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Palynology of the interval 3177.46 to 3222.35 m of well 205/22-1A, Faroe-Shetland Basin

ENERGY SYSTEMS AND BASIN ANALYSIS PROGRAMME
Commissioned Report CR/17/138

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 205/22-1A was undertaken and samples were taken for palynology in order to provide additional facies information and age determinations.

This generally poor run of samples lacks good age-diagnostic palynomorphs. Specimens of *Cicatricosisporites* and *Tuberositriletes* occur at sample 8 (3219.75 m). These highly ornamented spores indicate Late Jurassic (Volgian) or Cretaceous strata (Dörhöfer, 1979). Pollen and spore assemblages of a general Jurassic/Cretaceous aspect occur at Sample 1 (3177.46 m) and Sample 9 (3221.52 m).

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 205/22-1A 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 samples, aqueous residues and microscope slides are held in the BGS collections at Keyworth, Nottingham. Counts of kerogen types were carried out on unoxidised residues. Palynological analysis was carried out on oxidised material where possible.

Sample details are given in Appendix 1.

2 Palynology

Detailed palynological data is given in Appendix 2.

2.1 SAMPLE 1 (3177.46 M) – VOLGIAN OR YOUNGER

Abundant amorphous organic material is present with rare pollen grains and a foraminiferal test lining. This is the only marine indicator encountered in the section studied. Age-diagnostic palynomorphs are absent but the pollen assemblage has a generally Jurassic/Cretaceous aspect.

2.2 SAMPLES 2 TO 8 (3203.7 TO 3219.75 M) – VOLGIAN OR YOUNGER

Samples from this interval proved to be very disappointing being virtually devoid of palynomorphs. Some samples yielded abundant organic residues. Kerogen analysis shows that amorphous organic material dominates samples 2, 3 and 4; brown woody and plant material dominates samples 5 and 6; black wood dominates sample 7. Sample 8 yields abundant black wood, rare spores and pollen including specimens of *Cicatricosisporites* and *Tuberositriletes*. These highly ornamented spores indicate Late Jurassic (Volgian) or Cretaceous strata (Dörhöfer, 1979).

2.3 SAMPLE 9 (3221.52 M) – JURASSIC/CRETACEOUS

Sample 9 yields abundant plant material and brown wood and a typically Jurassic/Cretaceous spore and pollen assemblage. Age-diagnostic palynomorphs are absent as are marine palynomorphs.

2.4 SAMPLE 10 (3222.35) – INDETERMINATE

This sample is dominated by amorphous organic material but is devoid of palynomorphs and is therefore of indeterminate age.

3 Conclusions

This generally poor run of samples lacks good age-diagnostic palynomorphs. Specimens of *Cicatricosisporites* and *Tuberositriletes* occur at sample 8 (3219.75 m). These highly ornamented spores indicate Late Jurassic (Volgian) or Cretaceous strata (Dörhöfer, 1979). Pollen and spore assemblages of a general Jurassic/Cretaceous aspect occur at sample 1 (3177.46 m) and sample 9 (3221.52 m).

4 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	67663	3177.46	63991
2	67662	3203.7	63990
3	67661	3203.93	63989
4	67660	3205.18	63988
5	67659	3207.71	63987
6	67658	3209.07	63986
7	67657	3210.33	63985
8	67656	3219.75	63999
9	67655	3221.52	63998
10	67654	3222.35	63997

Appendix 2 – palynology data.

Well 205/22-1a										
Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
MPA Number	67663	67662	67661	67660	67659	67658	67657	67656	67655	**67654**
Depth	3177.46	3203.7	3203.93	3205.18	3207.71	3209.07	3210.33	3219.75	3221.52	**3222.35**
Age interpretation	**Volgian or younger**								**Jurassic/ Cret.**	**Indet.**
Palaeoenvironment	**?Marine**	**Indeterminate**				**Terrest. taxa only**	**Indet.**	**Terrestrial taxa only**		**Indet.**
PTERIDOPHYTE SPORES										
Baculatisporites commaumensis									X	
Cicatricosisporites sp.								X		
Cyathidites minor								X	X	
Densosprites sp.										
Foraminisporis sp.									X	
Gleicheniidites sp.									X	
Ischyosporites sp.										
Obtisisporis canadensis									X	
Rubinella major									X	
Spore - indeterminate								X	X	
Tuberositriletes sp.								X		
GYMNOSPERM POLLEN										
Araucariacites australis	X							X	X	
Bisaccate pollen undiff.	X					?			X	
Callialasporites dampieri	X									
Classopollis classoides	X									
Exesipollenites scabratus	X							X	X	
Monocolpate sp.									X	
Perinopollenites elatoides									X	
MISCELLANEOUS										
Foraminiferal test lining	X									
KEROGEN TYPE PERCENTAGES										
Wood	6	3	43	9	43	93	95	7	2	2
Plant fragments	0	1	0	91	57	7	3	84	23	23
Palynomorphs	3	0	0	0	0	0	1	9	0	0
Amorph. organic material (AOM)	91	96	57	0	0	0	1	0	75	75