

**Geological description of five vibrocores from  
the South Pod Site, Store fisker Banke area,  
Danish North Sea**

Peter Konradi and Tibor Czakó

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# **Geological description of five vibrocores from the South Pod site, Store Fisker Banke area, Danish North Sea**

Five vibrocorings were carried out as part of a site survey by Gardline Surveys Ltd. for Amarada Hess Limited as operator in the Danish Block 5604/30 (Gardline Surveys Ltd. 2001).

The cores have been delivered to GEUS by DONG according to law no. 293, § 34, of 10. June 1981 and no. 13 of 7. January 1991.

## **Geological description of vibrocores**

### **Location**

Amarada Hess Ltd presented five vibrocores from block 5604/30 from a site called South Pod to GEUS. The name South Pod is a temporary name as no well has yet been drilled.

The South Pod site is situated at 56°01'20" N 04°17'50"E. The vibrocores are located in a 2km x 2km survey area. The area is situated in the southern part of the Store Fisker Banke area bordering the Tail End area. The position of the cores is indicated on the map, Enclosure 1, and given on the table, Enclosure 2.

### **Geological setting**

The proposed South Pod hydrocarbon well site is situated in the Danish Central Graben area (Enclosure 3).

According to the industrial report (Gardline Surveys Ltd. 2001) the seabed is practically flat, and water depths in the survey area range from 53.5 to 54.8 m, slightly increasing to the north west.

In the seismics the shallow sediments are generally made up of continuous sequences of seabed parallel reflectors. A broad shallow channel is observed to the east of the survey area reaching > 20 m below seabed.

The sediment above the first mapped reflector comprises a veneer of fine sand, as observed on the seabed, underlain by a unit of very soft clay, which is approximately 2-3 m thick. A unit of fine sand underlies this. The first reflector is situated around 5 m below seabed. The underlying sequence of seabed parallel reflectors is expected to comprise interbedded sand, silt and clay. In the upper part of this sequence a series of poorly defined channels are observed to truncate deeper channels to a maximum depth of 91 m below seabed.

A seismic marker horizon at 358 m below seabed could represent the Base Quaternary, but this is not confirmed.

## Sedimentological core log

The result of the geological description of the core **DGU no. 560430.17**, Havb 131-31-590013, Gardline Survey South Pod VC2, is given in Enclosure 5.

The upper 0.17 m of this 3.50 m core is made up of silty, very fine sand with many shells and shell fragments. The section to 1.57 m core depth is made up of a laminated heterolith of slightly silty to sticky clay, and of silty, very fine sand. This heterolith is bioturbated with few shell fragments. The section 1.57 - 2.56 m is made up of fine silty sand, partly laminated with clayey laminae, partly bioturbated with few shells and shell fragments. In the section 2.56 - 2.80 m a silty, faintly laminated clay with fine sand laminae occurs. The lower part of the core is made up of fine sand with rootlets and peaty laminae. The lowermost 0.12 m section of the core holds many shells and shell fragments that are interpreted to be contamination caused during coring process.

The result of the geological description of the core **DGU no. 560430.13**, Havb 131-31-590014, Gardline Survey South Pod VC3, is given in Enclosure 6.

This 5.00 m core is made up a top of 0.15 m of slightly silty fine sand with many shell fragments. The section 0.15 - 1.83 m consists of laminated or bioturbated, silty, fine sand with little shell fragments. At 1.83 - 4.91 m core depth a bioturbated, sticky clay with sand pods and few shell fragments is found. The base 0.09 m of the core is fine to medium, slightly silty sand with shell fragments.

The result of the geological description of the core **DGU no. 560430.14**, Havb 131-31-590015, Gardline Survey South Pod VC4, is given in Enclosure 7.

The 3.51 m core is made up an upper part of silty, fine sand with few shell fragments, in the uppermost 0.07 m with shells and a little gyttja. The interval 0.81 - 1.20 m is a heterolith of laminated, fine, silty sand and silty clay with few shell fragments. The interval 1.20 - 1.67 m is a laminated, very silty clay with sand laminae and few shell fragments. The lower 1.84 m of the core is laminated, fine sand with few clayey laminae and few shell fragments.

The result of the geological description of the core **DGU no. 560430.15**, Havb 131-31-590016, Gardline Survey South Pod VC6, is given in Enclosure 8.

The 3.22 m core consists of an upper 1.05 m of laminated, silty, fine sand with clayey laminae in the lower part. In the section 1.05 - 2.67 m a bioturbated and laminated sticky clay with laminae of silty, fine sand is found followed by 0.18 m of bioturbated, very silty, fine sand with many shells fragments. The lowermost section of the core, below 2.85 m, is made up of laminated, slightly silty, fine sand with few plant fragments.

The result of the geological description of the core **DGU no. 560430.16**, Havb 131-31-590017, Gardline Survey South Pod VC7, is given in Enclosure 9.

The upper part of this 3.20 m core is made up of 0.87 m of silty, fine sand with few shell fragments, in the uppermost 0.20 m with few gravel size clasts and many shells. The section 0.87 - 3.45 m is a sticky, laminated, silty clay with few shell fragments and with upcore decreasing number of laminae of silty, fine sand. Underneath the clay is followed by 0.08 m of laminated, silty, fine sand with much shell fragments. The lower 0.47 m of the core is made up of laminated, slightly silty, fine sand with many peat-like laminae and plant fragments.

## **Core photos**

The photos of the core DGU no. 560430.17 are seen in Enclosure 12a & 12b.  
The photos of the core DGU no. 560430.13 are seen in Enclosure 13a & 13b.  
The photos of the core DGU no. 560430.14 are seen in Enclosure 14a & 14b.  
The photos of the core DGU no. 560430.15 are seen in Enclosure 15a & 15b.  
The photos of the core DGU no. 560430.16 are seen in Enclosure 16a & 16b.

## **Correlation between cores**

All cores, except core 560430.15, have a top layer of varying thickness with many, comparatively large shells or shell fragments (enclosure 10 & 11). The layer may hold gravel-size clasts. The top layer seems to form the uppermost part of a section of silty, fine sand with few shell fragments. In the fine sand an (indistinct) lamination can be seen. In the lower part laminae of silty clay are identified and the sediment may (gradually) turn into a heterolith often showing bioturbation. Downcore the heterolith is mostly followed by a bioturbated, sticky clay with a varying number of silty fine sand laminae. Below the clay a bioturbated, laminated, fine sand is found with (many) shell fragments and few clayey laminae. In core 560430.17 the shelly, fine sand is underlain by a non-calcareous, faintly laminated, silty clay, which is followed downcore by a silty, fine sand including organic material. In the cores 560430.16 and 560430.15 the shelly fine sand is underlain by a laminated, slightly silty, fine sand with plant fragments, and probably compares to the fine sand in the lower part of core 560430.17 (enclosure 10).

## **Interpretation of genesis**

Most of the cores are made up of strata including marine shells and shell fragments. These strata are marine and of Holocene age. The fine sand with organic remnants, as well as the non-calcareous clay, of the cores 560430.15, 560430.16 and 560430.17 are interpreted to be limnic deposits. They are most probably of Late Weichselian or Early Holocene age and deposited before the marine inundation of the North Sea in the Early Holocene. The lower sandy part of the marine section with (many) shells is thought to have been deposited in the early part of the marine transgression followed by the sticky clay deposited during succeeding quiet environmental conditions. The top layer with comparatively large shells and shell fragments and occasionally gravel-size clasts is probably deposited in the late Holocene after a change in the hydrographic situation (Leth 1996, Konradi 2000).

## **Correlation with seismic**

The industrial report indicates the first reflector around 5 m below seabed in the area of the vibrocores. Information of the sediments above the reflector is based on the data from the vibrocores. The sediments below the first reflector are not disclosed in the vibrocores.

## Conclusion and suggested correlation to stratigraphy

The uppermost toplayer with larger shells or shell fragments is expected to be equivalent to the Terschellingbank Member of the Nieuw Zeeland Gronden Formation (Cameron et al. 1992, Jeffery et al. 1990). The middle sections of the cores that includes an upper part with fine sand with few shell fragments which passes downcore into a middle part with a sandy to clayey heterolith or a sticky clay that is underlain by a fine sand with (many) shells or shell fragments is believed to correlate to Elbow Formation (Oele 1969). The limnic deposits of non-calcareous clay and of fine sand with organic remnants can not immediately be correlated to any known formation. From a lithological point of view the slight micaceous character of the sediment may point to correlation to the Late Weichselian Well Ground Formation (Cameron et al. 1989) even though this formation is found only south of 55° N and west of 4° in the Dutch sector. Comparing to sediments encountered in other vibro-cores in the Danish sector e.g. the Nini-3 site (Konradi and Czakó 2002a) and the Hejre-1 site (Konradi and Czakó 2002b) a correlation to the Twente Formation could also be a possibility.

Holocene	Nieuw Zeeland Gronden Formation	Terschellingbank Member
	Elbow Formation	
Late Weichselian	Well Ground Formation ? / Twente Formation ?	

Table 1: Generalised stratigraphy of the Late Weichselian and Holocene of the southern North Sea (after Cameron *et al.* 1989 and Jeffery *et al.* 1990).

## Stored cores

The core DGU no. 560430.16 and core DGU no. 560430.17 are stored at the GEUS core stores for comparison and further stratigraphic studies.

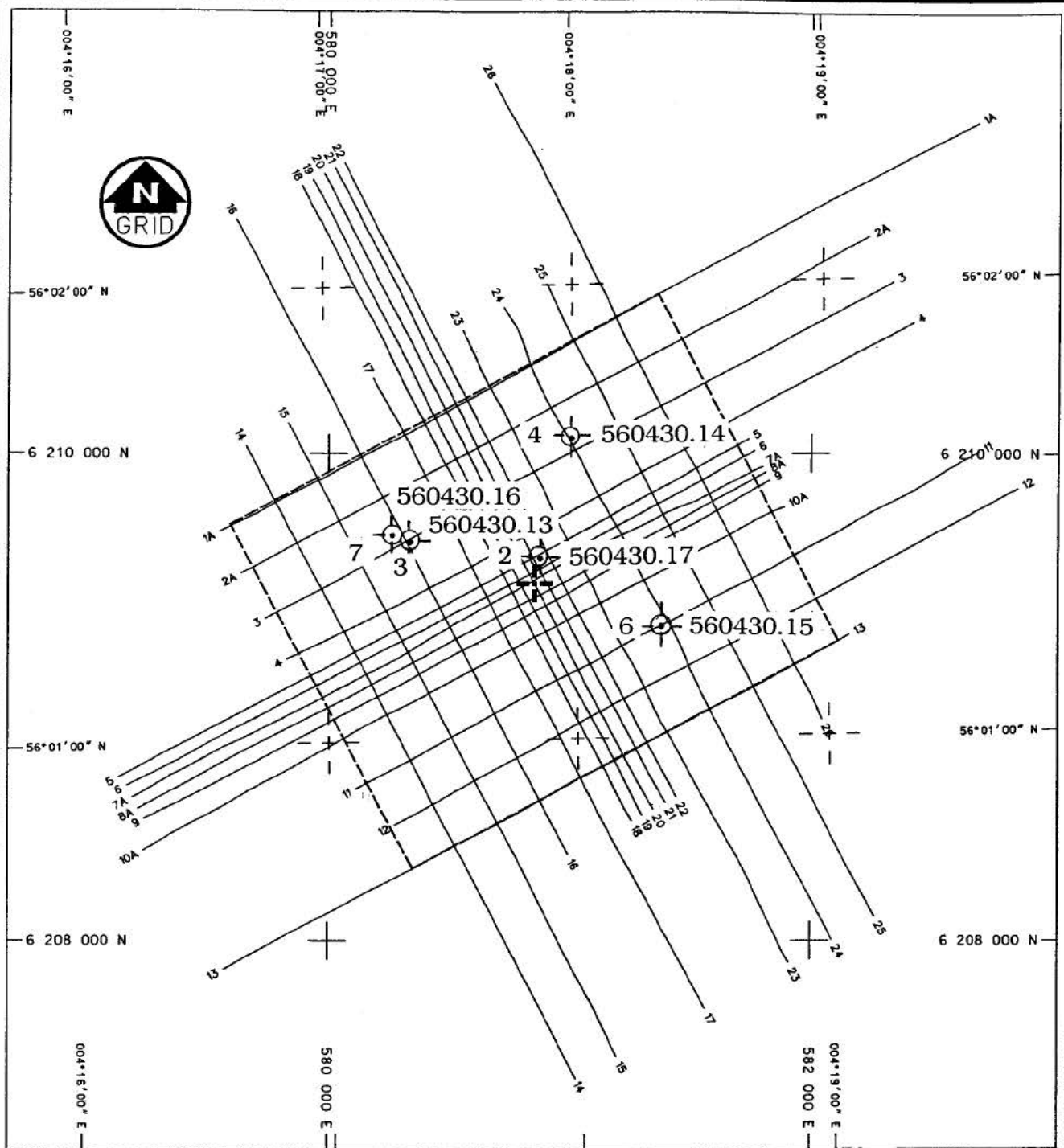
## Literature

- Cameron, T.D.J., Schüttenhelm, R.T.E. & Laban, C. 1989: Middle and Upper Pleistocene and Holocene stratigraphy in the southern North Sea between 52° and 54° N, 2° to 4° E. *In*: Henriët J.P. & de Moor, G. (Eds.) *The Quaternary and Tertiary geology of the Southern Bight, North Sea.*
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- Gardline Surveys Ltd.2001: Amerada Hess Limited, South Pod Site Survey, Danish Sector 5604/30, August 2001, Survey Report. GEUS Report File No. 18931.



- Jeffery, D., Graham, C., Wright, S., Laban, C. and Schüttenhelm, R.T.E. 1990: Dogger. Sheet 55°N–2°E. Sea bed sediments and Holocene geology. Holocene en oppervlaktensedimenten. British Geological Survey and Rijks Geologische Dienst, 1:250.000 series.
- Leth, J.O. 1996: Late Quaternary development of the Jutland Bank and the initiation of the Jutland Current, NE North Sea. *Norges Geologiske Undersøkelse Bulletin* 430, 25.34.
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- Konradi, P. and Czakó, T. 2002a: Geological description of vibrocores from the NINI-3 site, Store Fisker Banke area, Danish North Sea, Danmarks og Grønlands Geologiske Undersøgelse Rapport 2002/2
- Konradi, P. and Czakó, T. 2002b: Geological description of six vibrocores from the Hejre-1 site, Store Fisker Banke area, Danish North Sea (formerly East Gert-1 site), Danmarks og Grønlands Geologiske Undersøgelse Rapport 2002/32
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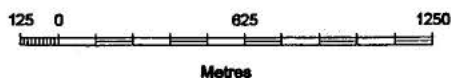
## Enclosures



**SURVEY GRID**  
(ANALOGUE SEISMIC - SOUTH POD SITE SURVEY)

-  PROPOSED SOUTH POD LOCATION (580 860 E 6 209 474 N)
-  560430.17 VIBROCORE LOCATION (DGU WELL No)

Scale 1 : 25 000

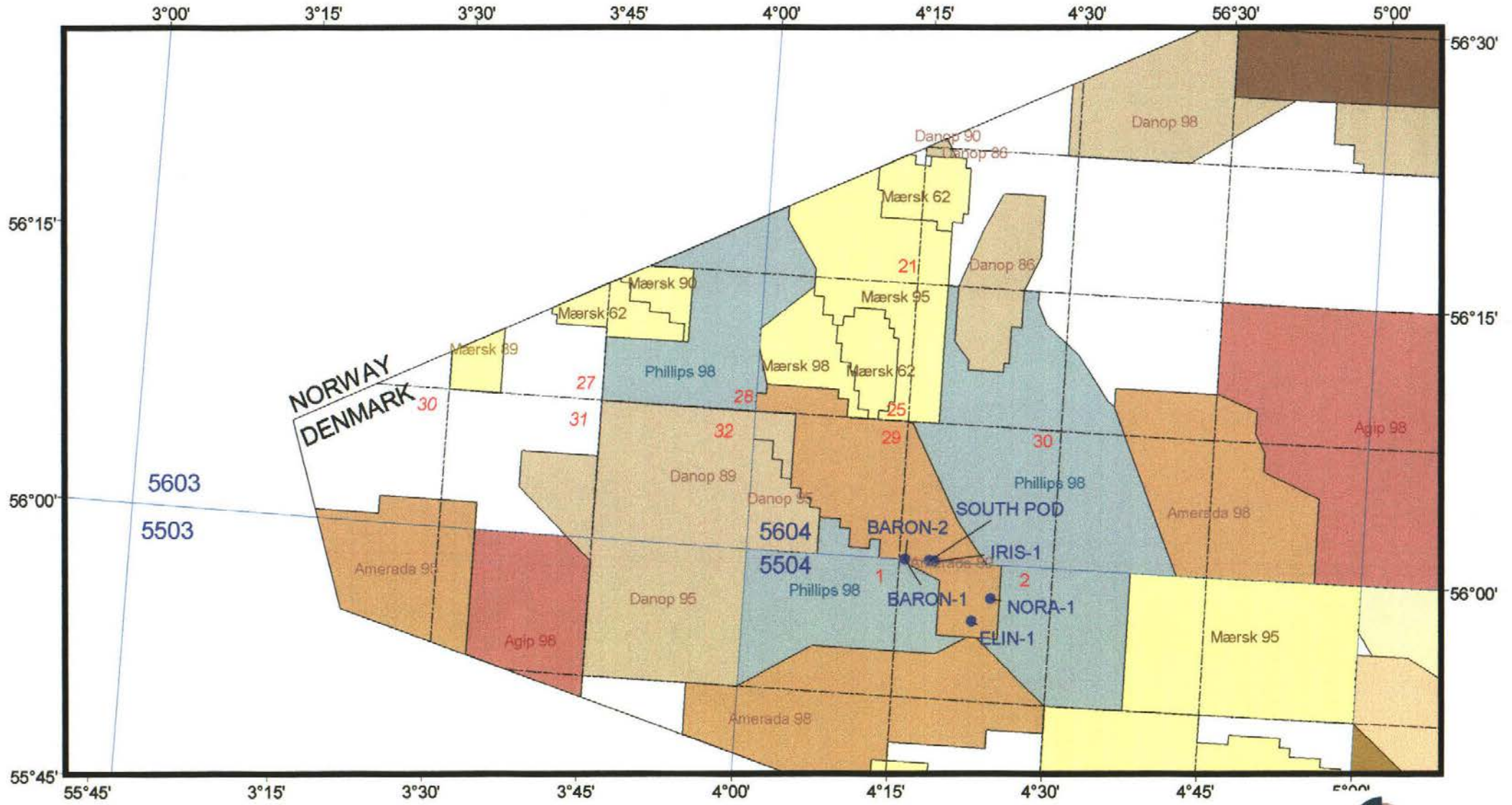


**Vibrocores from South Pod site, Danish North Sea**

**Enclosure 2**

Gardlines sample no	Core Recovery depth(m)	Water depth(m)	UTM 3d E		Geographical position		DGU Well File no in Jupiter database	Danish North Sea Well no in Samba database
			Easting	Northing	Latitude	Longitude		
2	0.00-0.50 0.50-1.50 1.50-2.50 2.50-3.50	54.5	580880	6209544	56d01'23"N	4d17'51"E	560430.17	HAVB 131-31-590013
3	0.00-1.08 1.08-2.00 2.00-3.00 3.00-4.00 4.00-5.00	54.8	580356	6209636	56d01'26"N	4d17'21"E	560430.13	HAVB 131-31-590014
4	0.00-0.61 0.61-1.61 1.61-2.61 2.61-3.51	55	581005	6210064	56d01'39"N	4d18'59"E	560430.14	HAVB 131-31-590015
6	0.00-0.48 0.48-1.42 1.42-2.42 2.42-3.32	54.2	581379	6209285	56d01'14"N	4d18'19"E	560430.15	HAVB 131-31-590016
7	0.00-1.00 1.00-2.00 2.00-3.00 3.00-4.00	54.6	580340	6209640	56d01'03"N	4d17'41"E	560430.16	HAVB 131-31-590017

# Enclosure 3: Location map of South Pod site, Danish North Sea.



Scale: 1:550000

0 5 10 Kilometers



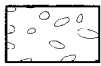
● Hydrocarbon well



GEUS

## LEGEND

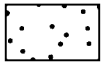
### LITHOLOGY



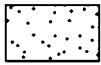
Gravel



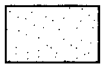
Sand and gravel  
(conglomeratic)



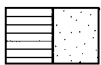
Sand, coarse



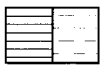
Sand, medium



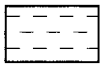
Sand, fine



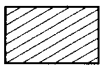
Heterolith,  
clay/fine sand



Heterolith,  
clay/silt



Silt



Clay

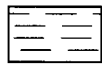


Peat

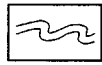
### PRIMARY SEDIMENT STRUCTURES



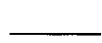
Parallel lamination



Indistinct  
parallel lamination



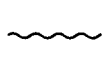
Disturbed  
parallel lamination



Sharp boundary

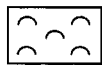


Gradual boundary

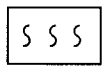


Unconformity,  
(erosions boundary, hiatus)

### FOSSILS



Shells



Bioturbation

### ENVIRONMENT AND AGE

HL : Holocene marine clay

HS : Holocene marine sand

HV : Holocene marine  
clay and sand

L : Periglacial  
lacustrine ler

S : Periglacial  
lacustrine sand

# SEDIMENTOLOGICAL CORE LOG

**CORE NO.:** Havb 131-31-590013      **POSITION:** 56°01'23" N  
 DGU 560430.17      4°17'51" E      **Water depth:** 54,5 m

Lab. sample	Core	PKV no.	Scale	Lithology	Grain size and Sedimentary structure	Description	Environment and age
	IV	22457				0.00-0.17: SAND, very fine, silty, increasing content of silt downcore, well-sorted, in top: few gravel-size clasts; shells ( <i>Arctica islandica</i> , <i>Cardium</i> sp.) and shell fragments, very calcareous, olive grey 5Y 4/2.	HS
	III	22458	1			0.17-1.00: Heterolith: CLAY, rather sticky, slightly silty, laminated with SAND, very fine, silty, (2-4 mm laminae), bioturbated, few scattered shell fragments, very calcareous, dark grey and olive grey 5Y 4/1 and 4/2, upper boundary: sharp.	HV
	II	22459	2			1.00-1.35: Heterolith: CLAY, rather sticky, slightly silty, laminated with SAND, very fine, silty, bioturbated, scattered shell fragments, very calcareous, dark green grey GLEY1 4/1, upper colour boundary: sharp.	HS
						1.35-1.57: Heterolith: SAND, fine, well-sorted, silty, laminated with CLAY, rather sticky, few shells ( <i>Cardium</i> sp.) and scattered shell fragments, calcareous, grey and olive grey 5Y 5/1 and 5/2, upper boundary: transitional.	HV
	I	22460	3			1.57-1.87: SAND, fine to medium, slightly silty, indistinct lamination, at 1.67: silty clay lamina; scattered shell fragments, calcareous, grey 5Y 5/1, upper boundary: sharp.	HS
						1.87-2.04: Heterolith: CLAY, silty, laminated with SAND, fine, silty with scattered shell fragments, slightly bioturbated, very calcareous, dark grey 5Y 4/1, upper boundary: sharp.	L
						2.04-2.56: SAND, fine, increasing content of silt and clay downcore, indistinctly laminated, in upper 10 cm: shell fragments, at 2.15: silty clay bed; below 2.15: strongly bioturbated, few shells ( <i>Cardium</i> sp.) and shell fragments, very calcareous, grey 5Y 5/1, upper boundary: sharp.	S
			4			2.56-2.80: CLAY, silty, indistinctly laminated, streaks of silty, very fine sand, slightly micaceous, in upper half: scattered, slightly charred plant fragments; non-calcareous, dark grey 5Y 4/1, upper boundary: sharp.	HS
			5			2.80-3.38: SAND, fine, well-sorted, slightly micaceous, scattered root fragments, at 2.82-2.92: high content of organic material; at 2.86-2.89 PEAT, dark brown; non-calcareous, dark greybrown 2,5Y 4/2, upper boundary: sharp.	
			6			3.38-3.50: SAND, fine, well-sorted, many shells ( <i>Scaphopoda</i> sp.) and shell fragments, fine disseminated organic particles, no plant fragments, calcareous, grey brown 2,5Y 5/2, upper boundary: only visible in content of lime and shells.	
						The section 3.38-3.50 most probably is core bark and does not belong stratigraphically at this position	
						Penetration: 5.0 m	
						Photo: Enclosure 12a-12b	

Master Grafisk

Oct.15-2001      PK/TC      Date:      Described by:

Clay	Silt	Sand			Gravel	
0.002	0.02	0.06	0.2	0.6	2	6
						20

Enclosure 5

Geological Survey of Denmark and Greenland

DN04.02K-147-TC lid

# SEDIMENTOLOGICAL CORE LOG

**CORE NO.:** Havb 131-31-590014 **POSITION:** 56°01'26" N  
 DGU 560430.13 4°17'21" E **Water depth:** 54,8 m

Environment and age

Lab. sample	Core	PKV no.	Scale	Lithology	Grain size and Sedimentary structure	Description
	V		1	0.00-0.15	SAND, fine, well-sorted, slightly silty, in top: many shell fragments ( <i>Arctica islandica</i> , a.o.), calcareous, light grey 5Y 7/1.	HS
	IV		1	0.15-1.05	SAND, very fine, silty, laminated, scattered shall fragments and (terrestrial?) plant fragments on bedding planes, at bottom: clay-streak; very calcareous, grey 5Y 6/1, upper boundary: sharp.	
	IV		2	1.05-1.83	SAND, very fine, silty, numerous clay-streaks, bioturbated, few scattered shell fragments and (terrestrial?) plant fragments, slightly micaceous, very calcareous, dark grey 5Y 4/1, upper boundary: sharp.	HL
	III		3	1.83-4.91	CLAY, rather sticky, silty, laminated, numerous small pods and streaks of finesand, increasing thickness of streaks in middle part, bioturbated, few scattered shell fragments and organic materials, very calcareous, dark grey 2,5Y 4/1, upper boundary: sharp.	
	II		4	4.91-5.00	SAND, fine and medium, slightly silty, shell fragments and (terrestrial?) plant fragments, calcareous, grey 2,5Y 5/1, upper boundary: sharp.	HS
	I		5	5.00-5.00	Penetration: 5.0 m	
			6	6	Enclosure 6	

Master Grafisk  
 Oct.16-2001 TC/PK  
 Date: Described by:

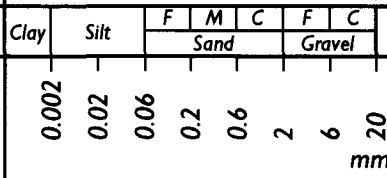


Photo: Enclosure 13a-13b

Geological Survey of Denmark  
and Greenland



DN04.02K-143-TC/Id

# SEDIMENTOLOGICAL CORE LOG

**CORE NO.:** Havb 131-31-590015 **POSITION:** 56°01'39" N  
 DGU 560430.14 4°18'59" E **Water depth:** 55,0 m

Lab. sample	Core	PKVno.	Scale	Lithology	Grain size and Sedimentary structure	Description	Environment and age													
	IV			[Lithology symbols]	[Grain size symbols]	0.00-0.42: SAND, fine, silty, very well-sorted, upper 7cm: many shells, with gyttja, few scattered plant fragments; in lower part: indistinctly laminated; calcareous, dark grey 2,5Y 4/1.	HS													
	III		1	[Lithology symbols]	[Grain size symbols]	0.42-0.81: SAND, very fine, very silty, laminated, few streaks of silty clay, few shell fragments, few plant fragments, calcareous, dark grey 2,5Y 4/1, upper boundary: gradual.	HV													
				[Lithology symbols]	[Grain size symbols]	0.81-1.20: Heterolith: SAND, fine, silty, laminated with CLAY, silty, few scattered shell fragments, lower 10 cm: fine and medium sand with clay beds; calcareous, dark grey 2,5Y 4/1, upper boundary: gradual.	HL													
	II		2	[Lithology symbols]	[Grain size symbols]	1.67-3.51: SAND, fine, slightly silty, upper 15 cm: fine to medium, laminated, light brown grey 2,5Y 5/1; in middle part: increasing content of silt, scattered shell fragments, few scattered plant fragments, at 1.80 - 1.95: clayey streaks and laminae, bioturbated, calcareous and very calcareous (clay), grey 2,5Y 5/1, upper boundary: sharp.	HS													
	I		3	[Lithology symbols]	[Grain size symbols]															
			4			Penetration: 4,35 m														
			5																	
			6																	
				<table border="1" style="font-size: small;"> <tr> <td>Clay</td> <td>Silt</td> <td>F</td> <td>M</td> <td>C</td> <td>F</td> <td>C</td> </tr> <tr> <td></td> <td></td> <td colspan="3" style="text-align: center;">Sand</td> <td colspan="2" style="text-align: center;">Gravel</td> </tr> </table>		Clay	Silt	F	M	C	F	C			Sand			Gravel		Enclosure 7
Clay	Silt	F	M	C	F	C														
		Sand			Gravel															

Master Grafisk

Oct.15-2001

PK/TC

Date:

Described by:

0.002  
0.02  
0.06  
0.2  
0.6  
2  
6  
20  
mm

Geological Survey of Denmark  
and Greenland





# SEDIMENTOLOGICAL CORE LOG

**CORE NO.:** Havb 131-31-590016      **POSITION:** 56°01'14" N      **Water depth:** 54,2 m  
 DGU 560430.15      4°18'19" E

Lab. sample	Core	PKV no.	Scale	Lithology	Grain size and Sedimentary structure	Description	Environment and age
	IV					0.00-0.60: SAND, fine, well-sorted, slightly silty, indistinct lamination, very few shell fragments, few plant fragments, calcareous, grey 2,5Y 5/1.	HS
	III		1			0.60-1.05: SAND, fine, slightly silty, laminated, many laminae of silty clay, few scattered shell fragments, slightly bioturbated, very calcareous, grey 2,5Y 5/1, upper boundary: gradual.	
	II		2			1.05-2.67: CLAY, rather sticky, laminated, many streaks and laminae of silty finesand, bioturbated, very calcareous, GLEY1 4/1, in lower part: fewer sandy laminae and dark grey 2,5Y 4/1, upper boundary: sharp.	HL
	I		3			2.67-2.85: SAND, fine, very silty, indistinct clayey laminae, bioturbated, few shells and many shell fragments, very calcareous, GLEY1 4/1, upper boundary: sharp.	
						2.85-3.32: SAND, fine, slightly silty, varying content of silt, laminated, scattered plant fragments, calcareous, grey 2,5Y 5/1, upper boundary: sharp.	HS
						Remark: Lower core measures 0.90 m, and is indicated as 1.00 m from drill ship: possibly collapsed during vertical transportation through water escape.	S
						Penetration: 3.97 m	
			4				
			5				
			6				
			m				
				Clay	Silt	F M C F C Sand Gravel	Enclosure 8

Master: Grafisk  
 Oct..16-2001      TC/PK  
 Date:      Described by:

0.002    0.02    0.06    0.2    0.6    2    6    20  
 mm

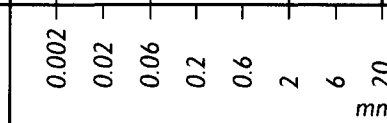
DNG04 02K-145-1C16d

# SEDIMENTOLOGICAL CORE LOG

CORE NO.: Havb 131-31-590017      POSITION: 56°01'03" N      Water depth: 54,6 m  
 DGU 560430.16      4°17'41" E

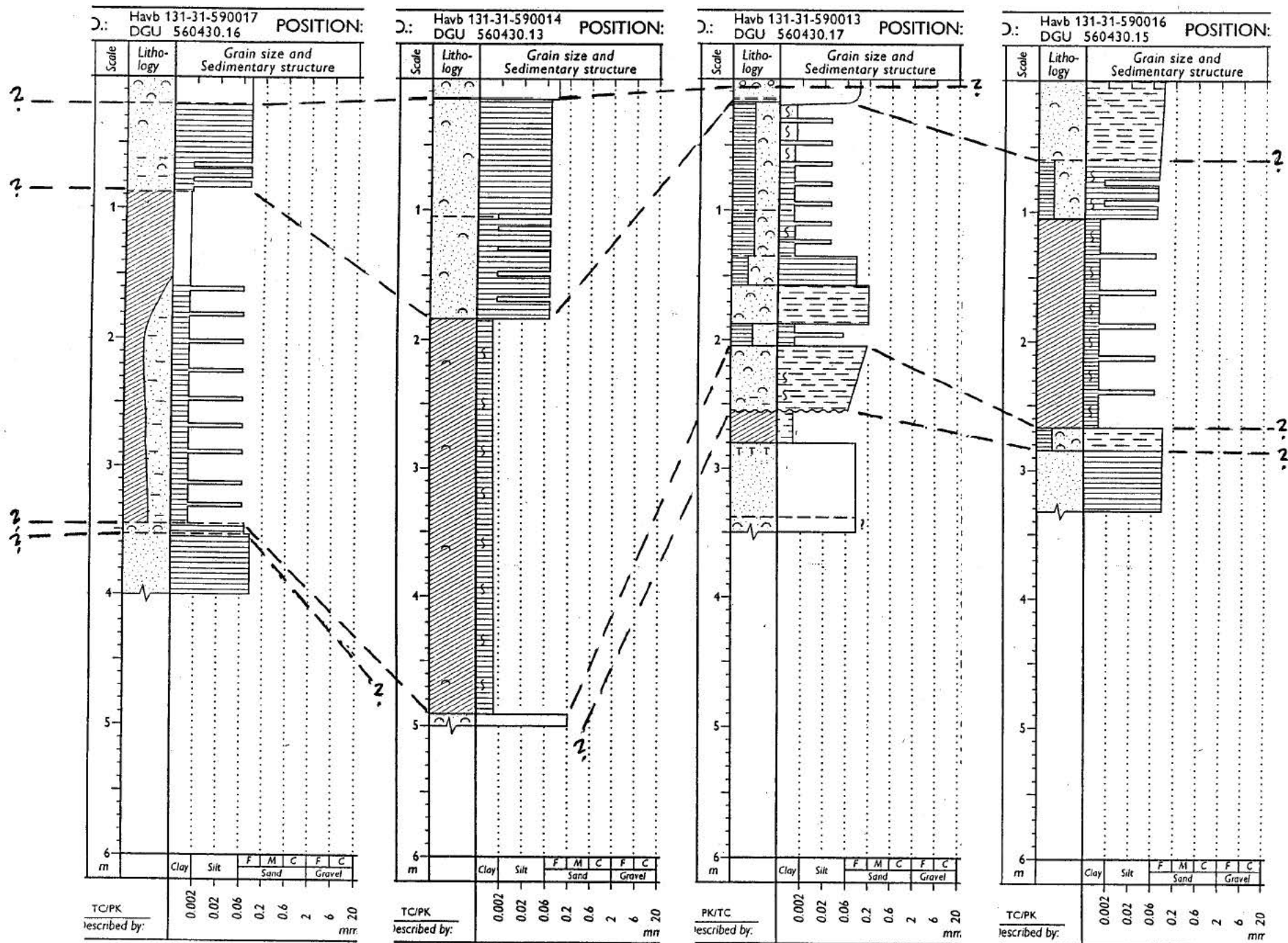
Lab. sample	Core	PKV no.	Scale	Lithology	Grain size and Sedimentary structure	Description	Environment and age													
	IV	22461	0-1	(Lithology symbols)	(Grain size bars)	0.00-0.20: SAND, fine, slightly silty, well-sorted, few gravel-size clasts, many shell fragments ( <i>Arctica</i> sp., <i>Cardium</i> sp.), very calcareous, dark grey 2.5Y 4/1.	HS													
	III	22462	1-2	(Lithology symbols)	(Grain size bars)	0.20-0.87: SAND, fine, very silty, laminated, in lower part: many laminae and streaks of silty clay, scattered shell fragments, very calcareous, dark grey 2.5Y 4/1, upper boundary: gradual.	HL													
	II	22463	2-3	(Lithology symbols)	(Grain size bars)	0.87-3.45: CLAY, rather sticky, silty, in uppermost part: few laminae of silty finesand; downcore: several laminae of silty finesand; bioturbated, few scattered shell fragments, few black plant fragments, very calcareous, dark grey 2,5Y 4/1, upper boundary: short and gradual.														
	I	22464	3-4	(Lithology symbols)	(Grain size bars)	3.45-3.53: SAND, fine, silty, laminated, many shell fragments, very calcareous, grey 5Y 5/1, upper boundary: short and gradual.	HS													
			4-4.6	(Lithology symbols)	(Grain size bars)	3.53-4.00: SAND, fine, slightly silty, laminated, plant fragments, at 3.65: peaty layer; non-calcareous, grey 5Y 5/1, upper boundary: gradual.	S													
<p>Remark: uppermost layer, 0.0-0.20 m is presumably reworked sediment from underlying sand.</p> <p>Penetration: 4.6 m</p> <p style="text-align: right;">Photo: Enclosure 16a-16b</p>																				
				<table border="1" style="font-size: small;"> <tr> <td>Clay</td> <td>Silt</td> <td>F</td> <td>M</td> <td>C</td> <td>F</td> <td>C</td> </tr> <tr> <td></td> <td></td> <td colspan="3" style="text-align: center;">Sand</td> <td colspan="2" style="text-align: center;">Gravel</td> </tr> </table>		Clay	Silt	F	M	C	F	C			Sand			Gravel		Enclosure 9
Clay	Silt	F	M	C	F	C														
		Sand			Gravel															

Master Grafisk  
 Oct..17-2001      TC/PK  
 Date:      Described by:

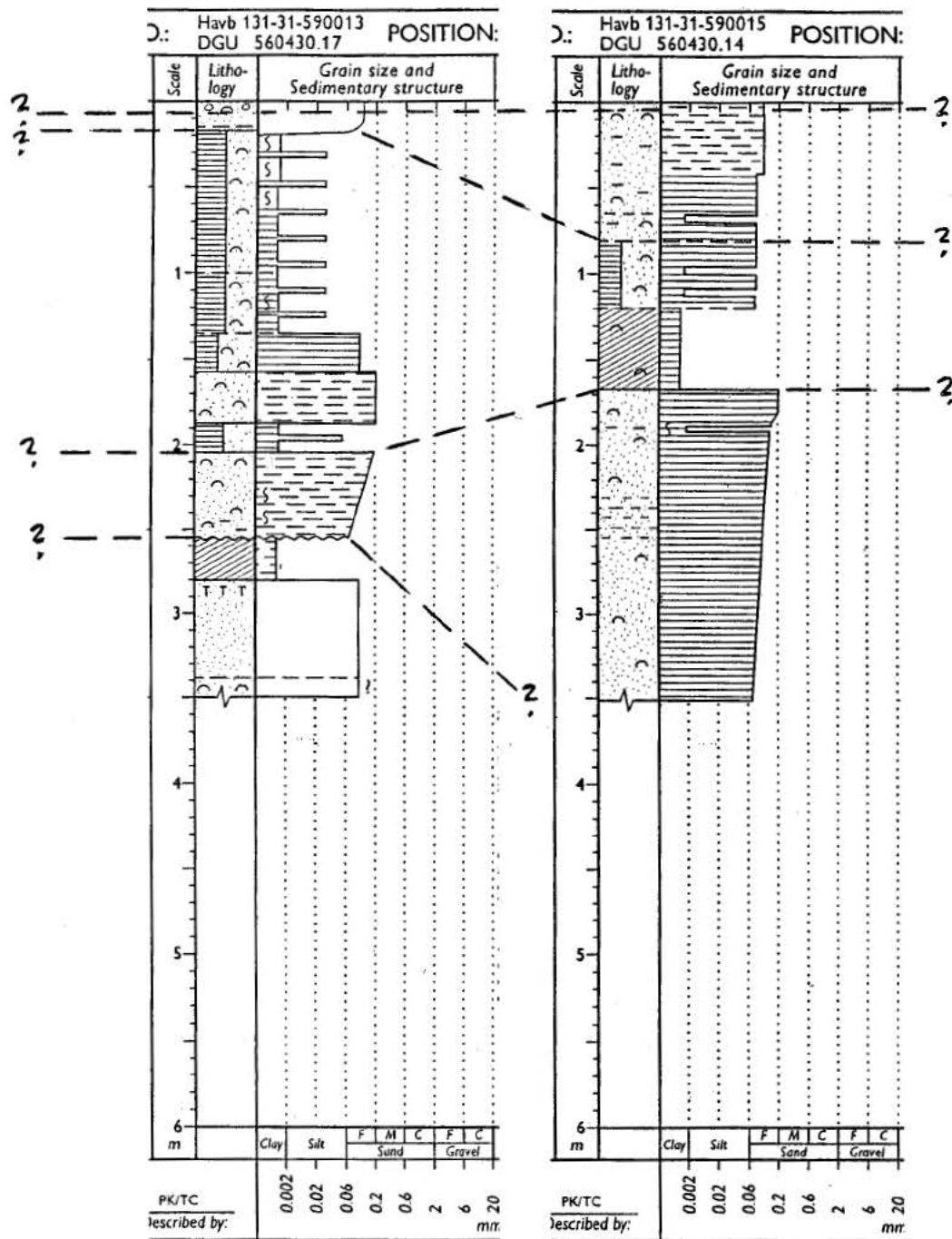


DN04.07K-146-TC.rld

## Enclosure 10 : Correlation between sedimentological core logs, South Pod Vibrocores 7-3-2-6



# Enclosure 11 : Correlation between sedimentological core logs, South Pod Vibrocores 2-4





HAVB 131-31-590013  
SOUTH POD SITE  
CORE:1; 0.00m-3.50m  
0.00m - 0.50m  
BOX: 1 DGU 560430.17  
Pkvnr.: 022457 okt-2001

HAVB 131-31-590013  
SOUTH POD SITE  
CORE:1; 0.00m-3.50m  
0.50m - 1.50m  
BOX: 2 DGU 560430.17  
Pkvnr.: 022458 okt-2001





HAVB 131-31-590013  
SOUTH POD SITE  
CORE: 1; 0.00m-3.50m  
1.50m - 2.50m  
BOX: 3 DGU 560430.17  
PKVnr.: 022459 OKT-2001

HAVB 131-31-590013  
SOUTH POD SITE  
CORE: 1; 0.00m-3.50m  
2.50m - 3.50m  
BOX: 4b DGU 560430.17  
PKVnr.: 022460 OKT-2001





HAVB 131-31-590014  
SOUTH POD SITE  
CORE:1; 0.00m-5.00m  
0.00m - 1.08m  
BOX: 1 DGU 560430.13  
Pkvnr.: 333331 okt-2001

HAVB 131-31-590014  
SOUTH POD SITE  
CORE:1; 0.00m-5.00m  
1.08m - 2.00m  
BOX: 2 DGU 560430.13  
Pkvnr.: 333332 okt-2001

HAVB 131-31-590014  
SOUTH POD SITE  
CORE:1; 0.00m-5.00m  
2.00m - 3.00m  
BOX: 3 DGU 560430.13  
Pkvnr.: 333334 okt-2001.



HAVB 131-31-590014  
SOUTH POD SITE  
CORE:1; 0.00m-5.00m  
3.00m - 4.00m  
BOX: 4 DGU 560430.13  
PKVnr.: 33335 OKT-2001

HAVB 131-31-590014  
SOUTH POD SITE  
CORE:1; 0.00m-5.00m  
4.00m - 5.00m  
BOX: 5b DGU 560430.13  
PKVnr.: 33336 OKT-2001



HAVB 131-31-590015  
SOUTH POD SITE  
CORE:1; 0.00m-3.51m  
0.00m - 0.61m  
BOX: 1 DGU 560430.14  
Pkvnr.: 333337 okt-2001

HAVB 131-31-590015  
SOUTH POD SITE  
CORE:1; 0.00m-3.51m  
0.61m - 1.61m  
BOX: 2 DGU 560430.14  
Pkvnr.: 333338 okt-2001



HAVB 131-31-590015  
SOUTH POD SITE  
CORE:1; 0.00m-3.51m  
1.61m - 2.61m  
BOX: 3 DGU 560430.14  
Pkvnr.: 333339 OKT-2001

HAVB 131-31-590015  
SOUTH POD SITE  
CORE:1; 0.00m-3.51m  
2.61m - 3.51m  
BOX: 4b DGU 560430.14  
Pkvnr.: 333310 OKT-2001

GEUS

Enclosure 14b



HAVB 131-31-590016  
SOUTH POD SITE  
CORE:1; 0.00m-3.32m  
0.00m - 0.48m  
BOX: 1 DGU 560430.15  
PKVnr.: 333311 OKT-2001

HAVB 131-31-590016  
SOUTH POD SITE  
CORE:1; 0.00m-3.32m  
0.48m - 1.42m  
BOX: 2 DGU 560430.15  
PKVnr.: 333312 OKT-2001

GEUS

Enclosure 15a



HAVB 131-31-590016  
SOUTH POD SITE  
CORE:1; 0.00m-3.32m  
1.42m - 2.42m  
BOX: 3 DGU 560430.15 OKt-2001  
Pkvnr.: 333313

HAVB 131-31-590016  
SOUTH POD SITE  
CORE:1; 0.00m-3.32m  
2.42m - 3.32m  
BOX: 4b DGU 560430.15 OKt-2001  
Pkvnr.: 333314

GEUS

Enclosure 15b



HAVB 131-31-590017  
SOUTH POD SITE  
CORE:1; 0.00m-4.00m  
0.00m - 1.00m  
BOX: 1 DGU 560430.16 OKT-2001  
PKvnr.: 022461

HAVB 131-31-590017  
SOUTH POD SITE  
CORE:1; 0.00m-4.00m  
1.00m - 2.00m  
BOX: 2 DGU 560430.16 OKT-2001  
PKvnr.: 022462

GEUS

Enclosure 16a



HAVB 131-31-590017  
SOUTH POD SITE  
CORE:1; 0.00m-4.00m  
2.00m - 3.00m  
BOX: 3 DGU 560430.16 okt-2001  
Pkvnr.: 022463

HAVB 131-31-590017  
SOUTH POD SITE  
CORE:1; 0.00m-4.00m  
3.00m - 4.00m  
BOX: 4b DGU 560430.16 okt-2001  
Pkvnr.: 022464

GEUS

Enclosure 16b