFICATION
LEKASTAÐIR GRUNNVATN
Leakage area and G.W.T.
LEKT — PERMEABILITY
LU
HÆÐ ELEV.
SÝNISHORN SAMPLES
skriða vikurblandin — talus
basalt
völuberg — conglomerate
basalt
þursaberg — breccia
bólstraberg og þursaberg
pillow lava and palagonite breccia
þursaberg — breccia
sandsteinn — sandstone
bólstraberg — pillow lava
fínkornóttur sand og siltsteinn - siltstone
bólstraberg — pillow lava
siltsteinn — siltstone
bólstraberg — pillow lava
sandsteinn — sandstone
sand og siltsteinn
sand and siltstone
basalt
þursaberg — breccia
basalt
harðnaður hvarfleir
varved claystone
lagskiftur sandsteinn
bedded sandstone
basalt,grátt — gray basalt
sandsteinn — sandstone
þursaberg setmyndað
sedimentary breccia
völuberg — conglomerate
sandsteinn — sandstone
basalt
grunnvatn G.W.T.
grunnvatn G.W.T.
Enginn leki við 5,75 kg
No leakage at 5,75 " pressure
114
220,7
Enginn leki - no leakage
Ekki prófað — not tested
Enginn leki — no leakage
Leki 0,03 LU við 7,9 kg þrýsting
fullkomlega þétt við minni þrýsting
Permeability 0,03 LU at 7,9 kg pressure
completly thight at lesser pressure
103

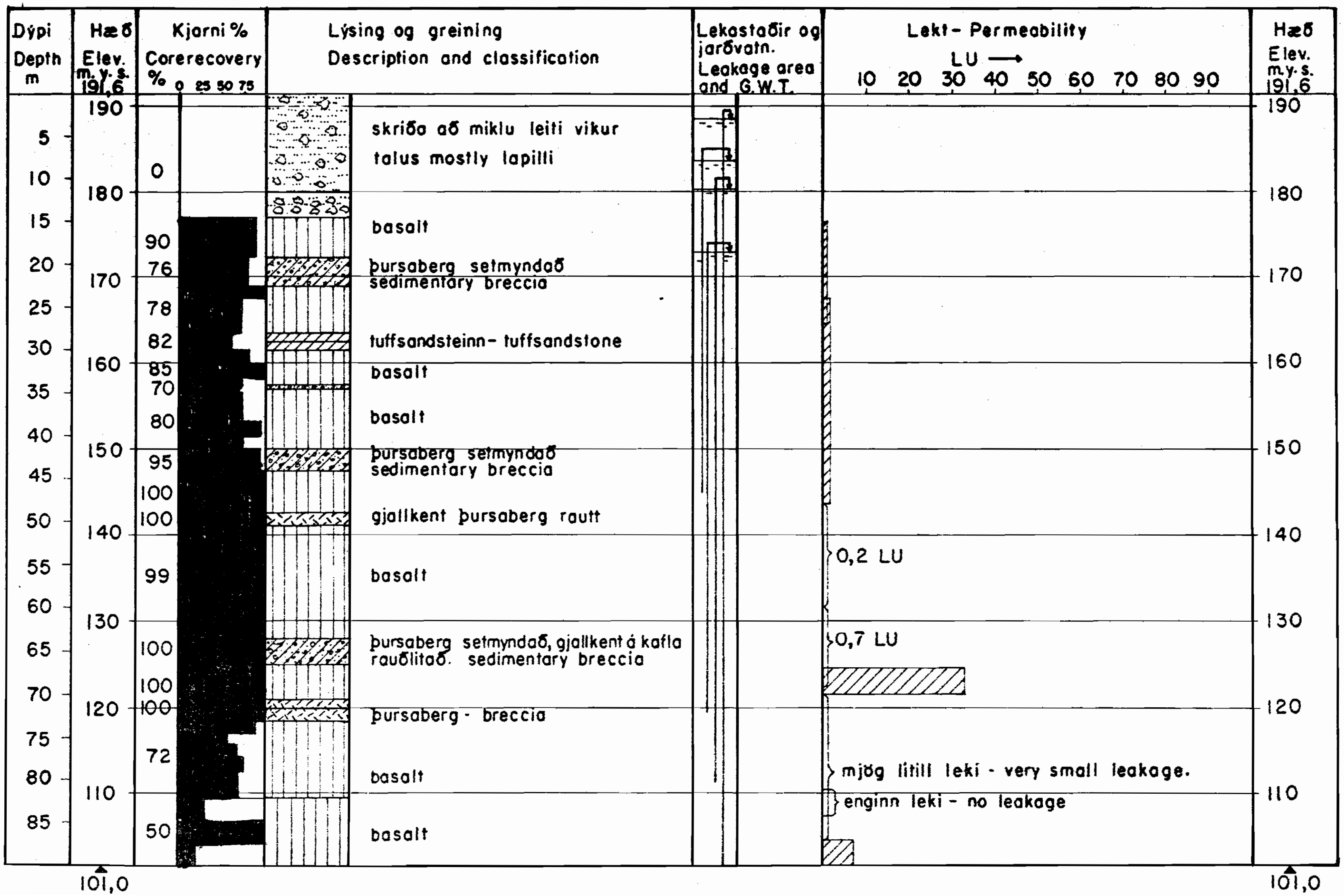
Mynd / Fig.		
1.-8, 06	HOLA 6 BÚRFELL	16.10.'61 H.T./P.J. TNR. 271 B— 277 FNR. 5519



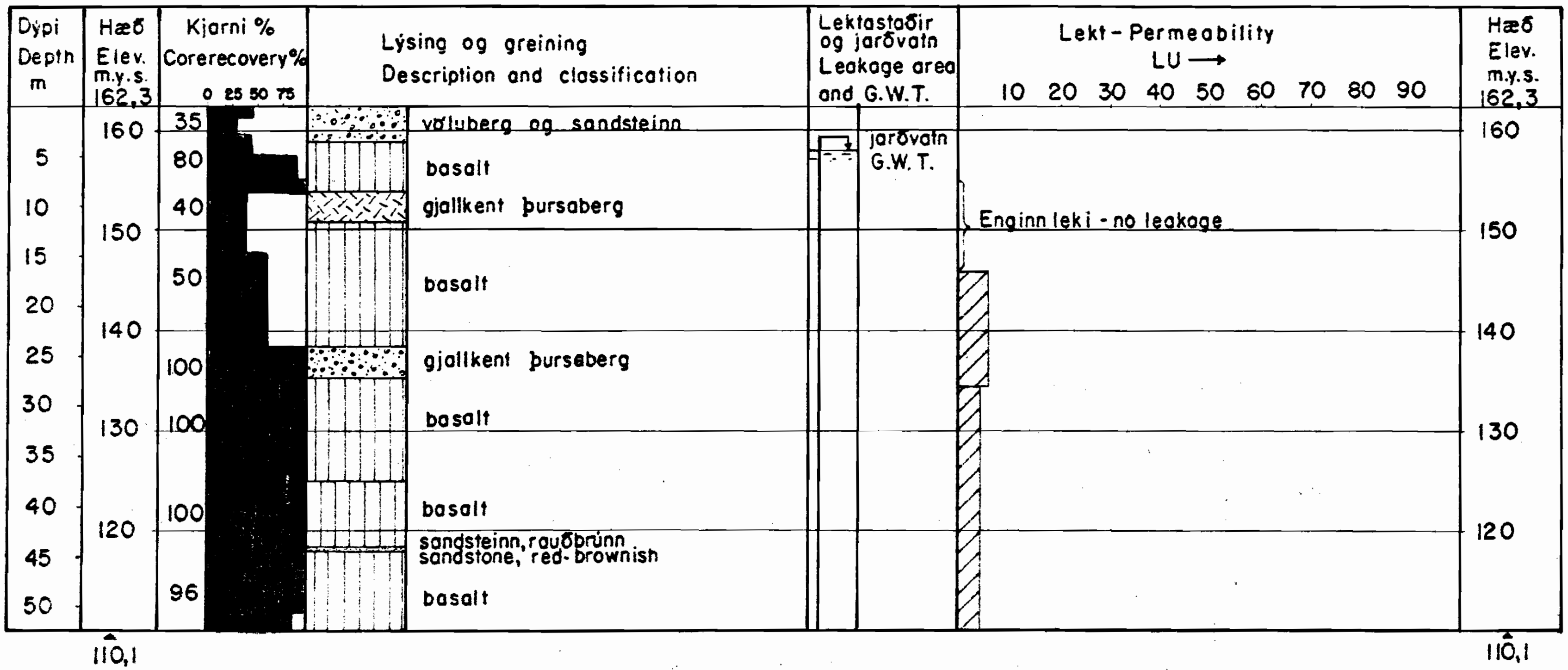


Mynd
1-8,07
Fig.
HOLA 7
BÚRFELL
17.10.'61 H.T./P.J.
TNR. 272
B— 277
FNR. 5520
DÝPI m y.s
DEPTH m
HÆÐ m y. s.
ELEV. 240,8
KJARNI%
CORERECOVERY %
0 25 50 75
LÝSING OG GREINING
DESCRIPTION AND CLASSIFICATION
LEKASTAÐIR OG JARÐVATN
Leakage area and G.W.T
LEKT— PERMEABILITY
LU
10 20 30 40 50 60 70 80 90
HÆÐ
ELEV.
240,8
5 10 15 20 25 30 35 40 45 50 55 60 65 70
240 230 220 210 200 190 180 170
168,9
74 80 98 100 100 19 92 57 100 29 48 0 90 48 35 52
skriða — talus
bólstraberg — pillow lava
basalt
þursaberg — breccia
basalt
bólstraberg—pillow lava
þursaberg — breccia
bergið plastiskt
squeezing rock
basalt
tuff
basalt
siltsteinn _ siltstone
basalt
rautt þursaberg eða leirsteinn
basalt
basalt
bólstraberg-pillow lava
basalt
jarðvatn
G.W.T
G.W.T
G.W.T
Ekki prófað — not tested
Enginn leki — no leakage
0,08
230 220 210 200 190 180 170

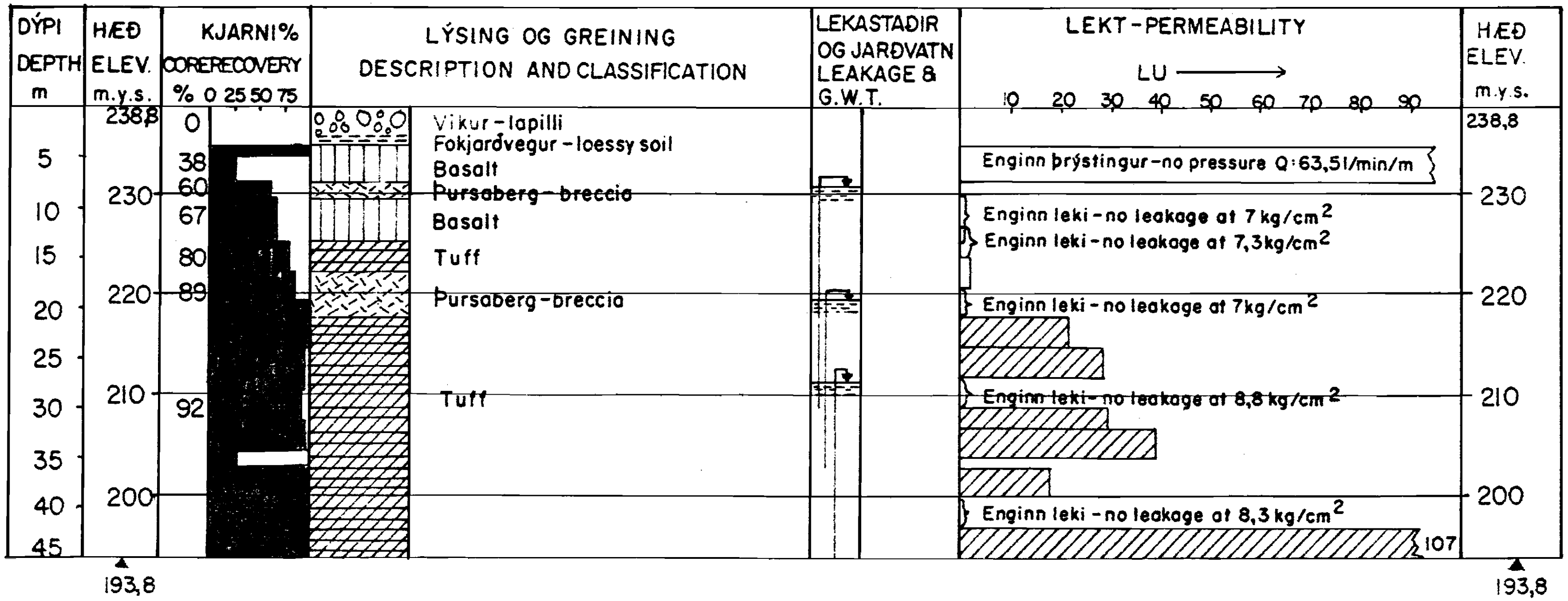
Mynd I.-8,08 Fig.	HOLA 8 BÚRFELL	2.2.62 HT/jb TNR. 333 B – 274 FNR5650



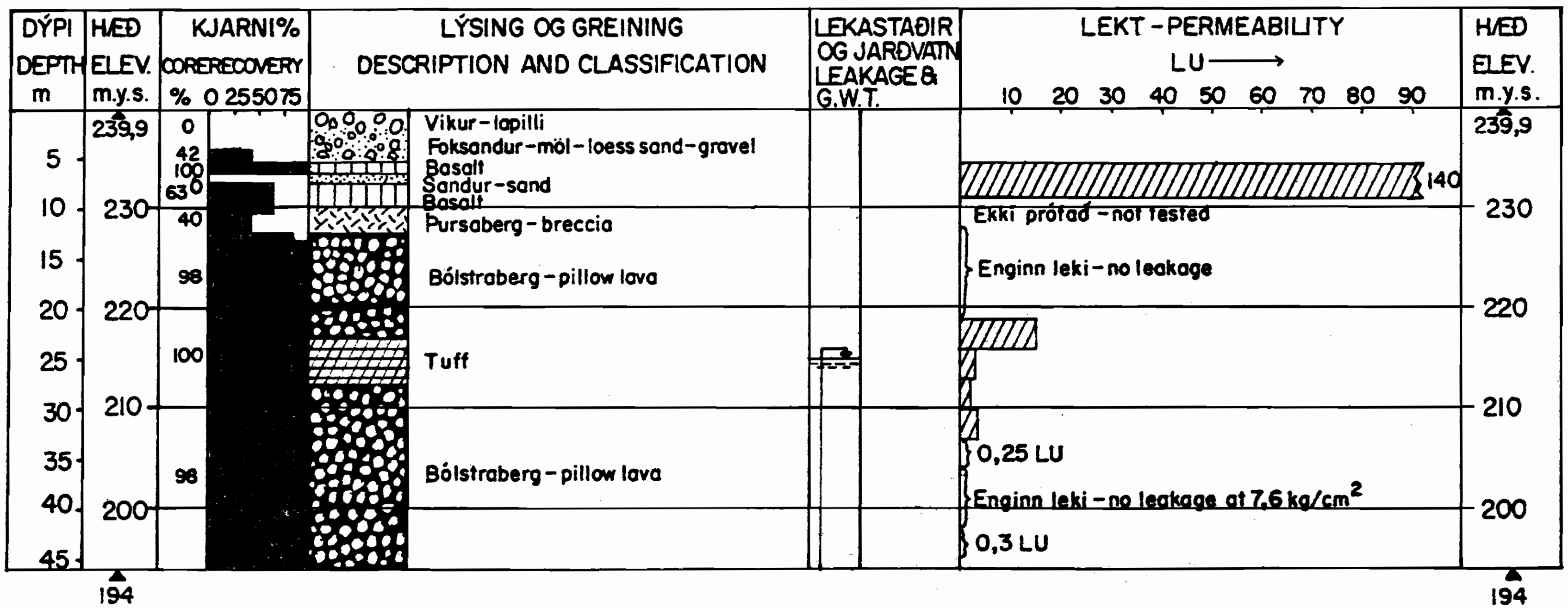
Mynd / Fig.		
I-8,09	HOLA 9 BÚRFELL	3.2.62 HT/jb
		TNR. 332
		B- 274
		FNR — 5649



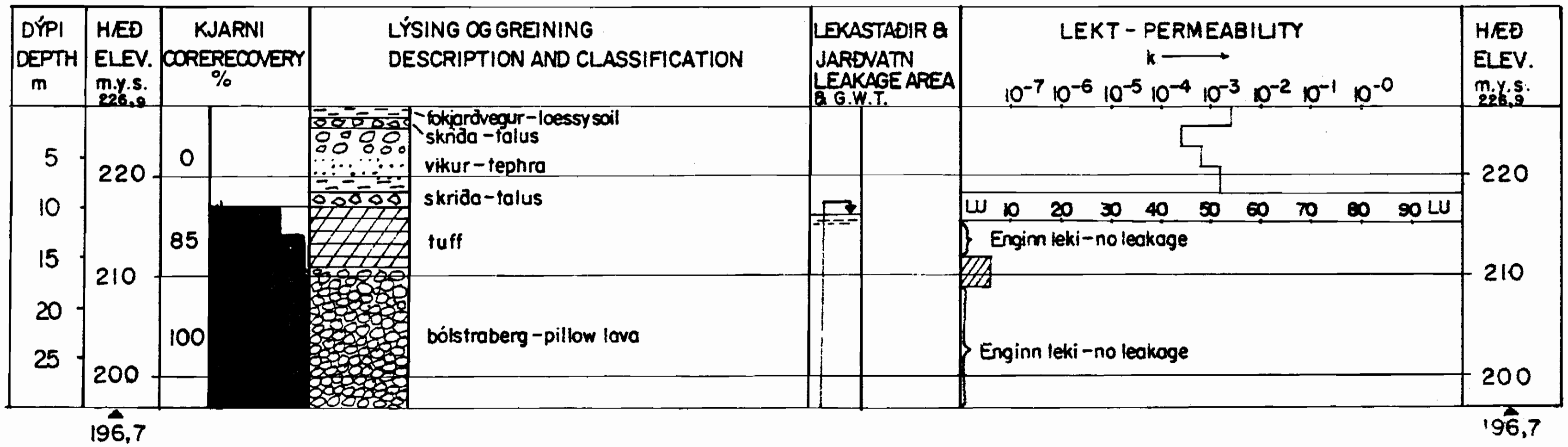
Mynd 1.-8, 10 Fig.	HOLA 10 BÚRFELL	23.11'61 HT/EP
		TNR - 309
		B-277
		FNR-5568



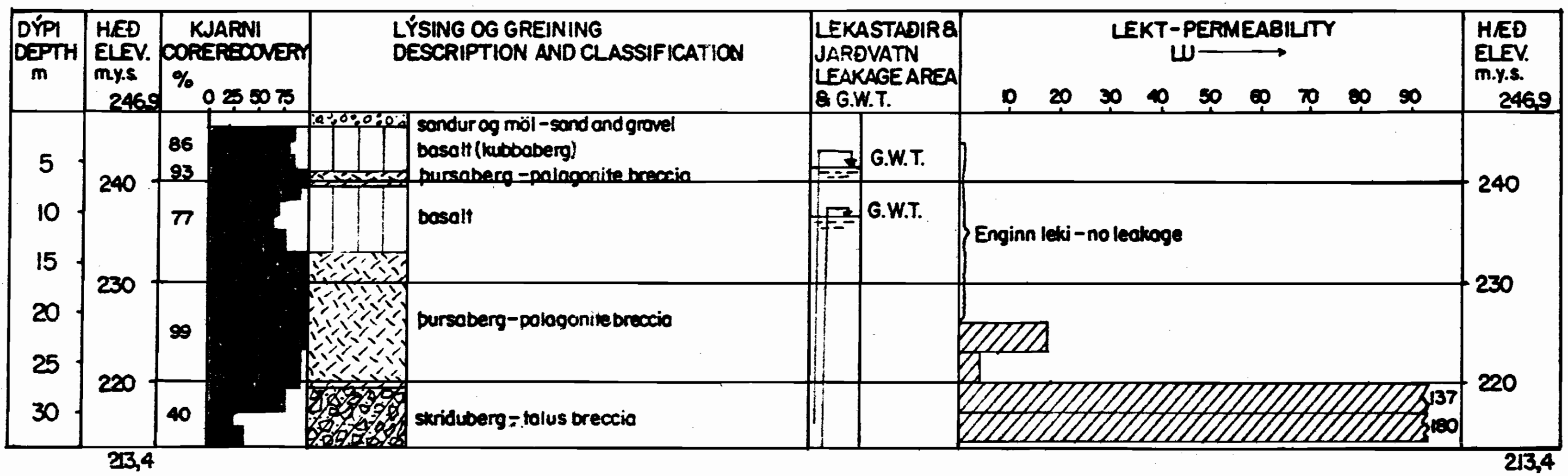
Mynd 1-8, 11 Fig.	HOLA 11 BÚRFELL	28.11'61 HT/EP
		TNR-310
		B-277
		FNR-5569

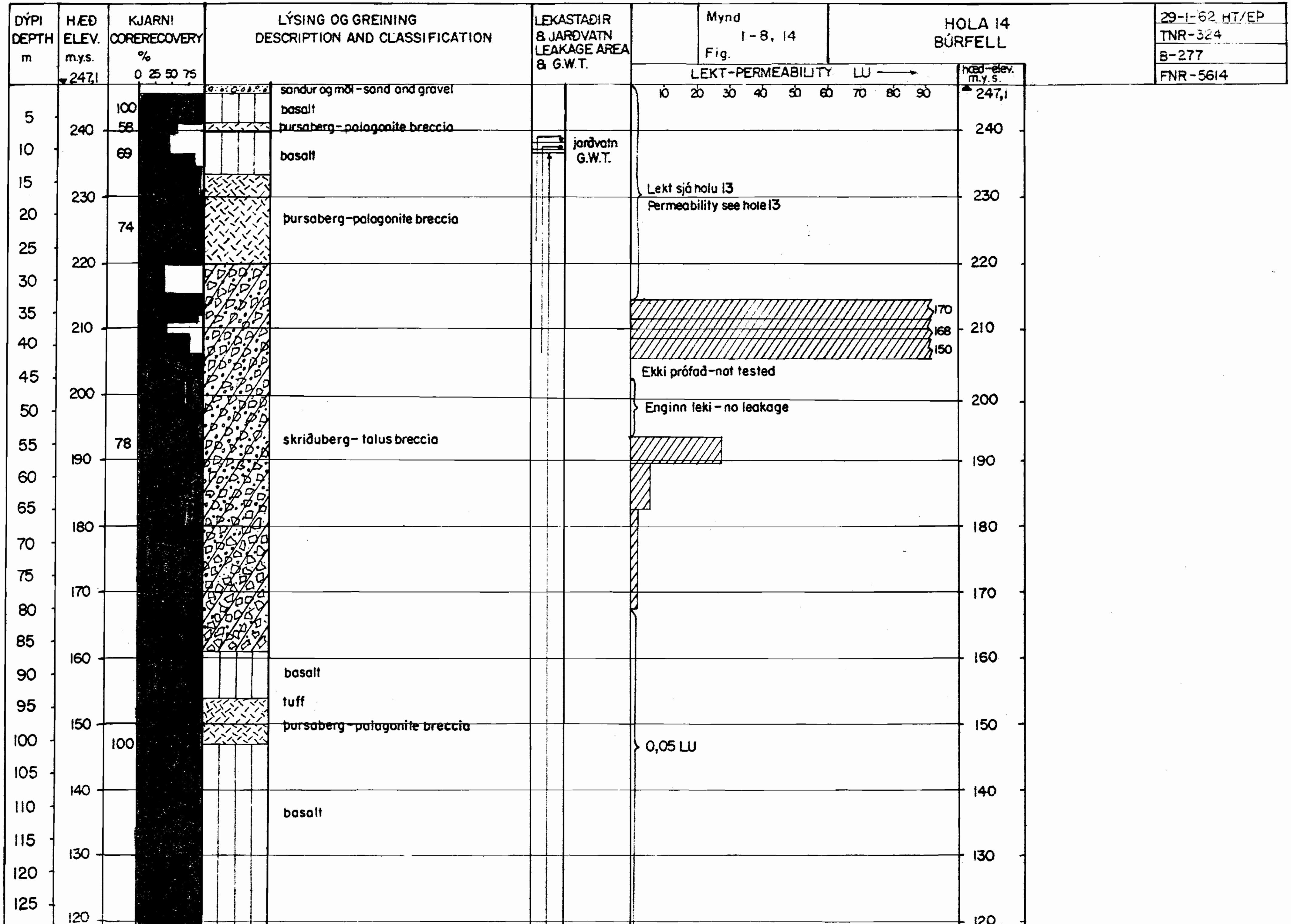


Mynd 1-8, 12 Fig.	HOLA 12 BÚRFELL	29-1-'62 HT/EP
		TNR-323
		B-277
		FNR.-5613



Mynd 1-8, 13 Fig.	HOLA 13 BÚRFELL	30-1-'62 H.T./EP TNR-325 B-277 FNR-5618

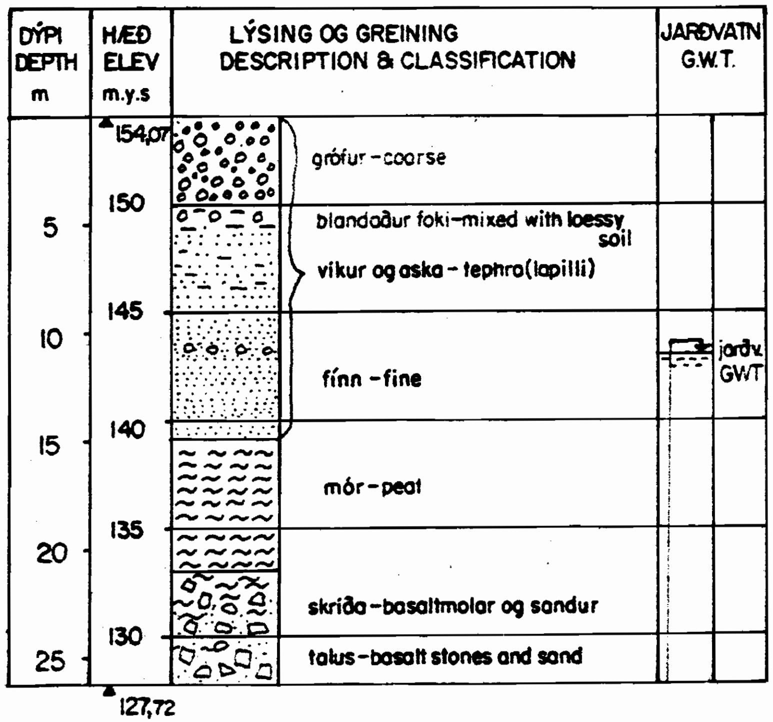




DÝPI DEPTH m
HÆÐ ELEV. m.y.s. 247,1
KJARNI CORERECOVERY %
0 25 50 75
LÝSING OG GREINING DESCRIPTION AND CLASSIFICATION
LEKASTAÐIR & JARÐVATN LEAKAGE AREA & G.W.T.
Mynd 1-8, 14 Fig.
HOLA 14 BÚRFELL
29-1-62 HT/EP
TNR-324
B-277
FNR-5614
LEKT-PERMEABILITY LU
10 20 30 40 50 60 70 80 90
hæð-elev. m.y.s.
247,1
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
240
230
220
210
200
190
180
170
160
150
140
130
120
100
58
69
74
78
100
sandur og möl - sand and gravel
basalt
þursaberg - palagonite breccia
basalt
þursaberg - palagonite breccia
skriðuberg - talus breccia
basalt
tuff
þursaberg - palagonite breccia
basalt
jarðvatn G.W.T.
Lekt sjá holu 13
Permeability see hole 13
170
168
150
Ekki prófað - not tested
Enginn leki - no leakage
0,05 LU

Mynd / Fig. 1.-8, 15	HOLA 15 og 16 BÚRFELL	29-1-62 HT/EP TNR-322 B-277 FNR.-5612

HOLA 15



HOLA 16