DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 1997/98

Microfaunal and nannofloral analysis of the Cretaceous of the Adda-3 well

- a contribution to the EFP-93 project: Lower and upper Cretaceous stratigraphy in the Central Trough

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Contents

1. Introduction

As part of the EFP-93 Cretaceous Stratigraphy Project, microfaunal and nannofossil analyses of the cored intervals covering the Chalk Group to Valhall Formation of the Adda-3 well were undertaken. A stratigraphic subdivision has been produced and is presented in this report.

The chronostratigraphic subdivision of the Chalk Group to Valhall Formation that has been established from the Adda-3 material is based on the research of the EFP 93 project together with published and confidential proprietary schemes from the North Sea and adjacent areas (Figs 1-3).

1.1 Materials and methods

Core samples were collected using normal techniques appropriate to the discipline involved. In the case of nannofossils, this required stringent precautions to avoid contamination from sample to sample. Implements used to take samples were cleaned with mild acid before a new sample was taken.

Preparation techniques for microfaunas were as follows. The samples were cleaned in water and then crushed by use of a hammer. The resultant material was soaked in hydrogen peroxide for a period not less than 12 hours. They were then heated to just below boiling point and left to cool. The peroxide which had soaked into the sample material caused the sediment particles to disaggregate due to the release of oxygen in the form of small bubbles. The residues of this were separated through a 63µ sieve and the remaining material was dried under infra-red lamp and bagged for future analysis.

The nannofossil samples were prepared by smear technique. That is, the samples were crushed and put into solution with distilled water in a test tube. This was physically agitated and left to stand for ten seconds to allow the larger fragments to fall out of suspension. A small amount of the dissolved material was removed from the top 1 cm of solution by use of a dropper pipette. The sediment solution was then spread on a cover slip and left to dry. When it had dried, the cover slip was set onto a standard thickness microscope slide with an epoxy resin (Norland Optical Adhesive) and set under ultra violet light. At all stages, precautions to avoid contamination were taken. Nannofossils are small enough to be

transported in the air around a room so a positive pressure environment would be desirable. Unfortunately, this was not available for this project.

Number of samples analysed: Microfaunal: 31

Nannofossil: 50

A full sample list is given in Appendix 1. Preparations for this project are catalogued and stored in the GEUS laboratory.

2. Biostratigraphic summary

All depths quoted are in feet and inches and are measured depth from rotary table (MDRT). The stratigraphic distribution of micro and nannofossils are summarised in Summary Charts 1- 2.

2.1 Compiled biostratigraphy: Adda-3 well

INTERVAL AGE	MICROZONE	DEPTH	NANNOZONE	DEPTH	COMBINED ZONE
Upper Santonian (top not seen)	UCM11	7220.00'	NUC11	7220.00'	HC II
Lower Coniacian	UCM14	7237.00'	NUC14	7237.00'	HD II
Turonian (undivided)			NUC14/15	7532' 5"	HD I - HE
Upper to Middle Cenomanian			NUC16/17	7617' 5"	HRA/B
basal Lower Cenomanian to Upper Albian	UCM18 - LCM1	7672' 5"	NUC18 - NLC1	7672' 5"	HRC/RA
Upper to Middle Albian	LCM1	7682' 2"			RA
Lower Aptian	M2	7683' 5"	d-e	7683' 5"	SL4-5
Middle to Lower Barremian	M6b-M8c	7698.00'	n-s	7698.00'	TX4-9
	M8c	7755.00'	t-u1	7755.00'	TX10-11
	M10	7777.00'	v	7777.00'	TX13
	M11	7816.00'	w	7816.00'	TX14
Upper Hauterivian	M13	7826.00'	y2	7826.00'	TX 15
Lower Hauterivian	M18	7856.00'			VH4
	M19	7875.00'			VH5

Last sample examined at 7889' 6"

2.2 Biostratigraphic description

Adda-3 well: Microfauna

7220.00' (first sample examined) - 7237.00': Upper Santonian

The occurrence at 7220.00' of the calcareous benthic foraminifera *Stensioeina exsculpta gracilis* and *Stensioeina exsculpta exsculpta* indicate that the age of the interval is no younger than Upper Santonian. (Koch, 1977).

The microfauna analysed in this interval was poor in both diversity and abundance.

7237.00' - 7532' 5": Lower Coniacian

At 7237.00', an influx of planktic foraminifera including *Dicarinella imbricata, Dicarinella asymmetrica, Globotruncana bulloides* and *Hedbergella planispira* suggests Lower Coniacian age for the interval. This is supported by an influx of actinommid radiolaria (*Cenosphaera* spp.) at the same depth.

The age is confirmed by the top ranges of the planktic species, *Marginotruncana pseudolinneiana, Dicarinella concavata* and *Marginotruncana marginata* (abundant) together with the calcareous benthic foraminifera, *Stensioeina granulata granulata* all at 7252.00'.

Between the samples at 7282.0' and 7617' 5", no sampling was undertaken as the lithology was unfavourable for reasonable extraction of microfossils. Nannofossil samples covering this interval were taken.

7532' 5" 7672' 5": Turonian to Upper/Middle Cenomanian

Microfossil recovery over this interval was very poor and no stratigraphically significant inferences could be made. The interval was age-dated using nannofossils.

7672' 5" - 7682' 2": Basal Lower Cenomanian

An influx of well preserved planktic and benthic foraminifera at 7672' 5" *including Whiteinella brittonensis, Hedbergella delrioensis , Gavelinella baltica* and *Gavelinella cenomanica* suggests Lower Cenomanian age.

This is supported by an influx of abundant *H. planispira* and abundant *H. delrioensis* at 7679' 4". Associated with this influx were specimens of *Hedbergella simplex*.

7682' 2" - 7683' 5": Upper to Middle Albian

This thin interval was characterised by the calcareous benthic *foraminifera Lingulogavelinella ciryi ciryi* and the agglutinated benthic foraminifera *Spiroplectammina complanata*.

Reworking was evident with the presence of *Hedbergella infracretacea* s.l. from the Aptian in characteristic white preservation.

7683' 5" - 7698.00': Lower Aptian

Microfaunal assemblages in this interval were dominated by planktic foraminifera. especially *Blefuscuiana excelsa cumulus*, *Blefuscuiana infracretacea aptica* and *Hedbergella planispira.* Notable calcareous benthic species included *Gavelinella cf. barremiana* and *Gavelinella barremiana.. B. excelsa cumulus* has an age range lying totally within the Lower Aptian and it's presence throughout the section in core samples delimits the age of this interval.

7698.00' - 7826.00": Middle to Lower Barremian

A change in the composition of microfaunas was noted at 7698.00' . The assemblage at that depth included smooth ostracods (*Macrocypris* spp., *Pontocyprella* spp.) together with an increase of lenticulinids. At 7755.00', an influx of *Inoceramus* (bivalve) prisms can be correlated with a similar event in the Valdemar-2 well.

Additional Middle to Lower Barremian events are noted at 7797.00' where an influx of agglutinated benthic foraminifera including *Falsogaudryinella moesiana, Ammobaculites agglutinans* and *Triplasia* spp. was noted and at 7816.00' ,with the top range *of Meandrospira washitensis* with *Marssonella* spp.

Between 7699.00' and 7754.00', core recovery was very poor and no samples could be obtained for analysis. Electric log signatures suggest that the Munk Marl falls within this missing interval.

7826.00' - 7856.00': Upper Hauterivian

An influx of benthic foraminifera including *Lenticulina ouachensis wisselmanni, Vaginulina riedeli riedeli ,Vaginulina recta* and *Vaginulina striolata* at 7826.00' indicates that the Upper Hauterivian has been reached. Additional important species included *Aulotortus neocomianus* and increases in abundance of *F. moesiana* and *Marssonella* spp. Smooth ostracod species were also an important component of the microfauna at 7826.00'

At 7844.00', the top range of *Tristix acutiangulata* and *Conorboides hofkeri* supported Upper Hauterivian age, as did the occurrence of *Lenticulina schreiteri* at 7846' 5"

7856.00' - 7889' 6" (last sample examined): Lower Hauterivian

An influx of agglutinated foraminifera at 7856.00' which included *Verneuilinoides neocomiensis* (sensu Sliter) suggests that the Lower Hauterivian gas been reached. This is confirmed at 7875.00' by the occurrence of *Ammovertella cellensis*, and at 7889' 6" by the occurrence of *Bigenerina clavellata* as part of another agglutinated benthic foraminiferal influx.

Adda-3 well: Calcareous Nannofossils

7220.00' (first sample examined) - 7237.00': Upper Santonian

The sample at 7220.00' includes large specimens of *Micula decussata* together with very common *Lucianorhabdus cayeuxii, Reinhardtites levis* and *Watznaueria barnesae*. This assemblage suggests Upper Santonian age.

7237.00' - 7532' 5": Lower Coniacian

The incoming of very common W. barnesae at 7237.00' indicates a change in nannofloral assemblage character. The base occurrence of M. decussata at 7262.00' suggests that this change of nannofloral character is associated with the penetration of significantly older material, probably of Lower Coniacian age.

7532' 5" - 7617' 5": Turonian (undivided)

The increase in the abundance of *Gartnerago obliquum* at 7532' 5" suggests Turonian age for this depth (Mortimer 1987). This is supported by the first downhole occurrence of *Helicolithus turonicus* at 7555' 5". The occurrence of *Prediscosphaera columnata*, a Cenomanian species, at 7568' 7" is considered to be due to reworking.

The top boundary of this interval may well be placed higher in the section as nannofossil recovery was poor over the basal part of the overlying interval and into the top of the Turonian interval.

7617' 5" - 7672' 5": Upper to Middle Cenomanian

The occurrence of a nannofloral assemblage including *Rhagodiscus asper* and *Parhabdolithus embergeri* at 7617' 5" is a strong indication that the Upper to Middle Cenomanian has been reached.

7672' 5" - 7682' 2": *Basal Lower Cenomanian to Upper Albian*

The top occurrence of *Phanulithus anfractus* at 7672' 5" indicates that the interval top is of basal Lower Cenomanian (to Upper Albian) age. (Jakubowski, 1987).

No specific nannofossil evidence of Albian age was recorded in the relevant sample from this study .

7683'5" - 7698.00': Lower Aptian

A change in nannofossil assemblage characterised by abundant *W. barnesae,* common *R. asper* and *Viminites swinnertoni* indicates Aptian age.

7698.00' - 7826.00': Middle to Lower Barremian

A change of nannofloral assemblage to those dominated by nannoconids and micrantholithids at 7698.00' indicate Middle to Lower Barremian age. Upper Barremian sediments are very thin or absent in this area due to a regional unconformity at this level.

Specific Middle to Lower Barremian species at 7698.00' include *Micrantholithus hoschulzii* and *Rhagodiscus pseudoangustus* . Supporting evidence for this age was noted at 7899.00' where *Assipetra infracretacea*, *Conusphaera rothii* and *Nannoconus globulus* were recorded: at 7755.00', where the nannofloral assemblage included *Crucibiscutum salebrosum* and at 7777.00' where *Microstaurus chiastius* was present.

7826.00' - 7846' 5": Upper Hauterivian

An influx of abundant *Micrantholithus hoschulzii* and *Nannoconus globulus* indicate a change in the nannofloral character. The top range of common *Tegalulithus septentrionalis* at 7846' 5" indicates Upper Hauterivian age and it is possible that the actual boundary of this age interval is at the change at 7826.00'.

Below 7846' 5", samples were poor in nannofossils and no definitive stratigraphic information could be derived from the limited results.

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MAASTRICHTIAN TO LATE APTIAN BIOSTRATIGRAPHIC ZONATION

FIG.1

AGE/LITHOSTR.				ZONATIONS				MICROFAUNAL EVENTS	NANNOFOSSIL EVENTS
				MICROFAUNA	NANNOFOSSIL	COMBINED			
PAL.	LWR.	EKO.							
MAASTRICHTIAN	UPPER	TOR FM.		UCM1	NUC1	TA	(III)	P.elegans, R.contusa, R.fructicosa	A.cymbiformis, N.frequens, K.magnificus M.decussata
				UCM2			(II)	S.beccariiformis, G.volziana, R.szajnochæ	
					NUC2		(I)		comm. L.cayeuxi, R.levis(?rew.)
				UCM3	NUC3	TB		incr. in diversity comm. B.draco, G.nitidus	comm. P.cretacea, dom. A.cymbiformis v1
				UCM4	NUC4	TC	(II)	abnt. S.beccariiformis, comm/v.comm. Præbulimina spp., Citharinella spp.; comm/v.comm. ostracods	dominant A. cymbiformis v2
									dominant A.cymbiformis v3
									comm. Biscutum spp.
				UCM5			(I)	abnt. Nuttallinella spp. comm. Lenticulina spp.	
	LOWER			UCM6	NUC5	TD		abnt Inoceramus spp. prisms, comm. echinoid spines, V.?aff.reideli, B. draco miliaris	decr. in diversity and abundance R.levis ◢ N.frequens
									P.obscurus
				UCM7	NUC6	TE	(II)	comm. H. globulosa	A.cymbiformis v4
					NUC7		(I)		dominant A.cymbiformis v4 comm. W.barnesæ
CAMPANIAN	UPPER			UCM8	NUC8	HA	(II)	R.szajnochae, T.dubia, C.supracretacea	R.anthophorus, L.maleformis
				UCM9	NUC9		(I)	comm. Archæoglobigerina spp, E.concinna, S.exsculpta gracilis	E.eximius, O.campanensis
	LOWER			UCM10	NUC10	HB		Globotruncana/Marginotruncana spp.	B.enormis, Q.gartneri, L.grilli M.quaternarius
								◢ S.gommerana ◢ S.exsculpta exsculpta	
								S.granulata perfecta, S.granulata incondita	
SANTONIAN	UPR.	HOD FM.		UCM11	NUC11	HC	(II)	comm.-abnt. ?Whiteinella spp. comm. actinommid radiolaria ◢ S.exsculpta gracilis, S.granulata perfecta	abnt. L.maleformis, H.trabeculatus
	LWR.			UCM12	NUC12		(I)	S.gran. polonica ◢ S.gran. incondita	super abnt. W.barnesæ
CONIACIAN	UPR.			UCM13	NUC13	HD	(III)	comm.-abnt. grey/glassy Hedbergella spp. S.granulata granulata	abnt H.trabeculatus, E.floralis,
	LOWER			UCM14	NUC14		(II)	comm.-abnt. M.marginata, M.pseudolinneana, comm.-abnt. actinommid radiolaria	Eprolithus sp.7 ◢ Eprolithus sp.7, M.decussata
								D.imbricata ◢ S.gran. levis	
TURON.	MID.-UPR.							S.granulata kelleri	
	L.			UCM15			(I)	S.granulata humilis	
				UCM16	NUC15	HE		◢ S.granulata humilis ◢ keeled planktics	R.latfittei, R.asper
CENOMANIAN	UPPR.	HIDRA FM.		UCM17	NUC16	HRA		G.baltica, G.cenomanica, L.ciryi inflata Rotalipora spp.	E.planus M.chiastius Z.theta
	LWR.-MID.				NUC17	HRB			comm. T.phacelosus, B.enormis, G.nanum
				UCM18	NUC18	HRC		comm. H.planispira, H.delrioensis (chalky) S.antiqua	P.anfractus, B.constans
ALBIAN	M.-U.	RØDBY		LCM1	NLC1	RA		O.schloenbachi, consistent S.antiqua	
				LCM2	NLC2	RB		comm.-abnt. H.planispira, H.delrioensis (non-chalky)	H.gorkæ?
	L.			NO SAMPLES COVERING THIS INTERVAL					
APT.	UPR.	SOLA		LCM3	a	SL1		comm. G.barremiana, v.comm. ostracods	abnt R.asper

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LOWER APTIAN TO HAUTERIVIAN BIOSTRATIGRAPHIC ZONATION

(Based on data from North Jens-1 and Valdemar-2 wells)

FIG.2

AGE/LITHOSTR.	ZONATIONS			MICROFAUNAL EVENTS	NANNOFOSSIL EVENTS
	MICROFAUNA	NANNOFOSSIL	COMBINED		
HAUTERIVIAN UPPER / VALHALL FM	LCM3	a	SL1		high abundance of W.barnesae
	M1	b 1	SL2	V.gracillima grp.	influx of E.varolii
					abnt. Nannoconids (1), incl. N.abundans
		b 2	SL3	abundant B.infracretacea (1)	R.pseudoangustus, N.kamptneri
					L.subquadratus "minor"
					abnt. organic debris (1)
	M2	c	SL4		
		d	SL5		Z.sisyphus (large 1)
		e	SL6		v.comm. Micrantholithus spp.fragments (1)
		f	SL7		L.camiolensis
	M3 a	g	SL8	influx of B.aptiana	abnt. Nannoconids (2)
		h	SL9		abnt. organic debris (2)
	M3 b	i	SL10	common & consistent B.infracretacea	abnt. Corolithion spp.
	M4			impoverished microfaunas	reduction in diversity and abundance
				G.barremiana, Falsogaudryinella sp.X	abnt. Nannoconids (3)
	M5 a	j	SL11	G.barremiana (common)	influx of B.ellipticum
	M5 b	k		common H.planispira	"Phanulithus valdemarensis"
	M6 a		TX1	Falsogaudryinella sp.X (common)	P.embergeri (1), N."vermiformis" abnt "P.valdemarensis"
					N.borealis.
		l	TX2		base of "P.valdemarensis"
		m	TX3	reappearance of B.infracretacea	abnt. Nannoconids (4)
	M6 b	n	TX4		Z.sisyphus (large 2)
					super abnt. Z.sisyphus
					v.comm. Micrantholithid fragments (2)
					comm. "N.vermiformis"
					P.embergeri (2), C.rothii
		o	TX5		thin nannoconids, C.mexicana
		p	TX6		abnt. Nannoconids (5) incl. N."ananas"
	M7	q	TX7	A.neocomianus	v.comm. Micrantholithid fragments (3)
	M8 a-b			abundant B.infracretacea (2)	reduction in diversity and abundance
				pyritised radiolaria	D & A as in VC18a
				?Inoceramus spp. debris	abnt. organic debris (3)
	M8 c	r	TX8		
		s	TX9		low diversity with comm. L.camiolensis
		t	TX10		minor influx of thin nannoconids
		u 1	TX11		comm. A.infracretacea/Micrantholithid (4)
					R.laffittei (large)
	M9	u 2	TX12	Marssonella spp.	Increase of A.infracretacea
					v.comm. Micrantholithid fragments (5)
	M10	v	TX13	influx agglutinated foraminifera	influx of A.infracretacea
					increase in M.chiastius
	M11	w	TX14	V.reidell	abnt. Nannoconids (6)
					comm./v.comm. L.camiolensis
	M12	x	TX15	ostracods	comm. B.ambiguus
					influx of T.septentrionalis
	M13	y 2		L.ouachensis wisselmanni	abnt. Nannoconids (7)
	M14 a	y 3		increase in diversity and abundance	increase in A.infracretacea
	M14 b		VH1	M.robusta grp.	
				V. humilis præcursor	
	M15	z (part)			
BARREMIAN LOWER - MIDDLE / TUXEN FM.					
BARREMIAN LOWER / TUXEN FM.					
APTIAN UPPER / SOLA FM.					
APTIAN LOWER / SOLA FM.					
FISCH SCHIE					
MUNK MARL					

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HAUTERIVIAN TO RYAZANIAN BIOSTRATIGRAPHIC ZONATION

MAY 1997

AGE/LITHOSTR.				ZONATIONS			MICROFAUNAL EVENTS	NANNOFOSSIL EVENTS
				microfauna	*nannofossil*	*combined*		
HAUTERIVIAN	UPPER	*TUX.*	*VALHALL FM.*	M12	x	TX15		influx of T.septentrionalis
				M13	y 1		L.ouachensis wisselmanni	abnt. Nannoconids (7)
				M14 a	y 2		incr. in diversity and abundance: D.macfadyeni	incr.in A.infracretacea C.cuvillierii, S.colligata
				M14 b	y 3	VH1	M.robusta grp.	
				M15	z		V. humilis præcursor	
	LOWER			M16		VH2	L.nodosa, P.superba, incr. P.mandelstami abundant T.bettenstædti	T.(?) shetlandensis
				M17	α	VH3	influx of radiolaria	C.silvaradion, comm. C.margarelii T.stradneri
				M18		VH4	G.neocomiensis (sensu Sliter), H.inconstans gracile, influx G.hannoverana	
				M19		VH5	A.cellensis	
VALANGINIAN	UPPER			M20	β 1	VH6 a	agglt. influx: Glomospira spp., B.clavellata E.tenuicostata, A.eocretaceus	v comm. D.lehmanni & C.achylosum R.wisei, N.steinmanni minor
					β 2	VH6 b		abnt C.achylosum, N.steinmanni minor
					β 3	VH6 c		M.speetonensis, T.gabalus
								N.dolomiticus, D.rectus
	LOWER			M21	γ 1	VH7 a	B.loeblichi, M.valdensis, C.valdensis F.wolburgi	abnt C.salebrosus. comm. Sollasites spp.
					γ 2	VH7 b		K.borealis
					γ 3	VH7 c		K.borealis (small)
								K.curvata, N.concavus
RYAZANIAN	UPPER			M22	δ	VH8	incr. B.loeblichi, Trocholina spp.	S.arcuatus ⊿ T.(?) shetlandensis
								⊿ S.arcuatus, abnt R.asper
	LOWER		*FARSUND FM.*	M23	ε	F1	Tricolocapsa sp.1 & sp.2, P.jonesi H.calloviensis	
VOLG.	UPPER						Præconocaryomma(?) sp.2 (Dyer & Copestake) comm. S.devorata	

Fig.3

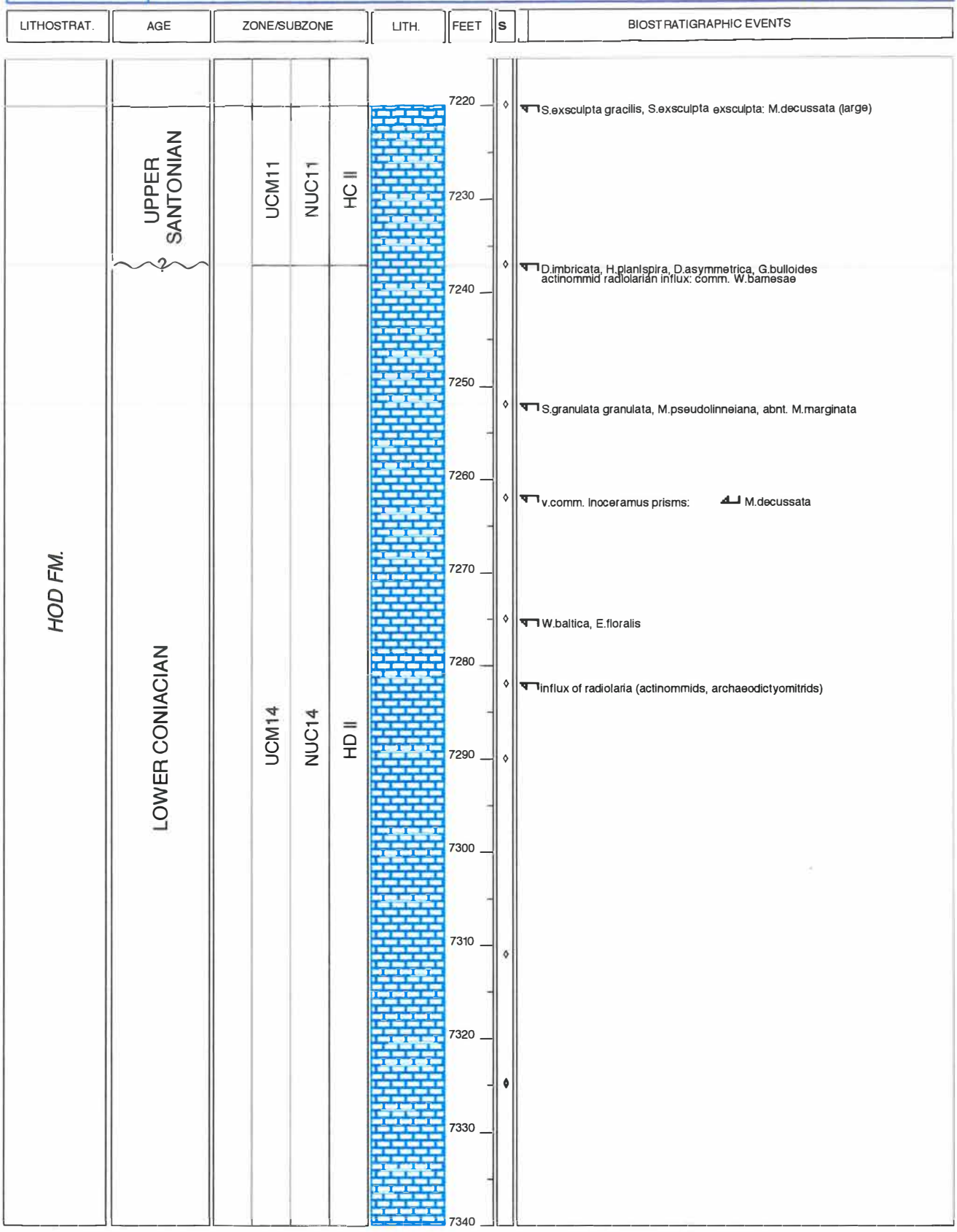
GEUS

BIOSTRATIGRAPHIC SUMMARY SHEET

1

Well: ADDA-3
Operator: MÆRSK OLIE OG GAS
Country: OFFSHORE DENMARK
Analyst(s): D. JUTSON **Date:** JUNE 1996

EFP 93



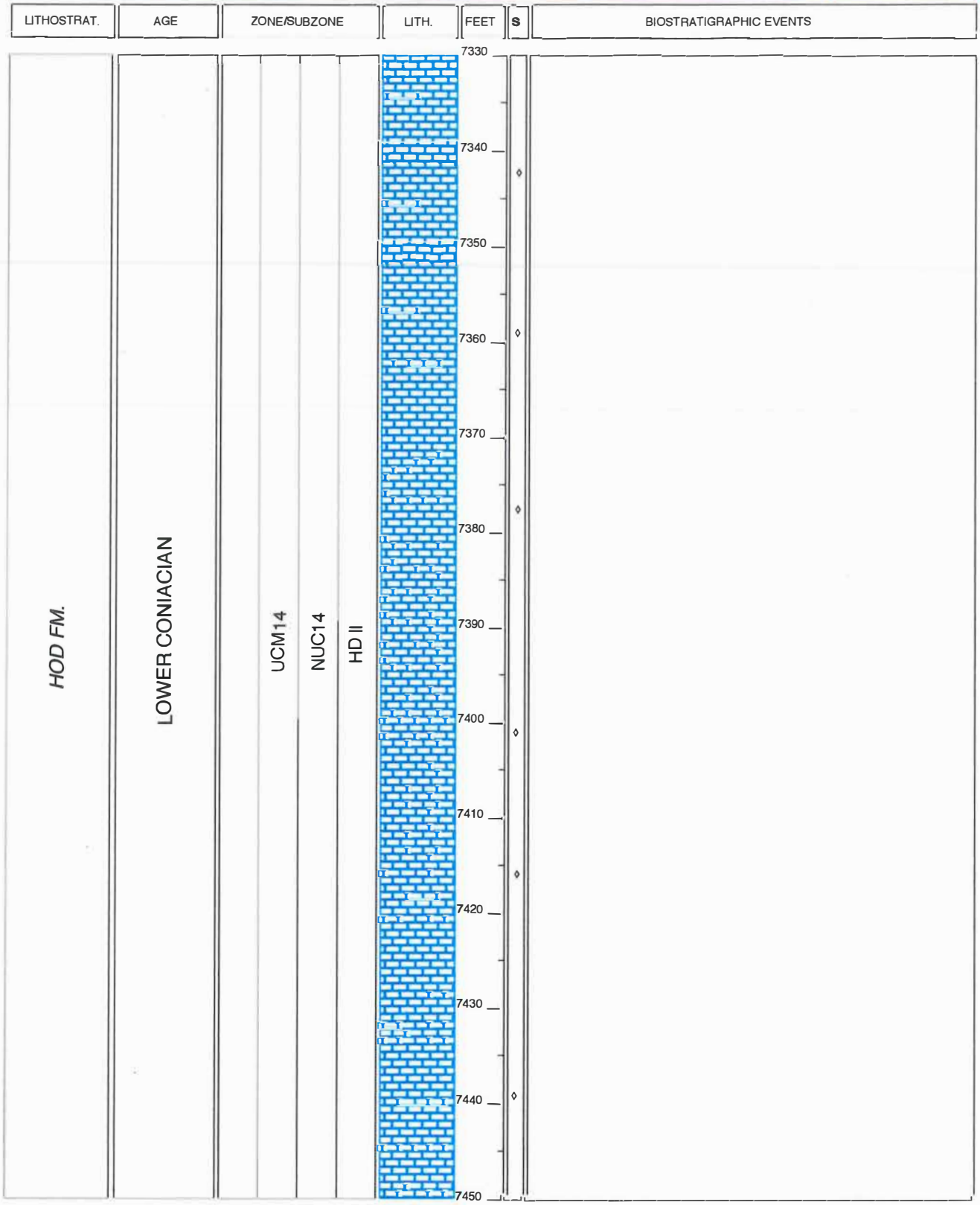
GEUS

BIOSTRATIGRAPHIC SUMMARY SHEET

2

Well: *ADDA-3*
Operator: *MÆRSK OLIE OG GAS*
Country: *OFFSHORE DENMARK*
Analyst(s): *D. JUTSON* **Date:** *JUNE 1996*

EFP 93



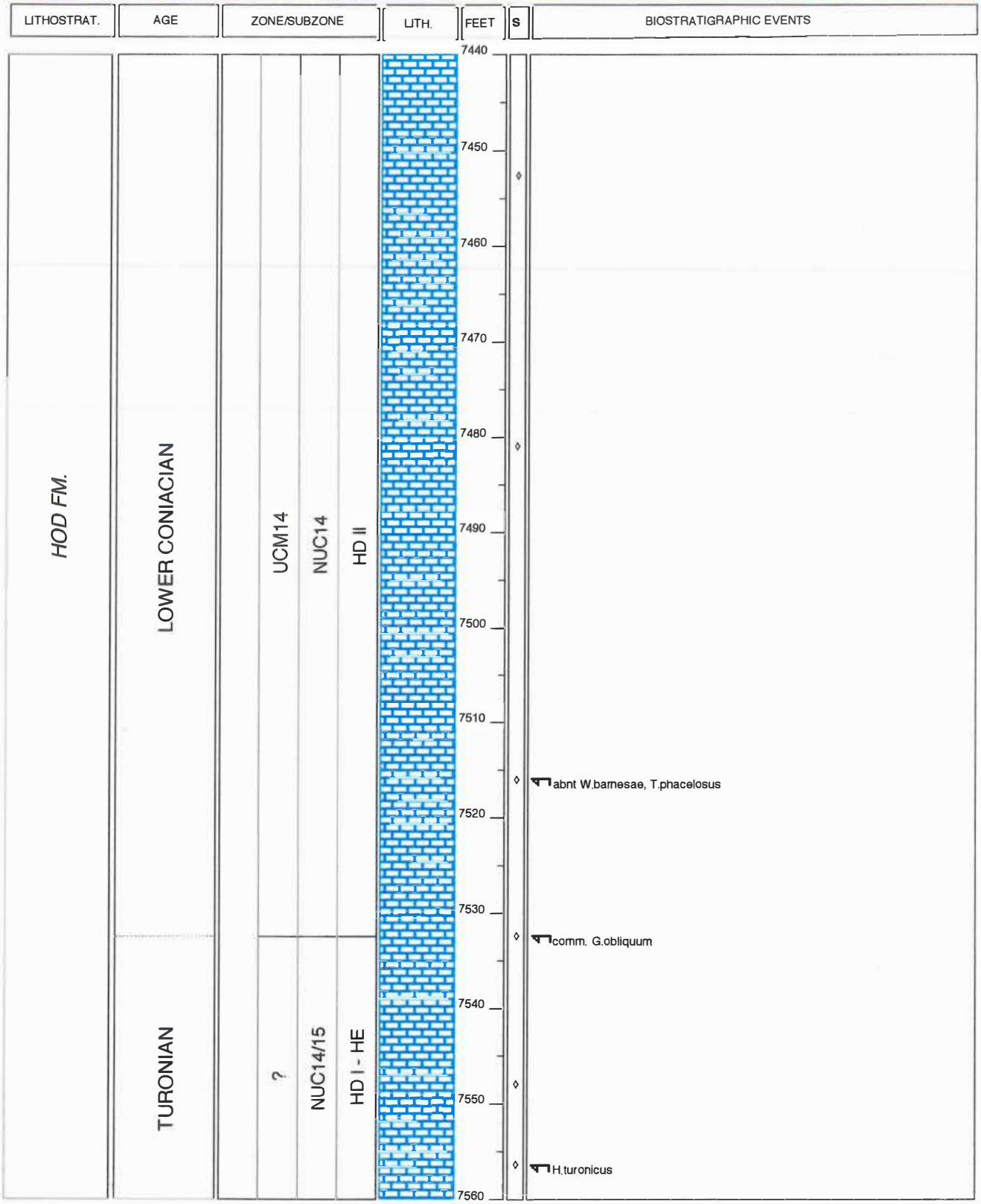
GEUS

BIOSTRATIGRAPHIC SUMMARY SHEET

3

Well: ADDA-3
Operator: MÆRSK OLIE OG GAS
Country: OFFSHORE DENMARK
Analyst(s): D. JUTSON **Date:** JUNE 1996

EFP 93



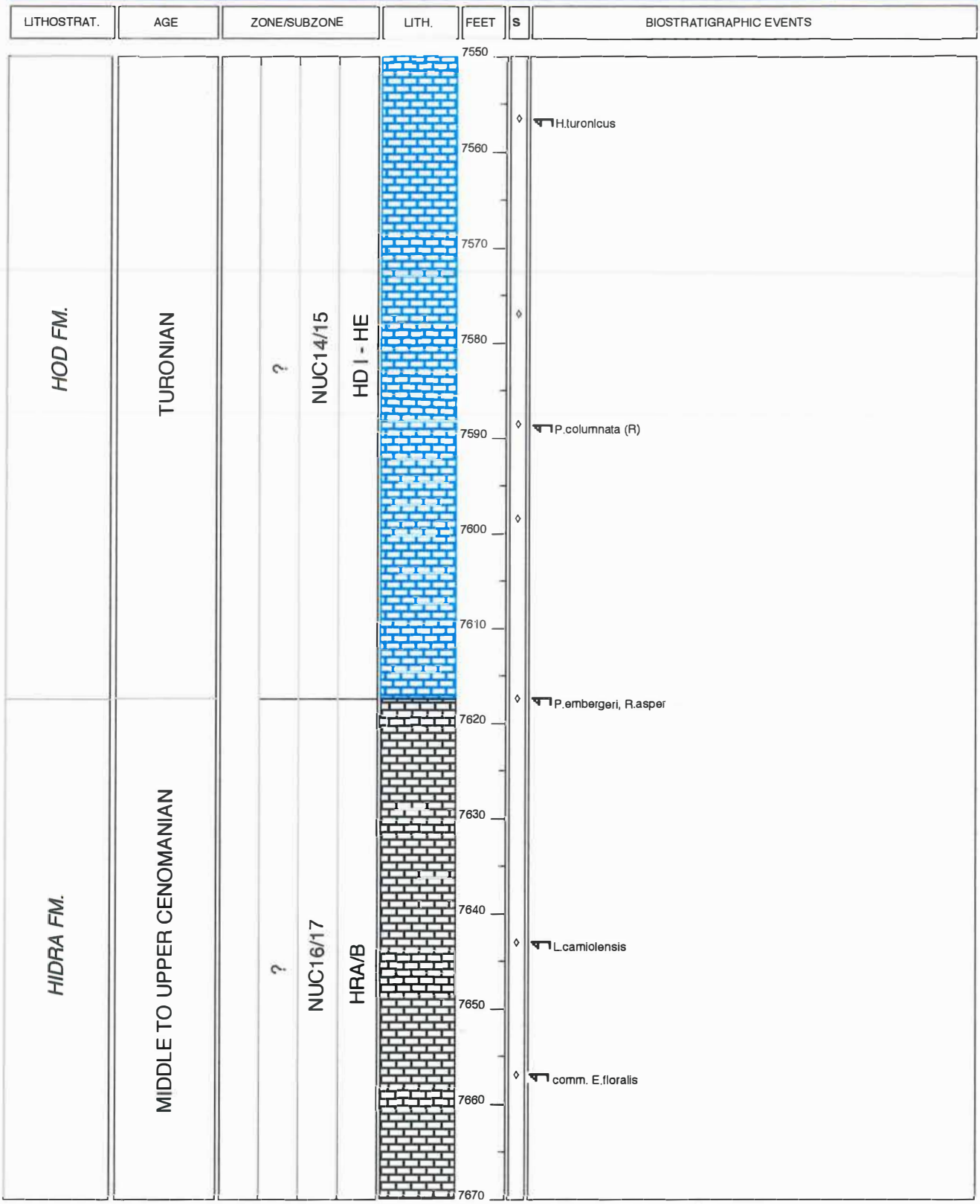
GEUS

BIOSTRATIGRAPHIC SUMMARY SHEET

4

Well: ADDA-3
Operator: MÆRSK OLIE OG GAS
Country: OFFSHORE DENMARK
Analyst(s): D. JUTSON **Date:** JUNE 1996

EFP 93



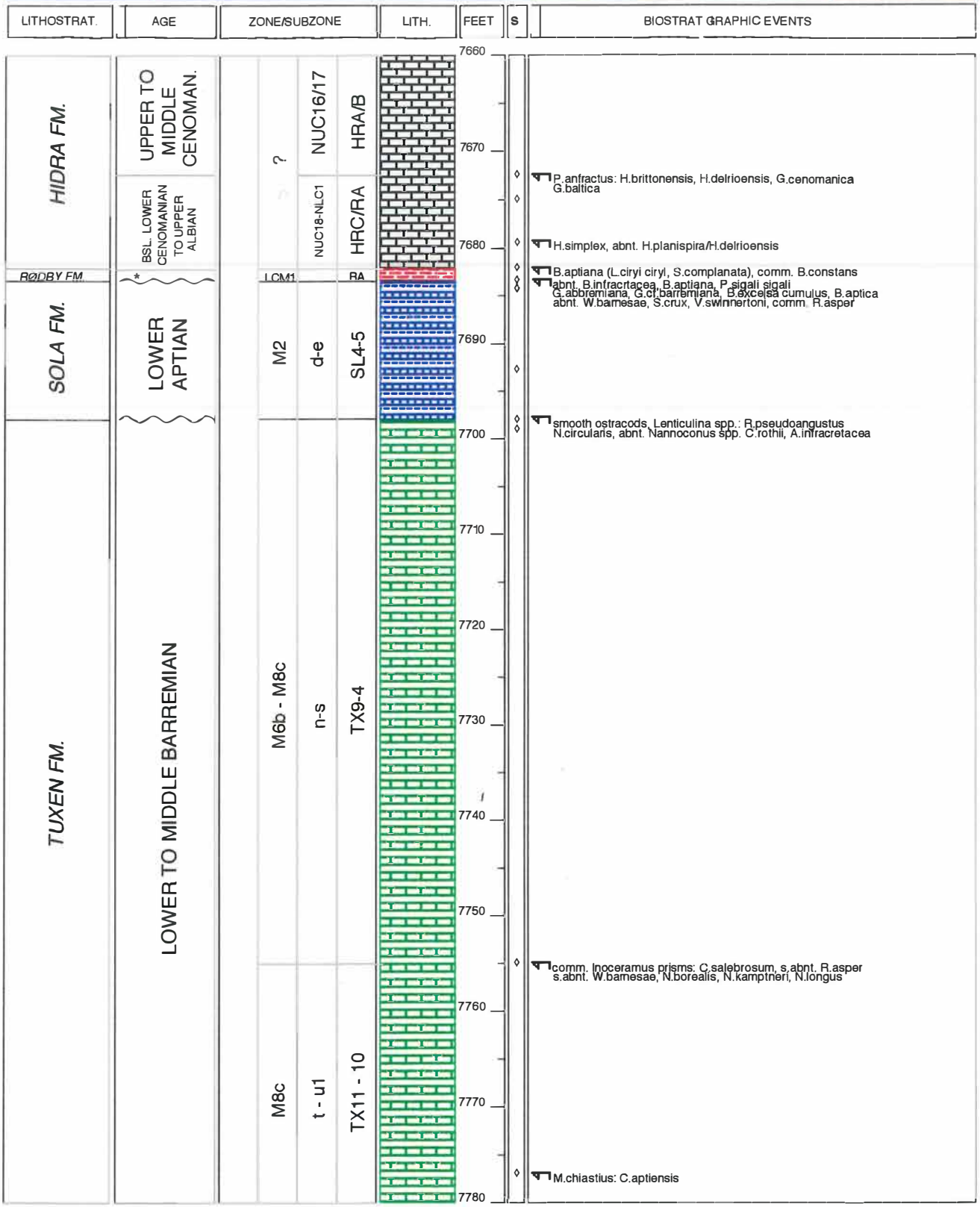
BIOSTRATIGRAPHIC SUMMARY SHEET

5

GEUS

Well: ADDA-3
Operator: MÆRSK OLIE OG GAS
Country: OFFSHORE DENMARK
Analyst(s): D. JUTSON **Date:** JUNE 1996

EFP 93



* = UPPER TO MIDDLE ALBIAN

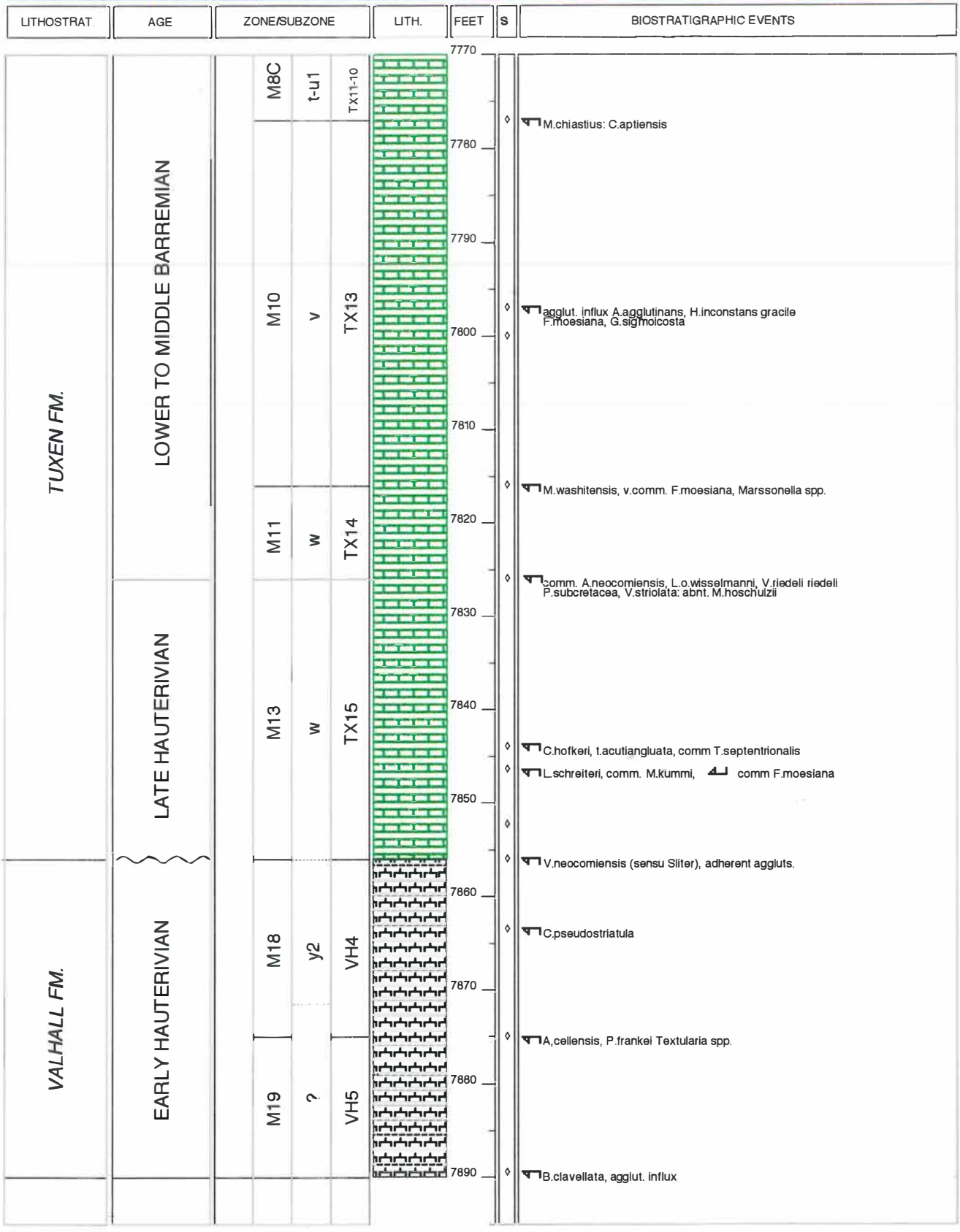
BIOSTRATIGRAPHIC SUMMARY SHEET

6

GEUS

Well: ADDA-3
Operator: MÆRSK OLIE OG GAS
Country: OFFSHORE DENMARK
Analyst(s): D. JUTSON **Date:** JUNE 1996

EFP 93



Appendix 1

Samples Analysed for Micro/nannopaleontology

Adda-3	Nannofossils	
	7220.00'	7846' 5"
	7237.00'	7852' 3"
	7252.00'	7856' .00'
	7262.00'	7863' 6"
	7275.00'	7875.00
	7290.00'	7889' 6"
	7211.00'	
	7324' 11"	
	7324' 9"	
	7342' 4"	
	7359.00'	
	7377' 8"	
	7401.00'	
	7416' 3"	
	7439' 2"	
	7452' 8"	
	7481.00'	
	7516.00'	
	7532' 5"	
	7548.00'	
	7556' 5"	
	7577.00'	
	7588' 7"	
	7589.00'	
	7589' 8"	
	7598' 6"	
	7617' 5"	
	7643.00'	
	7657.00'	
	7672' 5"	
	7675.00'	
	7679' 4"	
	7682' 2"	
	7683' 5"	
	7684' 4"	
	7692' 9"	
	7698.00'	
	7699.00'	
	7755.00'	
	7777.00'	
	7797.00'	
	7800.00'	
	7816.00'	
	7826.00'	
	7844.00'	

	Microfaunas
	7220.00'
	7237.00'
	7252.00'
	7262.00'
	7275.00'
	7282.00'
	7617' 5"
	7643.00'
	7657.00'
	7672' 5"
	7675.00'
	7679' 4"
	7682' 2"
	7683' 5"
	7684' 4"
	7692' 9"
	7698.00'
	7699.00'
	7755.00'
	7777.00'
	7797.00'
	7800.00'
	7816.00'
	7826.00'
	7844.00'
	7846' 5"
	7852' 3"
	7856.00'
	7863' 6"
	7875.00'
	7889' 6"

Total number of samples:	Microfaunas	50
	Nannofossils	35

N.B. all samples are conventional core samples