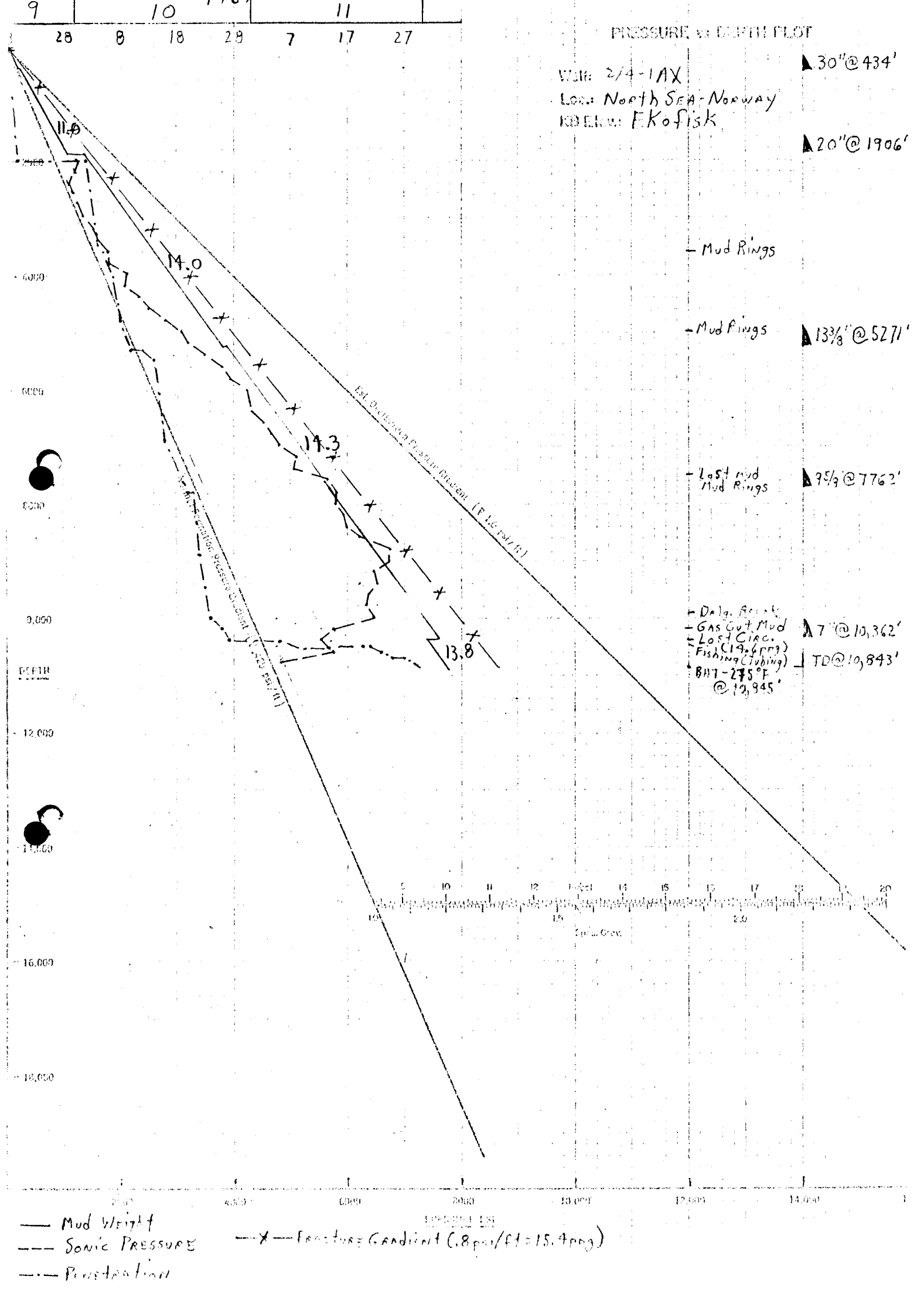
WELL : 7/4-1 AX
FIELD : EKOFISK 16 SEPT. 1969 – 24 DES. 1969 – 99 Days

P.P. CO. - NORWAY

WELL RECAP

1	MUD TYPE		Lignosulfonate	Lignosulfonate	Lignosulfonate	Lignosulfonate	
2	MUD WEIGHT	PPG	13.C - 14.0	14.3	12.5 - 14.6	13.8 - 14.0	12.5 - 14.6
3	INTERVAL EXAMINED	ft	1906 - 53CC	53CC - 78CC	78CC - 10,389	10,389 - 10,843	1906 - 10,843
4	TOTAL FOOTAGE	ft	3394	25CC	2589	454	8937
5	HRS DRILLING	hrs	53.5	59	62.5	3C	205
6	PENETRATION (4÷5)	ft/hr	63.4	42.4	41.4	15.1	43.6
7	MUD COST CURRENT (1973)	$	26,52C	15,702	145,C1C	29,489	190,196
8	MUD COST/FT (7÷4)	$/ft	25.94	6.28	56.C1	64.94	21.28
9	HRS. CONDITIONING HOLE	hrs	28.5	9	19	—	56.5
10	CONDITIONING COST (9 X Rig Cost)	$	54,15C	17,100	36,1CC	—	107,350
11	CONDITIONING COST/FT (10÷4)	$/ft	15.95	6.84	13.94	—	12.01
12			11 OKT. 1969	21 OKT. 1969	05 NOV. 1969	28 NOV. 1969	28 NOV. 1969
13	ROTATING COST (5XRIG COST)	$	1C1,65C	112,1CC	118,750	57,CCC	389,5CC
14	ROTATING COST/FT (13÷4)	$/ft	29.95	44.84	45.87	125.55	43.58
15	FISHING HRS	hrs	—	—	—	—	—
16	FISHING COST (15X RIG COST)	$	—	—	—	—	—
17	FISHING COST/FT (15÷4)	$/ft	—	—	—	—	—
18	TOTAL COST (7+10+13+16)	$	242,320	144,9C2	299,86C	86,484	687,C46
19	TOTAL COST/FT (18÷4)	$/ft	71.40	57.96	115.82	19C.49	76.88
20	COMMENTS		●	Cored 5C'	●	Cored	
	RIG COST = $1900/HR.		17½"	12¼"	8½"	6"	33 Days


PRESSURE vs DEPTH PLOT
Well: 2/4-1AX
Loc.: North Sea - Norway
Rig: Ekofisk
30"@434'
20"@1906'
Mud Rings
Mud Rings
13⅜"@5271'
Lost mud
Mud Rings
9⅝@7762'
Dolg. Sands
Gas Cut Mud
Lost Circ.
Fishing (Tubing)
BHT-275°F @12,945'
7"@10,362'
TD@10,843'
11.0
14.0
14.3
13.8
DEPTH
PRESSURE PSI
Mud Weight
Sonic Pressure
Fracture Gradient (.8 psi/ft = 15.4 ppg)

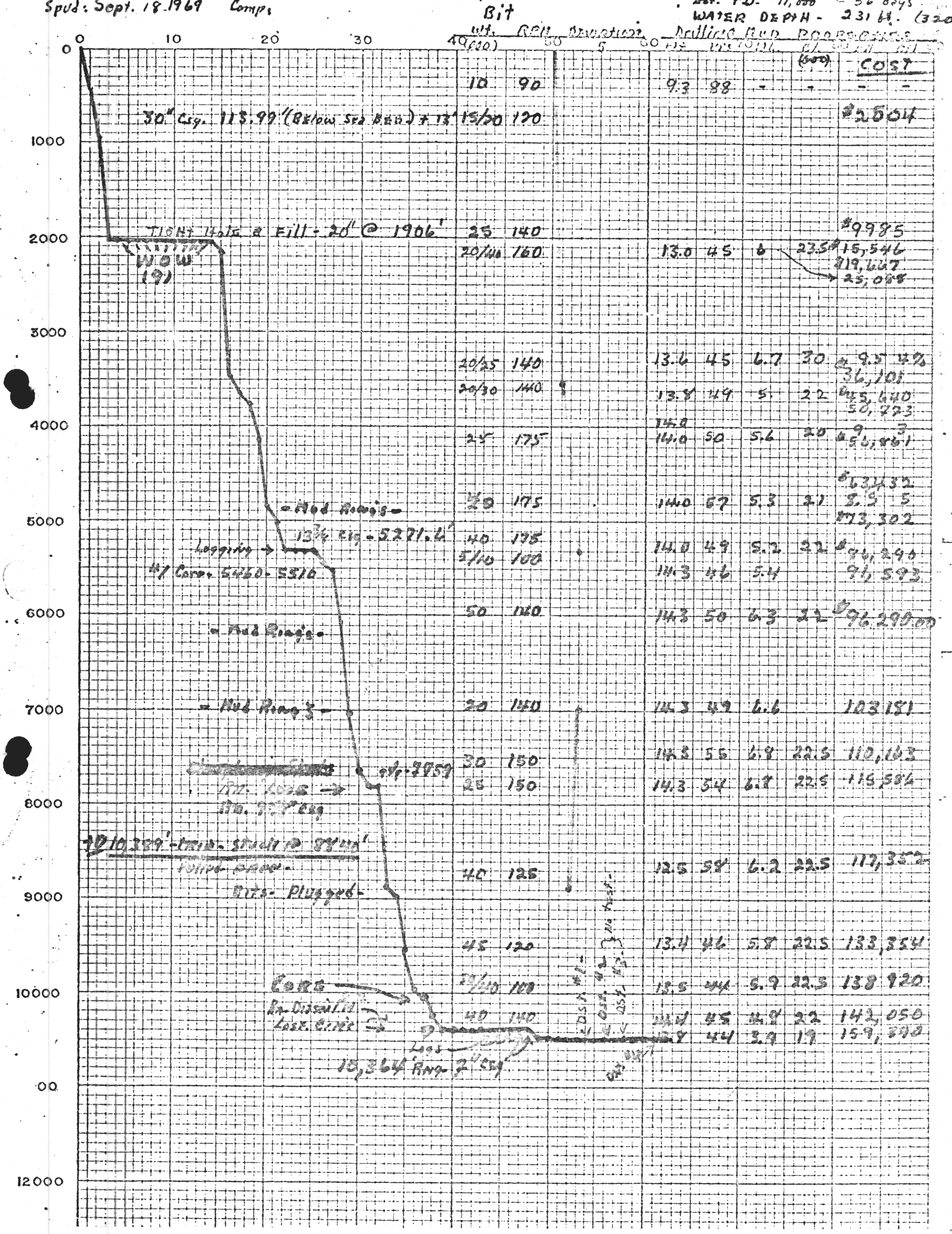
Well: Ekofisk- 2/4-1AX Contractor: ODECO

Cost Est. Gross $1,580,940 Net $584,315

Spud: Sept. 18 1969 Comp:

Est. TD- $11,000 - 56 days

WATER DEPTH - 231 ft. (320



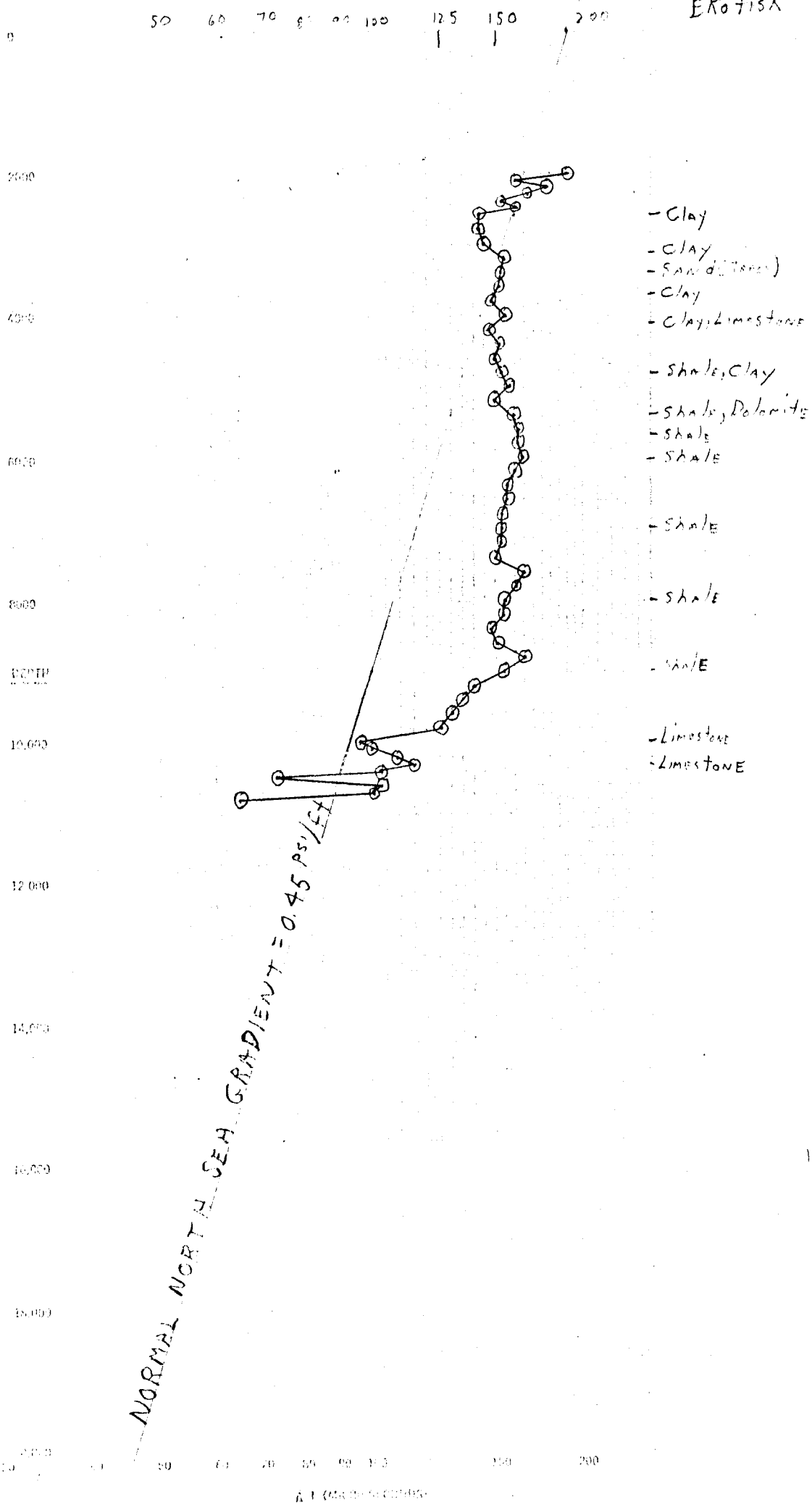
WELL: 2/4 - 1AX
LOCATION: North Sea - Norway
KB ELEV: Ekofisk

Data Sheet For Well Log Values

Shale Δt, Pressure Gradient, and Mud Weight

Depth	Δt	∇P	MW	Depth	Δt	∇P	MW	Depth	Δt	∇P	MW
2000	190	.625	12.02	7000	153	.695	13.36				
2100	160	.480	9.23	7200	154	.705	13.56				
2200	177	.550	10.58	7400	150	.695	13.36				
2300	166	.480	9.23	7600	165	.750	14.42				
2400	153	.450	8.65	7800	161	.745	14.33				
2500	160	.465	8.94	8000	155	.730	14.04				
2600	142	.450	8.65	8200	154	.730	14.04				
2800	142	.450	8.65	8400	148	.715	13.75				
3000	145	.450	8.65	8600	151	.730	14.04				
3200	155	.480	9.23	**8800**	**165**	**.772**	**14.85**				
3400	153	.470	9.04	9000	155	.753	14.48				
3600	153	.495	9.52	9200	140	.707	13.60				
3800	148	.470	9.04	9400	135	.695	13.36				
4000	155	.535	10.29	9600	130	.670	12.88				
4200	147	.495	9.52	9800	125	.650	12.50				
4400	152	.535	10.29	10,000	77	.470	9.04				
4600	150	.545	10.48	10,100	100	.507	9.75				
4800	154	.585	11.25	10,200	108	.565	10.86				
5000	157	.620	11.92	10,300	115	.620	11.92				
5200	155	.620	11.92	10,400	103	.535	10.29				
5400	160	.650	12.50	10,500	73	.450	8.65				
5600	162	.680	13.08	10,600	103	.545	10.48				
5800	162	.695	13.17	10,700	100	.530	10.19				
6000	165	.705	13.56	10,800	65	.450	8.65				
6200	160	.670	13.27								
6400	156	.685	13.17								
6600	156	.675	13.36								
6800	154	.670	13.27								

2/4 - 1 AX
Ekofisk



C O N F I D E N T I A L

NORWAY - NORTH SEA - EXPLORATION WELL

DRILLING PROSPECTUS

Well: 2/4-1X

Location: 56° 31' 30" N, 03° 17' E

Water Depth: Approximately 235'.

General:

It is planned to drill this well in block 2/4 with ODECO's semisubmersible drilling rig "Ocean Viking" to a depth of approximately 11,000' RKB.

The geological section for this well should be similar to other Norwegian North Sea wells. Hole sizes and casing setting depths will be similar to that for well 8/10-1X.

Anticipated Pressure and Troublesome Formations:

Sloughing shales and tight hole conditions can be expected between 5000' to 7800'. These will be controlled by increasing the mud weight to 13.0 ppg.

Hole and Casing Program:

Hole Size	Casing Size	Description	Torque ft-lbs	Approx. Depth RKB
26"	20"	133 lbs/ft J-ST & C	-	470'
17½"	13-3/8"	68 lbs/ft J-ST & C	5200	2,000'
12-1/4"	9-5/8"	47 lbs/ft N-80 Butt.	-	7,800'
8½"	7"	29 lbs/ft N-80 LT & C	3800	10,700'

Notes:

1. The 26" hole is to be drilled to approximately 145-150' below sea floor and to a depth which allows 10' to 15' of casing to remain above the sea floor after cementation. This string should be cemented with a float shoe on bottom and a baffle collar one joint above bottom.

2. 13-3/8" and 9-5/8" casing strings should be cemented with the float shoes as close to bottom as feasible.

3. The following is a tabulation of the minimum pumping pressures that could burst the casing strings while cementing:

Casing	Minimum pumping pressure that burst casing
20"	2850 psi
13-3/8"	2680 "
9-5/8"	5320 "
7"	5270 "

Cement Requirements:

A. 20" Casing

Cement with 900 sacks Dalen Portland cement plus 3% calcium chloride mixed with fresh water to a slurry weight of 15.6 ppg. The 900 sacks provides for cement back to the sea floor with 300% excess for washout. Wait on cement 12 hours before drilling out. A 20" Baker float shoe will be run on bottom and a baffle collar on the first joint. B-J Services' top and bottom sub sea cementing plugs are to be used. Mill connections of the bottom two joints of casing should be tack welded while the casing is on the rack. The field connections should be cleaned and Bakerlok'ed.

B. 13-3/8" Casing

Cement with 870 sacks Dalen Portland cement plus 8% bentonite plus 3% calcium chloride mixed to 13.1 ppg slurry followed by 800 sacks Dalen Portland cement plus 3% calcium chloride mixed to a 15.6 ppg slurry. Use fresh water for all mixing. This cement volume provides for cement back to the sea floor and 100% excess for washouts. The 870 sacks of the Dalen Portland cement plus 8% gel and 3% calcium chloride will have a dry bulk volume of 1030 cu. ft. Thickening time for the gel cement is in excess of 3 hours. Thickening time of the common plus 3% calcium chloride cement is 1 hour 15 minutes.

A Baker Model "G" differential fill shoe will be run on bottom and a Model "G" fill collar on top of the first joint. B-J Services' top and bottom sub sea cementing plugs are to be used.

Mill connections on the bottom two joints should be tack welded on the racks and Bakerlok used on the field connections.

Run 3 centralizers with one 7½' above the shoe, one on top of the second joint and one on top of the fourth.

Drilling may be resumed as soon as the 13-5/8" B.O.P. stack and 16" Marine Riser are in place.

C. 9-5/8" Casing

Cement with 1340 sacks Dalen Portland cement plus 8% bentonite plus 0.3% Diacel "LWL" mixed with FRESH WATER to 13.1 ppg. Followed with 800 sacks Dalen Portland cement plus 0.1% Diacel "LWL" mixed with fresh water to 15.6 ppg. This cement volume provides for cement back to the sea floor and a 25% excess for washouts. Thickening time for gel cement is 3 hours 10 minutes. Thickening time for common cement is 3 hours 50 minutes.

A Baker Model "G" differential float shoe will be run on bottom and a Model "G" differential float collar on top at the first joint. Three centralizers will be run, one 7½' above the shoe, one at the top of the second joint and one at the top of the fourth joint. The bottom two joints and the float equipment connections should be made up with Bakerlok. No welding is to be done on the casing. Wait on cement 8 hours before drilling out.

D. 7" Casing

Cement with 390 sacks Class "B" plus 0.3% Diacel "LWL" plus 1.0% Diacel "A" mixed with fresh water to a slurry weight of 15.6 ppg. This volume of cement provides for a 2900 ft column of cement with a 25% excess to allow for washouts and to tie back into the 9-5/8" casing string. Thickening time for this cement is 3 hours 37 minutes.

A Baker Model "G" differential float shoe will be run on bottom and Model "G" fill up collar on top of the first joint.

~~Bakerlok should be used on the bottom two joints and~~ float equipment. On this string do not use subsea cement plugs but use convertional wiper plugs. No welding is to be done on this string of casing.

Wellhead and B.O.P. Procedure:

A National Supply Underwater Wellhead System - Payne Control System, Hydril and Shaffer blowout preventors will be used for drilling this well. The procedure for handling and running this equipment is basically as covered in the National Supply Manual.

In addition to the initial subsea 5000 psi B.O.P. test, the preventors are to be tested to 2500 psi the first trip out of the hole after 12:01 a.m. each Tuesday.

Mud Logging:

The Geoservice mud logging unit is to be in service when the well is spudded. A geologist will be on board to furnish information to the mud logger as to frequency, number, and kind of samples to be collected.

Drill Stem Testing:

There will be no open hole drill stem testing.

Hole Deviation Surveys:

An instrument to measure hole deviation is available on the rig. Surveys should be made every trip out of the hole. Intermediate surveys are to be made only if deviation is a problem. Surveys below 8000' are not required unless there is reason to believe a serious hole deviation problem is occurring that will have to be corrected. The final hole deviation and direction can be taken from the dipmeter log.

Logging Program:

See Geological Prognosis.

Coring Program:

See Geological Prognosis.

Lost Circulation Procedure:

Diaseal M

Diaseal M is never added to the drilling mud nor is it slurried as a pill in drilling mud. It is always mixed with water either fresh, salty or salt saturated. It is always pumped down as a separate pill but is preceded and followed by drilling mud. The amount to be used varies from 25 to 200 barrels depending upon the amount of open hole and experience in the area. Some operators are twice the open hole volume as a guide.

Conventional lost circulation material such as nut hulls or fibers can be added to the slurry. Successful jobs have been done with and without the addition of these conventional lost circulation materials. 10 lb/bbl of fibrous material such as Baroid's Fibertex (Magcobar's Magco-Fiber) or 20 lb/bbl of medium nut hulls such as Baroid's Wall Nut (Magcobar's Tuf-Plug) are recommended.

The general procedure for using Diaseal "M" when circulation is lost is as follows:

1. Pull off bottom or just above the loss zone. Put the kelly back on and continue to work the pipe.

2. Mix the slurry as conditions dictate. If pull is to be mixed in suction pit, run necessary amount of water into pit with guns on pit. As water fills suction pit, begin opening sacks of Diaseal "M" and mix contents with water by maximum agitation from guns. As slurry becomes viscous, begin addition of lost circulation material.

2a. If Diaseal "M" slurry is already mixed and being held in readiness in standby pit, agitate vigorously, add lost circulation material if it has not already been added. Slurry is ready for use when throughly mixed and agitated.

3. When mixing is complete, pump the mixture in the hole and displace the slurry from the pipe with mud.

4. Pull up in the surface pipe and fill the hole with mud through the fill-up line.

5. If the hole does not fill with one foot of mud out of pits, mix another pit of Diaseal "M" slurry and repeat procedure.

6. If the hole does fill, proceed as follows:

   a) For depths less than 7000 feet, close the pipe rams, pump slowly through the fill-up line at 0-300 psi and squeeze, and hold available pressure for 10 mins.

   b) For depths more than 7000 or when a squeeze pressure cannot be established, wait two hours, then if the hole will stand full, go to bottom and drill.

Diaseal "M" slurries can be put in place through the bit nozzles. In the Texas Panhandle mud losses have been sealed by pulling off bottom, pumping down a pre-mixed Diaseal "M" slurry of 25 to 50 barrels followed by mud. This restores circulation and drilling is continued.

Mud Program:

26" hole 160' below sea floor (106 bbls w/o washout)

Drill hole with sea water. After reaching total depth slug hole with 200 bbls of "thick" mud having a viscosity of approximately 75 sec/qt. Build mud as follows:

10-20 ppb Attapalgite clay for saltwater muds
5-10 ppb Bentonite
1-2 ppb Flosal
1/4 ppb Lime

Attapulgite is to be used instead of bentonite due to the poor yielding characteristics of the European bentonite. The 5-10 ppb bentonite is recommended for filtercake building properties in event permeable zones are encountered. The bentonite will also provide some viscosity increase.

17½" hole to 2000' RKB (455 bbls w/o washout)

Slugs of thick mud may be required if hole becomes tight during connections. Upon reaching total depth slug hole with 1000 bbls thick mud prepared as in 26" hole.

12-1/4" hole to 7800' (1092 bbls w/o washout)

Drill plug with sea water. Immediately after drilling plug displace hole (300 bbls) with 13.0 ppg mud previously prepared in the pits as follows:

1-2 ppb Flosal
10-12 ppb Bentonite
½-1 ppb Tech. grade Carboxylmethylcellulose
1/4-1 ppb Sodium Hydroxide
~~5-10 ppb Modified Lignosulfonate~~
270 ppb Barium sulfate

This mud should have the following properties:

Weight	-	13.0 ppg
Viscosity	-	40-45 sec/qt
Waterloss	-	6-10 cc
pH	-	9-10
Solids	-	22%

Drilling rate from 2000' RKB to 7800' RKB will be limited by the ability of the mud system to maintain the above properties. Viscosity may be allowed to increase to 60-70 sec/qt. due to the mud making characteristics of the formation. Viscosity should not be allowed to go above 70 sec/qt.

If the viscosity increases to the 60-70 range, gels may become difficult to control and the addition of ½ to 1 ppb non ionic drilling mud surfactant may be required. If hole

becomes tight on connections or excessive drag exists (normal 20000 lbs) the addition of 5-6% diesel will be justified. If the problem continues to exist add Soltex as required.

An alcohol deformer will be used as required (± 1.1 ppb).

8½" hole to 11,000' RKB (778 bbls w/o washout)

Prior to drilling cement plug pretreat mud pits with 1 ppb sodium bicarbonate. As drilling progresses allow weight to slowly decrease to 12.0 ppg. Properties of the mud should be as follows prior to reaching 9450' (top of Paleocene):

Weight	-	12.0 ppg
Viscosity	-	40 to 45 sec/qt
Waterloss	-	4-7 cc
pH	-	9-10
Solids	-	14%

Attached is a list of the chemical and trade name of drilling mud additives used in our operations.

General:

A daily drilling report from 0600 to 0600 hrs is to be called to the Stavanger Office at 8:30 a.m. daily unless advised otherwise. All information reported over the radio should be in code.

Attached are "Casing Setting Report" and "Cementing Report" forms that are to be filled out when casing is set.

Attached also is a plot of torque in AMPS versus a torque readings in ft-lbs for rotary table RPM ranging from 40 to 250 RPM.

A drillpipe float may not be used after the first 12 1/4" bit run (approximately 5000'-6000').

A.T. CRUMP

BAZ/GMR
7/30/69

BAROID DIVISION
NATIONAL LEAD COMPANY

DRILLING MUD RECORD

COMPANY Phillips Petroleum Company STATE Norway CASING PROGRAM: 20 @ 1906
WELL 2/4-1AX COUNTY North Sea 13 3/8 inch at 3277
DATE CONTRACTOR ODECO "Ocean Viking" LOCATION 9 5/8 inch at 7762 ft
STOCKPOINT Stavanger BAROID ENGINEER Mike Carlile & Bill Witt SEC TWP RNG 7 inch at 10,362
TOTAL DEPTH 10,843

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION		SAND	SALT		pH	VISCOSITY			GELS		FILTRATE ANALYSIS				RETORT ANALYSIS			* Res:	REMARKS AND TREATMENT
	feet	lb/gal	Sec	cc	Cake 32nd	%	*NaCl ppm	Cl ppm		cp	Pv	Yp	in	10 min	Cl ppm	Ca ppm	SO_4 ppm	Alk Pf	Oil %	Water %	Solids %		
Sept 18-69	300	9.6	85	—	—													—	-				Spud in 02:00
19	434	9.0	80	—	—													—	-				Set 434' 30" casing
20	2030	11.0	82	—	—													—	—				Raise wt. to 11.0#/gal
21	2030	11.0	82	—	—													—	—				Running 20" to 1906'
22	2030	13.0	50	6.4	1	V4	.29		10.0		20	11	4	6	23,000	400		1.5	—		16		Mix Separator - Ø-Bentonite mud
23	2030	13.0	50	6.4	1	V4	.29		10.0		20	11	4	6	23,000	400		1.5	—		16		WOW.
24	2030	13.0	50	6.4	1	V4	.29		10.0		20	11	4	6	23,000	400		1.5	—		16		No test on BOP
25	2030	13.0	50	6.4	1	V4	.29		10.0		20	11	4	6	23,000	400		1.5	—		16		Pull hybril & Riser
26	2030	13.0	50	6.4	1	V4	.29		10.0		20	11	4	6	23,000	400		1.4	—		16		Run BOP & Riser
27	2030	12.6	45	6.8	2	V4	.29		10.0		17	12	4	6	22,500	300		1.2	—		16		WOW Drill cement
28	2030	12.6	44	7.2	2	TR	.29		9.8		20	12	2	5	22,500	300		1.2	—		16		Del. out shoe - displace mud
29	2030	13.0	44	5.8	2	TR	.29		10.0		24	16	2	6	23,500	350		.75	4	80	16		WOW mix mud volume
30	2030	13.0	44	6.0	2	TR	.30		10.0		24	16	0	4	22,000	300		.7	4	79	17		WOW
Oct 1	2030	13.0	44	6.0	2	TR	.30		10.0		24	15	0	5	23,000	300		.7	4	78	18		WOW
2	2030	13.0	44	6.0	2	TR	.30		10.0		24	15	0	5	22,000	300		.7	4	78	18		WOW
3	2150	13.3	44	6.2	2	TR	.31		9.4		26	12	0	5	23,000	300		.4	4	78	18		Drlg - building volume
4	3480	13.8	48	6.3	2	V4	.30		9.5		25	16	1	8	22,000	300		.3	4	74	22		Drlg - Losses over shaker
5	3658	13.8	49	6.1	2	V4	.30		9.5		24	15	2	5	22,000	300		.3	2	75	22		Drlg - mud rings
6	3790	14.0	50	5.6	2	TR	.29		9.5		26	20	4	12	23,000	800		.3	3	77	21		Drlg control @ 40-50#/h
7	4146	14.0	50	5.6	2	TR	.30		9.0		26	16	4	10	20,000	1200		.3	5	75	22		Drlg - spotting 7#/bbl Flose
8	4841	14.0	57	5.3	2	TR	.30		8.5		28	20	6	12	21,000	5000		.25	5	73	22		Drlg - " " " "
9	5033	14.0	46	55	2	TR	.29		9.0		26	16	2	8	21,000	400		.25	3	76	21		Drlg - mud Rings
10	5300	14.0	49	5.2	2	TR	.31		9.0		26	20	4	12	22,000	350		.3	3	75	22		Drlg - Logging
11	5300	14.0	50	6.4	2	TR	.30		9.0		26	20	4	10	22,000	360		.25	3	75	22		Set 5271' 13 3/8"
12	5500	14.0	50	6.4	2	TR	.30		9.0		26	20	4	10	22,000	360		.25	3	75	22		Ran BOP - 16" mud Riser
13	5350	14.0	48	6.6	2	TR	.30		9.0		26	16	4	10	22,000	360		.2	3	75	22		Drlg cmt to shoe
14	5510	14.8	47	5.6	2	1/4	.31		8.8		28	14	2	10	22,000	300		.3	4	73	23		Cut rope @ 5460 to 5511
15	5833	14.3	46	5.5	2	V4	.30		9.0		28	14	2	14	22,000	300		.3	4	73	23		Drlg Ahead
16	6870	14.3	50	6.3	2	V4	.31		8.8		30	20	2	14	22,000	280		.3	4	72	24		Drlg - gumbo shale
17	7500	14.3	50	6.6	2	V4	.31		9.0		30	20	2	15	22,500	300		.3	4	72	24		Drlg - Loss mud - mud up
18	7800	14.3	55	6.8	2	V2	.31		9.0		30	19	2	18	22,500	320		.36	4	71	25		Drlg - 7800 - Logging
19	7800	14.3	55	6.8	2	V4	.30		9.5		30	19	2	12	22,500	300		.3	4	72	24		Ran 9 5/8 to 7762

BAROID DIVISION
NATIONAL LEAD COMPANY

DRILLING MUD RECORD

COMPANY Phillips Petroleum Company STATE Norway CASING PROGRAM: 13 3/8 inch at 3277 @ 1906
WELL 2/4-1AX COUNTY North Sea 9 5/8 inch at 7762
DATE CONTRACTOR ODECO "Ocean Viking" LOCATION 7 inch at 10,36
STOCKPOINT Stavanger BAROID ENGINEER Mike Carlile & Bill Witt SEC TWP RNG TOTAL DEPTH 10,543

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION		SAND	SALT		pH	VISCOSITY			GELS		FILTRATE ANALYSIS				RETORT ANALYSIS			REMARKS AND TREATMENT
	feet	lb/gal	Sec	cc	Cake 32nd	%	NaCl ppm	Cl ppm		cp	Pv	Yp	in	10 min	Cl ppm	Ca ppm	SO_4 ppm	Alk Pf	Oil %	Water %	Solids %	
Oct 20	8105	12.5	50	6.4	2	1/4	.30		9.5		28	18	8	14	22,500	300		.35	4	72	24	Drill out - Reduce mud wt.
21	8889	12.5	50	6.2	2	1/4	.30		9.5		26	16	4	14	22,500	350		.3	4	81	15	Drlg. with 8 1/2" Bit
22	8910	13.5	46	6.3	2	1/4	.30		9.5		29	16	4	8	22,500	350		.4	4	81	15	Raise wt to 13.5 ppg
23	9517	13.5	44	5.8	2	1/4	.31		10.0		24	19	2	8	22,500	350		.4	3	77	20	Drlg
24	9970	14.0	48	4.8	2	1/4	.31		9.5		27	16	2	8	22,500	350		.45	3	76	21	Drlg - Drlg break
25	10,055	14.2	47	4.4	2	1/4	.30		9.5		28	18	2	15	22,000	330		.25	3	74	23	Core #2 - Wt. to 14.2 ppg
26	10,200	14.4	47	4.8	2	1/4	.31		9.5		28	16	2	16	22,000	360		.5	4	73	24	Drlg - Gas cut mud up
27	10,337	14.6	46	4.2	2	1/4	.30		9.5		26	16	2	15	21,000	360		.35	4	71	25	Drlg - Lost circ @ 10,339
28	10,339	14.2	46	4.4	2	1/4	.30		9.5		23	16	2	12	20,000	360		.4	4	72	24	Reduce mud wt to 14.2
29	10,389	14.4	47	4.2	2	1/4	.31		9.7		28	16	3	16	21,000	300		.4	4	72	24	WOW
30	10,339	14.4	60	3.3	2	1/4	.33		9.7		30	22	2	15	20,000	280		.3	5	72	24	Wiping to bottom
31	10,389	14.4	57	4.0	2	1/4	.31		9.3		32	22	3	16	19,000	280		.35	5	71	24	Circ to log
Dec. 1	10,369	14.4	60	3.9	2	1/4	.30		9.5		28	24	4	14	19,500	290		.4	5	72	23	Logging
2	10,369	14.4	60	3.9	2	1/4	.31		9.5		28	24	4	16	19,500	290		.4	5	72	23	WOW
3	10,369	14.4	63	4.1	2	1/4	.31		9.5		32	26	4	16	19,500	290		.4	5	72	23	WOW - Circ to Run 7"
4	10,369	14.4	63	4.0	2	1/4	.31		9.5		32	26	6	18	19,000	280		.4	5	71	24	Run 7" liner - WOC
5	10,364	14.2	45	3.9	2	1/4	.31		9.5		24	16	2	6	19,000	290		.4	4	73	23	WOC Reduce mud wt
6	10,457	13.8	44	3.9	2	1/4	.31		9.5		24	15	2	6	19,000	250		.35	5	75	20	Drill out to 10,464
7	10,464	13.8	44	3.6	2	1/4	.31		9.5		20	11	2	8	19,000	280		.5	5	75	20	Testing tubing - WOW
8	10,464	13.8	44	4.0	2	1/4	.31		10.0		20	11	2	8	19,000	300		.5	5	75	20	WOW
9	10,464	13.8	44	4.2	2	TR	.31		10.0		20	11	2	8	19,000	300		.65	5	75	20	WOW
10	10,464	13.8	44	4.6	2	TR	.31		10.4		23	10	0	8	19,000	300		.65	5	75	20	Testing tubing
11	10,464	13.8	44	4.4	2	TR	.55		10.0		28	14	0	8	15,000	200		.6	10	68	22	DST #1 - Leak test tool
12	10,464	13.8	45	4.6	2	TR	.42		9.8		28	14	0	8	15,000	200		.6	9	68	23	Pull test tool
13	10,464	13.8	45	4.6	2	TR	.42		9.7		28	14	0	8	15,000	200		.6	9	69	22	Try DST #2
14	10,464	13.8	46	4.6	2	TR	.42		9.8		23	14	0	8	15,000	200		.6	9	69	22	Fishing parted tubing
15	10,464	13.8	45	4.5	2	TR	.4		9.6		28	14	0	8	15,000	200		.5	9	69	22	Build volume - Wt strip
16	10,464	13.8	46	4.3	2	TR	.41		9.6		26	14	0	6	16,000	200		.5	8	72	20	DST #4
17	10,464	13.8	46	4.5	2	TR	.41		9.6		26	14	0	6	16,000	200		.5	7	72	21	Testing
18	10,464	13.8	46	4.5	2	TR	.41		9.6		26	14	0	6	16,000	200		.5	7	72	21	Testing
19	10,464	13.8	46	4.5	2	TR	.41		9.6		26	14	0	6	16,000	200		.5	7	72	21	Testing
20	10,464	13.9	41	4.2	2	TR	.41		9.5		28	14	0	6	17,000	200		.5	7	72	21	Kill well - Pull test tool
																						Drlg. Ahead

BAROID DIVISION
NATIONAL LEAD COMPANY

COMPANY Phillips Petroleum Company STATE Norway

WELL 2/4-1Ax COUNTY North Sea

CONTRACTOR ODECO "Ocean Viking" LOCATION SEC TWP RNG

STOCKPOINT Stavanger DATE BAROID ENGINEER Mike Parlile - Bill Witt

20 @ 1906

CASING PROGRAM: 13 3/8 inch at 3277

9 5/8 inch at 7762

7 inch at 10,362

TOTAL DEPTH 10,843

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION		SAND	SALT		pH	VISCOSITY			GELS		FILTRATE ANALYSIS				RETORT ANALYSIS			REMARKS AND TREATMENT
	feet	lb/gal	Sec	cc	Cake 32nd	%	~~NaCl~~ ppm	Cl ppm		cp	Pv	Yp	in	10 min	Cl ppm	Ca ppm	SO_4 ppm	Alk Pf	Oil %	Water %	Solids %	
Nov. 21	10,495	13.9	45	4.2	2	TR	.41		9.5		28	14	0	8	17,500	210		.4	6	73	21	Core #3
22	10,534	13.9	46	4.8	2	TR	.41		9.5		28	12	0	5	17,500	200		.4	5	72	23	Core # 4 & #5
23	10,605	14.0	46	4.6	2	TR	.40		9.5		28	14	0	5	18,000	200		.4	5	73	22	Core #6 & #7
24	10,714	14.0	47	4.4	2	TR	.36		9.8		28	14	0	6	20,000	200		.4	5	73	22	WOW
25	10,714	14.0	47	4.4	2	TR	.36		9.8		28	14	0	6	20,000	200		.4	5	73	22	WOW
26	10,714	14.0	46	4.6	2	TR	.36		9.8		30	14	0	6	20,000	200		.45	5	73	22	Core #8
27	10,762	14.0	47	4.6	2	TR	.36		9.6		29	14	0	5	19,500	160		.45	4	73	23	Reamed & Drl to 10,843
28	10,843	14.0	47	4.6	2	TR	.35		9.6		29	14	0	6	20,000	160		.45	4	74	22	Storm - Rig off Location
Dec. 13	10,843	14.0	48	4.8	2	TR	.40		9.2		30	16	2	6	21,000	160		.4	4	74	22	Back on Location
14	10,843	14.0	48	4.8	2	TR	.40		9.2		29	16	2	6	21,000	165		.4	4	74	22	WOW
15	10,843	14.0	48	4.8	2	TR	.40		9.2		29	16	2	6	21,000	165		.4	4	74	22	WOW
16	10,843	14.0	46	4.8	2	TR	.35		9.5		29	15	1	6	21,000	180		.45	4	74	22	Circ - cond mud - Run logs
17	10,843	14.0	49	4.4	2	TR	.40		9.5		23	14	0	6	21,000	170		.45	5	73	22	Logging
18	10,843	14.0	47	4.3	2	TR	.40		9.5		29	15	0	6	21,000	160		.45	5	73	22	Run 5" liner
19	10,843	14.0	47	4.3	2	TR	.40		9.5		29	15	0	6	21,000	160		.45	5	73	22	Running cement plugs

MUD MATERIALS USED (Total)

MATERIAL	AMOUNT	COST $
BAROID	2181 Tons	144,273.15
Q-Broxin	1868	17,521.84
Zeogel	942	2,741.22
Aquagel	234	837.72
Caustic Soda	191	1919.55
CMC H.V.	38	1068.32
CMC L.V.	188	2282.32
Soda Ash	70	397.60
Saltex	477	16,007.46
Lime	14	29.82
Flo-Vis	512	5713.92
Bicarbonate	59	450.33
Low Det Emls.	590	2640.00
Drispac	8	444.32

MATERIAL	AMOUNT	COST $
Diacel M	54	501.66
Mica	70	393.40
Walnut	75	555.50
Surflo W-300	55 gals.	500.00

MATERIAL	AMOUNT	COST $
Drayage		
Sales Tax		
	TOTAL COST $	192,278.1

DRILLING MUD RECORD

BR-1907-5

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BIT RECORD

SHEET ____ OF ____

COUNTY	FIELD	STATE	SECTION	TOWNSHIP	RAN	SPUD	US	UNDER INTER	SET SAND STRIN
NORWAY	WILDCAT								

CONTRACTOR	RIG NO	LEASE	WELL NO.	COMPANY	TOOL PUSHER
CDECO NORWAY	O.V.	2-4-1AX		PHILLIPS PETROLEUM CO	

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILER'S-NO. RTD. HP.	PUMP NO. 1	LINER	PUMP No. 2	LI

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS	O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH OUT	FEET	HOURS	FEET PER HOUR	ACCUM. DRLG. HOURS	WT. 1000 LBS	RPM	VERTICAL DEV.	PUMP PRESSURE	PUMP OPER. ATION	SPM 1	SPM 2	MUD WT	MUD VIS	MUD W.L.	DULL T	DULL B	DULL G	OTHER	REMARKS
1	26"	HTC	OSC 3A	Rem	260-162-6	2030	1710	35	47½	35	25	140	¼°	1100	P	65	65	SEAWATER			1	1	I		W/36"
2	17½	HTC	OSC 3AJ	2/18 20	LK43091	4003	1973	36		28	2¾0	150	1°	2000	T	52	57				1	3	I		
3	17½	HTC	OSC 1GJ	3-24	47526	5300	1297	27½	47⅞	18.5	40	175	3°	3000	P	57	57	14	50	5	2	2	I		
4	12¼	HTC	OSC 1GJ	2-16 1-12	LK78844	5350	50	1		9½	10/20	140		3000	P	40	39	12.2	48		1	1	I		Drlg shoe rat hole
5	8½	SEC	S3J	3-16	1034211	5460	110	2½		102	10/20	100		2700	S	53		14.4	44		1	1	I		
6	8 7/16	Hycalog	CORELIT R35	—	10036	5510	50	10		112	20	60/65		1700		35		14.3	47						
RR5	8½	SEC	S3J	3-16	1034211	5590	80	2		114	10	120		2300	S	55		14.5	47						
RR4	12¼	HTC	OSC 1GJ	1-15 3-14	UK78844	7018	1428	26½		120.5	10	140		3000	P	52	32	14.3	52		3	3	I		
7	12¼	SEC	S4T6J	1-15 2-14	104141	7800	782	16½		137	20/25	150		3000	P	31	31	14.5	56		1	1	I		
8	8½	SEC	S4J	1-10 2-13	802066	8889	1089	12½		165½	30/40	125		2800	S	65		13.3	48		4	3	I		
9	8½	HTC	OWVJ	1-10 2-13	84098	8899	10	½		170	30	125	2°	3000	S	43		12.7	48		1	1	I		Junked Jet
10	8½	HTC	X16J	1-10 2-13	80516	9517	618	14		184	35/45	120		3000	S	44		13.4	49		7	7	I		1-cone locking
11	8½	Reed	YS16J	3-12	NCC076	9970	453	15½		199½	30/40	100		3000	S	42		13.5	48		4	3	I		
12	8½	SEC	M4NBJ	1-10 1-13	226318	10010	40	2		201½	30/40	150		3000	S	42		13			8	8	I		
RR6	8 7/16	Hycalog	CORELIT R35	—	10036	10055	45	3		204½	30/35	100		1800	S		36	14.2	48						
RR12	8½	SEC	M4NJ	1-10 2-13	226318	10389	334	7½		212	40/40	100		2000	S		40	14.4	47						
13	8½	SEC	M4NJ	OUT	226137	Washed	from			8 7/16	to	to	36	9							T	1	I		
14	6	HTC	OWVJ	OUT	71377	10457	68	3		215	15/18	100		2000	S		44	14.2	45		4	5	I		Drlg float equip
15	6	HTC	OWJCJ	OUT	67616	10464	7	1		216	15/18	100		2200	S		44	14.2	41		2	2	I		
16	6	HTC	OWJCJ	7-10	67618	10495	31	2½		218½	17/20	75		2200	S		31	13.9	46		7	5	I		
17	5 31/32	Christ.	C20-RS2S	—	469966	10762	267	19.5			12	70		1100	S		18	14	47		0	0	I		CORING
18	6	HTC	OWC-J	3-10	67617	10843	81	4			20	60		2400	S		36	14	47		2	4	I		
19	6	HTC	OWC-J	—	67619	TO	—	—	WASHING	TO	BOTTOM														