

THE ZUURLAND BOREHOLE: INTRODUCTION

by

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The previous history and a concise description of the drilling techniques applied for the borehole Zuurland-2 at Brielle, province of Zuid-Holland, The Netherlands, are given.

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SAMENVATTING

De boring Zuurland: inleiding.

Als introductie op de hierna volgende artikelen worden in het kort de voorgeschiedenis en de toegepaste boortechnieken beschreven van de boring Zuurland-2 te Brielle.

HISTORY

As a young boy I was curious to learn about the Earth below our feet and I investigated the uppermost layers in the area of the village of Oostvoorne on the island of Voorne-Putten with very primitive drilling equipment. It was impossible for me to arrive at levels below 10 metres below the surface because the successive boreholes continued to collapse. The application of casings and a pulse with a valve was not only unknown to me, I could not have afforded such equipment either.

In 1969 I obtained drilling equipment with a pulse. During that year I reached a depth of 25 metres and in 1972, using all available casing, even 44 metres.

In 1979 I obtained a piece of land in the polder Zuurland where I could work on the borehole for a longer period. After buying a large quantity of expensive casings I made, in the period of 1980 to 1983, a borehole with a depth of 95.02 m.

I studied the lithology of the sedimentary succession and paid only little attention to the remains of flora and fauna. On the one hand much material was lost because of the use of a sieve with a mesh of 5 mm, and on the other hand I was not aware of the value and the significance of the fossils. Although I had some literature about mammalian fossils I did not realize that there could also be fossils in the layers which I was investigating. Nevertheless, I noted the presence of shells. I divided them into two categories: those with smooth and those with ribbed surfaces.

During my drilling activities, which I did by hand and without any help, I came into contact with Mr A.C. Janse from the city of Brielle. He showed me a better way to take my samples and he also brought me into contact with other persons who (professionally) studied Quaternary fossils. This resulted in a visit to the Geological Survey of The Netherlands at Haarlem on the 11th of November 1982. Since then the investigation progressed rapidly.

With the knowledge of the lithology and realizing that the sampling had not correctly been executed, I decided to start all over again and make a new borehole close to the previous one. I started on the 2nd February 1984 and I expect that it will still take several years to complete (Hordijk, 1985, 1986). The first results of this "new" borehole, called Zuurland-2, were presented at a symposium, held on the 14th of November 1986 (van Kolfschoten, 1986). The texts of the various contributions are printed in this special volume of 'Contributions to Tertiary and Quaternary Geology' (= 'Mededelingen van de Werkgroep voor Tertiaire en Kwartaire Geologie').

METHODOLOGY

The drilling technique applied is a bailer sampler. The equipment consists of a pulse: an iron pipe (length 1.5 m, diameter 7 cm) with a valve at the bottom, and casings in pieces with a length of 2 metres and a diameter of 3.5 inches (almost 9 cm). The pulse is attached with a synthetic wire and brought into the casing. After dropping the pulse several times from a small distance above the bottom of the borehole, it gradually fills up with sediment and is pulled out of the casing. By preventing the casing to sink, it is possible to let the sediment well up and take large samples from particular layers. Therefore we must realize that the large quantity of fossils from this borehole cannot be compared to the results of other, "normal" drillings.

For further investigation an unprocessed sample is taken from every metre of the section. Special attention is paid to the sampling of clays, claystones, gravels and wood. Most of the collected sediment is washed on a 0.4 mm mesh sieve. Sieving is done near the borehole. The residue is dried at home and sorted out with a binocular microscope followed by a provisional identification.

The fossil content of the section as well as other material is registered per metre. Lumping the contents per metre we must realize that in some cases certain thin layers with a different (fossil-)content or thin layers without fossils can not be recognized. This is the case with sections at a depth between -22 and -23 m, -23 and -24 m, -28 and -29 m and -36 and -37 m. In the description of the lithology and the fossil contents this will be discussed further.



Fig. 1. The Zuurland-2 borehole at Brielle, The Netherlands.
General impression of the drilling equipment (November 1987). (Photograph R. G. Meijer).

REFERENCES

- Hordijk, L. W., 1985. Verslag van een grondboring in de polder Zuurland nabij Brielle, 1. Het traject van 0 tot 20 m diepte. Brielle (unpublished report), 156 pp.
- Hordijk, L. W., 1986. Verslag van een grondboring in de polder Zuurland nabij Brielle, 2. Het traject van 20 tot 40 m diepte. Brielle (unpublished report), 237 pp.
- Kolfschoten, T. van, 1986. Uitreiking van de Van der Lijn onderscheiding, 14 november 1986.—Meded. Werkgr. Tert. Kwart. Geol., 23(4): 113-114, 1 fig.

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