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## TNO report

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**Palynological age-dating of the Paleozoic section of  
Terziet-1 (B62D1112)**

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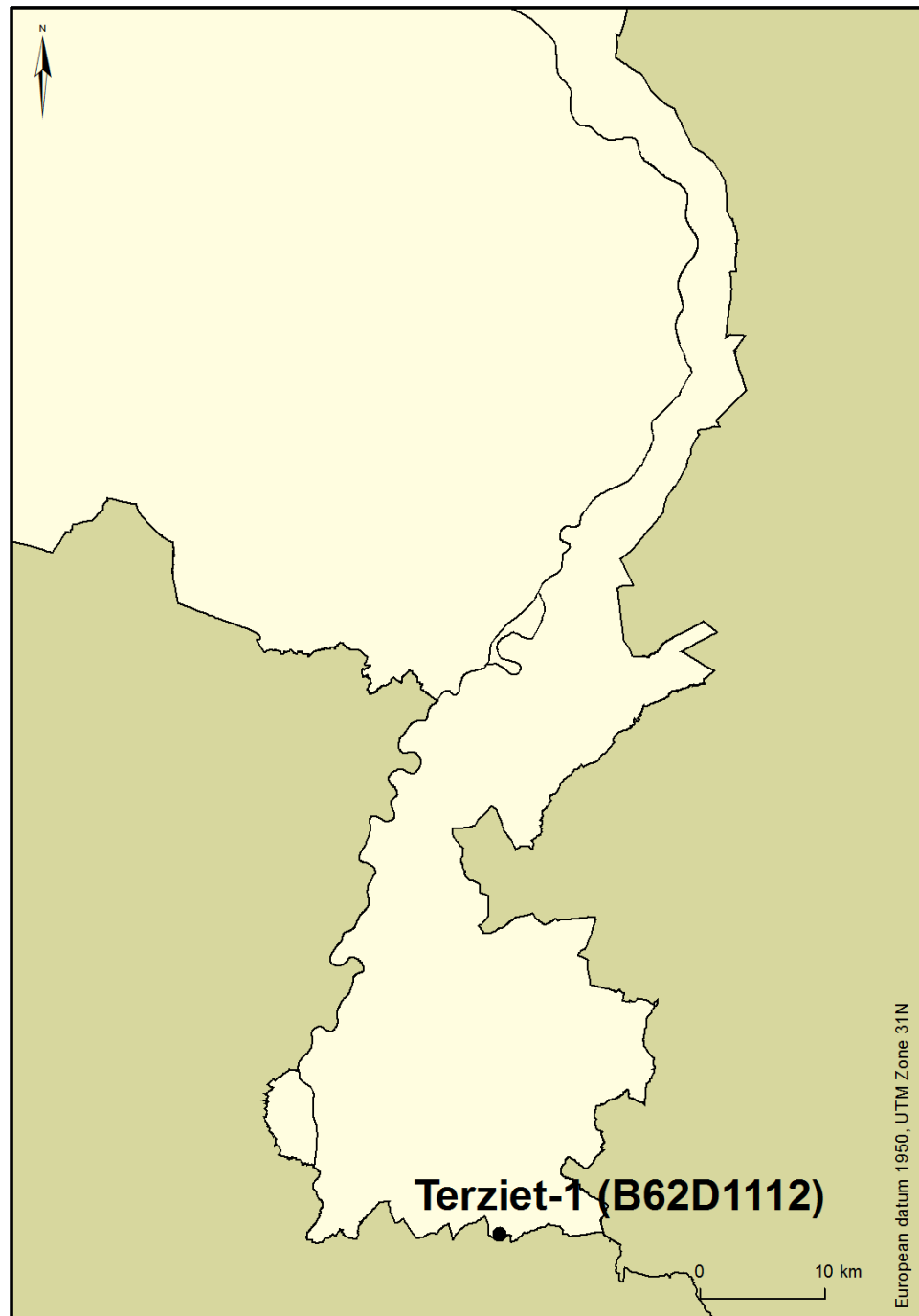
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# Contents

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
<b>2</b>	<b>Material and Methods .....</b>	<b>4</b>
<b>3</b>	<b>Results .....</b>	<b>5</b>
<b>4</b>	<b>Conclusions .....</b>	<b>7</b>
<b>5</b>	<b>References .....</b>	<b>8</b>

# 1 Introduction

Ditch well cutting samples (12) from borehole Terziet-1 were supplied to carry out palynological age-dating. The main question was the position of the Carboniferous-Devonian boundary and to determine a more specific age for the Devonian section.



**Figure 1:** Location of borehole Terziet-1 in Zuid-Limburg.

## 2 Material and Methods

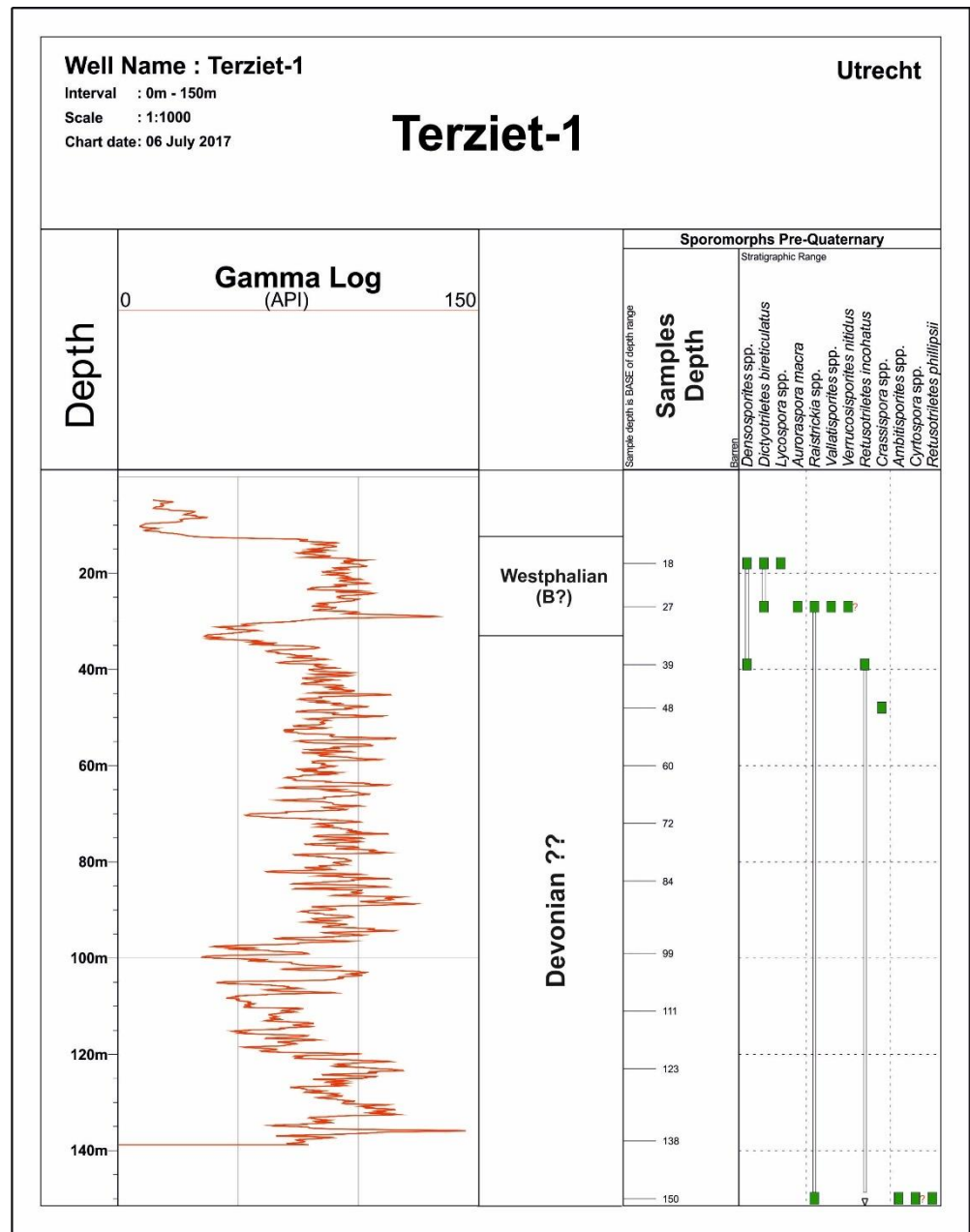
The 12 ditch well cuttings were processed for palynological analysis.

Sample	Depth (m)	Type
1	18	CU
2	27	CU
3	39	CU
4	48	CU
5	60	CU
6	72	CU
7	84	CU
8	99	CU
9	111	CU
10	123	CU
11	138	CU
12	150	CU
13	159	CU
14	168	CU

**Table 1:** List of samples. CU = cutting.

The set of samples were processed using standard sample processing procedures in use at PLS ltd. The processing involved HCL and HF treatment and sieving over a 10 micron mesh. Additional treatment with sulphuric acid was applied to enhance recovery. In most samples the recovery was low and the preservation was extremely poor. However, some identifiable palynomorphs were recovered.

### 3 Results



**Figure 2:** Overview of the encountered palynomorphs in the Terziet-01 borehole

### **Age-interpretation of the Terziet-01 borehole**

The overall presence of Cretaceous Dinoflagellate cysts throughout the section suggests these are caved from the top 18 m of this borehole and hence this top 18 m has a Cretaceous age.

#### *18 – 27 m Westphalian (B?)*

The samples at 18 m and 27 m contain a lot of remains of *Dictyotriletes bireticulatis*. This species has its peak occurrence during the Westphalian B (Clayton et al., 1977). Together with the other long-ranging Carboniferous taxa encountered, and the fact that these samples are in the top of the section and hence the encountered specimen cannot have caved in from above it is concluded that this interval most likely has a Westphalian (?B) age.

#### *39 – 150 m ??? Devonian*

Based on the occurrence of some typical Devonian specimen at 150 m. This interval has tentatively been interpreted to be of Devonian age. The marker *Retusotriletes incohatus* has a range into the Tournaisian and hence cannot be used to pin-point the Devonian.

The absence of a typical top-Famennian (Strunian) association in this borehole, which were encountered in an also poorly preserved section of the well KSL-02, does suggest the Devonian of this section is older than the Devonian observed in this other well.

## 4 Conclusions

Based on the tentative palynological age-interpretation of the Terziet-1 borehole the Carboniferous / Devonian boundary is placed between the samples 27 m and 39 m.

In general, sample quality was poor and a more detailed age-determination can be obtained when better quality samples (e.g. core or side-well core) are available. Furthermore it is advised to apply palynology on future wells at this locality as this would increase the chance of obtaining a more concise age-determination.

## 5 References

Clayton, G., Coquel, J., Doubinger, J., Gueinn, K.J., Loboziak, S., Owens, B. and Strel, M., 1977. Carboniferous miospores of Western Europe: illustration and zonation. Mededelingen Rijks Geologische Dienst, volume 29.