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NATURAL ENVIRONMENT RESEARCH COUNCIL

Palynology of Faroe-Shetland Basin well 205/26-1 between 2095.71 and 2103.91 m

Energy Systems and Basin Analysis Programme

Commissioned Report CR/17/083

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 205/26-1 was undertaken. Six core samples were taken for palynology between 2103.91 m and 2095.71 m in order to provide age determinations and additional facies information. The five productive samples from between 2095.71 and 2103.09 m are questionably assigned to the late Ryazanian to the earliest Valanginian due to the presence of questionable specimens of the dinoflagellate cyst *Systematophora palmula*. The rest of the palynoflora is consistent with this assessment. This interval represents marine deposition.

1 Introduction

As part of detailed sedimentological logging of conventional core from offshore well 205/26-1, six samples between 2095.71 and 2103.91 m were collected for palynological analysis in order to provide biostratigraphical ages and palaeoecological information. The samples were all prepared using standard acid-based techniques. The samples, aqueous residues and microscope slides are held in the BGS collections at Keyworth, Nottingham.

The six samples are listed in Appendix 1.

2 Palynology

The samples from well 205/26-1 proved very sparse in palynomorphs; samples 1, 2 and 5 yielded assemblages rich in wood and amorphous organic material but samples 3, 4 and 6 are especially organic lean. The stratigraphical distribution of the palynomorphs and kerogen is detailed in Appendix 2.

Samples 1 to 5 inclusive yielded sparse, relatively low diversity palynofloras; the preservation is relatively poor. All the productive samples include marine forms, thereby indicating a marine depositional setting. Due to the fact that the kerogen and palynomorph assemblages are so similar, the five productive samples are interpreted as being part of the same genetic sedimentary unit. Sample 6 proved entirely barren.

The interval spanned by samples 1 to 5 (2095.71 to 2103.09 m) produced rare, poorly-preserved dinoflagellate cysts, many of which could not be identified with certainty. These include thick-walled forms of *Cribroperidinium*, *Cyclonephelium* spp., ?*Systematophora palmula* and *Systematophora* spp. This association is indicative of the Jurassic–Cretaceous transition (Volgian–Ryazanian). Specifically, *Systematophora palmula* ranges from the Late Ryazanian to the earliest Valanginian (Davey, 1982; Heilmann-Clausen, 1987; Costa and Davey, 1992). However, this form was not positively identified. Hence the interval from 2095.71 to 2103.09 m is tentatively assigned to the Late Ryazanian to the earliest Valanginian. The remainder of the palynoflora is consistent with this conclusion.

3 Conclusions

The five productive samples from well 205/26-1 between 2095.71 and 2103.09 m are tentatively assigned to the Late Ryazanian to the earliest Valanginian on the basis of the presence of

questionable specimens of *Systematophora palmula*. The remainder of the palynoflora is consistent with this conclusion. This interval represents marine deposition.

4 References

COSTA, L I, and DAVEY, R J. 1992. Dinoflagellate cysts of the Cretaceous System. 99–153 in *A stratigraphic index of dinoflagellate cysts*. POWELL, A J (editor). (London: Chapman and Hall, British Micropalaeontological Society Publications Series.)

DAVEY, R J. 1982. Dinocyst stratigraphy of the latest Jurassic to Early Cretaceous of the Haldager No. 1 Borehole, Denmark. *Danmarks Geologiske Undersøgelse*, Series B, No. 6, 1–57, pl.1–10.

HEILMANN-CLAUSEN, C. 1987. Lower Cretaceous dinoflagellate biostratigraphy in the Danish Central Trough. *Danmarks Geologiske Undersøgelse*, Series A, No. 17, 1–89.

Appendix 1 - list of samples (measured depths).

Informal No.	BGS Registration No.	Depth (m)
1	MPA 67648	2095.71
2	MPA 67647	2097.07
3	MPA 67646	2098.12
4	MPA 67645	2101.38
5	MPA 67644	2103.09
6	MPA 67643	2103.91

Appendix 2 - palynological data from well 205/26-1, between 2095.71 and 2103.91 m.

205/26-1						
Number	1	2	3	4	5	6
MPA Number	67648	67647	67646	67645	67644	67643
Depth (m)	2095.71	2097.07	2098.12	2101.38	2103.09	2103.91
Comments	sparse	sparse	v. sparse	v. sparse	moderate	barren
Age interpretation	?Late Ryazanian to earliest Valanginian					Indet.
Palaeoenvironment	marine					Indet.
PTERIDOPHYTE SPORES:						
Cyathidites spp.		X	X		X	
Ischyosporites vaerigatus		X	?			
spores - indeterminate	X				X	
GYMNOSPERM POLLEN:						
bisaccate pollen - undifferentiated					X	
Classopollis spp.					X	
Perinopollenites elatoides					X	
pollen - indeterminate	X					
DINOFLAGELLATE CYSTS:						
chorate dinoflagellate cysts - indet.	X					
Cribroperidinium spp. (thick-walled)	X	?	X	?		
Cyclonephelium spp.		?	?		X	
dinoflagellate cysts - indet.	X	X	X	X	X	
Systematophora palmula	?				?	
Systematophora spp.	?	?				
MISCELLANEOUS:						
foraminiferal test linings	X	X	X	X	X	
Pterospermella	X					
Tasmanites spp.	X	X	X		X	
KEROGEN TYPE PERCENTAGES						
w ood	63	28	...	...	43	...
plant fragments	18	12	...	...	18	...
palynomorphs	2	3	...	...	7	...
amorphous organic material (AOM)	17	57	...	...	32	...