



ORKUSTOFNUN
Vatnsorkudeild

SÝNIEINTAK
-má ekki fjarlægja

HÓLMSBERG

BOREHOLES B-11 and B-12.

Snorri Zóphóniasson

OS-83 114/VOD -41 B

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1 INTRODUCTION

The work described in this report was carried out in accordance with a contract between Orkustofnun and AV Consulting Engineers (Almenna verkfræðistofan), dated November 1983, in connection with the proposed oil storage and harbor project at Hólmsberg and Helguvík South West Iceland.

The work included:

(1) Core drilling. Two boreholes, B-11 and B-12, were drilled, 10.3 and 10.1 m. deep. For location see Figs. 1. and 2.

(2) Core logging: (a) General geological logging of the cores. Graphic core logs are shown in Fig. 3. (b) Rock mass quality evaluation.

In accordance with the contract the work was performed in the same way as the earlier work in the area as described by Víkingsson & Zóphóníasson (1982),

2 STRUCTURE

All the rocks penetrated by the boreholes belong to the same compound lava flow, which is made of many flow-units of different thicknesses. Each flow-unit usually lies directly on top of another unit but interbedded scoria occurs, although not penetrated by any of the 12 boreholes drilled sofar. The rock type is olivine tholeiite. One thick flow-unit which commonly exceeds 25 m in thickness, comprises the top of most of the cliffs and is penetrated by the boreholes. This flow unit is often of a multiple character, that is cooling cracks extend through a horizontal boundary or a weakness zone.

No tectonic fractures have been observed in the cliff sections. The joints found are in most cases easily recognised as either more or less vertical cooling cracks or nearly horizontal weakness zones. The interval between cooling cracks is proportional to the thickness of the flow-unit.

3 TEXTURE

The texture of the basalts is typical for olivine tholeiites with large crystals compared with basalt in general. Plagioclase, olivine and even pyroxene (augite) crystals are commonly visible to the naked eye. The crystal matrix is loosely constructed with voids between crystals, a feature generally thought to be caused by degassing of the crystallizing melt.

4 CORRELATIONS

Correlations of contacts between flow-units can only be done across quite short distances but one is inclined to assume that both boreholes penetrate the same flow-unit.

5 ROCK MASS QUALITY

Rock quality analyses were carried out for the core in both of the holes, i. e. B-11 and B-12, in the same way as described in the previous reports (Víkingsson & Kristinsson 1982) and (Víkingsson and Zóphóníasson 1982).

The purpose of the coredrilling is to locate a feasible armor rock quarry. For this purpose three main factors are important: RQD of the rock, strength the rock and groundwater conditions.

RQD values (with threshold values of 10, 30 and 50 cm) are given in the core logs. These values, indicate that the rock is of medium quality.

Although no tests have been performed on the rock the strength is assumed to be quite similar to the one obtained previously (see Víkingsson and Zóphóníasson 1982, page 5).

No groundwater was in the boreholes.

The rock quality analyses data for these two holes are quite similar to the data for the previously drilled holes.

REFERENCES

Barton, N. Lien, R. & Lunde, J. 1974: Engineering classifications of rock masses for design of tunnel report. Rock Mechanics, Vol. 6.

Víkingsson, Skúli & Kristinsson, Bjarni 1982: Hólmsberg. Geological report. Orkustofnun OS82042/VOD25 B, May 1982.

Víkingsson, Skúli & Zóphóníasson, Snorri 1982: Hólmsberg. Geological report. Orkustofnun OS82092/VOD40 B, October 1982.

TABLE 1

COORDINATES OF BOREHOLES

| NAME | X | Y | EL. |
|------|-----------|-----------|-------|
| B-11 | 723011.08 | 100070.34 | 27.77 |
| B-12 | 723016,08 | 99966.34 | 27.47 |

Coordinates: Lambert

Core photographs



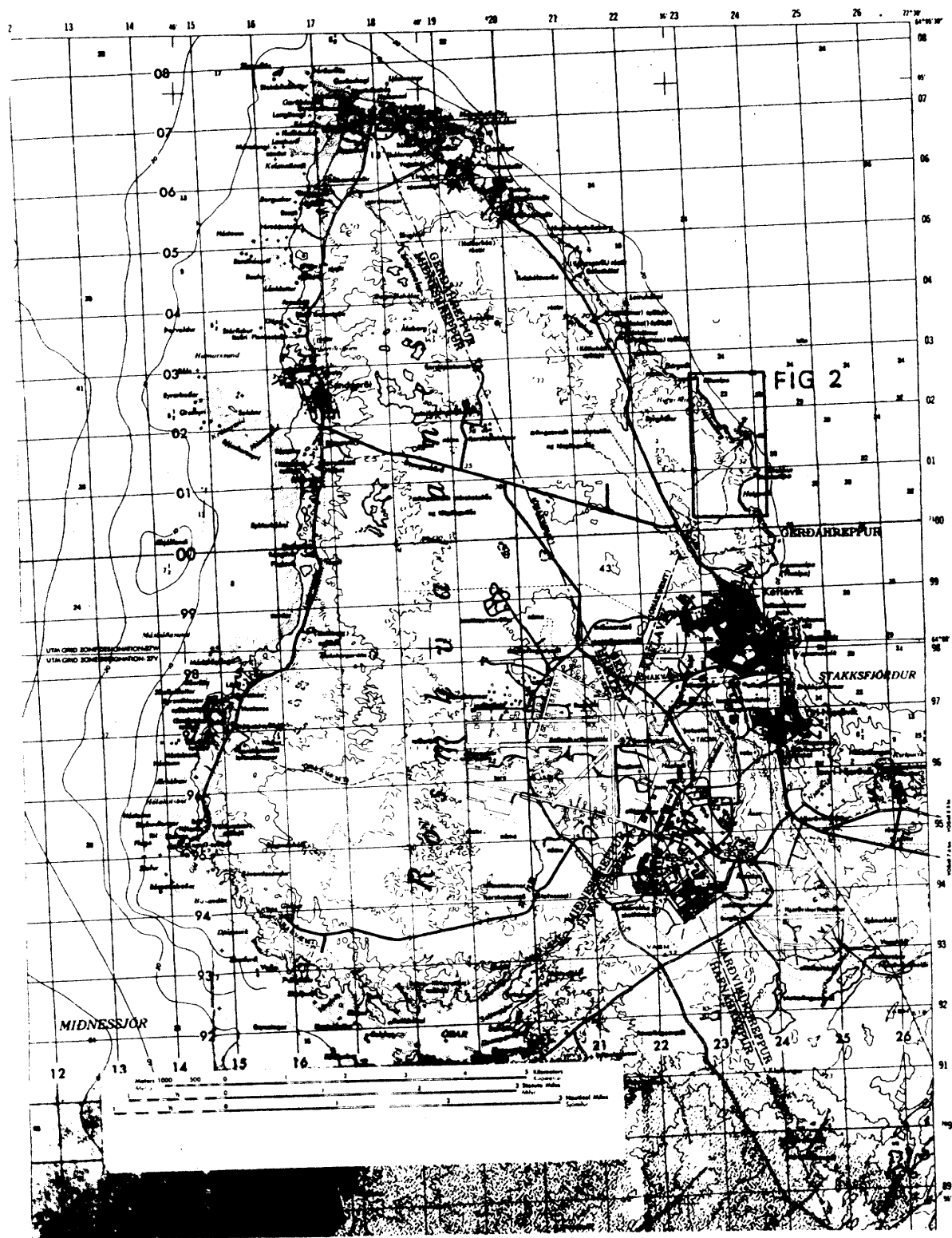
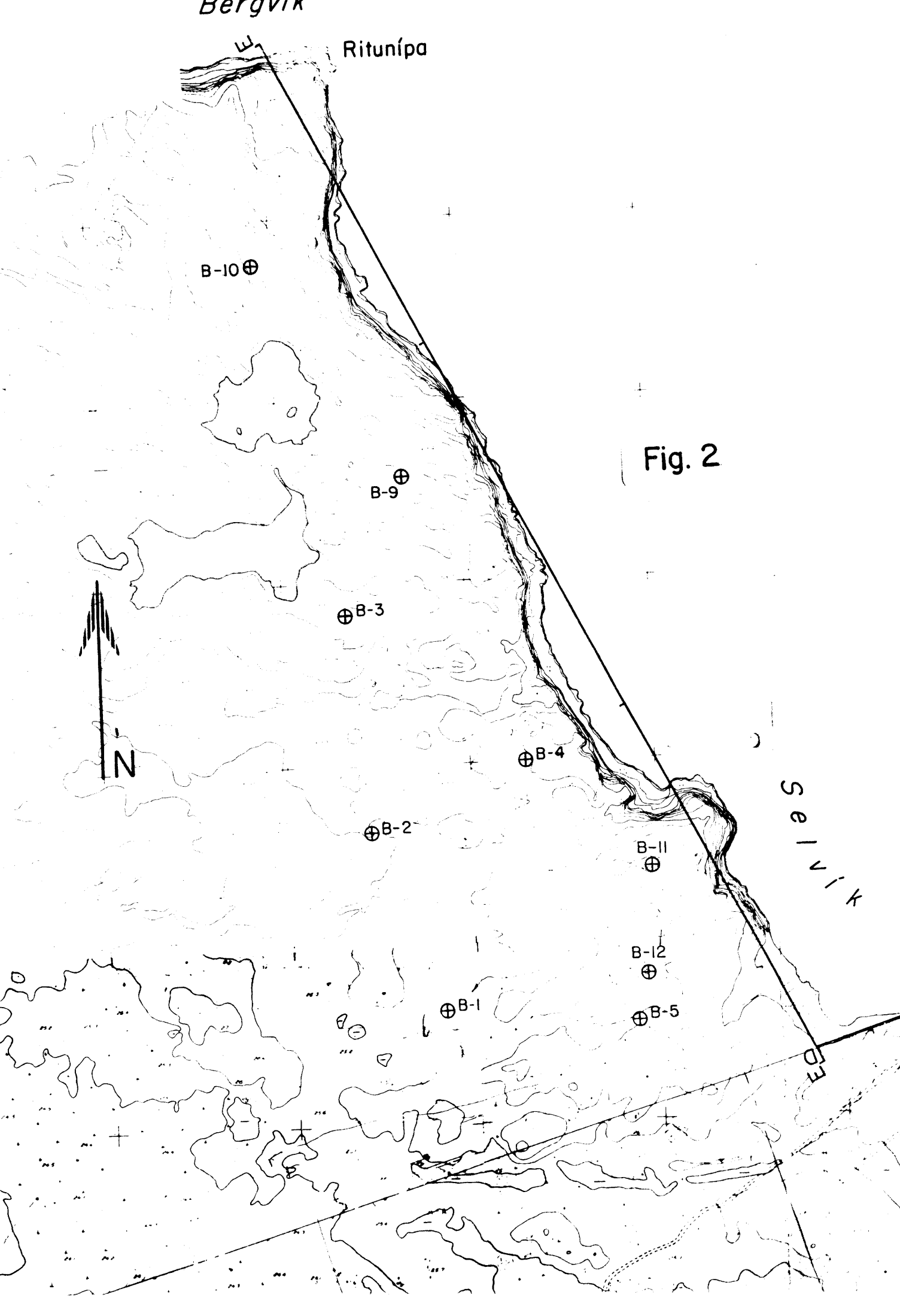


Fig. 1: Location map. (A part of Sheet 1512IV Keflavík published by Landmælingar Íslands (Icelandic Geodetic Survey) and DMAHTC U.S.A.).

Bergvik

Ritunípa

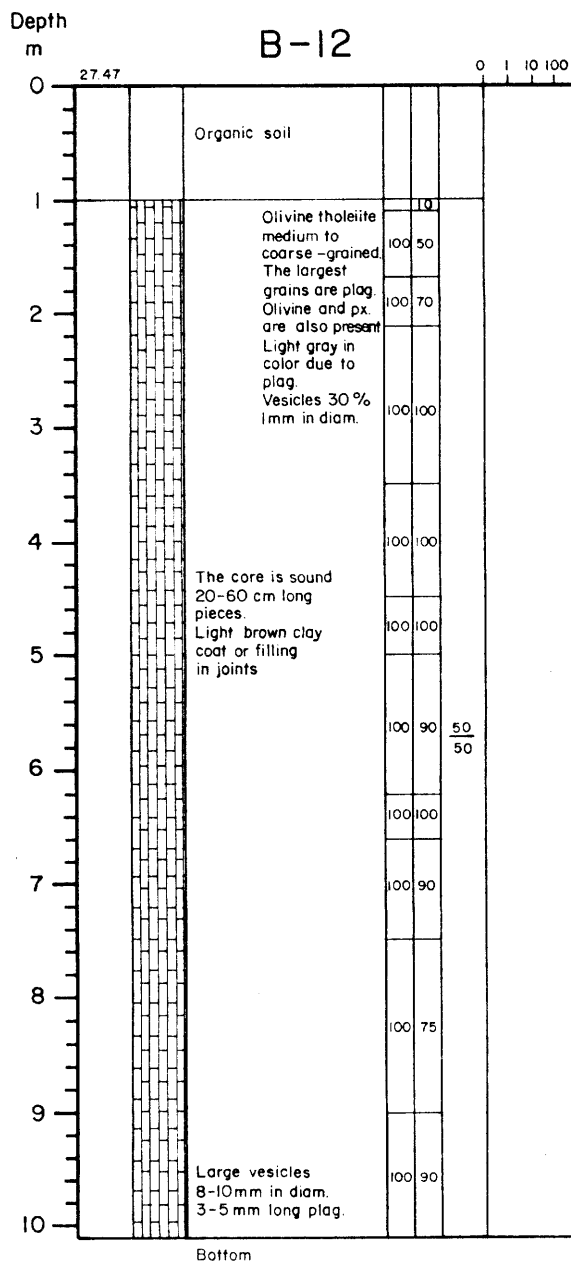
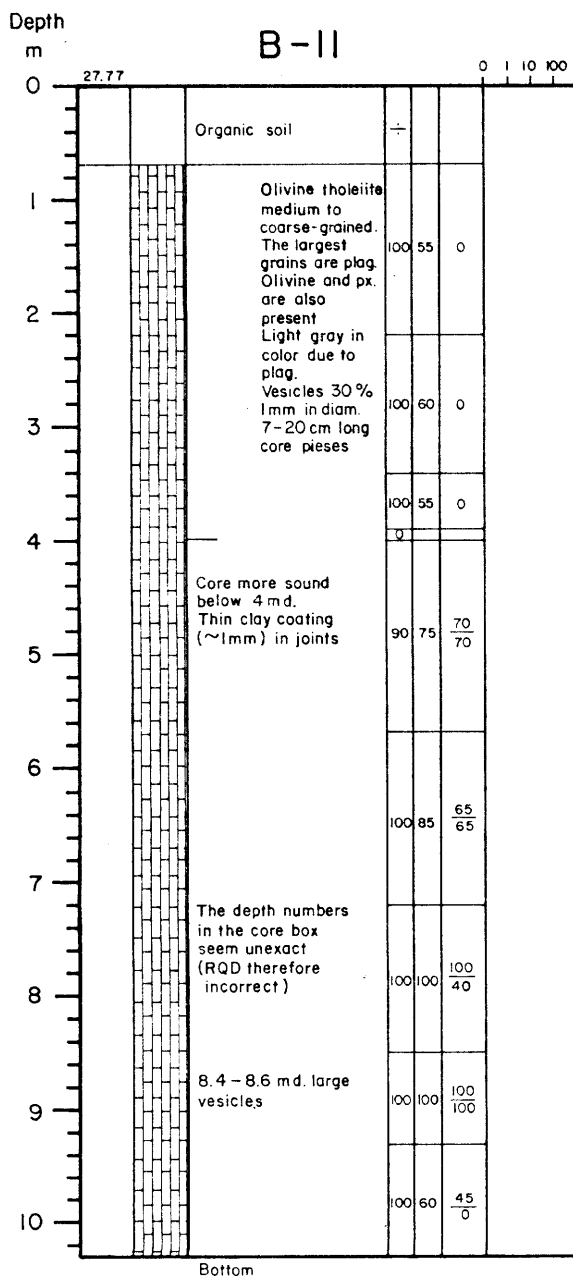
Fig. 2



Selvik

| | | | | |
|------------------|----------------------------|---------------|--------------|---------------------------------|
| HÆD Elevation | GREINING CLASSIFICATION | Kjarni/Core % | | LEKT PERME- ABILITY LU |
| | | RQD 10 | RQD 30 50 | |

| | | | | |
|------------------|----------------------------|---------------|--------------|---------------------------------|
| HÆD Elevation | GREINING CLASSIFICATION | Kjarni/Core % | | LEKT PERME- ABILITY LU |
| | | RQD 10 | RQD 30 50 | |



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Graphic core logs B-11 and B-12