



Denne rapport tilhører



LTEK DOK.SENTER

L.NR. 20090030025

KODE Well 1/9-3 Nr.24

Returneres etter bruk

BAROID (U.K.) LIMITED

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O. Box 30C
001 STAVAN

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LÅNTAKER ER ANSVARLIG FOR RETUR AV DEFFE DOKUMENTET. VENNLIGST RETURNER DET STRAKS ETTER AT DET ER FERDIGBEHANDLET.

DATO	AR PER	LANTAKER NAVN	AVDELING	ADRESSE	TELEFON	STATUS	ANT.DOK.
03.12.99	99 12	Lars Wensaas	F&U/LFP	7.35, TR-RO	1614424	UTLANT	5
REFERANSE/KODE/PLASSERING	BESKRIVELSE						
99.S95.237-14 RRRH05V	brønn 1/9-1 nr 64						
99.S95.237-15 RQQ504V	brønn 1/9-2 nr 28						
	brønn 1/9-3 nr 3						
	brønn 1/9-3 nr 9						
	brønn 1/9-3 nr 24						
LANTIL	LEV. AR						
1. FEBRUAR	2000						
PURRET SVAR	PURRET2 SVAR2	PURRET3 SVAR3	PURRET4 SVAR4	PURRET5 SVAR5			

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enclosure

DETTET KORTET MÅ IKKE FJERNES FRA DOKUMENTET

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BAROID (U.K.) LIMITED

Arkiv:

Den norske stats oljeselskap A/S
P.O. Box 300

4001 STAVANGER

Tananger, December 7, 1977

Dear Sirs,

Please find enclosed our mud recap for your latest well 1/9-3 drilled with the rig "Dyvi Gamma".

Although final mud cost exceeds estimates, this is largely due to the fact that days spent on the well (rig repairs etc.) far exceed total anticipated days.

Mud losses due largely to crew inexperience also contributed significantly to final mud cost. In addition, barite accounted for 54% of the final mud bill.

The mud cost was high, but we feel that the Aktaflo-S mud system played a substantial part in allowing 13 3/8" casing to be run successfully after the hole had been open 61 days.

We would like to thank you for this opportunity to work with STATOIL NORWAY and are available at any time to discuss our products and services as used on this well.

Regards,
BAROID (U.K.) LTD. NORWAY BRANCH

Chuck Cook
District Manager

CC/bks
Enclosures

Mail: Centre Heights, 137 Finchley Road, London NW3 6JD Telephone: 01-586 1121 (9 lines) Telex: 262610

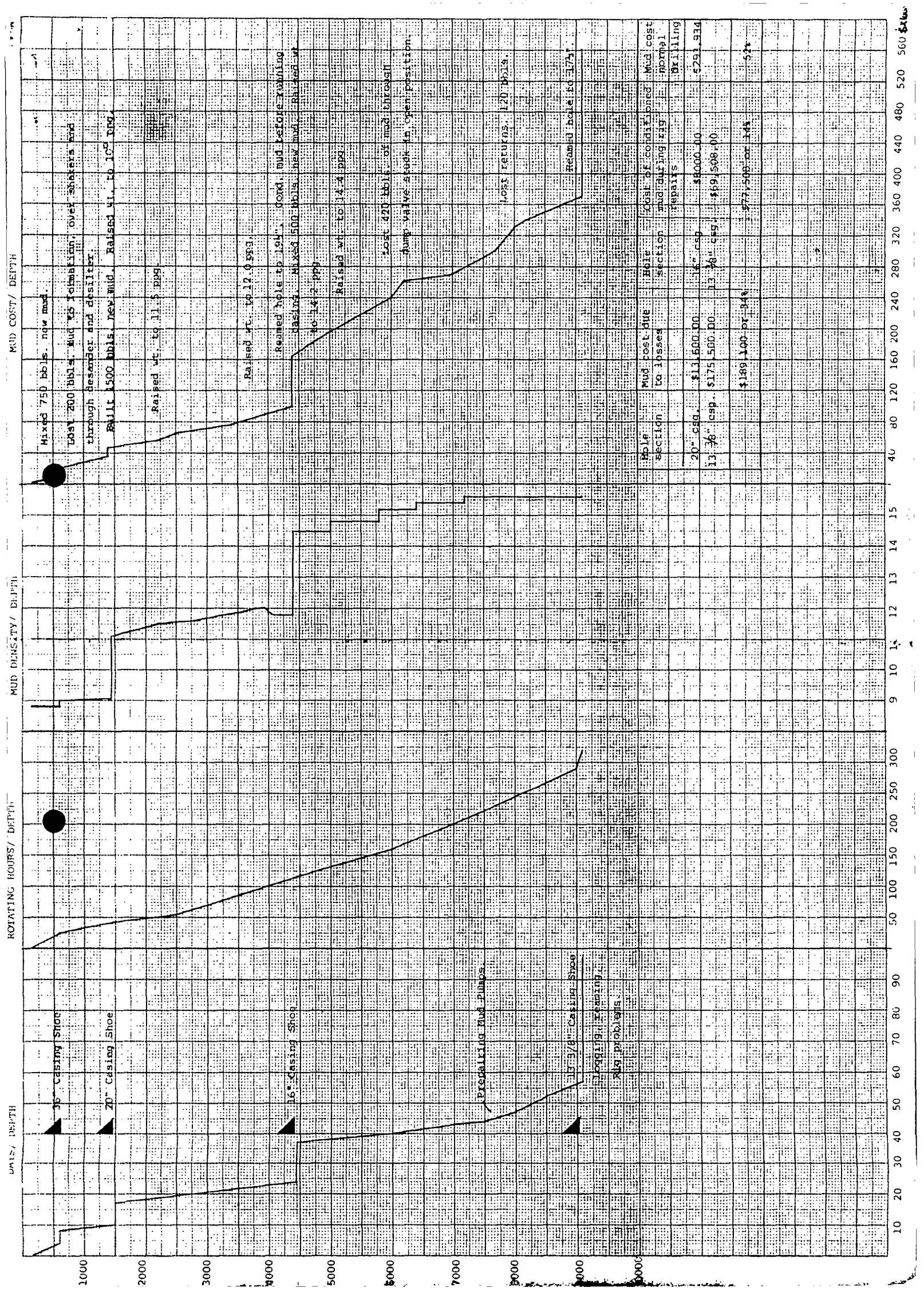
Cable: Baroid London NW3 (England)

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GRAPHS



DISCUSSION AND COST COMPARISONS BY INTERVAL

SUMMARY STATOIL 1/9-3

44" HOLE FOR 36" CASING (50 - 165 m)

700 bbls. of spud mud were used in the 44" hole section and 380 bbls. of 10,0ppg. weighted spud mud. Three days were used from spudding to cementing casing. The cement tail of 70 bbls mixed with salt water was contaminated by spud mud due to a leaky valve. A second cement tail was mixed without problems.

MATERIALS	ORIGINAL ESTIMATE		ACTUAL USEAGE	
	sx.	cost	sx.	cost
Wyoming Bentonite (50 kg)	300	3,234.00	242	2,608.76
Barite (bulk)	6 MT	677.80	16 MT	1,807.52
H-921 (25 kg)	-	-	10	624.80
Caustic Soda (25 kg)	10	148.25	11	163.02
Soda Ash (50 kg)	6	77.80	8	103.76
Lime (40 kg)	-	-	9	55.44
Total		\$4,137.85		\$5,363.30

Materials used with cement for 36" casing.

Wyoming Bentonite (50 kg)	17 sx.	\$183.26
Calcium Chloride (50 kg)	37 sx.	<u>\$309.32</u>
Total		<u>\$492.58</u>

Total cost of 44" Interval \$5,855.88.

	<u>ORIGINAL ESTIMATE</u>	<u>ACTUAL USEAGE</u>
Days on section	1	3
Cost per day	\$4,137.85	\$1,951.63
Cost per meter	\$ 82.75	\$ 34.50
Cost per barrel	\$ 3.76	\$ 5.42
Cost per bbl/day	\$ 3.76	\$ 1.81

26" HOLE FOR 20" CASING (165 - 445 m)

The cement was tagged at 161.5 meter and drilled to 165 meter with seawater. The hole was displaced with spud mud and the 17½" pilot hole was drilled to 445 meter with no problems. The hole was surveyed and logged with no problems. The 26" hole opener was made-up and the hole was reamed to 445 meters. A wiper trip was made and the hole displaced with 250 bbls. LCM pill. The 20" casing was run and cemented without trouble. The cement was displaced with seawater and returns were dumped (500 bbls.). A 70 bbl. LCM pill was spotted in annulus.

The formation was mostly sand. Approximately. 1700 bbls. of mud were lost to the sand and over the shale shakers with a cost of \$13,600.-.

The section was drilled and cased in seven days. 3,120 bbls. of spud mud were used.

MATERIAL	ORIGINAL ESTIMATE		ACTUAL USEAGE	
	sx.	cost	sx.	cost
H-921 (25 kg)	120	7,497.60	244	15,245.12
Wyoming Bentonite (50 kg)	140	1,509.20	410	4,419.80
Wyoming Bentonite (bulk)	6 MT	677.80	8 MT	1,936.00
Barite (bulk)			11 MT	1,242.67
Caustic Soda (25 kg)			50	741.00
Soda Ash (50 kg)			42	544.74
Wallnut F (25 kg)			15	208.95
Wallnut C (25 kg)			15	208.95
Mica F (25 kg)			15	195.00
Mica C (25 kg)			15	195.00
Lime (40 kg)			7	43.12
Total		\$9,684.60		\$24,980.35

Materials used with cement for 20" casing

Wyoming Bentonite (50 kg)	36 sx.	\$338.08
Calcium Chloride (50 kg)	3 sx.	\$ 25.08
Total		<u>\$413.16</u>

Total cost of 26" Interval \$25,393.51

	<u>ORIGINAL ESTIMATE</u>	<u>ACTUAL USEAGE</u>
Days on section	2	7
Cost per day	\$4,842.30	\$3,627.64
Cost per meter	\$ 35.80	\$ 90.69
Cost per barrel	\$ 3.20	\$ 8.14
Cost per bbl/day	\$ 1.60	\$ 1.16

19" HOLE FOR 16" CASING AT 1343.49 METERS

While nipping up on 20" casing 1200 bbls. of old mud from the last section were reconditional and weighted up from 9.0 - 11.0 ppg. Cement and shoe were drilled and a leak off test showed 12.5 ppg. Drilling continued to 1149.65 meters. At this point bit and stabilize were balled up. Con Det was added as requested by Statoil representative without any success. The hole was drilled to 1359 meters and logs run without trouble. The hole was opened to 19½" to 1356.3 meters. Casing was run to 1343.49 meters without any problems and cemented.

13 days were used from drilling 20" shoe to cementing 16" casing. 7 days were actually spent on drilling, 1 day logging, 3 days reaming hole to 19½" and 2 days to work on water pumps. Used 4400 bbls. mud.

Some mud was lost over shakers in this section. The screens on shakers were changed from 50 mesh to 20 mesh and it cured the problem. 400 bbls. of mud were lost due to cementing 16" casing.

MATERIAL	ORIGINAL ESTIMATE		ACTUAL USEAGE	
	sx.	cost	sx.	cost
Barite (bulk)	375	42,363.75	387.3 MT	43,753.28
Aktaflo-S (55 gal. dr.)			50 dr.	15,880.00
Wyoming Bentonite (bulk)			27 MT	6,534.00
Wyoming Bentonite (50 kg)	200	2,156.00	138	1,487.64
Drispac Regular	1000	13,102.00	18	2,358.36
Drispac SL			16	2,232.16
Caustic Soda (25 kg)	120	1,779.00	185	2,741.70
Aquagel (100 lb)			210	2,058.00
Q-Broxin (50 lb)	200	2,874.00	293	4,210.41
H-921 (25 kg)			21	1,312.08
Ca ⁺ Lignosulfonate (25 kg)			47	743.07
Surflo W-300 (55 gal. dr.)			1 dr.	658.20
Wallnut F (25 kg)			35	487.55
Soda Ash (50 kg)	50	648.50	16	207.52
Con Det (55 gal. dr.)			4 dr.	1,548.80
Alum. Stearate (25 kg)			3	101.43
Total		72,898.25		86,314.20

Materials used with cement for 16" casing

Aquagel 100 lb. 34 sx. \$333.20

Total cost of 9" Interval \$86,647.40

	<u>ORIGINAL ESTIMATE</u>	<u>ACTUAL USEAGE</u>
Days on section	4	13
Cost per day	\$18,224.56	\$6,639.55
Cost per meter	\$ 78.00	\$ 94.90
Cost per barrel	\$ 16.50	\$ 19.62
Cost per bbl/day	\$ 4.13	\$ 1.51

17½" HOLE FOR 13 3/8" CASING AT 2760.13 METERS

While running casing and nipping up 500 bbls. of new lime/surfactant mud was made up. 1300 bbls. of mud from the last interval was conditioned to a lime/surfactant system.

The 16" casing was displaced with 800 bbls. of lime/surfactant mud. Cement and shoe were drilled and a leak off test run.

4 days were spent waiting on rig repairs before drilling out. The mud in the casing was circulated and conditioned to prevent barite settling.

Drilling was started in a gumbo and clay formation. The flowline, shaker-box and shakers were plugged several times with gumbo causing a large loss of mud.

The drillrate was lowered from 90' to 30' per hour to handle gumbo. A mud-slide, that was highly recommended weeks before starting this section, was not installed until just before section was finished. 750 bbls. of mud was lost during the first 2 days because of plugged flowline, shakerbox and shakers.

At 2195.98 meter with 15.5 ppg. mud in hole the formation took 120 bbls. of fluid. Pipe was pulled to shoe to allow time for the hole to heal. Pipe was run to bottom and the hole circulated out. No more loss of mud to the formation was experienced in this section.

Some gas was occasionally getting into the mud in this section, which caused a slight reduction in mud weight. The degasser was run to help the problem. Drilling continued to 2773.24 meters. Pump output at this time was only 680 G.P.M. with 3000 psi. Bit balling did occur, the main reason for this was insufficient pump output. The hole was then logged with no problems.

The hole was opened to 17½" at 30' to 40' per hour. The underreamer was balled up twice due to low annular velocity. It is felt that hole problems encountered were once again the result of insufficient hole cleaning as pump output was only 820 G.P.M. with 3100 psi.

The rig pumps broke down at 2113.38 meters for 3 days. Reaming continued to 2243.22 meters when the pumps were repaired.

At this point several different technical rig problems occurred and it was necessary to shut down the drilling operation until repairs were effected. After seven days circulating on bottom and at shoe, reaming continued to 2773.24 meters without problems.

The hole was logged and showed that the hole was undergauged in many places. Reaming was restarted at the shoe again. At 1656.51 meters the crane broke down and delayed operations for 9 days. In the meantime a gauge ring run was tried through 16" casing but without success. 12% diesel was added to the mud system and the gauge ring went down. When the crane was repaired rereaming commenced at the shoe. The hole was reamed to 2770.19 meters with no more problems. Logs were run and the gauge ring set at the 16" shoe. Casing was run to 2760 meters and cemented.

2700 bbls. of mud were lost in this section. Most of the mud loss was again due to dump valves being left open or stuck, gumbo plugged flowlines, shaker-box, overflow of mixing hopper and some to formation. These losses account for an additional \$175,500 to final mud cost.

The Sweco mud cleaner was broke down through most of this section. To compensate for inefficient solids control equipment water dilution and additional chemical additives were required to maintain a low solids system. This increased to overall mud cost also.

A total of 61 days were spent on this section, 14 days of which was actually drilling the 14 3/4" hole to 2772.24 meters.

Three attempts were made to open hole to 17 1/2". The first time 13 days were used and logs showed hole to be undergaged. The second attempt ended after 2 days when crane broke down. Third attempt completed operation in 3 days. 6800 bbls. mud were used.

43 days were spent on this section logging and working on rig repairs.

The section cost reflecting all this downtime was \$442,645.78. Barite cost for this section was \$256,215.96 or 58% of the total. The well was T.D. for phase I at this point.

In conclusion it is felt that considerable credit is due the lime/surfactant mud system for keeping 1432.49 meters of 17 1/2" hole open for so long and allowing 13 3/8" casing to be successfully run, particularly as most of this section constituted gumbo and clay formations.

	ORIGINAL ESTIMATE		ACTUAL USEAGE	
	sx.	cost	sx.	cost
Barite (bulk)	850 MT	96,024.50	2268 MT	256,215.96
Drispac SL	60	8,370.60	193	26,925.43
Q-Broxin (50 lb.)	550	7,903.50	1482	21,296.34
Caustic Soda (25 kg)	250	3,706.25	906	13,426.92
Drispac Reg.	60	7,861.20	91	11,922.82
Aktaflo-S (55 gal)	60 dr.	19,056.00	280 dr.	88,928.00
Lime (40 kg)	450	1,732.50	1147	7,065.52
Aquagel (100 lb)	250	2,695.00	694	6,801.20
Soltex (50 lb)			144	6,521.76
CC-16 (50 lb)			72	1,023.12
Surflo W300 (55 gal)			2 dr.	1,316.40
Soda Ash (50 kg)			10	129.70
Wallnut F (25 kg)			77	1,072.61
Total		\$147,349.55		\$442,645.78

Total cost of Interval \$442,645.78.

	<u>ORIGINAL ESTIMATE</u>	<u>ACTUAL USEAGE</u>
Days on Section	15	61
Cost per day	\$9,823.30	\$7,256.49
Cost per meter	\$ 109.00	\$ 312.46
Cost per barrel	\$ 25.00	\$ 65.09
Cost per bbl/day	\$ 1.67	\$ 1.07

COST ANALYSIS (SUMMARY)

TOTAL MUD MATERIALS USED

PRODUCT	QUANTITY	AMOUNT \$
Barite (bulk)	2282.3 MT	303,019.43
Aktaflo-S (55 gal)	330 dr.	104,808.00
Drispac SL (50 lb)	209 sx.	29,157.58
Q-Broxin (50 bl)	1775 sx.	25,509.75
CMC H-921 (25 kg)	275 sx.	17,182.00
Caustic Soda (25 kg)	1107 sx.	17,072.64
Drispac Reg (50 lb)	109 sx.	14,281.18
Aquagel (100 lb)	938 sx.	9,192.40
Wyoming Bentonite (50 kg)	843 sx.	9,087.54
Wyoming Bentonite (bulk)	35 MT	8,470.00
Lime (40 kg)	1163 sx.	7,164.08
Soltex (50 lb)	114 sx.	6,521.76
Con Det (55 gal)	4 dr.	1,548.80
Wallnut F (25 kg)	127 sx.	1,769.11
CC-16 (50 lb)	72 sx.	1,023.12
Soda Ash (50 kg)	76 sx.	985.72
Ca ⁺ Lignosulphonate (25 kg)	47 sx.	743.07
Surflo W300 (55 gal)	1 dr.	658.20
Calcium Chloride (50 kg)	40 sx.	434.40
Wallnut C (25 kg)	15 sx.	208.95
Mica F (25 kg)	15 sx.	195.00
Mica C (25 kg)	15 sx.	195.00
Alum Stearate (25 kg)	3 sx.	101.43

SUMMARY OF DAILY DRILLING MUD OPERATIONS

COST ANALYSIS SUMMARY BY INTERVAL

	ESTIMATED		ACTUAL	
	DAYS	COST \$	DAYS	COST \$
44" HOLE	1	4,137.85	3	5,855.88
26" HOLE	2	9,684.60	7	25,393.51
19" HOLE	4	72,898.25	13	86,647.40
17½" HOLE	15	147,349.55	61	442,645.78
TOTAL		234,070.25		560,542.57

DAILY MUD PROPERTIES
(DRILLING MUD RECORD)

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Period August 11, 1977 to August 21, 1977.

Operator: STATOIL

Location: 1/9-3

Rotary Hrs.	Cost/ Ft.	Footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
						11/8	Arrived on rig. Did an inventory check.
			\$ 1,326.60	\$ 1,326.60		12/8	Working on rig to get it in drlg. position mixed 750 bbl of spud mud
	\$84.86	50	\$ 4,243.36	\$ 2,916.76	50	13/8	Rigged up for drlg. Drilling 44" hole. Made up 350 bbls. of 10 ppg. mud.
	\$10.57	507	\$ 5,363.30	\$ 1,119.94	557	14/8	Drilled to 557. Displaced hole with 400 bbls. spud mud. Wiper trip Displaced hole again with 380 bbls. of 10 ppg. Spud mud P.O.O.H. Running casing. Started mixing spud mud for 26" hole.
			\$10,386.58	\$ 5,023.28	557	15/8	Run casing to 532'. Cemented, W.O.C. Made up 800 bbls. of new spud mud for 26" hole.
			\$12,829.30	\$ 2,442.72	557	16/8	Did 2nd cement job. W.O.C. P.O.O.H. mixed up 400 bbls. new spud mud for 26" hole.
			\$16,653.96	\$ 3,824.66	557	17/8	R.I.H. Tag cement shoe 531'. Displaced hole with 550. bbl. mud. P.O.O.H. made up 200 bbls. new spud mud and 350 bbls. of 10,5 ppg. as requested by Statoil REP.
			\$16,653.96		557	18/8	Nipple up B.O.P. welders working on deverter line and flow line. Rebuild 44" hole opener to 26".
	\$26.02	83	\$16,653.96		640	19/8	R.I.H. to 500'. Reamed down to 557'. Displaced 600 bbls. of mud in hole. Drilled to 640' lost mud over shakers.
	\$18.73	820	\$27,352.92	\$10,698.96	1460	20/8	Drlg. and circ. to decrease mud wt from 9.5 to 9.0 ppg. Changed screens on shakers from 30 x 40 to 30 x 30. Mixed up, 1200 bbls. new spud mud. Lost 600 bbls to formation, shakers, desander and desilter. Drlg. to 1460'.
	\$19.08		\$27,856.86	\$ 503.94	1460	21/8	Formation; sand + clay. Logged. Made up 250 bbls. of spud mud for 26" hole. Lost 200 bbls. mud to formation, desilter, desander and shakers.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Period August 22, 1977 to September 1, 1977.

Operator: Statoil

Location: 1/9-3

Rotary Hrs.	Cost/ Ft.	Footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
	\$21.67		\$31,649.66	\$ 3,792.80	1460	22/8	Formation sand + clay. R.I.H. Reamed w/26" bit to 1460'. Wiper trip, circ. spotted 250 bbls of LCM pill P.O.O.H. made up 500 bbls of new spud mud. Lost mud to formation, desander desilter pits and shakers 900 bbls.
	\$22.05		\$32,194.50	\$ 544.84	1460	23/8	Run 20" csg. to 1424'. Cemented. Displaced cement w/480 bbls. sea- water. Spotted 60 bbls. Hivis pill into annulus W.O.C.
	\$22.46		\$32,803.03	\$ 608.53	1460	24/8	W.O.C. Working on the platform. Wt. up and re-conditioned old spud mud for 19" hole, changed shaker screens, now 2 of 50 x 50, 1 of 30 x 30
	\$27.58		\$40,268.78	\$ 7,465.48	1460	25/8	Nippling up. Wt up old spud mud from 9.0 ppg. to 11.0 ppg.
	\$27.58		\$40,268.78	-	1460	26/8	Nippling up. No treatment.
	\$32.00		\$46,726.20	\$ 6,457.42	1460	27/8	Nippling up. Viscosified mud in pits and brought wt. back to specifications. Built 350 bbls. Hivis gel mud in pit no. 3 according to co. rep. instructions.
	\$33.50		\$48,914.91	\$ 2,016.39	1460	28/8	Nippling up. Displaced csg. with unweighted mud. Tested casing and B.O.P's. Built 300 bbls. of gel mud for additional surface volume.
	\$26.39	380	\$53,845.30	\$ 4,930.39	2040	29/8	Drilled out cement and shoe. Wt. mud to 11.5 ppg.
	\$23.13	728	\$64,015.06	\$10,169.76	2768	30/8	Drilling, losing considerable amount of mud over the shakers. Gumbo is blocking flow line
	\$21.85	1175	\$70,259.42	\$ 8,620.36	3255	31/8	P.O.O.H. Waited for mud material. Bit and stabilizers balled up. Mixed 500 bbls. replacement mud. Losing mud over shakers. Changed screens to 30 mesh.
	\$21.55	557	\$81,293.17	\$11,034.17	3772	1/9	Added Con Det. Foam development. Added de-foamer. Changed shaker screens to 20 mesh. Reduced mud losses over shakers. Raised wt to 12.0 ppg.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Operator: Statoil
 Location: 1/9-3

Period September 2, 1977 to September 15, 1977.

Rotary Hrs.	Cost/ Ft.	Feet Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
	\$21.21	361	\$87,666.94	\$ 6,373.35	4133	2/9	Mud cut by foam. Stopped drilling. Thinned mud to reduce foam lowered wt. to 11.8 ppg.
	\$22.90	177	\$98,710.71	\$11,043.77	4310	3/9	Bit balled, Flowline plugged. Add Aktaflo-S.
	\$23.95	150	\$106,808.35	\$ 8,097.64	4460	4/9	Added Wallnut to clean balled bit. Drilled to casing depth, conditioned hole. P.O.O.H. to log.
	\$24.23	-	\$108,086.53	\$ 1,278.18	4460	5/9	Ran electric logs. Built 300 bbls. reserve mud.
	\$25.66	-	\$114,440.42	\$ 6,353.89	4460	6/9	Wt. up reserve mud. Ream 19 1/4" hole. P.O.O.H. to repair water pump.
	-	-	\$114,440.42	-	4460	7/9	Working on water pumps - both pumps down.
	\$26.24	-	\$117,071.27	\$ 2,630.85	4460	8/9	Reaming 19 1/4" hole to 4460; 100 units gas. Run degasser.
	\$26.32	-	\$117,419.75	\$ 348.48	4460	9/9	Circ. bottoms up. Short trip. R.I.H. Circ bottoms up. P.O.O.H. to run Csg.
	\$26.40	-	\$117,752.95	\$ 333.20	4460	10/9	Run 16" csg. to 4408'. Circ., lost 400 bbls. mud when cementing.
	\$31.09	-	\$138,682.39	\$20,929.44	4460	11/9	W.O.C. Skid rig. Made up 500 bbls. new mud for 17 1/2" hole. Wt. up 1400 bbls. - from 10 - 14.2 ppg.
	\$33.84	-	\$150,938.94	\$12,256.55	4460	12/9	Cleaned desilter and desander pits. Dumped 250 bbls. of mud. Skid rig to position. Conditioning 1800 bbls. and 14.2 new mud for 17 1/2" hole.
	\$33.93	-	\$151,357.47	\$ 418.53	4460	13/9	Rig up and tested B.O.P. Nipping up.
	\$33.93	-	\$151,357.47	-	4460	14/9	Tested B.O.P. Circ. Displaced mud in csg. with Lime/Surfactant mud 300 bbls.). Conditioning active system.
	\$35.56	5	\$158,789.64	\$ 7,432.17	4465	15/9	Drig. plug and cement. Clean hole and drlg. shoe. Drig. 5' of new hole. Did formation leak off test. await equip. repairs. circ. and cond. mud.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Period September 24, 1977 to October 7, 1977

Operator: Statoil

Location: 1/9-3

Rotary Hrs.	Cost/ Ft.	footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
						1977	
	\$40.79	181	\$ 301,275.84	\$ 9,411.40	7386	24.9	Finished short trip. Circ. bottoms-up. No mud loss. No mud rings. Drilled to 7386'. P.O.O.H. to change bit. Going in hole.
	\$40.52	411	\$315,970.74	\$14,694.90	7797	25.9	Finished trip. Drilling. No problems. Ran mud cleaner until screen broke. Made wiper at 7705'. No trouble. Drilling. Drill water valve leaked 140 bbls. into reserve pits. Then pump blow-up. Lost 150 bbls. mud into pump room. Pulled into casing to repair.
	\$40.51	100	\$319,889.86	\$ 3,919.12	7897	26.9	Repaired pump. R.I.H. Drilling ahead. Lost approx. 30 bbls. mud over shakers on bottoms-up. Pulled into casing to repair motors.
	\$40.70	151	\$327,594.34	\$ 7,546.21	8048	27.9	Repaired motors. Circ. out at shoe. Ran 20 stds. and circ. out. Air compressors broke down. Pulled back to shoe for repairs. Ran to bottom and began drilling. Started getting shale cavings over shaker Started adding soltex.
	\$40.21	270	\$334,465.95	\$ 6,871.62	8318	28.9	Drlg. short trip - drlg. small mud ring at 8490'. Lost approx. 25 bbls. - pull up to shoe + work on kelly spinner.
	\$40.29	203	\$343,289.59	\$ 8,823.64	8521	29.9	Drlg. - P.O.O.H. for new bit - no. 9.
	\$39.98	302	\$352,706.15	\$ 9,414.56	8823	30.9	Drilling to 2666' m. Make ten std. short trip lost + 90 bbls. mud on bottoms-up.
	\$40.22	167	\$361,605.48	\$ 8,899.33	8990	1.10	Drill to 8990. P.O.O.H. for Bit no. 10.
	\$40.29	109	\$366,632.99	\$ 5,027.50	9099	2.10	Collars + stab balled on trip. Drlg. to 9099'. Cir bottoms-up + P.O.O.H. to log.
	\$40.33	0	\$366,971.90	\$ 338.91	9099	3.10	Logging - R.I.H. + Lay down drill pipe.
	\$41.45	Reaming 0	\$377,169.30	\$10,197.40	9099	4.10	R.I.H. to under ream to 17 1/2". 5196'. Made short trip - no problems
	\$42.10	Reaming 0	\$383,059.81	\$ 5,890.51	9099	5.10	Made trip for new bit. Balling of collars considerably reduced, String 12 lines - R.I.H. + drill 17 1/2" to 5287. No problems.
	\$42.79	Reaming 0	\$389,396.39	\$ 6,336.58	9099	7.10	Reamed to 1655 m. Circ. bottoms-up. P.O.O.H. for new bit. Tested B.O.P. R.I.H. Hole O.K. Reamed to 5576'. Lost 20 bbls. of mud over mudslide, due to closed valve on flowline.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Period October 8, 1977 to October 20, 1977 .

Operator: Statoil

Location: 1/9-3

Rotary Trs.	Cost/ Ft.	Footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
						1977	
	\$43.88	Reaming 0	\$399,267.89	\$ 9,871.50	9099	8.10	Reamed to 5960'. P.O.O.H. for new bit. Underreamer balled up. R.I.H. changed shaker screens to 1,80 x 60. 2,80 x 60.
	\$44.56	Reaming 0	\$405,516.40	\$ 6,248.51	9099	9.10	R.I.H. HOlé O.K. changed screens on shakers from 1 + 2. 80 x 60 to 60 x 60. Drilled to 6206'.
	\$45.42	Reaming 0	\$413,323.45	\$ 7,807.05	9099	10.10	Reamed to 6934'. Rig pumps broke down. P.O.O.H. for new bit.
	\$45.42	-	\$413,323.45	-	9099	11.10	P.O.O.H. hole O.K. collars and under reamer were clean. Changed bit R.I.H. to 16" shoe. Working on rig pumps and one crane.
	\$45.44	-	\$413,500.09	\$ 176.64	9099	12.10	Working on rig pumps and one crane.
	\$45.45	-	\$413,598.09	\$ 98.00	9099	13.10	Working on Mud pumps + Motors, and Drawworks Motor.
	\$46.53	Reaming 0	\$423,344.70	\$ 9,746.67	9099	14.10	R.I.H. to bridge at 6450' Ream through. Circ. out high gas from area below bridge 30 min. TD + ream from 6933' to 7360'. P.O.O.H.
							Lost 180 bbls. of mud faulty dump valve.
	\$46.91	-	\$426,818.25	\$ 3,473.49	9099	15.10	P.O.O.H. + stand back B.H.A./R.I.H. open ended, bridge at 7750' Washed + circ. bridge, Run to TD 9099' no problems circ. bottoms-up/ pulled up to Cs/WOO.
	\$46.98	-	\$427,468.14	\$ 649.89	9099	16.10	R.I.H. to TD no problems Circ bottoms-up/P.O.O.H. to run B.O.P. test/ R.I.H. open end to TD no problems/Circ. bottoms-up.
	\$47.00	-	\$427,637.86	\$ 169.72	9099	17.10	P.O.O.H. to Cs/R.I.H. to TD/Circ. bottoms-up/P.O.O.H. to Cs/WOO.
	\$47.10	-	\$428,541.62	\$ 903.76	9099	18.10	R.I.H. to TD no problems, Circ. bottoms-up/P.O.O.H. to Csg shoe/WOO.
	\$47.25	-	\$429,953.42	\$ 1,411.80	9099	19.10	R.I.H. to TD no problems, Circ. bottoms-up/P.O.O.H. to Csg shoe/WOO.
	\$47.84	-	\$435,277.30	\$ 5,323.88	9099	20.10	R.I.H. Circ. bottoms-up - pull to shoe.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Operator: Statoil

Period October 21, 1977 to November 1, 1977.

Location: 1/9-3

Rotary Hrs.	Cost/ Ft.	Footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
	\$48.07	Reaming	\$ 437,395.20	\$ 2,118.20	9099	21.10	Reaming, pull to shoe to work on air compressor
	\$48.27	Reaming	\$ 439,214.85	\$ 1,819.35	9099	22.10	Reaming 17 1/4" hole, no problems.
	\$48.93	Reaming	\$ 445,214.49	\$ 5,999.64	9099	23.10	Reaming - pull to shoe to work on air compressor R.I.H. + Ream.
	\$49.22	Reaming	\$ 447,889.82	\$ 2,675.33	9099	24.10	Reaming 17 1/4" hole. Made trip to dress blades.
	\$50.14	Reaming	\$ 456,255.39	\$ 8,365.57	9099	25.10	Ream to 8842'. P.O.O.H. for new bit.
	\$51.19	Reaming	\$ 465,819.09	\$ 9,363.50	9099	26.10	Reaming to 9099' - made 10 stand short trip. Circ. bottomsp-up pull out 17 hole to log.
	\$51.29	Log	\$ 466,158.00	\$ 353.87	9089	27.10	Logged hole. under gauge. Lay down drill pipe to re-ream.
	\$51.87	Reaming	\$ 471,450.77	\$ 5,292.77	9089	28.10	Layed down DP to shoe. Rereamed 17 1/4" hole to 4625'. Crane broke down. Circ. bottoms-up. P.O.O.H. R.I.H. w/gauge ring to shoe.
	\$51.93	-	\$ 472,015.62	\$ 564.85	9089	29.10	R.I.H. to scrape casing from 3713' to shoe. Made up slug P.O.O.H. R.I.H. w/gauge ring to 4106'. Taking 20,000 psi. P.O.O.H. Wor-king on crane.
	\$51.97	-	\$ 472,383.27	\$ 367.65	9089	30.10	R.I.H. w/ 14 3/4" bit to 9089'. Circ. bottoms-up. Pulled up to casing shoe. Circ. bottoms-up P.O.O.H. R.I.H. w/casing scraper.
	\$52.92	-	\$ 481,056.42	\$ 8,673.15	9089	31.10	Scraping from 4106' to casing shoe. P.O.O.H. R.I.H. w/gauge ring. Stopped at 449', got 20,000 psi P.O.O.H. R.I.H. to shoe. Circ. and cond. mud. Dumped shakerbox, got filled w/gumbo from casing - P.O.O.H.
	\$53.96	-	\$ 490,528.36	\$ 9,471.94	9089	1.11	P.O.O.H. R.I.H. w/gauge ring to 403', got 25,000 psi. P.O.O.H. R.I.H. to 9089'. Circ. bottoms-up. Pulled up to casing shoe. Added 12% diesel to mud in casing. Circ. Circ. bottoms-up.

SUMMARY OF DAILY DRILLING MUD OPERATIONS.

Operator: Statoil

Period November 2, 1977 to November 13, 1977.

Location: Norht Sea - 1/9-3

Rotary Hrs.	Cost/ Ft.	Footage Drilled	Cost-C	Cost-D	Depth	Date	Remarks:
	\$55.36	-	\$ 503,191.26	\$12,662.90	9089	2.11	R.I.H. to 6300'. Added 12% diesel to mud. R.I.H. to 9089'. Added 12% diesel to mud. Pulled up to casing shoe, added 12% diesel to mud. Circ. and cond. mud. Added a total of 260 bbls. of diesel to the mud.
	\$55.46	-	\$ 504,033.02	\$ 713.76	9089	3.11	Run gauge ring O.K.
	\$55.72	-	\$ 506,405.98	\$ 2,372.96	9089	4.11	Run to bottom + circ. Pull to shoe + circ. bottoms-up. P.O.O.H.
	\$56.35	-	\$ 512,187.37	\$ 5,781.39	9089	5.11	Test BOP - Run to shoe. Testing reamer. Start reaming.
	\$56.63	-	\$ 514,713.73	\$ 2,526.36	9089	6.11	Reaming 17 1/2" hole. Pull to shoe + work on pump. R.I.H. + ream.
	\$56.63	-	\$ 518,603.75	\$ 3,890.02	9089	7.11	Ream to 9089. Circ. shakers + P.O.O.H. to log.
	\$57.06	-	\$ 518,603.75	-	9089	8.11	Run cal log - O.K. to run casing. Ran gauge ring O.K. Set test plug + change B.O.P.
	\$57.12	-	\$ 519,184.71	\$ 580.96	9089	9.11	Test B.O.P. - cut drlg. line. R.I.H. + cond. mud to run 13 3/8" csg. - Pull to shoe + circ. 1 hour - running 13 3/8" casing.
	\$57.12	-	\$ 519,184.71	-	9089	10.11	Finished running casing. Circ. bottoms-up before cementing.
	\$58.97	-	\$ 535,944.42	\$16,759.71	9089	11.11	Losing mud while circ. stop to build more volume. Cemented 13 3/8" casing, with no returns. Start mixing new volume for 2nd stage.
							Reduced mud wt. to 15.0 ppg.
	\$61.20	-	\$ 556,255.86	\$20,311.44	9089	12.11	Build new 15.0 ppg. volume. Had trouble transferring Barite from tanks to hoppper. Waiting for cement to harden.
	\$61.49	-	\$ 558,921.70	\$ 2,665.84	9089	13.11	Ran temp. survey. Lost mud when circ. for and during first stage cement at 1900 m. Cement 2nd stage after circ. bottoms-up. No mud lost.

DAILY OPERATIONS LOG
(ENGINEER ACTIVITY)



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY

STATOIL

STATE Norway

CASING PROGRAM:

36 inch at 532 ft

WELL

1/9-3

COUNTY Norway

inch at inch at

DATE

CONTRACTOR

Dyvi Offshore A/S

LOCATION 1/9-3

STOCKPOINT Stavanger

BAROID ENGINEER

Svendsen/Hansen

SEC

TWP

RNG TOTAL DEPTH

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec	FILTRATION cc	SAND %	SALT			pH	VISCOSITY			GELS			FILTRATE ANALYSIS				RETOUR ANALYSIS		REMARKS AND TREATMENT	
						NaCl ppm	CaCl ppm	CI ppm		cp	Pv	Yp	in 10min	Co ppm	SO ₄ ppm	Alk Pf	Oil %	Water %	Solids %				
11.8.77																							Arrived on rig. Doing inventory check.
12.8.77		8.7	120+						Spud mud.														Working on rig to get it in drlg. position. Mixed 750 bbls. spud mud.
13.8.77	50	8.7	120+																				Rigged up for drlg. Made up 350 bbls. of 10.0 ppq. Spud mud. Started drlg. 44" hole
14.8.77	557	8.7	120+																				Drilled to 557'. Displaced hole twice. Used 1080 bbls spud mud for 44" hole.
15.8.77	557	8.7	60						Spud mud.														Run 36" csg. to 532'. Cemented. W.O.C. made up 800 bbls of mud for 26" hole.
16.8.77	557	8.7	60						Spud mud.														Cemented. W.O.C. P.O.O.H. made up 400 bbls. of Bentonite/H-921 spud mud.
17.8.77	557	8.7	60						Spud mud.														Drilled cement. Displaced hole. with 550 bbls. mud. P.O.O.H. mixed 200 bbls. of mud and 350 bbls. of 10.5 ppq.
18.8.77	557	8.7	60						Spud mud.														Nipple up B.O.P. Welders working on deverter line and flow line.
19.8.77	640	9	55		2				Spud mud.														R.I.H. to 500'. Reamed to 557'. Displaced 600 bbls. in hole. Drilled to 640'.
20.8.77	1460	9	53		2				Spud mud.														Drilled to 725'. Circ. + suvey (1/4") circ. to decrease mud wt. from 9.5 to 9.0 ppq Formation up to 50% sand



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL STATE Norway CASING PROGRAM: 36 inch at 532 ft.
 WELL 1/9-3 COUNTY Norway 20 inch at 1424 ft.
 CONTRACTOR Dyvi Offshore A/S LOCATION 1/9-3 _____ inch at _____ ft.

STOCKPOINT Stavanger BAROID ENGINEER Svendsten/Hansen SEC _____ TWP _____ RNG _____ TOTAL DEPTH _____ ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec	FILTRATION cc	SAND %	EX- lime	SALT		pH	VISCOSITY			GELS			FILTRATE ANALYSIS				RETORT ANALYSIS		REMARKS AND TREATMENT		
							Cl ppm	lime		cp	Pv	Yp	in	10min	Cl ppm	Co ppm	MF	Alk Pf	Oil %	Water %	Solids %			
21.8.77	1460	9	49		1/4																			rest clay. Drlg. to 1460' P.O.O.H. to log. Formation, clay + sand. Logged, made up 250 bbls. Spud mud for 26" hole.
22.8.77	1460	8.9	63		2																			Formation. Clay + sand. R.I.H. Reamed from 532' to 1460'. Circ. bottoms-up. Wiper trip O.K. Spot hole w/250 bbls. ICM mud. P.O. O.H. made up 500 bbls. new spud mud. Lost 900 bbls. mud to formation, and clea- ning of desilter, desander pits.
23.8.77	1460	8.9	62		1/4																			Run 20" csg. to 1424'. Ce- mented. Displaced cement w/480 bbls. seawater. Spot ted 70 bbls. of high Vis pill into annular W.O.C. Wt. up and re-con- ditioned old spud mud for 19" hole.
24.8.77	1460	11.0	45																					Run 20" csg. to 1424'. Ce- mented. Displaced cement w/480 bbls. seawater. Spot ted 70 bbls. of high Vis pill into annular W.O.C. Wt. up and re-con- ditioned old spud mud for 19" hole.
25.8.77	1460	11.0	45	6.2	1 1/2				10.5	20	15	2	20	15,500	480					.6	0	91	9	Nippling up.
26.8.77	1460	10.9	43	6.4	1 1/2				10.0	18	13	2	12	15,500	480					.4	0	91	9	Add viscosifier to help ba- rite suspension.
27.8.77	1460	11.0	53	5.8	1 1/2				9.5	22	17	2	17	17,000	600					.3	0	91	9	Built 350 bbls. HiVis mud.
28.8.77	1460	11.0	46	6.0	1 1/2				9.5	20	16	2	12	17,000	600					.3	0	91	9	Built 300 bbls. gel mud. Displaced casing.
29.8.77	2040	11.5+	48	4.8	1 1				10.0	23	21	2	7	15,400	420					.7	0	84	16	Wt. up to 11.5. Drill out shoe.
30.8.77	2768	11.5+	52	4.6	1 2				10.0	25	22	3	8	16,500	500					.5	0	84	16	Drilled ahead.



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL

STATE Norway

CASING PROGRAM: 36 inch at 532 ft.

WELL 1/9-3

COUNTY Norway

20 inch at 1424 ft.

DATE _____ CONTRACTOR Dyvi Offshore A/S

LOCATION 1/9-3

inch at _____ ft.

STOCKPOINT Stavanger

BAROID ENGINEER Swendsen/Hansen

SEC _____

TWP _____

RNG _____

TOTAL DEPTH _____ ft.

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION	SAND	SALT	PH	VISCOSITY			GELS			FILTRATE ANALYSIS			RETORT ANALYSIS			REMARKS AND TREATMENT
								lb/gal	Sec	cc	Coke %	32nd	EX-Lime ppm	Cl	Pv	Yp	In	10min	Cl ppm	
31.8.77	3215	11.54	48	5.6	1	3/4	11.0	23	17	3	9	14,000	420		.8	0	84	16	Mix 500 bbls. replacement mud.	
1.9.77	3772	12.0	52	6.6	2	1	10.5	26	21	3	11	15,000	440		.5	0	18	82	Add Con Det. Treat foam.	
2.9.77	4133	11.8	42	6.8	2	3/4	11.0	21	15	2	7	14,000	400		1.1	0	17	83	Thin mud to reduce foam.	
3.9.77	4310	11.8	49	6.4	2	3/4	10.5	23	18	3	11	14,600	440		1.0	0	17	83	Add Aktaflo-S for foam and bit balling.	
4.9.77	4460	11.8	44	6.2	2	3/4	10.5	22	16	3	8	15,000	400		.7	0	17	83	Add Walnut to clean bit.	
5.9.77	4460	11.8	42	6.8	2	3/4	10.0	25	13	3	8	15,000	480		.6	0	17	83	Ran Electric logs.	
6.9.77	4460	11.8	44	7.0	2	1/2	10.0	23	16	3	7	14,600	400		.6	0	17	83	Ream 19 1/2" hole.	
7.9.77	4460	11.8	58	7.0	2	1/2	10.0	28	24	5	14	15,000	480		.6	0	17	83	Work on H ₂ O pump. Agiators off.	
8.9.77	4460	11.8	46	6.2	2	1/2	10.0	24	17	2	8	16,500	420		.5	0	17	83	Reamed 19 1/2" hole to 4460'.	
9.9.77	4460	11.8	47	6.5	2	1/2	10.0	23	16	2	8	16,500	420		0.5	0	16	84	Circ. short trip R.I.H.	
10.9.77	4460	11.8	46	6.6	2	1/2	10.0	23	16	2	7	16,500	420		0.5	0	16	84	Circ. P.O.O.H. to run csg. Run csg. to 4408' circ. cemented.	
11.9.77	4460	14.2		Mixing up		Lime/Surfactant													W.O.C. made up new mud for 17 1/2" hole	
12.9.77	4460	14.2		Conditioning mud		for 17 1/2" hole.													Conditioning mud.	
13.9.77	4460	14.2	52	7.6	2	TR	12.3	32	16	2	14	18,500	280		5	3.5	0	22	78	Testing B.O.P. Nipping up
14.9.77	4460	14.0	46	7.9	2	TR	12.1	37	14	2	10	19,000	260		5	3.9	0	22	78	R.I.H. Displaced old mud in csg. with Lime/Surfactant (800 bbls).
15.9.77	4465	12.6	50	13	3	TR	12.5	34	15	2	12	19,000	250		4.8	3.5	0	19	81	Drlg. plug and cement + shoe. Drlg. 5' of new hole
16.9.77	4465	12.1	54	6.6	2	4.6	12.4	24	16	2	12	19,000	240		5.3	4	-	88	12	Waiting on rig repairs. Did leak off test.
17.9.77	4465	13.5	51	6.0	2	TR	12.5	34	15	3	14	19,000	230		5.4	4.5	-	79	21	Circ. and cond. mud. Waiting on rig repairs.
18.9.77	5018	14.6	57	11.0	3	TR	12.2	40	17	3	16	19,000	280		5.0	4.0	-	75	25	Start weighting up. Drlg. Clay. Flowline. plugged twice w/ mudrings.



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL STATE Norway CASING PROGRAM: 36 inch at 532 ft.
 WELL 1/9-3 COUNTY Norway 20 inch at 1424 ft.
 CONTRACTOR Dyvi Offshore A/S LOCATION 1/9-3 16 inch at 4408 ft.

STOCKPOINT Stavanger BAROID ENGINEER Svendsen/Hansen/Crawford/Small SEC TWP RNG TOTAL DEPTH ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec	FILTRATION		SAND %	SALT		pH	VISCOSITY			GELS			FILTRATE ANALYSIS			REPORT ANALYSIS		REMARKS AND TREATMENT
				cc	Coke 32nd		Ex- lime	Cl dom		Cp	Pv	Yp	in	10 min	Cl ppm	Ca ppm	Mf	Alk pf	Oil %	Water %	
19.9.77	5658	14.8	57	7.0	2 1/2	TR	5.2		12.5	30	15	2	12	19,000	230	4.7	3.5	-	75	25	Drig. clay. Had several mudrings.
20.9.66	6025	15.2	58	9.0	2	1/2	4.9		12.4	26	15	2	11	19,000	250	5.0	3.3	-	73	27	Drig. clay. Got 650 units gas. P.O.O.H. for new bit.
21.9.77	6445	15.4	52	7.0	2	1/2	5.0		12.5	28	15	2	10	19,000	250	4.6	3.7	-	73	27	R.I.H. Hole's O.K. Drig. Claystone.
22.9.77	6690	15.4	55	5.0	1	1 1/8	5 3/4		12.4	37	20	2	10	18,500	240	5.0	4.0	0	73	27	Drig. gumbo. Continued getting mud rings. Circ.
	6832	15.4	55	6.0	2	1 1/8	5 1/2		12.4	35	16	3	15	19,000	250	5.0	4.0	-	73	27	out gas bubble at 6686' Built 300 bbls. new mud.
	7016	15.4	58	6.9	2	1 1/8	4.9		12.2	37	23	4	25	19,000	360	4.7	3.7	TR	73	27	Lost approx. 50 bbls. from dumping possum belly.
23.9.77	7100	15.4	55	8.1	2	1 1/8	5 1/4		12.0	38	22	2	11	19,000	320	4.2	3.2	TR	72	28	Made wiper trip. Got mud rings up after. Lost 240 bbls. mud. Started using reg. mud scales to check weight. Necessary to raise weight from 15.1 to 15.5 pb
			52	9.0	2	3/4	3.9		11.9	33	21	3	30	19,000	400	3.5	3.2	TR	72	28	Built 450 bbls. mud. Lost approx. 120 bbls. mud to formation at 7205'. Pulled into casing and staged back to bottom. No mud loss
	7205	15.5	48	8.2	2	3/4	4.5		12.1	34	14	2	7	19,000	320	5.1	3.7	TR	72	28	Finished short trip - no mud loss or mud rings. Drig P.O.O.H. at 7386' for bit chge. R.I.H. to shoe. Circ outy cont. going in hole. Chge. shaker screens to 30 mesh.
24.9.77	7386	15.4	56	6.5	2	3/4	4		11.9	39	25	3	20	19,000	320	4.4	3.4	TR	71	29	Finished going in hole. Circ. bottoms-up. No gumbo
25.9.77	7590	15.5	53	6.8	2	3/4	3.7		12.0	34	21	2	21	19,000	340	4.4	3.1	TR	72	28	

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BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL STATE Norway CASING PROGRAM: 20 inch of 1424 ft.
 WELL 1/9-3 COUNTY North Sea 16 inch of 4408 ft.

DATE _____ CONTRACTOR Dyvi Offshore A/S Ruffing location 1/9-3 ft.
 STOCKPOINT Stavanger BAROID ENGINEER Svendesen/Hansen/Crawford/Small/ SEC _____ TWP _____ RNG _____ TOTAL DEPTH _____ ft.

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION		SALT		pH	VISCOSITY			GELS			FILTRATE ANALYSIS				RETORT ANALYSIS			REMARKS AND TREATMENT			
				cc	Coke 2nd	EX lime	EX SUR- fact		cp	Pv	Yp	in	10 min	Cl ppm	Co ppm	MF	Alk Pt	Oil %	Water %	Solids %					
1977	feet	lb/gal	Sec																						
	7705	15.4	48	7.8	2 3/4	4.0	2+	12.1	-	35	18	2	17	19,000	360	4.5	3.6	TR	70	30				Drill water valve leaked approx. 140 bbls. into reserve pits. Low press, end blew out of mud pump dumping 150 bbls. mud into room. P.O.H. to shoe for repairs. Valve on barite line leaked dumping barite into hopper and sack sto- rage room. Cont. drilling. Wiper trip at 7705. O.K. Drilled to 7808'. Lost approx. 30 bbls. over shaker screens. Shut down to repair motors. P.O.O.H. Tested electric logging tools and B.O.P. waited on rig repairs. Circ. out at shoe. Run 20 stds. and circ. out. P.O.O. to repair air compressor. Chgd bit. R.I.H. Circ. out 10 stds. off bottom. Got shale cavings over shakers. Run to bottom. No problem. Drilling. No gumbo or mud loss. Adding soltex to prevent caving shale.	
	7797	15.5	53	7.8	2 3/4	4.2	2+	12.4	-	37	24	3	18	18,000	320	5.6	4.2	TR	70	30					
	26.9.77	7865	15.4	52	8.0	2 3/4	4.2	2+	12.1	-	36	22	2	16	19,000	340	4.8	3.5	TR	70	30				
		Pit	15.5	56	7.5	2 3/4	5.0	2+	12.4	-	38	23	3	19	18,500	300	5.4	4.0	TR	71	29				
	27.9.77	Pit	15.5	55	7.8	2 3/4	4.3	2+	12.2	-	37	23	3	18	18,000	300	5.0	3.7	TR	70	30				
		Pit	15.4	47	8.2	2 3/4	3.6	2	11.9	-	33	15	3	13	19,000	280	4.6	3.1	TR	70	30				
	28.9.77	7897	15.5	45	8.0	2 3/4	4.1	2	12.0	-	33	17	3	12	19,000	300	5.0	3.1	TR	70	30				
		7920	15.5	62	8.6	2 3/4	3.8	2	12.0	-	27	15	5	22	20,000	400	4.6	3.3	TR	71	29				
		8033	15.5	52	8.5	2 3/4	4.3	2	12.3	-	25	14	4	20	20,000	360	5.6	4.0	TR	71	29				
	29.9.77	8197	15.5	52	7.8	2 3/4	5.0	2	12.1	-	35	23	3	17	18,500	300	5.3	4.0	TR	70	30				



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL STATE Norway CASING PROGRAM: 20 inch at 1424 ft.
 WELL 1/9-3 COUNTY North Sea 16 inch at 4408 ft.
 CONTRACTOR Dyvi Offshore A/S LOCATION 1/9 16 inch at 4408 ft.
 BAROID ENGINEER Svendsen/Hansen/Crawford/Small/ SEC 1/9 TWP 1/9 RNG 1/9
 STOCKPOINT BAROID ENGINEER TOTAL DEPTH 1424 ft.

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION	SAND	SALT	PH	VISCOSITY			GELS			FILTRATE ANALYSIS			REFORT ANALYSIS			REMARKS AND TREATMENT	
								MTB	Pv	Yp	in	10min	MF	Ca	PM	Alk	Oil	Water	Solids		
	feet	lb/gal	Sec	cc	Cake % 32nd	Ex lime	Ex Sulf- fact							dpm	Pi	Pi	%	%	%		
1977																					
29.9.77	8318	15.5	51	8.0	2 3/4	5	2	12.1	27.5	35	21	3	15	5.0	300	21.5	3.6	TR	70	30	Drlg. small mud ring. Bull to shoe.
30.9.77	8521	15.4	48	7.6	2 3/4	4.8	2	12.0	-	35	18	2	14	4.7	300	21.6	3.5	TR	70	30	Drlg. - P.O.O.H. for bit no. 9.
1.10.77	8823	15.4	58	8.0	2 3/4	4.2	2+	12.0	30	34	22	3	18	4.7	280	18.5	3.2	TR	71	29	Drlg. - short trip - lost 90 bbls. on bottoms-up - drlg.
2.10.77	8990	15.5	56	7.2	2 3/4	5	2+	12.1	30	36	21	3	18	5.0	270	22	3.4	TR	71	29	Drill to 8990' - P.O.O.H. from bit no. 10
3.10.77	9099	15.5	56	7.7	2 3/4	4.9	2+	12.3	32	35	21	3	17	5.9	280	22	4.5	TR	70	30	Drill to 9099'. P.O.O.H. to log.
4.10.77	9099	15.5	60	7.9	2 3/4	4.86	2+	12.1	5	37	23	3	18	5.3	250	21.5	4	TR	70	30	Logging.
5.10.77	9099	15.5	51	7.5	2 3/4	5.2	2+	12.0	30	31	19	2	15	5.0	250	22.5	3.5	TR	71	29	Reamed to 5169'. P.O.O.H. for new bit.
6.10.77	9099	15.5	49	7.0	2 3/4	5.4	2+	12.2	30	33	16	2	14	5.8	240	24	4.7	TR	70	30	String 12 lines - ream to 5287'.
7.10.77	9099	15.5	50	6.5	2 3/4	5.0	2+	12.5	30	30	18	3	16	5.8	200	25	5.0	TR	70	30	P.O.O.H. for new bit. R.I.H. Reaming.
8.10.77	9099	15.5	49	6.3	2 3/4	4.8	2+	12.4	30	28	18	3	16	5.4	230	24	4.9	TR	70	30	P.O.O.H. for new bit. R.I.H. hole. O.K.
9.10.77	9099	15.5	47	5.3	2 3/4	4.7	2+	12.4	30	27	18	3	16	5.4	250	23	4.1	TR	70	30	R.I.H. Drilled to 6206'.
10.10	9099	15.5	46	6.0	2	5.3	2+	12.4	27	26	15	3	13	5.4	260	24	4.5	TR	69	31	Rig pumps broke down. POOH
11.10	9099	15.4	45	6.5	2 1/2	4.6	2+	12.3	27	25	14	3	12	5.3	250	23	4.6	TR	69	31	Hole O.K. Collars and under reamer clean. R.I.H.
12.10	9099	15.4	47	6.6	2 1/2	4.9	2+	12.0	27	25	15	3	15	5.0	240	24	4.2	TR	69	31	Working on rig pumps and one crane.
13.10	9089	15.5	48	7.2	2	5.1	2+	12.0	27	35	18	3	16	5.2	240	24.8	4.6	TR	69	31	Working on Mud pumps + motors.
14.10	9089	15.5	50	6.8	2	5	2+	12.2	28	30	18	3	18	6.6	220	25	5	TR	69	31	R.I.H. circ. gas. Ream at 7360'.
15.10	9089	15.5	5.3	7.5	2	4.9	2	12.4	28	29	19	3	18	6.2	280	25.4	5.4	TR	70	30	P.O.O.H./R.I.H. open ended Circ. bottoms-up.



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOILSTATE NorwayCASING PROGRAM: 20 inch of 1424 ft.WELL 1/9-3COUNTY North Sea16 inch of 4408 ft.DATE CONTRACTOR Dyvi Offshore A/SRuffing LOCATION 1/9inch of ft.STOCKPOINT StavangerBAROID ENGINEER Svendesen/Hansen/Crawford/SmallSEC TWP RNG TOTAL DEPTH: ft.

DATE	DEPTH	feet	WEIGHT lb/gal	VISCOSITY Sec	FILTRATION cc	SAND % Coke 32nd	SALT EX lime	SALT EX Sur- Fact	PH	VISCOSITY			GELS			FILTRATE ANALYSIS				REPORT ANALYSIS			REMARKS AND TREATMENT
										MBT	Pv	Yp	In	10min	MF	Ca ppm	PM	Alk pt	Oil %	Water %	Solids %		
1977	9089	15.5	54	7.0	2	1	5.3	1.5	12.2	32	31	18	3	20	6	280	24.3	4.6	-	70	30	R.I.H. to TD Circ. bottoms-up. POOH run BOP test.	
17.10	9089	15.5	53	7.6	2	1	5.6	1.5	12.2	34	30	18	3	18	6.2	320	24.2	4.7	-	70	30	POOH to cs/RH to TD circ. bottoms-up.	
18.10	9089	15.5	53	7.7	2	1	5.6	1.5	12.6	34	30	17	3	19	8.6	240	23.8	6	-	70	30	RH to TD Circ. bottoms-up. POOH to cs.	
19.10	9089	15.5	53	7.0	2	1	5.2	1.5	12.6	31	30	20	3	20	8	260	23	5.8	TR	71	29	RH to TD Circ. bottoms-up. POOH to cs. lost 30 bbls.	
20.10	9089	15.5	53	6.6	2	1	4.6	1.5	12.5	32.5	35	17	3	18	8.1	240	21.5	5.5	TR	71	29	Circ. bottoms-up no problem	
21.10	9089	15.5	53	7.4	2	1	4.6	1.5	12.5	32.5	35	17	3	18	8.1	240	21.5	5.5	TR	71	29	Circ. bottoms-up. Repair air compressor.	
22.10	9089	15.5	52	6.6	2	1	5.1	2	12.4	32	27	19	3	16	6.0	250	23	4.8	TR	71	29	Reamed to 7315' - no problem	
23.10	9089	15.5	50	6.7	2	1	4.9	2+	12.5	32	28	18	3	20	6.1	280	23.5	4.6	TR	70	30	Ream - work on air comp.	
24.10	9089	15.5	53	7.0	2	3/4	5.0	2+	12.3	32	27	18	3	20	5.8	280	22.5	4.6	TR	71	29	Reamed - some hard spots	
25.10	9089	15.5	53	7.0	2	1	4.8	2+	12.2	32.5	28	19	3	20	6	280	21.5	4.1	TR	70	30	Ream 17 1/2" hole.	
26.10	9089	15.5	52	7.2	2	1	4.6	2	12.1	32	29	17	3	18	5.9	300	20.4	3.8	TR	70	30	Reamed to TD circ. to log	
27.10	9089	15.5	51	6.6	2	1	4.7	2	12.1	32	28	16	3	16	6.0	300	21	4.1	TR	71	31	Log - lay down DP.	
28.10	9089	15.5	54	6.6	2	1	4.9	2	12.4	32	29	20	3	19	6.5	19500	21.5	4	TR	71	29	Reamed to 4625'	
28.10	9089	15.5	55	6.6	2	1	4.9	2	12.4	32	28	18	3	16	5.5	19000	23	4.1	TR	71	29	Crane broke down. POOH	
29.10	9089	15.5	58	7.0	2	1	4.7	2	12.3	32	29	19	3	18	5.3	19000	23	4.0	TR	71	29	R.I.H. w/gauge ring.	
30.10	9089	15.5	60	7.2	2	1	4.5	2	12.2	32	30	20	4	23	5.5	19000	22	4.1	TR	71	29	Scrape csq. R.I.H. w/gauge ring. POOH	
31.10	9089	15.5	50	6.0	2	1	4.7	2+	12.4	30	28	18	3	16	5.7	19500	23	4.2	TR	70	30	R.I.H. to 9084'. Circ. Pulled up to csq. shoe.	
1.11	9089	15.5	57	4.0	2	TR	4.0	2+	12.0	27	32	22	4	19	4.9	19000	32	3.7	12	58	30	R.I.H. w/gauge ring to 403. POOH R.I.H. to 9085'. Circ. bottoms-up. Pulled up to casing shoe.	



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

DATE 1/9-3 COMPANY STATOIL STATE Norway CASING PROGRAM: 16 inch at 4408 ft.
 WELL 1/9-3 CONTRACTOR Dyvi Gamma COUNTY Norway LOCATION North Sea inch at 9056 ft.
 STOCKPOINT Stavanger BAROID ENGINEER Crawford/Svendsen/Hansen/Oswald SEC TWP RING TOTAL DEPTH ft.

DATE	DEPTH feet	WEIGHT lb/gal	VISCOSITY Sec	FILTRATION cc 32nd	SAND %	SALT Ex Sulf- fact	PH	VISCOSITY			GELS			FILTRATE ANALYSIS			REPORT ANALYSIS			REMARKS AND TREATMENT			
								MBT	Pv	Yp	In	10min	MF	Cl ppm	PM	Alk pf	Oil %	Water %	Solids %				
1977																							
1 Cont.																							
2.11	9089	15.5	55	4.1	2	TR	4.3	2+	12.2	27	30	18	3	16	5.4	19000	21	39	11	59	30		Added 12% diesel to mud in casing. Circ. bottoms-up.
3.11	9089	15.5	51	4.5	2	TR	4.8	2+	12.2	27.5	30	17	3	16	5.4	19500	21.5	4.0	12	58	30		R.I.H. to 9089'. Circ. and added 12% diesel to mud.
4.11	9089	15.5	50	4.4	2	1/4	4.6	2+	12.3	27.5	29	18	3	19	5.7	20000	20.5	4.0	11	59	30		Added 12% diesel to mud. Circ. and cond. mud. Added a total of 260 bbls. of diesel.
5.11	9089	15.5	51	4.8	2	1/4	4.8	2+	12.3	27.5	30	18	3	15	5.7	20000	21.5	12	58	59	30		Gauge ring O.K. Circ. bot-toms-up.
6.11	9089	15.5	52	4.4	2	1/4	4.9	2+	12.5	28	31	16	3	14	6.8	20000	22.5	5.1	12	58	30		Change BOP + test CK ream-er.
7.11	9089	15.5	52	5.0	2	1/4	4.5	2+	12.2	30	30	18	3	17	5.8	20000	20	3.9	13	58	29		Reaming
8.11	9089	15.6	53	4.8	2	TR	4.6	2+	12.2	28	31	18	3	17	6.0	20000	20.5	4.0	12	59	29		Ream to 9089' - circ. to log Cal log O.K. Run gauge ring set test plug + change BOP
9.11	9089	15.5	53	5.0	2	TR	4.7	2+	12.3	28	31	19	3	17	6.8	20000	21.0	4.0	13	58	29		Cond. mud for csq. run 13 3/8" csq.
10.11	9089	15.5	55	5.0	2	TR	4.6	2+	12.2	28	31	18	3	18	6.7	20000	20.5	3.8	12	58	30		Finish running csq.
11.11	9089	15.0	56	7.6	2	TR	3.9	5	12.0	22	25	16	2	14	5.8	16000	18	4.0	6	68	26		Mixed volume to cement.
12.11	9089	15.0	51	8.0	2	TR	3.8	-	11.8	-	24	18	2	13	5.0	16500	17	3.2	N.1	74	26		Cemented 13 3/8 csq. with no returns. Start mixing volume for 2nd stage.
13.11	9089	15.1	56	8.2	2	TR	3.5	-	12.0	-	25	20	3	16	-	17000	17	3.3	F.1m	74	26		Make new volume - WOC. Cement 2nd stage on 13 3/8 csq. lost 145 bbl. while displacing
14.11	9089	15.3	57	7.8	-	TR	3.7	-	12.0	-	26	19	3	16	-	300	16.5	2.8	TR	72	28		Temp survey - WOC



BAROID DIVISION N L INDUSTRIES, INC.

DRILLING MUD RECORD

COMPANY STATOIL STATE Norway CASING PROGRAM: 16 inch at 4408 ft.

WELL 1/9-3 COUNTY Norway 13 3/8 inch at 9056 ft.

DATE _____ CONTRACTOR Dyvi Gamma Location North Sea inch at _____ ft.

STOCKPOINT Stavanger BAROID ENGINEER Crawford/Svendsen/Hansen/Oswald/ SEC _____ TWP _____ RNG _____ TOTAL DEPTH _____ ft.

DATE	DEPTH	WEIGHT	VISCOSITY	FILTRATION	SAND	SALT	PH	VISCOSITY			GELS		FILTRATE ANALYSIS			REPT ANALYSIS			REMARKS AND TREATMENT					
								Mb	Pv	Yp	in	10min	MF	Co	PM	Alk	Oil	Water		Solids	%	%	%	
15.11	9089	15.2	53	8.0	-	TR	3.2	-	11.6	-	27	18	3	15	-	280	14	2.3	TR	72	28	Csg. hold pressure - pump down ann. ran bond log.		
16.11	9089	15.2	55																				Set cement plugs at 4472' to 4674' 1542' to 1443' 820' to 492'.	

BR-1907-4



BAROID (U.K.) LIMITED

ENGINEER ACTIVITY & REMARKS

11.8	Arrived on the rig (0100). Jacked legs down to sea bed. Lifted rig to 10 ft. air gap. Preload rig. Allow rig to set. Did a stock check. Missing 6 dr. Con Det. Recommended
	to build a mudslide over the shakers to help for possible mudrings.
12.8	Preload rig. Allow rig to set. Dumped preload. Lifted rig to drlg. position. Started mixing spud mud. Mixed 750 bbls.
13.8	Rigged up cellar deck. Made up kelly. Rigged up mouse-hole + rat hole. Made up B.H.A. run to sea bed. 111.94 meter. Drlg. 44" hole. Made up 350 bbls. of 10 ppg. spud mud as requested
	by Statoil rep.
14.8	Drilled 44" hole to 557'. Displaced hole with 400 bbls. spud mud. Survey. at 557', ($\frac{1}{2}$ °). Wiper trip. Displaced hole with 380 bbls. of spud mud. P.O.O.H. started running casing.
	Started mixing cementwater, and mud for 26" hole. Used 700 bbls. of spud mud, and 380 bbls. of 10 ppg. spud mud.
15.8	Run casing to 532'. Cemented 36" casing. W.O.C. some cement water was contaminated by polymer due to a leaking valve. Mixed up 800 bbls. new spud mud for 26" hole.
16.8	Did 2nd cement job. W.O.C. P.O.O.H. made up 400 bbls. new spud mud for 26" hole.
17.8	Run in hole with 26" bit. Tag cement shoe at 531.0'. Drill to 542'. Displaced with 550 bbls. mud. P.O.O.H. Nipple up B.O.P. Rebuild 44" hole opener to 26". Mixed up 200 bbls. of new spud mud, and 350 bbls. 10.5 ppg. mud as requested by Statoil rep.



BAROID (U.K.) LIMITED

ENGINEER ACTIVITY & REMARKS

18.8	Nipple up B.O.P. Welders working on Deverter line and flow line. Rebuild 44" hole opener to 26".
19.8	Made up B.H.A. and R.I.H. to 500'. Run to Csg. shoe and break circulation. Ream down to 557'. Displaced 600 bbls. of spud mud in hole including desiltertrap, desandertrap. Drlg. to 640'. Loosing mud over shakers. Mixed up 600 bbls. of new spud mud
	Running desilter and desander.
20.8	Drlg. from 570' to 725'. Circ. + survey (1/4 ^o). Drlg. circ. to decrease mud wt. from 9.5 to 9.0 ppg. Drlg. to 1468' TD Circ. + Survey (0') P.O.O.H. to log. Running desander and desilter, changed screens on shakers from 30 x 40. Made up 1200 bbls.
	new spud mud. Lost mud to formation, shakers, desander and desilter approx. 600 bbls.
21.8	Formation, sand + clay. Dresser Atlas ran Acoustic Induction log. Nipple down B.O.P. mounted 36" Nubbin on top of Riser and welded flowline on same made up 250 bbls. new spud mud for 26" hole. Lost mud to formation, shaker, back up in hopper
	desander, desilter = 200 bbls. P.O.O.H. to change out B.O.P.
22.8	Formation, sand + clay. Made up 17½" bit + 26" hole opener and R.I.H./Ream from 532' to 1460', Circ. bottoms up. Wiper trip back to csg. Circ. cond. hole spot hole w/250 bbls. LCM mud. P.O.O.H. made up 500 bbls. new spud mud, 250 bbls. of it
	used for LCM mud for 26" hole. Lost mud to formation, back - up hopper, cleaning of, 2 pits, desander, desilter pits shaker pits, flowline = 900 bbls. made up total for 26" hole 4250 bbls. 1950 bbls. lost.
23.8	Run 20" csg. to 1424'. Cemented 20" csg. Displaced cement w/480 bbls. seawater. Had good returns throughout cement job. While pumping plug down. Underdisplaced. Leaving plug 12 m from csg. shoe. Cleaned out 36" annulus through 2" line pipe.



BAROID (U.K.) LIMITED

ENGINEER ACTIVITY & REMARKS

23.8	Spot annular w/60 bbls. HiVis Pill. Lay down pipe. Rig down cement head. Made up 70 bbls. HiVis mud as per Statoils rep. instructions.
24.8	Rig up to lower B.O.P. Working on platform and lower same. Cut off flowline. Cut off 36" csg. Layed out 36" cut. Cut off 20" csg. Dress 20" csg. cut to be 16½" above top of 36" csg. Fit and weld 20" well head.
	Wt. up and re-conditioned old spud mud for 19" hole. Changed shaker screens, now have 2 50 x 50 and 1 30 x 30. Recommendation for 19" hole is to continue with a high clay content mud, until we reach the "gumbo" section. Then brake over to a
	Drispac /Lime system. This was done on block 1/9-1 with success.
25.8	Nippling up on 20" csg. Well head would not pressure test.
26.8	Nippling up. Added viscosifier to help barite suspension in pits.
27.8	Nippling up. Viscosified mud in pits and brought weight back up to specifications. Built 350 bbls. of high viscosity (130 - 140 sec./qt) unweighted gel mud according to company representative instructions.
28.8	Nippling up. Displaced casing with unweighted mud. Tested casing and B.O.P's. Built 300 bbls. of gel mud for additional surface volume.
29.8	Drilled out cement and shoe. Some wood from plug passed shakers and clogged pump valves. Weighted mud to 11.5 ppg. Leak off test good to 12.5 ppg. Drilled ahead. Made wiper trip to shoe. 3% gas at 550 m.
30.8	Drilling. Lost considerable amount of mud over the shakers (± 350 bbls.) short trip. Flow line plugged at bottoms-up.



BAROID (U.K.) LIMITED

ENGINEER ACTIVITY & REMARKS

31.8	P.O.O.H. while waiting for mud material. Bit and stabilizers balled up proxed 500 bbls. replacement mud for mud lost over shakers, changed screens from 50 to 20 mesh R.I.H. with new bit.
1.9	Drilling. Added Con-Det. Excess foam developed. Added Aluminum Stereate and W300, but foaming persisted. Increased mud wt. to 12.0 ppg. changed bottom shaker screens from 30 to 20 mesh to reduce mud losses over the shaker.
2.9	Drilling. Mud cut at flow line due to foam. Pulled up to casing shoe and circulated and conditioned mud to stop foaming. Ran to bottom and conditioned mud and hole. Resumed drilling. Reduced mud wt. from 12.0 to 11.8.
3.9	Drilling P.O.O.H. for new bit. Bit balled. R.I.H. flow line plugged on bottoms-up. Added Aktaflo-S to alleviate bit balling. Pulled to shoe to work on generators.
4.9	R.I.H. when generators repaired. Drilling slowly. Added Fine Walnut to remove ball from bit. Drilled to 16" casing depth. Conditioned hole. P.O.O.H. to log.
5.9	Ran electric logs. Laid down pipe in derrick. Built 300 bbls. unweighted reserve mud.
6.9	Reaming 19½" hole. P.O.O.H. to shoe to repair water pump.
7.9	Run in hole and begin reaming 19½" hole at 0630 hrs.
8.9	Reamed 19½" hole down to 4460'. 100 units gas run degasser.
9.9	Circulate bottoms-up. Short trip. R.I.H. circulate bottoms-up. P.O.O.H. to run casing.



BAROID (U.K.) LIMITED

ENGINEER ACTIVITY & REMARKS

10.9	Ran 16" csg. to 4408'. Circ. lost 400 bbls. mud when cementing. W.O.C.
11.9	Preparing to skid rig. Skidding rig. Made up 500 bbls. new mud for 17½" hole wt. up 1400 bbls. mud from 10 - 14.2 ppg. for 17½" hole.
12.9	Skid rig into position to land 20" B.O.P. Landed B.O.P. and rigging it up. Conditioning 1800 bbls. at 14.2 new mud for 17½" hole cleaned desilter and desander pits. Dumped 250 bbls. mud.
13.9	Rig up and tested B.O.P. Nippling up.
14.9	Tested B.O.P. Nipple up and tested. R.I.H. circ. to condition mud. Displaced old mud in csg. with Lime/Surfactant mud (800 bbls.) conditioning active system.
15.9	Drlg. plug and cement. Clean hole and drlg. shoe. Run formation leak off test. Await equipment repairs. Circ. + cond. mud at csg. shoe, barite start settling out in mud. Enable to solve the problem in time, due to equip. failures, cranes, mud mixing pumps and plugged hoppers down.
16.9	Waiting on rig repairs. Circ. + cond. mud at csg. shoe. Waiting on barite. Supplyboat unable to unload because of bad weather. Mixed condition 300 bbls. of old mud with lime and caustic.
17.9	Waiting on rig repairs. Supplyboat started unloading barite. Started weighting active system from 12.1 - 14 ppg. lost 400 bbls. of old mud 11.8 ppg, when the crew let the maindumpvalve stay open in pits.
18.9	Drlg. clay (100%). Had 2 mud rings which plugged up flowline causing a total lose of 400 bbls. mud. Running centrifuge. Have decreased drlg. rate from 90' to 30' per hour to to handle mud rings. Dumped sand trap and changed screens on shakers to 60 x 60 for 1 and 2 40 x 40.

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19.9	Drlg. from 5018' - 5658'. Had several mudrings, which plugged the shakerbox. Dumped shakerbox 5 times, lost 200 bbls. of mud. Lost 150 bbls mud through leaking dumpvalve in shakerbox. To compensate for 350 bbls. of mud lost, we had to transfer reserve mud at 11.5 ppg. into active system after first weighted up to 14.6 ppg. This took 70 M/T barite. Water back active system.
20.9	Drlg. from 5658' - 6025'. Drlg. w/control drlg. rate 30' - 40' per hour. Had 3 mudrings, cost 50 bbls. of mud. Got short of barite. Circ. for 3 hours while waiting for supplyboat. Increased weight from 14.6 - 15.2 ppg. Stopped mud-cleaner, loosing to much barite. P.O.O.H. Log new bit. Hole is O.K. Had 650 units of gas in the mud at 5936'. Lowered YP to get trapped gas out.
21.9	Changed bit. R.I.H. Hole O.K. No fill. Circ. Lost mud to; 30 bbls. in backup at hopper. 150 bbls. to open dumpvalve in shaker room, 110 bbls. to stuck dumpvalve in shaker room, and 130 bbls. to 3 mudrings=420 bbls. Had 300 units of gas. Formation, claystone.
22.9	Drilling gumbo. Circ. up gas bubble at 6686'. Continued getting occasional mud ring. Necessary to dump possum belly to clean flow line. Lost approx. 50 bbls. mud. Transferred 300 bbls. mud to active system and weighted up from 11.3 - 15.4.
23.9	Made wiper trip. No tight hole. Got 3 mud rings after, Lost 50 bbls. from first, 90 bbls. from second, and 100 bbls. from 3rd. Received orders to use reg. mud scales to weigh mud. Necessary to add barite to raise weight from 15.1 to 15.5. Lost approx. 120 bbls. mud to formation at 7205'. Pulled in-to casing. Circ. out. Ran half way to bottom and circ. out again. No more mud loss.
24.9	Finished going in hole. No gumbo or mud loss. Drilling P.O.O.H. at 7386' to change bit. Drill collars and stabilizer not balled-up. Run in to shoe and circ. out. Continued going in hole. Change screens on shakers.



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25.9	Drilling. Drill water valve leaked approx. 140 bbls. into reserve pits. Mud pump blew-up dumping 150 bbls. mud into pump room. Barite valve leaked dumping barite into sack storage room.
26.9	P.O.O.H. to repair pump. Run back to bottom. Lost approx. 30 bbls. over shakers during bottoms up. Drilled to 7808'. Pulled into casing to repair motors.
27.9	Pulled out of hole. Tested logging tools and B.O.P. Waited on rig repairs.
28.9	Finished repairing motors. Changed bit. Run in to shoe and circ. out. Run 20 stds. and circ. out. P.O.O.H. to shoe and repaired air compressor. Run back in hole. Circ. out 10 stds. off bott. Got shale cavings over shakers. Cont. to bottom.
	No fill of tight hole. Drilling. No mud loss. Adding soltex to prevent shale caving. Shut down one shaker to save screens. Necessary to change broken screens often.
29.9	Drilling. Made wiper trip O.K. No mud loss.
30.9	Drilling No problem. Pull out of hole for bit no. 9. Collar + stabilizers caked with mud.
1. 10	Drilg. \pm 4.2 meter/hour. Made short trip on bottoms-up by passed shaker + dumped \pm 90 bbls. mud. Changed 2 shaker screens. Ran centrifuge 8 hours. Drilling.
2.10	Drilling. Made short trip. Hole in good shape. Drill to 8990 + pull out of hole for bit no. 10. Collars and stabilizers caked with gumbo.
3.10	R.I.H. + drill to 9099'. Circ. bottoms up + pull out of hole to log. Log went to bottom with no problems.



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4.10	Logging - no problems. Start laying down drill pipe to under ream 17½" hole.
5.10	Finished laying down drill pipe. R.I.H. + start reaming. Ream to 5169. Pulled to shoe to clean hole. No problems.
6.10	Reamed to 5258 - P.O.O.H. for new bit. String 12 lines + R.I.H. + ream 17½" hole to 5287'. No problems. Increased additions of Aktaflo-S decreased balling of collars.
7.10	Reamed to 5428'. Circ. bottoms-up. P.O.O.H. for new bit. Tested B.O.P. R.I.H. Hole O.K. Reamed to 5576'. Lost 20 bbls of mud over mudslide, due to closed valve on flowline.
8.10	Reamed to 5960'. P.O.O.H. for new bit. Under reamer balled up. R.I.H. changed shaker screens to. 1. 80 x 60. 2. 80 x 60. 3. 40 x 40.
9.10	R.I.H. Hole O.K. Changed screens on shakers from 1. 80 x 60 to 2. 60 x 60. Worked on leaking bypassvalve on shakers. Baroid mudcleaner is still not installed. Increased waterdilution to help the mud properties. Reamed from 5960'-6206'.
10.10	Reamed from 6206' to 6934'. Rig pumps broke down. P.O.O.H. for new bit. Lowered viscosity and yield point to a minimum, to help cleaning the under reamer from balling up. The mud system needs to be circulated every 12-20 hrs. to help for
	barite settling.
11.10	P.O.O.H. hole O.K. Collars and under reamer was clean. Changed bit. R.I.H. to 16" shoe. Working on rig pumps and one crane. Transferred 120 bbls. of old mud into active pits. The mud in the hole needs to be circulated to help for barite settling.
12.10	Working on rig pumps and one crane.



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13.10	Working on mud pumps + motors, and Draworks motor, mud pump no. 2 operational at 2300 start Circ.
14.10	R.I.H. + circ. after 6 stands. Ream through bridge at 6450 ft. Circ. out high gas from area below bridge, 30 mins. TD + start reaming at 0600 hrs. Reaming, Circ. bottoms-up, prepare to P.O.O.H. Lost 180 bbls. to faulty dump valve at centrifuge.
15.10	P.O.O.H. and stood back bottom hole assembly. /R.I.H. open ended, bridge at c. 7750 ft/washed + circ. bridge. /Ran to 8200 ft. circ. bottoms-up. /Ran to TD circ. bottoms-up / pulled up to casing shoe /W.O.O.
16.10	R.I.H. to TD + circ. bottoms-up /P.O.O.H. to run B.O.P. test/R.I.H. open ended to TD, no problems/Circ. bottoms-up.
17.10	P.O.O.H. to casing shoe/R.I.H. to TD, no problems, circ. bottoms-up/P.O.O.H. to csg. shoe/W.O.O.
18.10	R.I.H. to TD, no problems, circ. bottoms-up/P.O.O.H. to csg. shoe /W.O.O.
19.10	R.I.H. to TD, no problems, circ. bottoms-up/P.O.O.H. to csg. shoe /W.O.O.
20.10	R.I.H. to TD no problems, circ. bottoms-up /P.O.O.H. to csg. shoe /W.O.O.
21.10	R.I.H. to TD + circ. bottoms-up/Pull up to shoe + W.O.O. no problems. Work on air compressor.
22.10	R.I.H. to 7357 + under ream hole to 7642'. No problems.



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23.10	Ream - Pull to shoe to work on air compressor. Ream-- some shale slivers over shakers. Added soltex.
24.10	Ream to 8400 - P.O.O.H. to Dress Blades. Had to reream 4 + 5th stds. off bottom. Hitting hard spots at times.
25.10	Reaming - made 10 std. short trip. No problems hard places at times. Reamed to 8842. P.O.O.H. for new reamer.
26.10	Reamed to 9099. Made 10 std. short trip. RIM to bottom + circ. to run cal log.
27.10	Circ. bottoms-up to log. Hole under gauge. R.I.H. + circ. bottoms-up. Lay down DP to reream hole.
28.10	Layed down 153 joints DP. ream 17½" to 1410 m. Crane broke down. Circ. bottoms-up. P.O.O.H. R.I.H. w/gauge ring to shoe.
29.10	R.I.H. to scrape casing from 3713' to shoe. P.O.O.H. R.I.H. w/gauge ring to 4106'. Taking 20,000 psi. P.O.O.H. Working on crane.
30.10	R.I.H. w/ 14 3/4" bit to 9084'. Circ. bottoms-up mud in good shape. Pulled up to casing shoe. Circ. bottoms-up P.O.O.H. Lost 80 bbls of mud over shakers. R.I.H. w/casing scraper. Started scraping casing from 4106' to casing shoe. Working on crane.
31.10	P.O.O.H. R.I.H. w/gauge ring. Stopped at 449', got 20,000 psi. P.O.O.H. R.I.H. to shoe. Circ. and cond. mud. Dumped shakerbox, got filled w/gumbo from casing. P.O.O.H. Working on crane.
1.11	P.O.O.H. R.I.H. w/gauge ring to 403', got 25,000 psi. R.I.H. to 9089', circ. bottoms-up. Pulled up to casing shoe. Added 12% diesel to mud in casing (Statoil). Circ. bottoms-up. Working on crane.



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2.11	R.I.H. to 6300'. Circ. and added 12% diesel to mud. R.I.H. to 9089'. Circ. and added 12% diesel to mud. Pulled up to casing shoe. Added 12% diesel to mud. Circ. and cond. mud. Added a total of 260 bbls. of diesel to mud.
3.11	Run in hole with gauge ring - very slow but went O.K. to shoe.
4.11	P.O.O.H. run into bottom + circ. P.O.O.H.
5.11	Test B.O.P. - run in to shoe with under reamer. Test reamer - start under reaming 17½" hole.
6.11	Ream 17½" hole to 6855'. Pull to shoe and work on pump. R.I.H. + ream.
7.11	Ream 17½" hole to 9089' (TD). Circ. three hours and P.O.O.H. to Run Cal. Log.
8.11	Cal. log O.K. to run casing. Run gauge ring O.K. P.O.O.H. + set test plug + change B.O.P.
9.11	Test B.O.P. - cut drill line. R.I.H. + circ. + cond. mud to run 13 3/8" casing. Pull to shoe and cir. bottoms-up Start running 13 3/8" casing.
10.11	Finish running casing. No problems with hole. Circ. bottoms-up to cement.
11.11	Started circ. but losing mud. Stopped to mix volume to displace cement. Reduced wt. to 15.0. Cemented 13 3/8" casing. But no mud returns while cementing or displacement begin mixing new volume to cement second stage.



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12.11	Build new volume + wt. up to 15.0 - had trouble transferring bulk barite to hopper. Wait on cement to get hard.
13.11	Ran Temp. Survey. Lost mud at 1900 m. Reverse circ. + lose very little mud. Circ. bottoms-up and lose no mud. Cement 2nd stage, lost 145 bbls. while displacing cement.
14.11	Let cement 8 hours. Ran temp. survey. Wait for cement 18 hours.
15.11	WOC Pressure - held pressure O.K. Pump down annulus. Ran bond log.