N.25

WELLFILE

PALEONTOLOGICAL STUDY OF THE STATOIL/ESSO 15/9-1 OFFSHORE NORWAY WELL

by M. Pons and J.P. Verdier

Micropaleontological studies on this well were carried out from 3232m to 3522m on 42 samples. 118 palynological slides were prepared from 56 samples spanning an interval from 3304m to 3732m. Washed residues of ditch cutting samples (paper cuts) and core plugs were used for these studies. It is worth noting that the non-availability of unwashed ditch cutting samples did not facilitate our study and could explain the paucity or the non-representativity of certain levels. The data gathered from our studies enable us to propose the following stratigraphic interpretation. Palynological results were already forwarded on our Log I sent in August 1977.

Micropaleontology	Top	Palynology
Late Cretaceous	already at 3232m	
Albian-Aptian	3325m	
Barremian	3361m	
	3376m	Kimmeridgian
	3501m	Oxfordian
	3526m	Callovian
	3661m	Dogger (Callovian or Bathonian)
	3735m	T.D.

Stratigraphy

3232m-3322m. Late Cretaceous

The first sample examined contained a Late Cretaceous assemblage. *Rugoglobigerina* ex.gr. *rugosa* is the predominant species of this interval. From 3232m down the cuttings are poor or barren.

3325m-3358m. Albian-Aptian

Based on the presence of *Pleurostomella obtusa* at 3325m and associated with a foraminiferal assemblage made of *Hedbergella* spp., *Valvulineria* sp., *Glomospira* sp. and a few arenaceous foraminifers. A very sparse microflora was observed in five ditch cutting samples from 3328m down to 3364m. No stratigraphically restricted dinoflagellate was observed, except that the overall composition of the microflora suggested an Aptian to Barremian age. None of the Albian dinoflagellates reported by The Continental Shelf Institute were found either in situ or caved; this could be explained by the fact that only washed residues were made available to us from which could have been removed plastic clay or shales containing the reported Albian microflora.

3361m-3373m. Barremian

Characterized by the presence of three different species of ostracods namely: *Protocythere triplicata*, *Pontocyprella* sp., *Robsoniella* sp. (the last two species are also present at 15/12-2) and *Gavelinella barremiana*. Various arenaceous foraminifers associated with *Uvigerinammina* sp., *Dorothia* aff. *kummi*, *Spirillina* sp., *Trocholina* sp., *Pseudonodosaria* sp. 11, *Glomospira* spp. and *Vidalina* sp. were also found in the interval.

3376m-3501m. Kimmeridgian

The first Malm association made of a relatively rich dinoflagellate association was encountered at 3376 m. The typical Late Malm palynofacies predominantly composed of amorphous organic matter first appeared at 3376m and began to fade out at 3501m. The microfossils present in the two top samples (3376m and 3382m) do not rule out the possibility of Earlymost Portlandian to be present; however, as in previous subsurface sections studied, we have considered that 15/9-1 penetrated below the Kimmerian unconformity into a complete Kimmeridgian interval. Comparing with other sections from the 15 block, the 15/9-1 well looks quite similar to 15/12-1 and the Kimmeridgian section looks more complete than in 15/6-3 and 15/6-4. We have tentatively placed a Middle/Late Kimmeridgian time line based on the top occurrence of a dinoflagellate and this correlation shows that 15/6-4 is truncated at the top. Rare *Haplophragmoides* sp. were found at 3433m.

3501m-3526m. Oxfordian

The usual Oxfordian markers did not show up very clearly in this section, as their first appearance is situated some 24 meters below the first indication of a change in organic matter composition usually stratigraphi-

cally meaningful. The Continental Shelf Institut reports our top Oxfordian marker as high as 3493m; placing the top Oxfordian at 3501m seems reasonable beside the fact that a few of the Late Oxfordian dinoflagellate appear below this depth. Additional dinoflagellate tops between 3501m and 3513m are indicative of Middle and Early Oxfordian strata being present between those depths.

3526m-3661m. Callovian

Comparisons of our observations with those of the Continental Shelf Institute and Robertson Research tend to indicate that the top of the Callovian is situated at 3526m. The deepest in situ Callovian microflora is found at 3661m. A great similarity was noticed between the microflora found in the cored interval (and particularly core 7) of 15/6-3 and the association encountered between 3526m and 3661m.

3661m-3735m (T.D.). Callovian/Bathonian?

This lowermost interval in 15/9-1 could still be Callovian or eventually Bathonian. A Bajocian age is not paleontologically substantiated. Callovian dinoflagellates are still present in ditch cutting samples below 3661m, our deepest core plug control; however, their in situ character cannot be ascertained. An influx of Dogger sporomorphs was noticed in cutting samples from 3690m down to T.D.; this does not reflect a stratigraphic change but rather an environmental modification. Our Bajocian restricted microflora was not found in this well.

Comparison with other 15 block wells

Kimmeridgian

A very similar section was encountered in 15/12-1 and 15/12-2 despite a lateral facies change. The 15/6 wells on the other hand show an incomplete, truncated at the top, Kimmeridgian section.

Oxfordian

A quite comparable interval was found in the 5 wells, thickest in 15/6-2 and thinnest in 15/6-4.

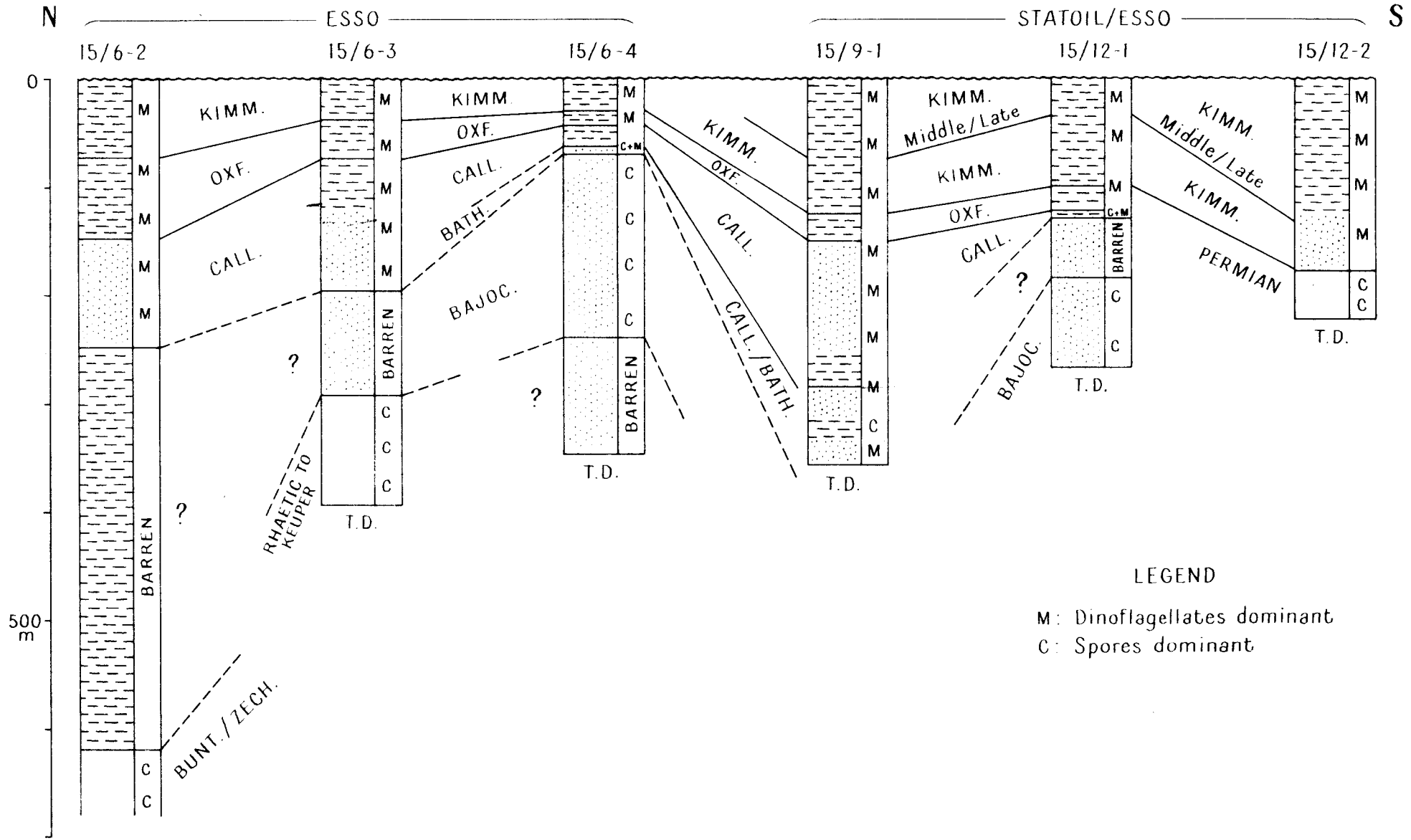
Callovian

Observed in 5 wells; however, its vertical development cannot be precisely indicated in 3 wells where it is underlained by intervals barren of microfossils. This situation offers several interpretations regarding the age of these barren intervals: they could be of the same age in the three wells or stratigraphically different; they could be still Callovian in the three sections or older.

Bajocian

Two sections presented a typical Bajocian interval similar to those encountered in the Brent area. They are always characterized by a microflora of purely continental origin giving to the sands a deltaic environment of deposition. Any younger sands (Kimmeridgian or Callovian) encountered in the 15 block on the contrary contained a predominantly marine microflora. In 15/6-4 the lower part of the section could still be Bajocian or older. Comparison between these 6 wells shows a similar stratigraphic setting which unfortunately remain imprecise for its lower part due to the scarcity of microfossils.

JPV:ae
Sept. 2, 1977



LITHOLOGIC AND BIOSTRATIGRAPHIC CORRELATIONS OF THE JURASSIC SECTIONS IN ESSO 15/6-2, 15/6-3, 15/6-4 AND STATOIL/ESSO 15/9-1, 15/12-1, 15/12-2

EPR-E. JPV/jl. 2 Sep. 77 N°1123

PROPRIETARY
EXPLORESSO

STATOIL-ESSO 15/9-1

LOG II

SCALE: 1/2000

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EXPLANATION

Sidewall core M : processed for foraminifers
" " P : " " palynology
" " C : " " coccoliths

DEPTH IN meters	DEPTH IN feet	SAMPLES cores	SAMPLES swc	AGE	PALEONTOLOGICAL SUBDIVISION: FORAMINIFERA OSTRACODS	PALEONTOLOGICAL SUBDIVISION: SPORES-POLLEN DINOFLAGELLATES	RELATIVE WATER DEPTH	REMARKS
50	100'						continental / transitional / shallow shelf / middle shelf / deep shelf / basin	
	200'							
100	300'							
	400'							
150	500'							
3300	11000'			LATE CRETACEOUS	Rugoglobigerina ex.gr. rugosa			3232 m First micropaleontological cutting sample examined
				3325 m				3304m First palynological cutting sample examined
				ALBIAN-APTIAN	Pleurostomella obtusa Hedbergella spp.			
				3361 m				
				BARREMIAN				
3400				3370m	Protocythere triplicata Pontocyprella sp. Gavelinella barremiana Robsoniella sp.	M. staffinensis E. polyplacophorum A.O.M.		
	11500'			KIMMERIDGIAN	3433 m Haplophragmoides sp.			
3500				3501m				
				OXFORDIAN		S.crystallinum, G.scarburghensis, W. fimbriata, A. aemulum W + H		
				3526m				
				CALLOVIAN		C. tenellum N. pellucida M. deflandrei W + H		
3600	12000'			3661m				
				DOGGER (CALLOVIAN or BATHONIAN, probably not BAJOCIAN)		Same association + Dogger sporomorphs influx W + H		
3700				3735m T.D.				Deepest cutting sample examined at 3732m
	12500'							
3800								