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Palynology of the interval 3169.84 to 3173.41 m of well 206/05-2, Faroe- Shetland Basin

ENERGY SYSTEMS AND BASIN ANALYSIS PROGRAMME

Commissioned Report CR/17/137

BRITISH GEOLOGICAL SURVEY

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Summary

As part of Phase 3 of the BGS Faroe-Shetland Consortium project on the Jurassic of the UK sector of the Faroe-Shetland Basin, detailed logging of core from well 206/05-2 was undertaken and samples were taken for palynology in order to provide additional facies information and age determinations. Analysis of kerogen and palynological assemblages revealed a generally poor run of samples lacking good age-diagnostic palynomorphs. A Volgian or younger age is tentatively assigned in Sample 5 at 3172.49 m by the presence of the spore genus *Cicatricosisporites*.

1 Introduction and method

As part of Phase 3 of the BGS Faroe-Shetland Consortium project on the Jurassic of the UK sector of the Faroe-Shetland Basin, detailed logging of core from well 206/05-2 was undertaken and samples were taken for palynology in order to provide additional facies information and age determinations. The samples were prepared using standard acid maceration techniques. The residues were mounted onto glass slides for microscopic examination. The slides are held in the BGS collections in Keyworth. Counts of kerogen types were carried out on unoxidised residues. Palynological analysis was carried out on oxidised material.

Sample details are set out in Appendix 1.

2 Palynology

Summary descriptions follow. Detailed palynological data is set out in Appendix 2.

2.1 SAMPLE 1 (3169.84 M) – VOLGIAN OR YOUNGER

This is a very sparse organic residue yielding very few palynomorphs and no age-diagnostic material. The kerogen assemblage is dominated by woody material (26%) and amorphous organic material (AOM, 65%).

2.2 SAMPLES 2 AND 3 (3170.97 AND 3171.16 M) – VOLGIAN OR YOUNGER

These samples yielded moderately productive organic residues containing long-ranging spores and pollen indicating the Jurassic or Cretaceous such as the spores *Baculatisporites commaumensis*, *Cyathidites minor*, *Gleicheniidites* sp. and *Retitriletes austroclavatidite*, and pollen including undifferentiated bisaccates, *Araucariacites australis*, *Cerebropollenites macroverrucosus*, *Classopollis classoides*, *Exesipollenites scabratus* and *Perinoploenites elatoides*. Marine taxa are absent. The kerogen assemblage is dominated by woody and plant material.

2.3 SAMPLES 4 TO 6 (3171.79 TO 3173.41 M) – VOLGIAN OR YOUNGER

These are very sparse organic residues yielding very few palynomorphs – mostly long-ranging Mesozoic spores and pollen. The lower three kerogen assemblages are dominated by woody material (50–67%). Palynomorphs are rare and poorly preserved (corroded). However, a specimen of the spore genus *Cicatricosisporites* in sample 5 (3172.49 m) suggests a Volgian or younger age at this level.

An indeterminate peridinioid dinoflagellate cyst is present in sample 4 (3171.79 m) suggesting marine influence at that level.

3 Conclusions

This generally poor run of samples lacks good age-diagnostic palynomorphs. A Volgian or younger age is tentatively assigned in Sample 5 at 3172.49 m by the presence of the spore genus *Cicatricosisporites*.

References

DÖRHÖFER, G. 1979. Distribution and stratigraphic utility of Oxfordian to Valanginian miospores in Europe and North America. *American Association of Stratigraphic Palynologists Contributions Series*, 5B, 101–132.

Appendix 1 – Sample details (measured depths)..

INFORMAL No.	BGS MPA No.	DEPTH (m)	SSK No.
1	67617	3169.84	63868
2	67616	3170.97	63867
3	67615	3171.16	63866
4	67614	3171.79	63865
5	67613	3172.49	63864
6	67612	3173.41	63863

Appendix 2 – Palynology data.

Well 206/05-2						
Number	1	2	3	4	5	6
MPA Number	67617	67616	67615	67614	67613	67612
Depth	3169.84	3170.97	3171.16	3171.79	3172.49	3173.41
Age interpretation	Volgian or younger					Indet.
Palaeoenvironment	Terrestrial taxa only			?Marine	Terrestrial taxa only	
PTERIDOPHYTE SPORES						
<i>Baculatisportites commaumensis</i>		X	X		X	
<i>Cicatricosisporites</i> sp.					X	
<i>Contignisporites cookksonii</i>					X	
<i>Cyathidites minor</i>		X	X	X	X	
<i>Gleicheniidites</i> sp.		X	X			
<i>Kyrtomisporis</i> sp.					?	
<i>Neoraistrickia</i> sp.			X			
<i>Retitriletes austroclavatidites</i>		X	X			X
Spore - indeterminate		X	X			
<i>Staplinisporites caminus</i>			X			
<i>Torosisporis</i> sp.		X				
GYMNOSPERM POLLEN						
<i>Araucariacites australis</i>		X	X	X	X	X
<i>Bisaccate pollen</i> undiff.		X	X	X	X	
<i>Cerebropollenites macroverrucosus</i>		X	X			X
<i>Classopollis classoides</i>		X	X	X	X	
<i>Exesipollenites scabratus</i>		X	X	X		
<i>Monocolpate</i> sp.						
<i>Perinopollenites elatoides</i>	X	X	X			
DINOFLAGELLATE CYSTS						
Peridinioid cyst indet.				?		
KEROGEN TYPE PERCENTAGES						
Wood	26	7	22	67	59	50
Plant fragments	9	87	50	16	38	8
Palynomorphs	0	2	12	2	1	0
Amorph. organic material (AOM)	65	4	16	15	2	42