

**A Palynological Study  
of the Interval 14450ft. to 14978ft.  
in NOCS Well 7/11-7**

**Project No. 1680/A/A/PV**

by

**S. Duxbury**

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*Prepared by  
Halliburton Reservoir Description Services  
Howe Moss Place  
Kirkhill Industrial Estate  
Dyce  
Aberdeen AB2 0GS  
U.K.*

*Prepared for  
Norsk Agip a.s.  
Travbaneveien 3  
PO Box 101  
4033 Forus  
Stavanger  
Norway*

## Contents

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1.	INTRODUCTION	1
2.	STRATIGRAPHIC RESULTS	2
3.	CONCLUSIONS	3

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## 1. Introduction

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Palynological analysis has been undertaken on a selected interval in NOCS well 7/11-7, as part of a larger proprietary study for Norsk Agip. The main objectives were to age-date samples analysed and to refer observed palynofloras to a standard biozonal scheme.

Results are presented below, and a comprehensive species matrix is included at the end of this report.

Unfortunately, recovery was generally poor, with the cored section virtually barren. This may be due to a combination of very sandy lithologies and high organic maturity, as demonstrated by the darkened palynomorphs recovered from the overlying sections.

No electric logs or other stratigraphic data were provided for this study and no detailed lithostratigraphic conclusions could be made.

Sample depths to two decimal places are core depths (uncorrected) and the rest are ditch cuttings.

Samples analysed here were processed using a standard overnight HF treatment to remove silicates, followed by 30 seconds ultrasonic treatment to ensure full kerogen dispersal. They were then panned to remove larger, heavier material. Overnight Schulze oxidation was then applied in an attempt to improve recovery.

All samples were finished using KOH solution and Bismarck Brown staining.

Ma	SYSTEM	AGE		STANDARD AMMONITE ZONATION	HALLIBURTON PALYNOLOGY ZONES				
		STAGE							
138	CR BT AC EO US	B A R L Y	VALANG	BARLY	PARATOLIA	PK4 (para.)			
			R Y A Z A N I A N	L A T E	ALBIDUM	STENOMPHALUS	PK3	b	
					a				
				B A R L Y	ICENII	PK2			
					KOCHII	PK1			
RUNCTONI									
144	J U R A S S I C	L A A S T E R E	P O R T L A N D I A N	L A T E	L A T E	LAMPLOHI	PUJ17		
						PREPLICOMPHALUS			
						PRIMITIVUS	PUJ16		
				B A R L Y	V O L G I A N	M I D D L E	OPPRESSUS	PUJ15	b
							ANGUIFORMIS		a
							KERBERUS		
				L A T E	V O L G I A N	M I D D L E	OKUSENSIS	PUJ14	
							GLAUCOLITHUS		
				L A T E	V O L G I A N	M I D D L E	ALBANI	PUJ13	
							FITTONI	PUJ12	
				L A T E	V O L G I A N	M I D D L E	ROTUNDA		
							PALLASIOIDES	PUJ11	
				M I D	V O L G I A N	B A R L Y	PECTINATUS	PUJ10	
							HUDELETONI	PUJ9	b
				WHEATLEYENSIS					
				SCITULUS					
				150	C	K I M M E R I D G I A N (ang)	B A R L Y	K I M M E R I D G I A N (gallico)	AUTISSIODORENSIS
EUDOXUS	PUJ7	b							
MUTABILIS		a							
CYMODOCE									
156	O X F O R D I A N	O X F O R D I A N	L A T E	M I D D L E	ROSENKRANTZI	PUJ5	b		
					REGULARE		a		
					SERRATUM				
					GLOSENSE	PUJ4			
					TENUISERRATUM	PUJ3	b		
					DENSIFICATUM		a		
					B A R L Y	M I D D L E	B A R L Y	CORDATUM	PUJ1
MARIAE									
163	C A L L O V	C A L L O V	L A T E	L A T E	LAMBERTI	PMI12			
					ATHLETA				

Fig. 1:

HALLIBURTON UPPER JURASSIC  
NORTH SEA PALYNOFLORAL SCHEME

## 2. Stratigraphic Results

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All samples examined from 7/11-7 were either barren or yielded only broadly age-diagnostic palynomorphs. All were very mature and palynofloras were very dark and poorly preserved.

### Samples analysed (depths and feet)

14450	14550	14600	14650	14700
14750	14800	14860	14900	14923.00
14941.00	14949.00	14956.00	14964.00	14968.00
14978.00				

### 14450ft to 14600ft RYAZANIAN TO LATE VOLGIAN

**Assemblage characteristics:** Ditch cuttings between 14450ft and 14600ft yielded fairly diverse palynofloras, including fairly common *Pterospermella* spp. at 14450ft; these were very common as high as 14600ft. Bisaccate pollen was common at 14450ft, but rare below.

In addition, the palynofacies at 14450ft and 14550ft was subtly different to that at 14600ft in containing less dark, vascular woody debris and much more amorphous debris. Other than *Pterospermella* spp and bisaccate pollen, taxa observed here were rare and sometimes obviously caved.

**Comments:** The presence of large numbers of *Pterospermella* spp, as at 14600ft, is typical of the Tyne Group, Mandal Formation in this area. The age suggested by the *Pterospermella* acme is no younger than 'mid' Ryazanian, although this event can occur as old as Late Volgian.

The observed palynofacies change between 14550ft and 14600ft could represent a Mandal to pre-Mandal transition.

### 14650ft to 14978.00' INDETERMINATE

**Assemblage characteristics:** The ditch cuttings samples between 14650ft and 14750ft were similar in containing common to abundant *Pterospermella* spp. with otherwise rare, non age-diagnostic taxa, some of which were obviously caved. Between 14800ft and 14900ft, the large numbers of *Pterospermella* spp. persisted, but together with common bisaccate pollen.

Core chips between 14923.00ft and 14978.00ft yielded very abundant, dark brown to black woody debris. Most were entirely barren of palynomorphs, but those at 14923.00ft and 14941.00ft yielded a single bisaccate pollen grain and two microforaminifera respectively. Neither are age-diagnostic, although the latter prove a marine setting at 14941.00ft.

**Comments:** The extremely poor recovery from the core samples and the marked contrast between these and the *Pterospermella*-rich ditch cuttings above suggest that much of the material observed in the latter might be caved. There is therefore no possibility of age-dating this part of 7/11-7, based on observed palynofloras.

### 3. Conclusions

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Results in this study have been adversely affected by extremely poor palynomorph recovery, particularly in the cored section. The highly mature nature of assemblages observed was probably a key factor in assemblage dilution. However, the extremely poor assemblages recovered from the cored section are undoubtedly, at least partly, marine in origin, but they are atypical of proven Upper Jurassic sandy sections in this area (eg. Ula, Gyda).

In addition to the assemblage dilution caused by high organic maturity, therefore, there is some possibility of either facies variation compared to other Upper Jurassic sections in the area or of a pre-Late Jurassic age.

WELL 7/11-7

DATE NOVEMBER 1992

LOCATION NORWEGIAN NORTH SEA

SHEET 1 OF 1

OPERATOR

STRATIGRAPHERS SD

INTERVAL 14400' 0" - 14900' 0"

CHART NUMBER 4231



PALYNOLOGICAL DISTRIBUTION CHART  
Scale 1:1000

CASING CORES SIDEWALL CORES	SAMPLE POSITION C SWC	STRATIGRAPHY			ENVIRONMENT	COMMENTS	DINOCYST	MIOSPORE	MIS
		LITHOLOGY	LITHOLOGICAL UNIT	AGE					
14450' 0"	14450' 0"	LATE JURASSIC EARLY CRETACEOUS	LATE VOLGIAN - RYAZANIAN	CONTINENTAL					
14500' 0"	14550' 0"								
14550' 0"	14550' 0"	INDETERMINATE	INDETERMINATE						
14600' 0"	14650' 0"								
14650' 0"	14700' 0"								
14750' 0"	14750' 0"								
14800' 0"	14800' 0"								
14850' 0"	14860' 0"								
14900' 0"	14900' 0"								

*Gonyaulacysta cretacea/helicoidea*  
*Hallodinium krutzschii*  
*Cyclonephelium distinctum*  
*Spiniferites multibrevis*  
*Spiniferites ramisus* sp.  
*Eatonicysta ursulae*  
*Simiodinium grossii*  
*Leptodinium subtile*  
*Odontochitina operculata*  
*Indeterminate chorate cysts*  
*Tenenedinium daveyi*  
  
*Bisaccates*  
*Ceratoidites* spp.  
*Cerebropollenites mesozoicus*  
*Coronatispora valdensis*  
*Classopollis* spp.  
  
*Pterospirillum* spp.  
 Dark Vascular Debris

WELL 7/11-7

DATE NOVEMBER 1992

LOCATION NORWEGIAN NORTH SEA

SHEET 1 OF 1

OPERATOR

STRATIGRAPHERS SD

INTERVAL 14760' 0" - 15010' 0"

CHART NUMBER 4232



PALYNOLOGICAL DISTRIBUTION CHART

Scale 1:500

CASING CORES SIDEWALL CORES	SAMPLE POSITION C SWC	STRATIGRAPHY				ENVIRONMENT	COMMENTS	DINOCYST	MIO	MIS
		LITHOLOGY	LITHOLOGICAL UNIT	SYSTEM	AGE					
14765' 0"										
	14800' 0"									
14810' 0"										
14835' 0"										
14860' 0"	14860' 0"									
14885' 0"										
	14900' 0"									
14910' 0"										
	14923' 0" C									
14935' 0"										
	14941' 0" C									
	14949' 0" C									
14960' 0"	14956' 0" C									
	14964' 0" C									
	14968' 0" C									
	14978' 0" C									
14985' 0"										

- Saxiniferites multibrevis*
- Cyclonophellium distinctum*
- Leptodinium subtile*
- Obolochitina operculata*
- Cribrochitidium* spp.
- Indeterminate Charate Cysts*
- Tenacodinium beveyi*
- Bisaccates*
- Dark Vascular Debris*
- Pteropermella* spp.
- Microstrombilitera*