SAMPLE STATION DATA

INSTITUTE OF GEOLOGICAL SCIENCES – MARINE GEOLOGY UNIT

SAMPLE NO. F (1) +59 (± lat) −01 (± long) 268 (no.) (11)

CRUISE NO. 84 FE 09 (year : ship : no 18)

DATE 06 10 (mnth : day 22)

TIME (local) (hrs : mins 26)

WATER DEPTH 144 (metres 30)

POSITION FIXING METHOD H

COMMENT (32)

NAVIGATIONAL READINGS (tick lanes with best intersection)

CHAIN | RED | GREEN | PURPLE (41 / 48 / 55)

POSITION

LATITUDE +59 51·05 (± degs : mins (decimal) 63)

LONGITUDE −00 03·87 (± degs : mins (decimal) 71)

ADDITIONAL INFORMATION :

BGS BH 84/9.

EQUIPMENT TYPE: 1 = sample recovered; 2 = no sample (geological reasons); 3 = no sample (equipment failure); 4 = no sample (undifferentiated)

G (1) dup cols 2–11

GS | VE | CS | CR | DM | DR | BH | SD | RD | SU | PS | DI | BS | OC | OG (12 / 22 / 32)

T.D. metres 29·50 (50 / 55)

SUMMARY SAMPLE DESCRIPTION : (Free text – max. 69 characters)

H (1) dup cols 2–11

THIN QUATERNARY ON TERTIARY CLAY AND SAND ON PERMOTRIASSIC SANDSTONE

(12 / 20 / 30 / 40 / 50 / 60 / 70 / 80)

GEOTECHNICAL DATA :

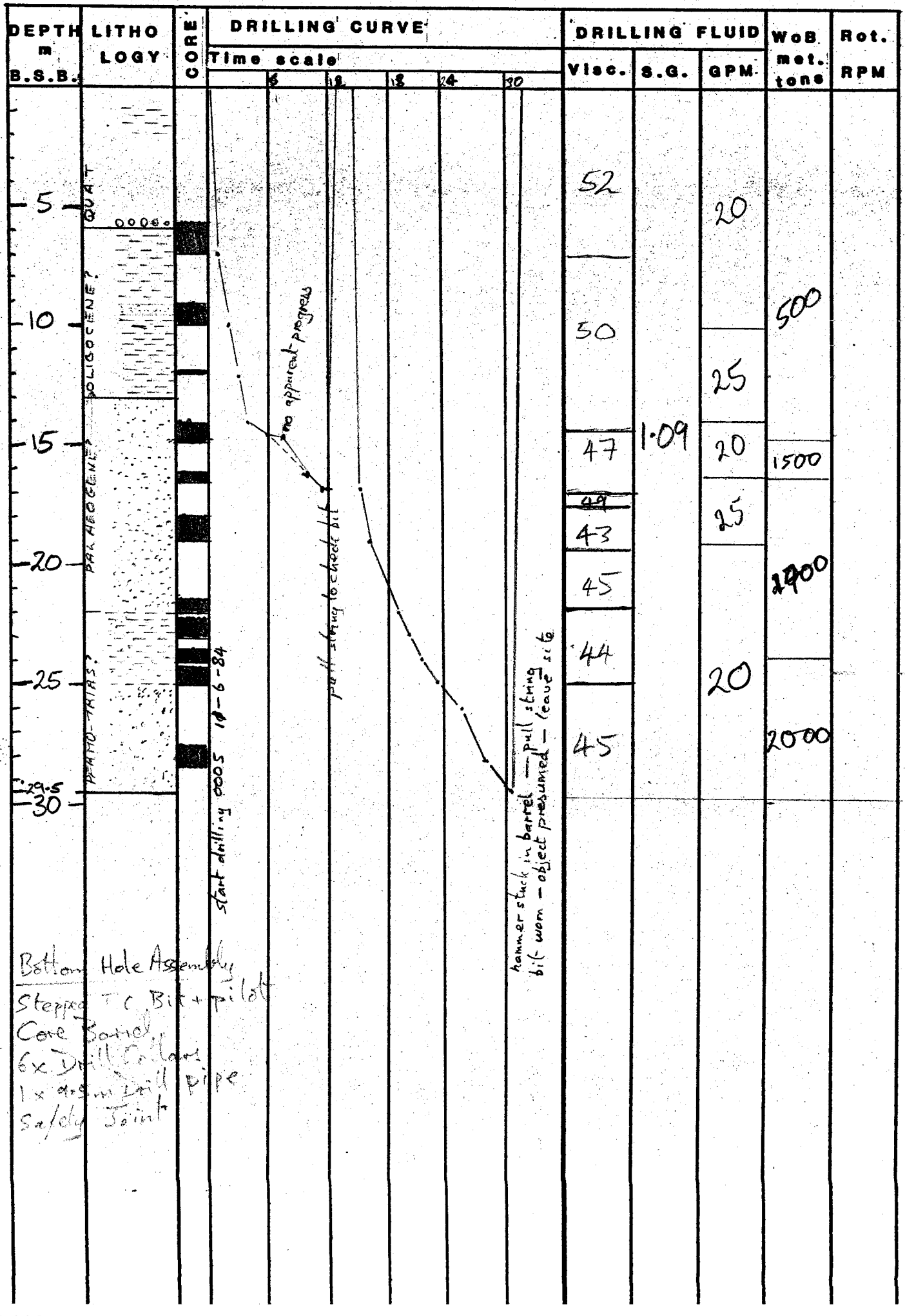
RAW DATA

PENETROMETER Head	PENETROMETER Readings					HAND VANE Head	HAND VANE Readings			

AVERAGED DATA

	DEPTH	PENETROMETER (KPa)	HAND VANE (KPa)
I (1) dup cols 2–11	(14)	(18)	(22)
	(25)	(29)	(33)
	(36)	(40)	(44)
	(47)	(51)	(55)
	(58)	(62)	(66)
	(69)	(73)	(77)
I (1) dup cols 2–11	(14)	(18)	(22)
	(25)	(29)	(33)
	(36)	(40)	(44)
	(47)	(51)	(55)
	(58)	(62)	(66)
	(69)	(73)	(77)

D.S. FERDER	BGS MGLU	B.H.	LATITUDE	LONGITUDE	WATER DEPTH
1984 PROGRAMME		84/9	59°51.046'N	0°03.870'W	144 m



TIME	DATE & LOCATION	ACTIVITY
0000		
0100		
0200		
0300		
0400		
0500		
0600		
0700		
0800		
0900		
1000		
1100		
1200		
1300		
1400		
1500	steaming to loc 270	
1600		
1700		
1800		
1900	1900 begin anchoring up	
2000		
2100	2105 check bit - okay - lower template	
2200		
2300	2245 pipe stuck in clamps 2300 — clamp off of pipe.	
2400		

TIME	DATE & LOCATION	ACTIVITY
0000	loc 270 BH84/9	Drilling
0100	2.0m	
0200	7.0m	
0300	10.0m	
0400	12m Nil recovery.	
0500	440 14m Bit blocked. Hammer out.	
0600	615 14.5m	
0700	745 15.00	
0800		
0900		
1000	955 — 16.5m	
1100		
1200	1130 17.0m 1150 Pull string to check bit	
1300		
1400	1330 Bit on deck change for new TC 1350 Run back in	
1500		
1600	1524 DRILLING 1615 19.0m.	
1700		
1800		
1900	1840 22.0m	
2000	2000 23.0m	
2100		
2200	2125 24.0m	
2300		
2400	2320 25.0m	

TIME	DATE & LOCATION	ACTIVITY
0000	12/6/84 SITE 270	
0100		
0200	01.45 27.5m	
0300		
0400	0400 28.3m	
0500		
0600	6.15am 29.5m NO RECOVERY	
0700	6.20 ① HAMMER - STUCK!!!	
0800	Attempting to free hammer Failed - Brake wire strand eventually Pull pipes	
0900		
1000		
1100	1030 Drill string up! Putting anchors	
1200	1150 steaming to Lerwick	
1300	off hire	
1400		
1500		
1600		
1700		
1800		
1900		
2000		
2100		
2200		
2300		
2400		

TIME	DATE & LOCATION	ACTIVITY
0000		
0100		
0200		
0300		
0400		
0500		
0600		
0700		
0800		
0900		
1000		
1100		
1200		
1300		
1400		
1500		
1600		
1700		
1800		
1900		
2000		
2100		
2200		
2300		
2400		

B484/9

M/S FERDER

DRILLER'S LOG

NB! VÆR OBS. PÅ HOVEDVENTIL
DEN ER LUMSK!

Date: | Client: BGS. | Location: | Borehole No.: 270

Depth deck to mudline: | Waterdepth: 145 m

Time	Pipe No.	Length single pipe	Length total pipe	Plus/minus pipe	Pipe below mudline	Bit load	Total weight	Mud press	REMARKS
Bit + sub.		5,9							2046 – 2108 BGS rigget utstyret
6 d.c.		32,9	38,8						
	x 1	9,6							2108 – 2340 Trippet ned.
	x 2	10,–							2300 Slippet koppet ut. 2320
	x 3	9,5							
	x 4	9,1							
	x 5	9,3							
	x 6	9,5							
	x 7	9,5							
	x 8	9,5							
	x 9	9,5							
	x 10	9,4							
(113,6)	x 11	9,2							
x	12	9,5	152,4.						
		113,6							
0005/0012	1	5	157,4	0	2	500		22	
0030/0110	2	5	162,4	0	7	"		20	
0125/0215	~~3~~	5	~~167,4~~	÷ 2	10	500		20	
0230/0300				0	12	500		23	
	13	9,50	178,9	÷ 4,5	12				
0323/0420				– 2.5	14	500		26	
0504/0555				– 2.–	14.5			21	
0625/0730				÷ 2	14.5	~~500~~ 1500		18	No prog.
0745/0856				0	16.5	1500		20/16	
1010/1120	3	5	176.9	4,5	17.	1500		25	Mud [illegible] 25 F.O. Skinner.
			24.5						Kl. 1120: Ble det bestemt
									å bytte [illegible], trippe opp.
									1320 Bitt på dekk.
									1345 – 1525 Trippet ned.

CERO GRAFISK a.s. Tønsberg

181.4
154
27.4

M/S FERDER

DRILLER'S LOG

181.4
154
27,4

152.4
19
171.4

12000
23-40
1-40
01-20

II

152
157
164

Date	Client	Location	Borehole No.
11.06.84.	BGS.		270
Depth deck to mudline: ~~148~~		Waterdepth: ~~145~~ 144 meter	

Time	Pipe No.	Length single pipe	Length total pipe	Plus/minus pipe	Pipe below mudline	Bit load	Total weight	Mud press	REMARKS (22.5 / 6 / 28.5)
Bit + sub									
6 dc			38.8						
12×9			152.4				should be 19.0		
	13	9.5							~~Mix Mud~~
	14	9.8	171.4	0	1?.-				
1525/1610	1	5	176.4	-2,5	19,5	1700		24	Prøve ca 1,5m sandsten.
1830/1840				0	22,-	"		29/18	dårlig prøve
1855/1955	2	5	181,4	-4	23,-	"		22	Det går bedre. OK. Prøve
2005/2125				-3	24,-	"		21/18	LITEN PRØVE 2052-2107 MIX MUD
2135/2320				-2	25,-	2000		17	PRØVE-VOGENLUVOE
2340/0150				-1	26,-	"		20	
				÷2	~~26~~ 27,5				Pga. tidevann. ~~[illegible]~~ v/144m vann
0225/0350				-1.2	28.3	2500		20	
0405/0?0				0	29.5	250		20	0635: HAMMEREN SATTE SEG FAST I BITTET, BUNNEN.
		~~5~~	186.4						
									ETTER FLERE FORSØK
								0750	- BLE WIREN BRENDT
								-1010	BEGYNTE Å TRIPPE OPP.
								1010	- 1020 HEIV OPP
									Seacraft.

CICERO GRAFISK a.s. Tønsberg

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1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

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Run 0·0 m to 2·0 m Recovery 0·0 m (0 %)

Depth	Sub Samples	Lith-ology	Description
0			No recovery. Traces of soft clay on shoe.
1			
2			

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mág - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
organic
Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

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B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 2-0 m to 7-0 m Recovery 1-2 m (24%)

Depth	Sub Samples	Lith-ology	Description
2			
3			
4			
5			
6			Gravel: cobbles of black claystone, similar to U. Jurassic cored in 84/8. (Diamict? — some of clasts coated with clayey material).
7	MPAL 7.0		White to light grey, laminated clays. Some of lamination: blue-green to brown in colour. Abundant wood fragments scattered throughout core. One piece ca. 60-70cm in length. Clays non-calcareous. Soft to stiff, highly plastic (? Oligocene) 7.0

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

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GEOLOGICAL LOG COVERING ONE CORE RUN

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Run 7.0 m to 10.0 m Recovery 0.9 m (30 %)

Depth	Sub Samples	Lith-ology	Description
7			
8			
9			
9.1			V. coarse, grey, poorly sorted, argillaceous, non calcareous, gravelly sand - Rare small shell frags. (cavings?).
9.42			Quartz dominant (inc. rose qtz) with minor lithics. Grains angular to rounded, low sphericity.
			Offwhite to blue green to grey, laminated, hard, clays with woody fragments. Clay / sand contact is sharp.
10	99 MPAL		
10.0			Irregular lens of quartzose, fine-medium sand at base. Irregularity probably a function of the drilling. Sand is dk greenish grey ca. 5G 4/1 Firm, non-calcareous. Subordinate disseminated dk green glauconite grains

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

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B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 10·0 m to 12·0 m Recovery 0·1 m (5 %)

Depth	Sub Samples	Lith-ology	Description
10			
11			
12	MPAL PETROL	11·9 12·0	Bluegreen clay with numerous Fragments of lithified dk grey glauconitic Sandstone ; same composition as sand lens at base of last core (7·0-10·0m). ca. 5% Glauconite Quartz dominant fine-medium. Glauconite gives rock a speckled appearance and grains vary from fine to coarse sand grade. (stored in 1lb jar)

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

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GEOLOGICAL LOG COVERING ONE CORE RUN

Run 12-0 m to 14.0 m Recovery 0 m (0 %)

Depth	Sub Samples	Lith-ology	Description
12			No recovery
13			
14			Hammer samples ① Glauconitic quartz sandstone fragments a/a. Glauconite ca. 5% of total rock. Minor muscovite. Fragments hard and indurated. Fragments lack any obvious structures. ② Glauconitic sandstones a/a Also light green-grey muscovite quartz sand, soft to firm, non-calcareous, Quartz ca. 98%. Appear laminated — unsure whether this is original or not. No shell fragments. Fine grained, moderate-well sorted.

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

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B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

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Run 14·0 m to 14·5 m Recovery 0·35 m (70 %)

Depth	Sub Samples	Lith-ology	Description
14			
	MPAL 14·5	14·15 / 14·5	Greenish grey (5GY 5/1), v fine - coarse, moderate to poorly sorted, quartzose sandstone. Subordinate muscovite, (?) glauconite and detritals. * Glauconite not as abundant as in the lithified fragments noted earlier. Quartz grains angular to subrounded, low sphericity. Very clean. No shell fragments Core appears weakly banded with occasional thin green argillaceous bands c 1·3mm thick. Unsure whether original or not. * ca 0·5-1·0%
15			

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

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GEOLOGICAL LOG COVERING ONE CORE RUN

Run 14·5 m to 15·0 m Recovery 0·5 m (100%)

Depth	Sub Samples	Lith-ology	Description
14			
			Mush of sand, clay and pebbles at top, most likely cavings.
			14·5 Fine – v. coarse, poorly sorted, clean quartz (inc. minor rose qtz) [redacted] sandstone with minor (<1%) *glauconite. Light green grey, friable, soft to firm. Non calcareous.
15	14·85 M'PAL		* Mica and other detritals more abundant than glauconite for which only the odd grain was noted
			Quartz: grains angular – rounded, low to high sphericity. ca. 99% of total rock sample.
			No shell fragments.
			[redacted]

All core recovered measured from base of run.

Sub Sample Code

EGU – Engineering
P.S.A. – grain size
M'Pal – Micropalaeontology
Macro – Macropalaeontology
P'Mag – Palaeomagnetic
M – Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

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SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 15·0 m to 16·5 m Recovery 0·45 m (30 %)

Depth	Sub Samples	Lith-ology	Description
15			
16			
	-16·45 MPal		16·05 (A) UPWARDS FINING (B) SHARP CONTACT at ca. 16·40. Not clear if is erosive or v. rapid grading. 16·5 (C)
			(A) Very fine-medium (occasional coarse grade), greenish-grey, poorly sorted quartz sandstone. Quartz ca. 99%. V. minor detritals. No shell frags.
			(B) Dominantly coarse (ranging fine-coarse), lightgrey, loose to firm, poorly sorted, quartz sand / sandstone. Friable Quartz ca. 99%. No shell frags.
			(C) Very fine to fine, moderately sorted, greenish grey, quartz sandstone. Soft + friable Quartz ca 95%; Muscovite + other detritals ca 5%. Muscovite quite distinct + its presence contrasts with (A) + (B) where little to no mica was seen. No shell frags.
			All qtz grains vary from angular to rounded + low to high sphericity. (No interstitial matrix in any of this whole sandstone facies.)

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 16.5 m to 17.0 m Recovery 0 m (0 %)

Depth	Sub Samples	Lith-ology	Description
16			
			16.5 No recovery
17			17.0
			Drill string being pulled up to replace drill bit. Hoping to re-enter hole!

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
vvv Extrusive
xxx Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 17.0 m to 19.0 m Recovery 1.0 m (50%)

Depth	Sub Samples	Lith-ology	Description
17.0			
18.0			18.0 Sandstone, slightly greenish pale grey, poor—moderately sorted, fine to coarse grade, subrounded to rounded, highly spherical quartz, virtually monomineralic, grains appear slightly frosted. Mostly fairly friable but some well-cemented bands, apparently non-calcareous at 18.25m. Remainder is laminated (5mm) at low angle in core — possibly shallow cross-bedding. (Water-gun has picked out the bedding)
19.0	18.75 MPAL		19.0

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 19·0 m to 22·0 m Recovery 0·35 m (12 %)

Depth	Sub Samples	Lith-ology	Description
19·0			
20·0			
21·0			1 lb jar of ?cavings At top gravel — ?cavings
22·0			21·65 Sandstone, greenish grey, ?bimodal - poorly sorted: fine grained fraction and coarse- 22·0 VCrS fraction : v. few med. grains. Friable but "clasts" of better-cemented material. Patches of pales material in greener more clay-rich sediment. ?glauconite small pyrite grains CrS grains rounded fine grains v fine - fine

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
c organic
p Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

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Run 22·0 m to 23·0 m Recovery 0·9 m (90 %)

Depth	Sub Samples	Lith-ology	Description
22·0			
			22·1 Sand greenish grey quartz-rich as above but with red-brown bands and laminae throughout. Red beds represent silty mud material, sometimes as silty mudstone bands else as red mud matrix in sst. friable in parts but otherwise well-cemented, non-calcareous slightly micaceous in parts.
23·0			23·0
24·0			

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

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Run 23.0 m to 24.0 m Recovery 0.5 m (50%)

Depth	Sub Samples	Lith-ology	Description
23.0			
			23.5 Sandstone, friable as above with red silty mudstone partings dipping ~~at~~ constant angle ∴ flat laminated tectonic dip ca 12°.
24.0			24.0

NB. Drilles notes only 60cm drilled against the tide.

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
vvv Extrusive
xxx Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 24.0 m to 25.0 m Recovery 0.75 m (75%)

Depth	Sub Samples	Lith-ology	Description
24.0			
			24.25 Sandstone, greenish grey as above with red silty mudstone laminae at constant dip ca. 10°. Possibly more granule material and ? feldspars
25.0			25.0 NB ca 20cm missing from base of shoe

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
organic
Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

GEOLOGICAL LOG COVERING ONE CORE RUN

Run 25-0 m to 27-5 m Recovery 0·0 m (0 %)

Depth	Sub Samples	Lith-ology	Description
25			No recovery.
26			
27			
28	* Petrology (Hammer Sample)		Hammer samples ① Red-brown, moderate to poorly sorted, fine to coarse, friable, soft to hard, non calcareous quartz sandstone* with minor (<1%) mica and other detritals. [redacted] Non calcareous. Quartz grains well rounded to angular, low to high sphericity. Distinct blue-green reduction bands prominent. Two dark pebbles included in mush, one is glacially scratched — suggest cavings. ② a/a with numerous caved pebbles * Sample for petrology — suggest further submit to palynology. though unlikely to get anything from such a coarse rock. Worth a try!

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

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GEOLOGICAL LOG COVERING ONE CORE RUN

1984 PROGRAMME

B.H. NO: 84/9

Run 27·5 m to 28·3 m Recovery 0·9 m (112·5%)

Depth	Sub Samples	Lith-ology	Description
27			
			Cavings at top c. 5cm Pebbly muddy mush.
			27·4
			Red brown to blue green, poorly sorted (altho' possibly bimodally sorted), current-to-flat-bedded, non-calcareous, (micaceous) quartzo feldspathic to quartz sandstones. Minor detritals.
28			
			28·3
			Coarse to v. coarse quartz + feldspar grains, rounded to subrounded, medium to high sphericity, set in a matrix of vfine to medium (dominantly) quartz grains which is more angular.
			Foresets dip at an angle of 5–10°. Unit is ca. 7cm thick and is capped by a sharp truncation surface marked by overlying flat-bedded unit.
			Locally coarse–v. coarse sand grains form discrete subhorizontal bands – one grain thick.

All core recovered measured from base of run.

Sub Sample Code

EGU – Engineering
P.S.A. – grain size
M'Pal – Micropalaeontology
Macro – Macropalaeontology
P'Mag – Palaeomagnetic
M – Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

I.G.S. MARINE GEOLOGY UNIT

1984 PROGRAMME

SHIP: FERDER

B.H. NO: 84/9

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GEOLOGICAL LOG COVERING ONE CORE RUN

Run 28·3 m to 29·5 m Recovery 0·0 m (0 %)

Depth	Sub Samples	Lith-ology	Description
28			
			28·3 No recovery
29			
			29·5 Hammer sample ① Stored in small bag. Red brown - blue green sandstone a/a.
30			

All core recovered measured from base of run.

Sub Sample Code

EGU - Engineering
P.S.A. - grain size
M'Pal - Micropalaeontology
Macro - Macropalaeontology
P'Mag - Palaeomagnetic
M - Moisture Content

Lithology Code

Clay/shale/mudstone
silt/siltstone
sand/sandstone
gravel/conglomerate
Carbonate
Extrusive
Intrusive
Metamorphic

pebbles
shells
C organic
P Plant Fragments
Si, Fe, minerals

INSTITUTE OF GEOLOGICAL SCIENCES

Continental Shelf Unit

COMPOSITE LOG

Borehole No 84/9 (59/-01/268)

IGS Borehole No 84/9

Location: 37 miles E of Sumburgh Head

Actual position: Latitude: 59°51·045'N
Longitude: 0°03·870'W

Dates of drilling: 10th–12th June 1984
Total depth: 29.5m
Water depth: 144m

Navigation: SATNAV/DECCA
Positioning: SATNAV
Contractor: ANTON VON DER LIPPE
Vessel: FERDER

Sea Area: FAIR ISLE
Planned IGS No: 270
Licence Block: 7/5
Operator: UNALLOCATED

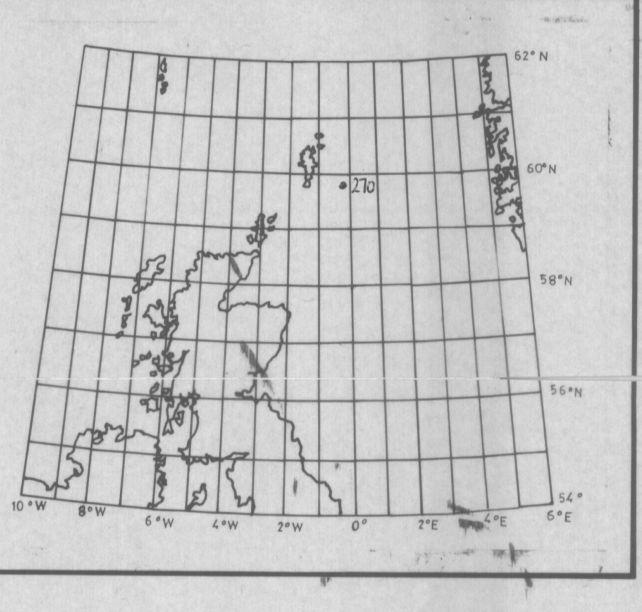
1:100 000 Sheet No: FAIR ISLE NE
Geologists: M.S.S., A.C.S., D.L., J.A.F.

Purpose

TO PENETRATE LOWER UNIT IN TERTIARY MARGINAL SEQUENCE AND ALSO SAMPLE ?DEVONIAN BENEATH.

Comments

THIN QUATERNARY ON ?OLIGOCENE CLAYS ON ? LOWER TERTIARY SANDS ON ? PERMO-TRIASSIC SANDSTONES. LATTER UNIT CORRESPONDS TO STRONG REFLECTION INTERPRETED ON SEISMIC EVIDENCE AS A LOWER TERTIARY UNIT. BOREHOLE TERMINATED BEFORE ?DEVONIAN REACHED.



LITHOLOGICAL KEY

- CLAY/SHALE, MUDSTONE
- SILT/SILTSTONE
- SAND/SANDSTONE
- GRAVEL/CONGLOMERATE
- LIMESTONE
- CHALK
- DOLOMITE
- COAL/LIGNITE
- EVAPORITES
- EXTRUSIVE IGNEOUS
- INTRUSIVE IGNEOUS
- BASEMENT
- WHOLE SHELLS/SHELL FRAGMENTS
- C / P — CARBONACEOUS/PLANT FRAGMENTS
- □ / FE — IRON PYRITES / FERRUGINOUS
- CALCAREOUS

AGE	NATURAL GAMMA RAY LOG (Counts/s) 0 50 100 / Depth (m below sealevel)	LITHOLOGY: INTERPRETATION	LITHOLOGY: CORE RECOVERED	DESCRIPTION	SUB-SAMPLES	COMMENTS
				Seabed		
QUATERNARY ? OLIGOCENE ? PALAEOGENE ? PERMO-TRIASSIC	Scale:			Traces of soft clay 2 5· 5·8 Gravel: cobbles of black claystone, similar to U. Jurassic cored in 84/8, coated in clayey sediment. (? DIAMICT) Off-White to light grey, to blue green, laminated, hard clays with abundant wood fragments scattered through core — on fragment ca. 60–70mm length. Clays are non-calcareous and highly plastic. 7 V. coarse, grey, poorly sorted argillaceous, non-calcareous gravelly sand. Rare small shell fragments (? caving). Quartz dominant with minor lithics. Grains ang-rded, low sphericity. 9·1 9·42 10 Clays a/a with irregular lens of quartzose, fine–medium sand at base. Sand is dk. greenish grey ca. 5G 4/1, firm, non calcareous with minor disseminated glauconite. 11·9 12 Blue green clay a/a with numerous fragments of lithified dk. grey glauconitic sandstone. 14 ← Hammer sample: Glauconitic sandstones (ca. 5% Glauconite) 14·15 14·5 V. fine – v. coarse, poorly sorted quartz sandstone with minor (ca. <1%) glauconite. Sandstone is light green-grey, soft to firm, friable and non calcareous. Quartz grains angular-rounded, variable sphericity. ca. 90% Qtz. No shell fragments 15 16·05 16·5 Sands/sandstones a/a. ? rare glauconite. Muscovite locally prominent. Virtually Monomineralic – Quartz. Graded beds (upwards fining) and possibly shallow cross-bedding. 17 19 20 21·65 Sandstone, greenish grey, ? bimodal – poorly sated fine and v. coarse fractions. Friable. Clasts of better cemented material. Rare ? glauconite 22 Sand greenish grey, quartzitic a/a but with red-brown bands and laminae throughout. Red beds represent silty mud material. Friable, but otherwise well cemented, non calcareous, slightly micaceous. Dip of bedding ca. 10–12° 23 23·5 25 27·5 Red-brown to blue green, poorly sorted (? bimodal), flat-to-current bedded, non-calcareous, slightly micaceous, quartzo-feldspathic to ? quartz sandstones. Minor detritals. 28·3 Coarse–v. coarse quartz + feldspar grains, rounded–subrounded, medium to high sphericity; set in a matrix of v. fine–medium (dominantly) quartz, which is more angular. 29·5 T.D. 30 Foresets in thin (ca. 1cm) current-bedded unit dip at ca. 5–10°.			7.0 MPAL 9.9 MPAL 12.0 MPAL PETROLOGY 14.5 MPAL 14.85 MPAL 16.45 MPAL 18.75 MPAL 27.5 PETROLOGY	Portlandian