RPS PALEO
THE GEOLOGICAL CONSULTANCY

STATOIL

NOCS Well 3/7-1

Biostratigraphy of the interval 1750m - 2860m

Project No. PA 6091(a)

RPS PALEO
THE GEOLOGICAL CONSULTANCY

STATOIL NORWAY

NOCS Well 3/7-1

Biostratigraphy of the Interval 1750m - 2860m

Project No. PA 6091(a)

by:

P.Mears
&
S. Mahdi

March, 1997

Prepared for:

Statoil
Forusbeen 50
Forus
4035 Stavanger
Norway

Prepared by:

RPS Paleo Limited
Kirkhill Drive
Kirkhill Industrial Estate
Dyce
Aberdeen
AB21 0EU

CONTENTS

ENCLOSURES

1. Stratigraphic Summary Log for the interval 1750m - 2860m (1:1000 Scale)

2. Micropalaeontological Data Distribution Charts (1:2000 Scale) for the Intervals

   I. Interval 1750m - 2050m
   II. Interval 2050m - 2350m
   III. Interval 2350m - 2650m
   IV. Interval 2650m - 2860m

3. Palynological Data Distribution Charts (1:2000 Scale) for the Intervals

   I. Interval 1750m - 2050m
   II. Interval 2050m - 2350m
   III. Interval 2350m - 2650m
   IV. Interval 2650m - 2860m

1. SUMMARY

1. The youngest sediments examined from the 3/7-1 well are assigned a Late Oligocene age and are part of the Hordaland Group (undifferentiated). The top of this unit is not seen.

2. Early Oligocene sediments are seen directly overlying those assigned a Late - ?Middle Eocene age at 2170m. This boundary is thought to be conformable.

3. Late - ?Middle Eocene sediments, still attributable to the Hordaland Group, are seen from 2170m - 2200m. These directly overlie the Hordaland section of the Early Eocene.

4. The top of the Rogaland Group is seen at 2690m with the occurrence of the Balder Formation. The boundary between the Hordaland and Rogaland Groups is unconformable, with palynozones TP8 - TP7C absent. Evidence for some of the older Hordaland sediments is seen caved into the Rogaland Group.

5. The Sele Formation is seen at 2705m with both micropalaeontological and palynological evidence in accordance. This is the lowest unit recorded from the Early Eocene.

6. The top of the Late Palaeocene is represented by the Forties Formation and palynozone TP6B. A minor unconformity is seen at the base of this unit where it overlies the Lista Formation.

7. The Lista Formation is also unconformable at its base, where it overlies the Vaale Formation. Palynological evidence suggests the absence of Zone TP4.

8. Much of the evidence for 'lower' Lista and 'upper' Vaale is seen caved into older sediments.

9. The Vaale Formation uncomforably overlies the chalks of the Ekofisk Formation. The upper part of the Ekofisk Formation is either condensed or totally absent.

10. The oldest sediments examined from this well are latest Maastrichtian in age and are assigned to the Tor Formation.

2. PROJECT DATA

This report presents the results of the biostratigraphic analyses, detailed below, which have been carried out over the Interval 1750m- 2860m on behalf of Statoil from the Norske Elf operated 3/7-1 Well.

The analyses carried out are as follows:

Micropalaeontology	:	81 cuttings samples from the interval 1750m - 2855m
Palynology	:	82 cuttings samples from the interval 1750m - 2860m

No log data were provided by Statoil so all lithostratigraphic boundaries are based upon biostratigraphical evidence.

All micropalaeontological samples were analysed volumetrically. Palynological analyses are quantitative. Using this method, a minimum count of 200 specimens is made, plus scanning of the rest of the assemblage for stratigraphically important species. The criteria used are:

Consistent	:	1 - 3 specimens
Frequent	:	4 - 10 specimens
Common	:	11 - 30 specimens
Abundant	:	31 - 60 specimens
Superabundant	:	>60 specimens

Results are presented on a 1:1000 scale Stratigraphic Summary Log (Enclosure 1) and on 1:2000 scale biostratigraphic Data Distribution Charts (Enclosures 2 and 3).

RPS Paleo acknowledge the cooperation and assistance received from Statoil personnel during the course of this project. RPS Paleo staff involved in this project were:

Pete Mears	:	Project Coordinator and Micropalaeontology
Salih Mahdi	:	Palynology

3. CHRONOSTRATIGRAPHIC SUCCESSION

Age		Top
Late Oligocene		1750m (top not seen)
Early Oligocene		1970m
Late - ?Middle Eocene		2170m
Middle Eocene		2200m
Early Eocene		2360m
---------- Hiatus ----------		
Late Palaeocene		2715m
---------- Hiatus ----------		
Early Palaeocene		2775m
---------- ? Hiatus ----------		
Late Cretaceous	latest Maastrichtian	2850m - 2860m (base not seen)

4. LITHOSTRATIGRAPHIC SUCCESSION

Lithostratigraphic Unit		Interval Top
Hordaland Group	(Undifferentiated	1750m (top not seen)
	---------- Hiatus ----------	
Rogaland Group	(Balder Formation	2690m
	(Sele Formation	2705m
	(Forties Formation	2715m
	---------- ? Hiatus ----------	
	(Lista Formation	2720m
	---------- Hiatus ----------	
	(Vaale Formation	2760m
	---------- ? Hiatus ----------	
Shetland Group	(Ekofisk Formation	2775m
	---------- ? Hiatus ----------	
	(Tor Formation	2850m - 2860m (base not seen)

5. BIOSTRATIGRAPHIC ZONATIONS

Planktonic Micropalaeontological

TMP9	1750m (top not seen)
TMP8A	1810m
TMP7C	1990m
TMP7B	2120m
TMP5E	2270m
?TMP5D	2320m
TMP5B	2390m
TMP5A	2400m
TMP4	seen caved at 2690m
TMP3J - TMP3F	2690m
TMP3D	2705m
TMP2	seen caved at 2765m
TMP1C	2780m
?TMP1B	2795m - 2855m (base not seen)

Benthonic Micropalaeontological

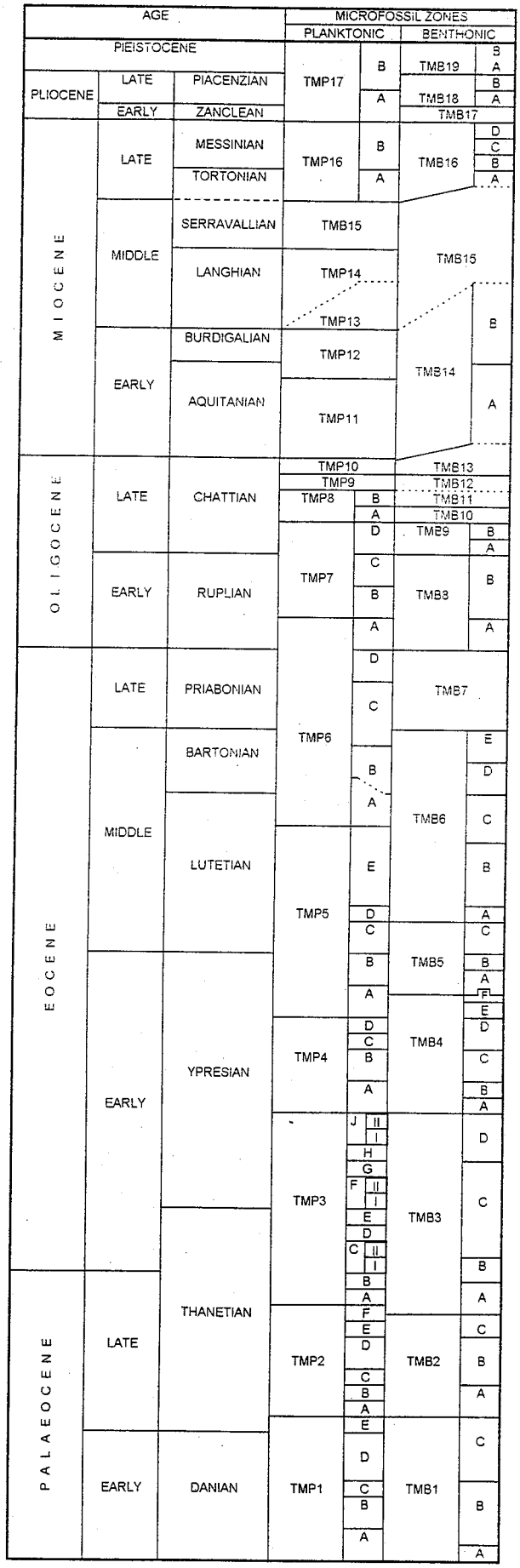
Unassigned	1750m (top not seen)
TMB11	1770m
TMB9B	1810m
?TMB8B	2030m
TMB8B	2110m
TMB8A	2170m
?TMB7	2190m
TMB6E	2230m
TMB6C	2250m
TMB6B	2310m
TMB5A	2360m
TMB4C - TMB4B	seen caved at 2690m
?TMB2C	2720m
TMB2B	2735m
TMB2A	seen caved at 2765m
TMB1C	2765m
TMB1B	2780m - 2855m (base not seen)

Palynology

TP16C	1760m (top not seen)
TP16B	1840m
TP16A	1920m
TP15C	1970m
TP15B	2060m
TP15A	2130m
TP14C - ?TP13B	2170m
TP13B	2200m
TP13A	2220m
TP12C (low)	2450m
TP12B - ?TP12A (low)	2580m
TP11 - ?TP10	2660m
TP9B	2680m
TP9A - TP7C absent	
TP7B - TP7A	2700m
TP6B	2715m
TP6A absent	
TP5C - ?TP5A	2745m
TP4 absent	
TP3C	2760m
TP3B - TP3A ?absent	
TP2B - ?TP1	2775m
KP32	2850m - 2860m (base not seen)

RPS PALEO
THE GEOLOGICAL CONSULTANCY

TERTIARY MICROPALAEONTOLOGICAL ZONATION SCHEME



TERTIARY PALYNOLOGICAL ZONATION SCHEME

EPOCH		AGE	ZONE	SUBZONE
OLIGOCENE	EARLY	RUPELIAN	TP15	C
				B
				A
EOCENE	LATE	PRIABONIAN	TP14	C
				B
				A
	MIDDLE	BARTONIAN	TP13	B
				A
		LUTETIAN	TP12	C
				B
				A
	EARLY	YPRESIAN	TP11	
			TP10	
			TP9	B
				A
			TP8	
			TP7	C
				B
				A
PALAEOCENE	LATE	THANETIAN	TP6	
			TP5	C
				B
				A
			TP4	B
				A
			TP3	C
				B
				A
	EARLY	DANIAN	TP2	B
				A
			TP1	C
				B
				A

TERTIARY MICROPALAEONTOLOGICAL AND PALYNOLOGICAL ZONATION SCHEME

EPOCH		AGE	MICROFOSSIL ZONES				PALYNOLOGICAL ZONES	
			PLANKTONIC		BENTHONIC			
EARLY OLIGOCENE		RUPELIAN	TMP7		TMB8		TP15	
EOCENE	LATE	PRIABONIAN	TMP6	D	TMB7		TP14	C
				C				B
								A
	MIDDLE	BARTONIAN		B	TMB6	E	TP13	B
				A		D		
		LUTETIAN	TMP5	E		C		A
				D		B	TP12	C
				C	TMB5	A		B
				B		C		A
	EARLY	YPRESIAN		A		B	TP11	
						A	TP10	
			TMP4	D	TMB4	-		
				C		E	TP9	B
				B		D		
				A		C		A
			TMP3	J	TMB3	B		
				H		A	TP8	
				G		D	TP7	C
				F		C		B
				E		B		A
				D		A	TP6	
				C		C	TP5	C
				B		B		B
				A		A	TP4	A
PALAEOCENE	LATE	THANETIAN	TMP2	F	TMB2	B		B
				E		A		A
				D		C	TP3	C
				C		B		B
				B		A		A
				A		C	TP2	B
	EARLY	DANIAN	TMP1	E	TMB1	B		A
				D		A	TP1	C
				C				B
				B				A
				A				

6. BIOSTRATIGRAPHY

6.1 Cenozoic

INTERVAL 1750m - 1970m : LATE OLIGOCENE (top not seen)

Lithostratigraphic Unit

Hordaland Group
Undifferentiated (part)

The age of this interval is based upon the following evidence:

1750m	(M)	the occurrence of *Globorotalia opima nana* (Zone TMP9)
1760m	(P)	the consistent occurrences of *Artemisiocysta cladodichotoma* and *Chiropteridium* spp. (Subzone TP16C)

Micropalaeontology

Zonation

Planktonic

TMP9	:	1750m (top not seen)
TMP8A	:	1810m

Benthonic

Unassigned	:	1750m (top not seen)
TMB11	:	1770m
TMB9B	:	1810m

Key Events

1770m	the highest occurrence of *Guttulina problema* (Zone TMB11)
1810m	the highest occurrence of *Spirosigmoilinella compressa* (Subzone TMB9B) the highest occurrence of Diatom sp. 5, King (Subzone TMP8A)

Comments

The highest sample analysed at 1750m contains *Globorotalia opima nana*, indicating an age no younger than Late Oligocene and planktonic Zone TMP9. Subsequent evidence for sediments of this age is provided at 1770m by the occurrence of *Guttulina problema* (Zone TMB11) and at 1810m by the highest *Spirosigmoilinella compressa* and Diatom sp. 5, King indicating Subzones TMB9B and TMP8A respectively.

Assemblages within this interval comprise mixed planktonic and benthonic foraminiferal elements with agglutinated taxa dominant. Cenosphaeriid radiolaria are also seen.

Caving of Miocene taxa is a feature of this interval.

Palynology

Zonation

TP16C	:	1760m (top not seen)
TP16B	:	1840m
TP16A	:	1920m

Key Events

1760m	the consistent occurrences of *Cordosphaeridium cantharellum, Homotryblium tenuispinosum* and *Paralecaniella indentata* occurrence of common *Arachnodinium antarcticum*
1770m	occurrence of frequent *Paralecaniella indentata*
1780m	occurrences of *Membranophoridium aspinatum* and *Gerlachidium aechmophorum*
1800m	the highest occurrence of *Wetzeliella gochtii*
1820m	massive influx of superabundant *Homotryblium floripes/vallum group* occurrence of frequent *Palaeocystodinium* sp. A Costa & Downie 1979
1840m	the highest occurrence of *Deflandrea phosphoritica* (Subzone TP16B) occurrence of frequent *Artemisiocysta cladodichotoma*
1900m	occurrence of common *Palaeocystodinium* sp. A Costa & Downie 1979
1920m	the highest occurrence of *Distatodinium biffii* and *Areoligera semicirculata* (Subzone TP16A)

1930m — the highest occurrence of frequent *Areoligera semicirculata* and *Distatodinium biffii*
occurrence of common *Palaeocystodinium golzowense* and *Arachnodinium antaraticum*

1940m — the highest occurrence of *Svalbardella* cf. *granulata*
occurrence of frequent *Chiropteridium mespilanum*

1960m — influx of common *Palaeocystodinium golzowense*

Comments

The first sample analysed for palynology is at 1760m. The consistent occurrence of *Artemisiocysta cladodichotoma* and *Chiropteridium* spp. indicates an age no younger than Late Oligocene, Subzone TP16C. The consistent occurrences of *Cordosphaeridium cantharellum, Homotryblium tenuispinosum* and *Paralecaniella indentata* in the same sample (1760m) are further support for the above interpretation.

At 1820m, a massive influx of superabundant *Homotryblium floripes/vallum* gp. proves a good correlative event in this area and appears to coincide with a major seismic event. Since other micropalaeontological and palynological markers for the Late Oligocene occur higher, this event is regarded as 'intra' Late Oligocene in age, i.e. 'intra' Subzone TP16C.

Palaeoenvironmental Comments

The dominance of flysch-type agglutinated foraminifera suggests outer-shelf to upper bathyal water depths and restricted water circulation. Rare calcareous benthonic taxa indicate some oxygen availability at the sediment water interface.

INTERVAL 1970m - 2170m : EARLY OLIGOCENE

Lithostratigraphic Unit

Hordaland Group
Undifferentiated (part)

The top and age of this interval are based upon the following evidence:

1970m	(P)	the highest consistent occurrence of *Rhombodinium draco* in association with common *Deflandrea* spp. (including frequent *D. phosphoritica*) (Subzone TP15C)

Micropalaeontology

Zonation

Planktonic

TMP7C	:	1990m
TMP7B	:	2120m

Benthonic

?TMB8B	:	2030m
TMB8B	:	2110m
TMB8A	:	2170m

Key Events

1990m	the highest occurrence of Diatom sp. 3, King (large var.) (Subzone TMP7C)
2030m	the highest occurrence of questionable *Rotaliatina bulimoides* (Subzone ?TMB8B)
2110m	the highest occurrence of *Rotaliatina bulimoides* (Subzone TMB8B)
2120m	the highest occurrence of actinommid radiolaria (Subzone TMP7B)
2170m	the highest occurrence of *Eratides foliaceus* (Subzone TMB8A)

Comments

The highest micropalaeontological evidence for penetration of Early Oligocene sediments is seen at 1990m with the highest occurrence of Diatom sp. 3, King (large var.) indicating the presence of Subzone TMP7C. This is some 20m below the highest palynological evidence for sediments of this age.

Further micropalaeontological evidence is seen at 2030m with the questionable occurrence of *Rotaliatina bulimoides*, and at 2110m with the confirmation of this taxon and Subzone TMB8B. Intra Early Oligocene events TMP2B and TMB8A are marked at 2120m and 2170m respectively by the highest occurrence of actinommid radiolaria and the subsequent appearance of *Eratides foliaceus*.

Throughout the Early Oligocene interval, assemblages are again dominated by agglutinated foraminifera with common elements including *Trochamminopsis challengeri*, *Cyclammina* spp. and *Karreriella seigliei*. Calcareous benthonic taxa present include *Melonis soldanii* and *Turrilina alsatica*. The planktonic elements recovered are regarded as being caved.

Palynology

Zonation

TP15C	:	1970m
TP15B	:	2060m
TP15A	:	2130m

Key Events

2010m	minor influxes of frequent *Chiropteridium dispersum* and *C. lobospinosum*
2020m	occurrence of consistent *Rhombodinium longimanum*, frequent *Areoligera semicirculata*, frequent *Watzeliella gochtii* and common *Deflandrea phosphoritica*
2040m	influxes of abundant *Chiropteridium* spp. and *Homotryblium floripes/vallum* gp.
2050m	the highest occurrence of *Adnatosphaeridium multispinosum*
2060m	the highest consistent occurrence of *Achilleodinium biformoides* (Subzone TP15B) the highest occurrence of frequent *Homotryblium tenuispinosum*

2090m	occurrence of frequent *Wetzeliella symmetrica*
2100m	occurrence of *Eocladopyxis* spp.
2120m	the highest occurrence of *Charlesdowniea coleothrypta, Cribroperidinium giuseppei* and common *Homotryblium tenuispinosum*
2130m	the highest consistent occurrence of *Phthanoperidinium amoenum* and *P. geminatum* (Subzone TP15A) the highest occurrence of *Areosphaeridium arcuatum* and *Cordosphaeridium funculatum*
2140m	the highest occurrence of frequent *Phthanoperidinium* spp.
2160m	the highest occurrence of common *Areosphaeridium arcuatum* occurrences of common *Nematosphaeropsis* spp.

Comments

The highest occurrence of *Rhombodinium draco* in association with the common occurrence of *Deflandrea* spp. is taken to indicate an Early Oligocene age, Subzone TP15C at 1970m.

The frequent occurrence of *Phthanoperidinium* spp. (including *P. amoenum, P. comatum* and *P. geminatum*) at 2140m and common *Areosphaeridium arcuatum* at 2160m are consistent with an 'intra/basal' Subzone TP15A.

Palaeoenvironmental Comments

The microfaunas in this interval are again dominated by agglutinated (flysch-type) foraminifera with subordinate calcareous taxa. An upper bathyal depositional setting is suggested with periodically dysaerobic bottom waters.

INTERVAL 2170m - 2200m : LATE - ?MIDDLE EOCENE

Lithostratigraphic Unit

Hordaland Group
(undifferentiated)

The top and age of this interval are based upon the following evidence:

2170m (P) the highest occurrence of *Areosphaeridium diktyoplokus* (Subzone TP14C)

Micropalaeontology

Zonation

Planktonic

TMP7B (part)

Benthonic

?TMB7 : 2190m

Key Event

2190m the highest occurrence of *Cyclammina amplectens* and the lowest *in situ* occurrence of *Spirosigmoilinella compressa* (?Zone TMB7)

Comments

Although micropalaeontological evidence for Late Eocene sediments is poor, in the present well, it provides supporting evidence for the palynology.

Zone TMB7 is tentatively assigned based upon the highest occurrence of *Cyclammina amplectens* and the lowest occurrence (*in situ*) of the Oligocene taxon *Spirosigmoilinella compressa*.

Assemblages in general are similar to those recovered in the overlying Early Oligocene interval.

Palynology

Zonation

TP14C - ?TP13B : 2170m

Key Events

2170m occurrence of common *Areosphaeridium arcuatum*, abundant *Homotryblium tenuispinosum* and common *Phthanoperidinum* spp.
the highest occurrence of *Areoligera tauloma* and *Corrudinium incompositum*
the highest occurrence of *?Diphyes colligerum* (?Subzone TP13B, if *in situ*)

2180m the highest occurrence of *Heteraulacacysta porosa* (Subzone TP14B)
the highest occurrence of *Areosphaeridium michoudii*

Comments

Two cuttings samples have been examined from this interval.

The highest occurrence of *Areosphaeridium diktyoplokus* is taken to indicate an age no younger than Late Eocene, Subzone TP14C at 2170m. This is supported by the presence of *Areoligera tauloma* and *Corrudinium incompositum* in the same sample, and *Heteraulacacysta porosa* at 2180m.

The highest occurrence of *?Diphyes colligerum*, if in situ, together with common *Areosphaeridium arcuatum* at 2170m tentatively suggests Middle Eocene, ?Subzone TP13B. Therefore, this interval is ranged to include Subzones TP14C - ?TP13B.

Palaeoenvironmental Comments

The predominance of agglutinants suggests deposition of an outer shelf - upper bathyal environment. Dysaerobic bottom waters are postulated.

INTERVAL 2200m - 2360m : MIDDLE EOCENE

Lithostratigraphic Unit

Hordaland Group
Undifferentiated (part)

The top and age of this interval are based upon the following evidence:

2200m (P) the highest occurrence of *Diphyes colligerum* (Subzone TP13B) together with abundant occurrence of *Areosphaeridium arcuatum*

Micropalaeontology

Zonation

Planktonic

TMP5E	:	2270m
?TMP5D	:	2320m

Benthonic

TMB6E	:	2230m
TMB6C	:	2250m
TMB6B	:	2310m

Key Events

2230m the highest occurrence of *Ammomarginulina aubertae* (Subzone TMB6E)
the highest occurrence of *Karrerulina conversa*

2250m the highest occurrence of *Spiroplectammina* aff. *spectabilis* (Subzone TMB6C)

2270m the highest Eocene occurrence of the radiolaria *Cenosphaera* spp. and *Cenodiscus* spp. (Subzone TMP5E)

2310m the highest consistent *Cyclammina amplectens* (Subzone TMB6B)

2320m a minor influx of *Cenodiscus* spp. (Subzone ?TMP5D)

Comments

The top of the Middle Eocene is picked on micropalaeontological criteria at 2230m based upon the highest occurrence of *Ammomarginulina aubertae* indicating Subzone TMB6E. The age assigned is substantiated at 2250m by the highest occurrence of *Spiroplectammina* aff. *spectabilis* indicating Subzone TMB6C and by the occurrence of Eocene radiolaria (*Cenosphaera* spp., *Cenodiscus* spp.) indicating planktonic Subzone TMP5E. Intra Middle Eocene Subzones TMB6B and ?TMP5D are recognised at 2310m and 2320m respectively.

Agglutinated foraminifera are the sole foraminiferal constituent within this interval. No calcareous taxa are recorded at all. Radiolaria constitute the remainder of the microfaunal assemblage.

Key agglutinants include *Karrerulina conversa, Labrospira scitula, Trochammina* sp. 1 Charnock & Jones and *Cystammina pauciloculata.*

The Radiolaria (*Cenosphaera/Cenodiscus* spp.) are seen to increase in numbers at 2320m, tentatively indicating Subzone TMP5D.

Palynology

Zonation

TP13B	:	2200m
TP13A	:	2220m

Key Events

2200m	occurrence of *Rottnestia borussica* and *Areoligera tauloma* the highest consistent occurrence of *Areosphaeridium diktyoplokus* and *A. michoudii*
2210m	the highest occurrence of frequent *Areosphaeridium diktyoplokus* and common *A. michoudii* occurrence of *Glphyrocysta exuberans* and frequent *Phthanoperidinium comatum*
2220m	the highest occurrence of common *Systematophora placacantha* (Subzone TP13A) the highest occurrence of *Phthanoperidinium clithridium* occurrence of common *Areosphaeridium diktyoptokus* and common *Phthanoperidinium comatum*
2240m	re-increase in numbers (common) of *Homotryblium floripes/vallum* gp.

2250m	occurrence of common/abundant *Systematophora placacantha* influx of common sphaeromorph acritarchs occurrence of frequent *Thalassiphora pelagica* occurrence of *Dracodinium samlandicum* and *Eatonicysta ursulae* (both reworked)
2260m	influx of abundant sphaeromorph acritarchs occurrence of *Phthanoperidinium powellii*
2280m	influx of bisaccate pollon (superabundant)
2290m	occurrence of consistent *Melitasphaeridium asterium*
2300m	occurrence of *Diphyes pseudoficusoides* and *Charlesdowniea ornata* occurrence of consistent/frequent *Heteraulacacysta porosa*
2320m	downhole increase in numbers (abundant) of *Areopshaeridium arcuatum, A. michoudii* and common *Phthanoperidinium comatum*
2340m	the highest occurrence of common *Areosphaerodium ebdonii*

Comments

The highest occurrence of *Diphyes colligerum* together with the occurrence of abundant *Areosphaeridium arcuatum* confirms a Middle Eocene age, Subzone TP13B at 2200m.

At 2220m the highest occurrence of common *Systematophora placacantha* confirms an intra Middle Eocene age and Subzone TP13A.

Microfloral recovery within this interval is rich, diverse and very well preserved. Also within this interval, there is no evidence for the presence of Subzones TP12B and TP12A.

Rare Jurassic taxa (mainly miospores) and Carboniferous miospore taxa are sporadically present throughout this interval.

Palaeoenvironmental Comments

The dominance of agglutinated foraminifera is taken to indicate deposition in an outer shelf - upper bathyal setting with dysaerobic conditions at the sediment/water interface.

INTERVAL 2360m - 2715m : EARLY EOCENE

Lithostratigraphic Unit

Hordaland Group		
Undifferentiated (part)	:	2360m - 2690m
Rogaland Group		
Balder Formation	:	2690m - 2705m
Sele Formation	:	2705m - 2715m

The top and age of this interval are based upon the following evidence:

2360m (M) the highest occurrence of *Spiroplectammina navarroana* (Subzone TMB5A)

Micropalaeontology

Zonation

Planktonic

TMP5B	:	2390m
TMP5A	:	2400m
TMP4	:	seen caved at 2690m
TMP3J - TMP3F	:	2690m
TMP3D	:	2705m

Benthonic

TMB5A	:	2360m
TMB4C - TMB3B	:	seen caved at 2690m

Key Events

2390m the highest occurrence of *Cenosphaera* sp. T1 RPS (Subzone TMP5B)

2400m the absence of *Cenosphaera* sp. T1 RPS (Subzone TMP5A)

2690m (caved) the occurrence planktonic and calcareous benthonic foraminifera (red-stained) (*Subbotina linaperta, Cibicides proprius*) indicating the presence of Zone TMP4 and Subzone TMB4C - 4B)

the highest occurrence of *Coscinodiscus* sp. 1 (Subzone TMP3J - TMP3F)

2705m the highest occurrence and influx of non-pyritised *Coscinodiscus* sp. 2 Thomas & Gradstein 1981 (Subzone TMP3D)

2720m major influx of *Coscinodiscus* sp. 2 Thomas & Gradstein 1981 (?caved)

Comments

The presence of *Spiroplectammina navarroana* at 2360m indicates penetration of Early Eocene sediments and Subzone TMB5A. At 2390m, supporting evidence is provided by the highest occurrence of *Cenosphaera* sp. T1 RPS indicating Subzone TMP5B. The absence of this taxon at 2400m indicates Subzone TMP5A.

TMB5A and TMP5A are the oldest *in situ* Hordaland Group Subzones recognised within the Early Eocene. However, at 2690m where the top of the Rogaland Group is placed, evidence is seen that suggests that 'lower' Hordaland Group Subzones TMP4 and TMB4C - 4B are present in the well, but fall within the unsampled section between 2670m and 2690m. This evidence consists of red stained *Subbotina linaperta* (Zone TMP4) together with the calcareous benthonic taxon *Cibicides proprius* (Subzone TMB4C - 4B), both indicative of lower Hordaland Group lithologies equivalent to the Rosnaes Clay Formation.

The top of the Early Eocene Rogaland Group is seen at 2690m marked by the highest occurrence of *Coscinodiscus* sp. 1 (Subzone TMP3J - F) indicating penetration of the Balder Formation. Due to sample spacing this is the only sample analysed from the Balder, so no further subdivision is possible.

The next sample downhole (2705m) shows an influx of non-pyritised *Coscinodiscus* sp. 2 Thomas & Gradstein 1981, indicating Subzone TMP3D and penetration of the Sele Formation. Minor radiolaria are also seen at this depth along with caved foraminifera. A further influx of the Subzone TMP3D index taxon is recorded at 2720m but may be caved.

Palynology

Zonation

TP13A (part)		
TP12C (low)	:	2450m
TP12B - ?TP12A (low)	:	2580m
TP11 - ?TP10	:	2660m
TP9B	:	2680m
TP9A - TP7C absent		
TP7B - TP7A	:	2700m

Key Events

2360m	occurrence of common *Dinopterygium fehmarnense* persistent occurrence of abundant *Areosphaeridium arcuatum* and *A. michoudii*
2370m	occurrence of frequent *Areoligera* cf. *senonensis* W & D' 66 occurrence of consistent/frequent *Cordosphaeridium gracile, Glaphyrocysta exuberance, Heteraulacacysta porosa* and *Rottnestia borussica*
2380m	occurrence of consistent *Phthanoperidinium distinctum* and frequent *Heteraulacacysta porosa*
2410m	the highest occurrence of *Thalassiphora delicata*
2420m	the highest occurrence of frequent *Phthanoperidium powellii* and *P. distinctum*
2440m	the highest occurrence of common *Phthanoperidinium distinctum*
2450m	the highest occurrence of *Diphyes ficusoides* (Subzone TP12C, low) influx of superabundant *Areosphaeridium arcuatum*
2460m	downhole influx of common/abundant *Phthanoperidinium distinctum*
2520m	occurrences of frequent *Areosphaeridium ebdonii, Fromea* cf. *Fragilis* and *Cribroperidinium tenuitabulatum* occurrence of common *Pteris/Trilites* spp.
2530m	influx of common *Dinopterygium fehmarnense*
2540m	occurrences of frequent *Heteraulacacysta porosa* and *Cometodinium* spp.
2580m	massive influx of superabundant *Systematophora placacantha* (Subzone TP12B) the highest occurrence of *Glaphyrocysta ordinata* and *Cerebrocysta magna* occurrence of frequent '*Albacysta* spp.'
2620m	occurrences of frequent *Achomosphaera alcicornu, Cordosphaeridium gracile* and *C. inodes*
2630m	influxes of frequent *Cordosphaeridium funiculatum* and common *C. gracile*
2640m	base massive influx of *Systematophora placacantha* the highest occurrence of *Deflandrea denticulata*

2660m	influx of abundant *Dracodinium pachydermum* (Zone TP11) together with the highest occurrence of *Eatonicysta ursulae* and *Membranilarnacia glabra* influxes of common *Deflandrea* spp. (including *D. phosphoritica*), *Thalassiphora pelagica* and *Wetzeliella* spp. (including *W. articulata*)
2670m	the highest occurrence of common *Eatonicysta ursulae*
2680m	influx of abundant *Areoligera* spp. (Subzone TP98) occurrence of frequent *Dracodinium politum*
2700m	the highest occurrence of abundant *Cerodinium wardenense* (Subzone TP7B) together with frequent *Deflandrea oebisfeldensis* and frequent *Hystrichosphaeridium tubiferum* the highest occurrence of abundant *Glaphyrocysta ordinata* major facies change associated with influxes of amorphous organic matter and increase in terrestrially derived sporomorphs including common *Caryapollenites simplex* gp. and abundant *Inaperturopollenites* spp.

Comments

The top of this interval is assigned to the Early Eocene on micropalaeontological criteria. However, palynological evidence between 2360m and 2660m suggests strongly that this interval is still Middle Eocene in age. Several key events recorded from this well are comparable with events recorded in the Siri-2 and Siri-3 wells.

Confirmation of Early Eocene, and the top of Zone TP11 is recorded at 2660m by an influx of abundant *Dracodinium pachydermum.* This is further supported by the highest occurrence of common *Eatonicysta ursulae* at 2670m.

At 2700m the downhole palynofloral/facies change which typically indicates penetration of the Balder Formation is confirmed by the highest occurrence of abundant *Cerodinium wardenense* (Subzone TP7B) in association with frequent *Deflandrea oebisfeldensis* and frequent *Hystrichosphaeridium tubiferum.*

Additional events recorded at 2700m include influxes of abundant *Glaphyrocysta ordinata,* amorphous organic matter and terrestrially derived sporomorphs (including common *Caryapollenities simplex* gp. and abundant *Inaperturopllenites* spp.)

The influx of *Cerodinium wardenense* indicates 'intra/basal' Balder Formation Subzone TP7B at 2700m. Zones/Subzones TP9A, TP8 and TP7C are either extremely condensed or absent.

Subzone TP7B is ranged (between 2700m and 2715m) to include Subzone TP7C (Sele Formation) based on the common occurrence of large leiospheres and common *Pterospermella* spp. caved in to the underlying Late Palaeocene interval.

Palaeoenvironmental Comments

Two distinct palaeoenvironmental settings are suggested by the ambient microfaunas within this Early Eocene interval.

From the top of the interval at 2360m down to 2690m sediments are attributed to the Hordaland Group (undifferentiated). Within this interval, assemblages are dominated by agglutinated foraminifera and locally common radiolaria. This suggests that outer shelf-bathyal conditions prevailed, with dysaerobic bottom water conditions in existence. The radiolaria suggest local upwelling conditions and open marine circulation.

Within the Rogaland Group (2690m - 2720m), palaeoenvironmental conditions are somewhat different.

In situ microfaunas/microfloras are dominated by diatoms, and foraminifera are all but absent. Conditions are still outer shelf-bathyal, but restrictions within the North Sea basin, caused by uplift of surrounding areas, meant that oxygen depletion at the sediment/water interface was exacerbated, and anaerobic conditions prevailed. Input of coarse clastic material and volcanic products was far greater than in the overlying Hordaland Group, leading to the exclusion of foraminifera and dominance of diatoms and radiolaria.

INTERVAL 2715m - 2775m : LATE PALAEOCENE

Lithostratigraphic Unit

Rogaland Group

Forties Formation	:	2715m - 2720m
Lista Formation	:	2720m - 2765m
Vaale Formation	:	2765m - 2780m

The top and age of this interval are based upon the following evidence:

2715m (P) the highest occurrence of common *Apectodinium* spp. including frequent/common *A. augustum* (Subzone TP6B)

Micropalaeontology

Zonation

Planktonic

TMP2	:	seen caved at 2765m
TMP1E	:	2765m

Benthonic

TMB2C	:	2720m
TMB2B	:	2735m
TMB2A	:	seen caved at 2765m
TMB1C	:	2765m

Key Events

2720m the highest occurrence *Cyclammina* sp. 1 Charnock & Jones 1990 (Subzone TMB2C)

2735m the highest occurrence of *Spiroplectammina spectabilis* and a rich agglutinated assemblage (Subzone TMB2B)

2750m the occurrence of locally red/brown stained agglutinated foraminifera

2765m — the highest occurrences of *Stensioeina beccariiformis* and *Quadrimorphina allomorphinoides* (Subzone TMB1C)
the influx of planktonic foraminifera including *Globorotalia pseudobulloides* and *G. compressa* (Subzone TMP1E)
the occurrence of *Trochammina ruthvenmurryi* and common *Spiroplectammina spectabilis* (Subzone TMB2A) together with *Cenosphaera lenticularis* (Zone TMP2) (all caved)

Comments

The top of the Late Palaeocene is picked at 2720m on the TMB2C restricted taxon *Cyclammina* sp. 1 Charnock & Jones 1990, which indicates penetration of the Lista Formation. A moderate agglutinated assemblage is seen at this depth including *Cystammina pauciloculata* and *Haplophragmoides walteri*.

In the next sample down, at 2735m, the disappearance of *Cyclammina* sp. 1 Charnock & Jones 1990, together with the highest occurrence of *Spiroplectammina spectabilis* indicates the presence of Subzone TMB2B. A relatively rich, moderate diversity agglutinated assemblage is seen at this depth, which is followed at 2750m by an increase in diversity and a change in preservation to the red/brown staining typically seen in TMB2B aged sediments.

TMB2A aged lithologies are tentatively interpreted to be present in this well, as *Trochammina ruthvenmurryi* and common *Spiroplectammina spectabilis* are seen at 2765m, caved into the Vaale Formation.

The sample at 2765m is significant for several reasons. As mentioned above, lower Lista Formation assemblages are present at this depth. Also present are common *Cenosphaera lenticularis* indicating Zone TMP2 (?TMP2A) and the uppermost part of the Vaale Formation. These too, are interpreted as being caved.

The *in situ* assemblage includes *Stensioeina beccariiformis* and *Quadrimorphina allomorphinoides* indicating Subzone TMB1C, together with planktonic taxa including *Globorotalia pseudobulloides, G. compressa* and *Subbotina triloculinoides* indicating Subzone TMP1E. These are 'intra' Vaale Formation events.

Reworking of Ekofisk faunas is seen at this depth.

Palynology

Zonation

TP6B	:	2715m
TP6A absent		
TP5C - ?TP5A	:	2745m
TP4 absent		
TP3C	:	2760m

Key Events

2715m	occurrence of *?Areoligera gippingensis* (?reworked, Subzone TP5C) occurrences of frequent *Cerodinium depressum* and *Fromea fragilis* occurrence of *Phelodinium magnificum* and common *Hystrichosphaeridium tubiferum* occurrences of common large leiospheres and *Pterospermella* spp. (Caved Subzone TP7A) the highest occurrences of *Interpollis supplingensis/microsupplingensis, Plicapollis pseudoexcelsus,* frequent *Nyssapollenites kruschii, Platycaryapollenities platycaryoides* and *Triatriopollenites triangulus/subtriangulus* facies change associated with increase in amorphous organic matter
2730m	occurrence of *Palaeoperidinium pyrophorum*
2745m	the highest occurrence of *Alisocysta margarita* and *Areoligera gippingensis* (Subzone TP5C) facies change associated with a massive influx of superabundant *Areoligera* spp. (in situ, ?Subzone TP5B) and reduction in amorphous organic matter
2760m	the highest consistent occurrence of *Isabelidinium viborgense* (Subzone TP3C) the highest occurrence of common *Cordosphaeridium gracile* and *C. inodes* massive influx of superabundant *Palaeoperidinium pyrophorum* the highest occurrence of *Palambages morulosa* and frequent *Cerodinium striatum* the highest occurrence of consistent/frequent *Operculodinium centrocarpum* and *Palaeocystodinium bulliforme*

Comments

Four samples have been examined from within this interval. The highest *(in situ)* occurrence of common *Apectodinium* spp. including frequent/common *A. augustum* is taken to indicate a Late Palaeocene age and Subzone TP6B at 2715m. The occurrence of common large leiospheres and common *Pterospermella* spp. (Subzone TP7A Sele Formation) in the same cuttings sample at 2715m are considered to be caved from the overlying interval. The influx of amorphous organic matter (fluffy yellowish colour) at 2715m and 2730m is characteristic of Forties Formation assemblages and further supports the above assignment.

The occurrence of *?Areoligera gippingensis* (?Subzone TP5C) at 2715m is considered to be reworked.

At 2745m the highest occurrence of *Alisocysta margarita* and *Areoligera gippingensis* is taken to indicate Subzone TP5C and penetration of the Lista Formation. This is further supported by a facies change at this depth (2745m) which is associated with the reduction in amorphous organic matter, increase in woody components and massive increase in caved Eocene taxa.

The major influx of superabundant *Areoligera* spp. in the same cuttings sample (if *in situ*) would suggest Subzone TP5B. However, these forms (*Areoligera* spp.), which are similar to those recorded from Early Eocene Subzone TP9B, may be caved, and the assignment of this subzone is tentative.

In the next sample (2760m) the highest occurrence of *Isabelidinium viborgense* is taken to indicate Subzone TP3C and penetration of the Maureen/Vaale Formation.

Palaeoenvironmental Comments

The lower part of the Late Palaeocene is represented by the Vaale Formation. Micropalaeontological residues within this interval are rich and diverse, with *in situ* assemblages dominated by calcareous taxa. This is taken to indicate deposition in an outer shelf-upper bathyal setting with oxygenated bottom water conditions and open marine circulation in the surface waters.

Assemblages within the ?condensed Lista Formation are dominated by agglutinated foraminifera. Outer shelf-upper bathyal conditions are postulated, but with reduced oxygen availability at the sediment/water interface.

INTERVAL 2775m - 2855m : EARLY PALAEOCENE

Lithostratigraphic Unit

Shetland Group
Ekofisk Formation

The top and age of this interval are based upon the following evidence:

2775m	(P)	the highest occurrence of *Spiniferites 'magnifica'* (Subzone TP2B)
2780m	(M)	the highest occurrence of chalk-preserved taxa including *Cibicidoides velascoensis* (Subzone TMB1B)

Micropalaeontology

Zonation

Planktonic

TMB1C	:	2780m
?TMP1B	:	2795m

Benthonic

TMB1B	:	2780m

Key Event

2795m	the highest occurrence of *Cenosphaera* ?sp. 2 RPS (Subzone ?TMP1B) the influx of planktonic foraminifera (*Eoglobigerina* spp.)

Comments

The top of the Early Palaeocene Shetland Group is placed at 2775m. However, substantive micropalaeontological evidence is not seen until 2780m with the highest occurrences of chalk preserved taxa including *Cibicidoides velascoensis* (Subzone TMB1B) and *Eoglobigerina* aff.? *trivialis* (Subzone TMP1C). Heavy caving of Late Palaeocene taxa is also seen at this depth.

At 2795m, the occurrence of questionable *Cenosphaera* sp. T2 RPS may indicate sediments as old as Subzone TMP1B. An influx of planktonic taxa, dominated by *Eoglobigerina* spp. is also seen at this depth.

Palynology

Zonation

TP2B - ?TP1 : 2775m

Key Events

2775m	occurrence of frequent *Cordosphaeridium fibrospinosum*
2790m	influxes of abundant/superabundant *Areoligera* spp., abundant *Hystrichosphaeridium tubiferum* and common *Operculodinium centrocarpum* occurrence of *Thalassiphora* cf. *delicata*
2820m	the highest occurrence of *Alisocysta reticulata* (low)

Comments

At 2775m the highest occurrence of *Spiniferites 'magnifica'* is taken to indicate a Early Palaeocene age, Subzone TP2B. This is further supported by the highest occurrence of *Alisocysta reticulata* (low) at 2820m.

In situ recovery is very poor and the overall assemblage is dominated by caved Eocene taxa.

Palaeoenvironmental Comments

The mixed foraminiferal assemblage together with locally common radiolaria indicate stable carbonate shelf conditions with oxygenated bottom water and good open marine circulation.

6.2 Cretaceous

INTERVAL 2850m - 2860m : LATE CRETACEOUS, LATEST MAASTRICHTIAN (base not seen)

Lithostratigraphic Unit

Shetland Group
?Tor Formation (base not seen)

The top and age of this interval are based upon the following evidence:

2850m (P) the highest consistent occurrence of *Palynodinium grallator* (Subzone KP32, if *in situ)*

Micropalaeontology

Zonation

Unassigned : 2850m - 2855m (base not seen)

Comments

No micropalaeontological evidence is seen to support the presence of Cretaceous lithologies.

Palynology

Zonation

KP32 : 2850m - 2860m (base not seen)

Key Events

2850m occurrences of *?Senoniasphaera inornata* and frequent *Achomosphaera ramulifera* and fequent *Hystrichosphaeridium 'porosum'*

2860m the occurrence of *Cribroperidinium wetzelii* and *?Cyclonephelium 'expansum'* occurrence of frequent *Areoligera 'horrida'*

Comments

The highest occurrence of *Palynodinium grallator* if *in situ,* indicates Late Cretaceous, latest Maastrichtian Subzone at 2850m. This is further supported by the frequent occurrence of *Achomosphaera ramulifera* at 2850m and frequent *Areoligera 'horrida'* at 2860m.

Similar to the overlying interval, *in situ* recovery is very poor and the overall assemblage is dominated by caved Eocene taxa.

Palaeoenvironmental Comments

Chalk preserved calcareous benthonic foraminifera indicate deposition in a stable carbonate shelf environment.

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 1750.00m - 2860.00m
Scale : 1:1000

Style :
Author : PM & SAM
Date : April-1997

ENCLOSURE 1: Stratigraphic Summary Log

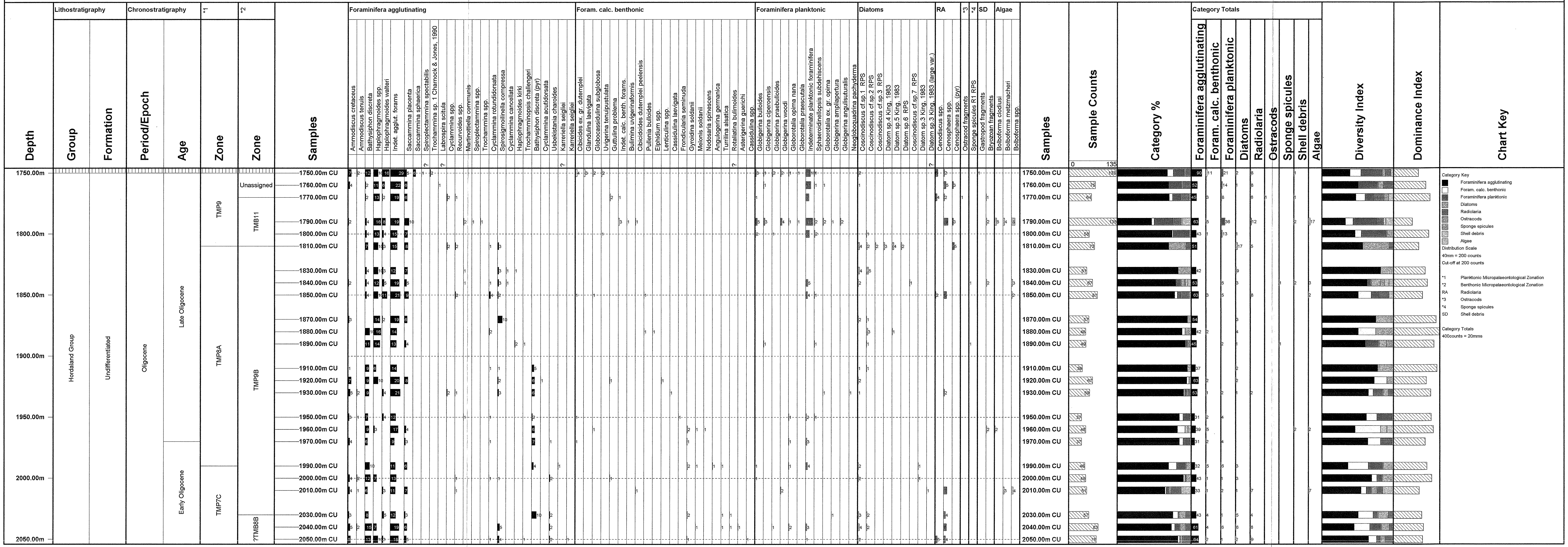
RPS PALEO THE GEOLOGICAL CONSULTANCY

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 1750.00m - 2050.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : PM
Date : April-1997

ENCLOSURE 2(I): Micropalaeontological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

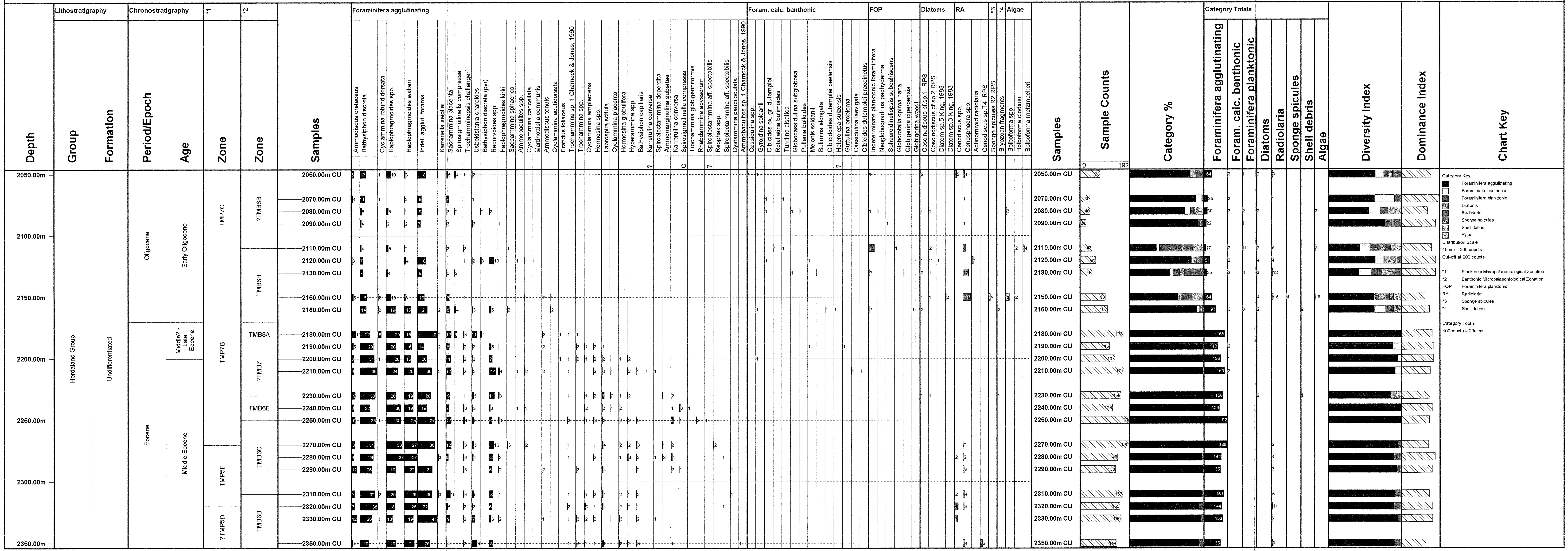


Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2050.00m - 2350.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : PM
Date : April-1997

ENCLOSURE 2(II): Micropalaeontological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY



Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2350.00m - 2650.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : PM
Date : April-1997

ENCLOSURE 2(III): Micropalaeontological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

Depth	Lithostratigraphy: Group	Lithostratigraphy: Formation	Chronostratigraphy: Period/Epoch	Chronostratigraphy: Age	*1 Zone	*2 Zone	Samples
2350.00m	Hordaland Group	Undifferentiated	Eocene	Middle Eocene	?TMP5D	TMB6B	2350.00m CU
							2360.00m CU
							2370.00m CU
					TMP5B		2390.00m CU
2400.00m							2400.00m CU
							2410.00m CU
				Early Eocene	TMP5A	TMB5A	2430.00m CU
							2440.00m CU
2450.00m							2450.00m CU
							2470.00m CU
							2480.00m CU
							2490.00m CU
2500.00m							2510.00m CU
							2520.00m CU
							2530.00m CU
2550.00m							2550.00m CU
							2560.00m CU
							2570.00m CU
2600.00m							2610.00m CU
							2620.00m CU
							2630.00m CU
2650.00m							2650.00m CU

Foraminifera agglutinating: Ammobaculites sp. 1 Charnock & Jones, 1990; Ammodiscus cretaceus; Bathysiphon capillaris; Bathysiphon discreta; Cyclammina amplectens; Cyclammina rotundidorsata; Haplophragmoides spp.; Haplophragmoides walteri; Hormosina globulifera; Hormosina spp.; Hyperammina spp.; Indet. agglut. forams; Karrerulina conversa; Labrospira scitula; Recurvoides spp.; Saccammina placenta; Trochammina sp. 1 Charnock & Jones, 1990; Trochammina spp.; Trochamminopsis challengeri; Usbekistania charoides; Ammomarginulina aubertae; Cyclammina placenta; Cystammina pauciloculata; Haplophragmoides kirki; Spiroplectammina aff. spectabilis; Spiroplectammina navarroana; Rhabdammina abyssorum; Saccammina sphaerica; Cyclammina spp.; Karrerella seigliei; Spirosigmoilinella compressa; Cyclammina cancellata; Ammobaculites spp.; Ammodiscus tenuis

FOBC: Cibicides ex. gr. dutemplei; Lenticulina spp.; Gyroidine soldanii; Indet. calc. benth. forams.

FOP: Indeterminate planktonic foraminifera

DI: Subbotina linaperta group

Radiolaria: Coscinodiscus sp.11 RPS; Coscinodiscus cf.sp.2 RPS; Cenodiscus sp.T4 RPS; Cenosphaera spp.; Cenodiscus spp.; Cenosphaera sp.T1 RPS; Cenodiscus sp.T5 RPS

*3: Bryozoan fragments

Samples	Sample Counts (0 – 241)	Category %	Category Totals: Foraminifera agglutinating	Foram. calc. benthonic	Foraminifera planktonic	Diatoms	Radiolaria	Shell debris	Diversity Index	Dominance Index
2350.00m CU	144		135			9				
2360.00m CU	132		121			10				
2370.00m CU	241		222		1	19				
2390.00m CU	189		175			14				
2400.00m CU	148		131			17				
2410.00m CU	138		127			11				
2430.00m CU	184		156			27	1			
2440.00m CU	127		117		1	19				
2450.00m CU	122		98		1	25				
2470.00m CU	152		133		1	14	4			
2480.00m CU	67		58			9				
2490.00m CU	89		78		3	8				
2510.00m CU	83		51			32				
2520.00m CU	110		86			24				
2530.00m CU	64		40			24				
2550.00m CU	57		32			25				
2560.00m CU	166		150		1	15				
2570.00m CU	88		65			23				
2610.00m CU	111		87		1	23				
2620.00m CU	114		96		1	17				
2630.00m CU	170		112			53				
2650.00m CU	139		110			29				

Chart Key

Category Key
- Foraminifera agglutinating
- Foram. calc. benthonic
- Foraminifera planktonic
- Diatoms
- Radiolaria
- Shell debris

Distribution Scale
40mm = 200 counts
Cut-off at 200 counts

*1 Planktonic Micropalaeontological Zonation
*2 Benthonic Micropalaeontological Zonation
FOBC Foram. calc. benthonic
FOP Foraminifera planktonic
DI Diatoms
*3 Shell debris

Category Totals
400counts = 20mms

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2650.00m - 2860.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : PM
Date : April-1997

ENCLOSURE 2(IV): Micropalaeontological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 1750.00m - 2050.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : SAM
Date : April-1997

ENCLOSURE 3(I): Palynological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2050.00m - 2350.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : SAM
Date : April-1997

ENCLOSURE 3(II): Palynological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2350.00m - 2650.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : SAM
Date : April-1997

ENCLOSURE 3(III): Palynological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY

Well Name : 3/7-1
Operator : NORSKE ELF (STATOIL)
Interval : 2650.00m - 2860.00m
Scale : 1:2000

Style : Numeric Abundance Histogram
Author : SAM
Date : April-1997

ENCLOSURE 3(IV): Palynological Data Distribution Chart

RPS PALEO
THE GEOLOGICAL CONSULTANCY