

Denne rapport
tilhører



L&U DOK. SENTER

L. NR. 20088370035

KODE Well 31/2-8 nr/b

Returneres etter bruk

WELL SUMMARY

A/S NORSKE SHELL

WELL NO. 31/2-8



ANCHOR DRILLING FLUIDS

WELL SUMMARY

A/S NORSKE SHELL

WELL NO. 31/2-8

GENERAL SUMMARY

OPERATOR A/S Norske Shell

WELL NO. 31/2-8

OPERATOR'S REPRESENTATIVES

Mr. Jim Hulme
Mr. Jim Daly

CONTRACTOR Dolphin Services

RIG Borgny Dolphin

CONTRACTOR'S REPRESENTATIVES

Mr. Harald Frigstad
Mr. H. Kilpatrick

ANCHOR ENGINEERS

Mr. Chris Atkinson
Mr. C. Blanchard
Mr. S. Wersland

WATER DEPTH	345,5 m
SEABED to RKB	370,5 m
36" HOLE DRILLED TO	480 m
30" CASING SET AT	469,5 m
26" HOLE DRILLED TO	840 m
20" CASING SET AT	826 m
17½" HOLE DRILLED TO	1745 m
13¾" CASING SET AT	1734 m
12¼" HOLE DRILLED TO	2743 m
9⅝" CASING SET AT	2732 m
8½" HOLE DRILLED TO	3375 m (T.D.)



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

CHRIS ATKINSON

ENGINEERS

DATE 15.6.82

Arrived at new location. Ran and tensioned anchors.
Ballasted down rig.
Made up 36" BHA. Prepared to spud.

Made up + 1400 bbls prehydrated Bentonite spud mud.

Carried out screen and chemical inventory checks.
Started servicing shale shakers.

DATE 16.6.82

Spudded in well at 05:30 hrs at 370 m. Drilled 36" hole with seawater and havis pills as required.
Drilled to 480 m. Pumped 100 bbls havis pill. Tripped to seabed. RIH to TD.
3 m fill. Displaced hole to spud mud (950 bbls).
POOH to run casing. Jetted well head with seawater.

Dumped and cleaned out all pits after displacing hole.
Finished servicing shale shakers.

DATE 17.6.82

Rigged up and ran 30" casing. Cemented same after circulating for 3 hours to get good returns to seabed.

Made up 14 3/4"/26" assembly. Drilled out cement.

Mixed 170 bbls CaCl₂ cement mix water. Mixed gel/seawater mud for next section. (+ 1000 bbls prehydrated Bentonite.)
Dressed shakers with 20/B60 screens.



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OSLO - STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-8
OPERATOR A/S NORSKE SHELL

ENGINEERS CHRIS ATKINSON

DATE 18.6.82

Drilled cement and shoe - and 5 m new hole to 485 m.
Circulated hole clean. POOH. Rigged up and ran marine riser and pin connector. Made up 14 3/4" bit and BHA.
RIH. Tested diverter lines. Displaced hole to mud. Drilled 14 3/4" pilot hole 485 m - 545 m.

Watered back spud mud to give 1420 bbls gel/seawater mud for displacing hole.

Weighted up pit no. 4 as kill mud 1.35 SG.

Made Sapp/Caustic bags ready if required for Barite plug.

DATE 19.6.82

Drilled 14 3/4" pilot hole 545 m - 840 m. Circulated 1 hour. POOH for wiper trip to 30" shoe. RIH to bottom.

Heavy dilution of system while drilling to keep mud weight below 1.10 SG.

Changed 2 broken 200 mesh Thule screens.

DATE 20.6.82

Circulated hole clean. Pumped 300 bbls 1.35 SG mud in open hole. POOH. Ran logs. RIH with 14 3/4" bit to bottom. Circulated out 1.35 SG mud via riser dump valve. POOH. Made up 14 3/4" bit with 26" under reamer. RIH to 485 m. Under reamed 485 - 575 m.

Continued dilution of system to keep mud weight at 1.10 SG, max. Dumped and cleaned out sand traps during logging. Maintained viscosity with CMC hivis.

Changed out broken 200 mesh Thule screen.

Mixed 280 bbls of 1.30 SG mud in pit no. 4 as kill mud.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS CHRIS ATKINSON

DATE
21.6.82

Under-reamed to 26" from 575 to 820 m. (Circulated 1 hour to reduce mud weight.) Maintained mud weight with heavy seawater dilution at max. 1.13 SG in - 1.15 SG out. Added Polymer for rheology maintenance.

Circulated 2½ hours at TD to clean hole. Pumped slug and POOH to 30" shoe. Opened riser dump valve and observed well. Filled riser again. Started RIH to TD.

Mixed Pit no. 3 and Pit no. 2 to 1.30 SG prior to spotting hole.

DATE 22.6.82

RIH to 820 m. Circulated bottoms up. Displaced hole (T.D. - Seabed) with 1100 bbls 1.30 SG mud. POOH with under reamer and laid down. Opened dump valve. Observed well. Rigged up and ran logs. Well flowed. Filled riser. RIH with new 26" under-reamer to 464.5 m. Re-reamed sections to bottom. Under reamed ahead to 840 m. Circulated hole clean while weighting up surface volume to 1.40 SG.

Mixed 360 bbls new gel/seawater mud to maintain surface volume required. Took high weight returns into reserve pit when started to re-ream.

DATE
23.6.82

Displaced hole with 1100 bbls 1.40 SG mud. Opened dump valve. Well flowing. Weighted up and pumped 240 bbls 1.40 SG. Opened dump valve. Flow again. Filled riser via trip tank. POOH to seabed. Displaced riser to seawater. Opened dump valve. Well flowing. Displaced back to 1.24 SG mud. Observed well. O.K. RIH to 30" shoe - then 520 m. O.K. Weighted up 400 bbls to 1.65 SG - pumped at 520 m. Filled riser with seawater. Opened dump valve. Well flowed. Filled riser (35 bbls). POOH to seabed. Circulated riser to clean out spots. Observed well. O.K. Opened dump. O.K. POOH. Observed. O.K. Rigged up Schlumberger and ran log. Prepared to pull riser. Mixed + 1050 bbls new gel/seawater mud to maintain surface volume.



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OSLO - STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS CHRIS ATKINSON

DATE 24.6.82

Pulled riser and pin connector. Rigged up and ran Schlumberger log. Rigged up and ran 20" casing. Filled casing with 1.65 SG mud while running in.

Dumped 40 bbls mud from pit no. 6 and cleaned out pit. Mixed 150 bbls CaCl₂ cement mix water. Dumped and cleaned out sand traps (140 bbls.)

DATE 25.6.82

Ran and landed 20" casing with shoe at 226 m. Circulated with 700 bbls 1.65 SG mud. Cemented casing. Displaced with seawater. No backflow. POOH with running tool. RIH with jetting tool and jetted well-head clean. Tested BOPs and prepared to run BOPs and marine riser.

Dumped and cleaned out all pits, mixing lines and jet line to Halliburton unit prior to taking on Brine. Dressed shakers to B20/B40 + 20/B40 + 20/B40. Thule unit to 150 x 150. Took on 660 bbls KCl brine + 95 ppb from boat. Started mixing KCl/Polymer system.

DATE 26.6.82

Continued running BOP stack. Tested kill and choke lines. Pressure losses. Pulled stack to surface. Laid down marine riser. Worked stack. Re-ran stack and riser.

Finished mixing total + 1400 bbls KCl/Polymer at 1.26 SG.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON/BLANCHARD/WERSLAND

DATE 27.6.82

Landed stack. Tested BOPs.

Sheared mud with mix line jets.

Received shaker screens as per order 16.6.82.

DATE 28.6.82

Made up 17½" assembly. RIH. Drilled cement and plug. Displaced hole to mud at shoe. Drilled shoe and drilled from 840 to 845 m. Circulated hole clean. Leak off test equivalent to 1.80 SG. POOH. Made up 8½" assembly. RIH. Drilled 8½" hole from 845 m to 938 m.

Mixed reserve pits (no. 2 at 1.27 SG and no. 3 at 1.1 SG) and kill mud at 1.60 SG. Total + 1000 bbls. Treated for some cement contamination. Increased system mud weight to 1.27 SG.

Losses at shakers due to Ancopol staying in system for considerable period before being taken up by 8½" hole. Removed B40 on two shakers for a time to minimize losses - no losses on Thule.

DATE 29.6.82

Drilled 8½" hole from 938 m to 948 m. Survey. Tight hole at 932 m - 948 m. Reamed and washed to 951 m. Made wiper trip to shoe. No drag. Drilled to 1054 m. Slugged pipe. POOH to 816 m. 50.000 lbs. max. drag. RIH to 1009 m. Hole tight. Washed to 1018 m. RIH to 1037 m. Drilled to 1063 m. Loss of pressure due to washed out nozzle. POOH. Tight hole at 949 m.

Reamed. POOH to make up new BHA (17½").

WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD/WERSLAND

DATE
30.6.82

Reduced Ca⁺⁺ and Mg⁺⁺ content with Soda Ash and Caustic Soda.
Reamed from 845 m to 1063 m. Used Halliburton pump due to no.2
mud pump being repaired. Ran survey. Wiper trip. Drilled to
1228 m.

Changed lower shaker screen to 60B.

DATE
1.7.82

Drilled to 1274 m. Ran survey - unable to retrieve. POOH.
RIH. No fill - tight spot from 825 m to 850 m. Drilled to
1425 m.

Changed shaker screens to 40B over 50S.

DATE
2.7.82

Drilled to 1485 m. Ran survey. Line snapped on survey tool.
POOH to 716 m (60.000 lbs drag max.)
RIH to 1114 m - tight hole. Reamed to 1130 m. RIH - ½ m fill.
Drilled to 1504 m - circulated out trip gas. Drilled to 1580 m-
survey. Drilled to 1612 m.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD/WERSLAND

DATE

3.7.82

Drilled 17½" hole from 1612 m to 1685 m.
Circulated hole clean. Survey. POOH. Tight hole from 1685 m to 1485 m.

Recovered survey at shoe. RIH to 1583 m. Reamed tight spot 3½ stds. above bottom. Drilled 1685 m to 1745 m.

Mixed new mud in pit no. 3 for dilution.

DATE 4.7.82

Circulated hole clean. POOH to 1485 m, tight hole from 1685 m to 1550 m. Ran back in to 1745 m.

POOH to 20" casing shoe. RIH to 1745 m - no fill.

Circulated and POOH with no drag. Ran logs, second log stood up at 1605 m. RIH to ream tight spot. Washed and reamed from 1592 m to 1628 m and from 1706 m to 1745 m. Circulated out trip gas.

POOH to 1583 m.

DATE

5.7.82

RIH to 1745 m. Circulated hole clean. Mud weight up to 1.4 SG. Added KCl due to low KCl content in mud.

POOH. Ran logs. RIH and circulated hole clean.

POOH. RIH to retrieve wearbushing in BOP.



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OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD/WERSLAND

DATE
6.7.82

POOH. Ran 13 3/8" casing. Cemented same, shoe at 1736 m. Displaced cement and lost circulation after 2400 strokes. Plug did not bump. Tested to 4250 psi. RIH to test BOP by midnight. Lost approx. 370 bbls mud. Dumped pit no. 4 and sand traps. Mixed new mud in pit no. 2 and 3. Diluted mud - 1.4 SG to 1.20 SG with water in pit no. 2 and 3. Mixed total of 300 bbls new mud.

DATE
7.7.82

Continued testing BOPs. RIH with test-tool and stinger. Tested shear-rams. RIH with fishing assembly.

Transferred 1/2 pit no. 1 to pit no. 4. Mixed new diluted mud in pit no. 1 and 4. Mud weight 1.2 SG.

Transferred 140 bbls from pit no. 3 to sandtraps. Mixed up new mud in pit no. 3. New mud built: 400 bbls in pit no. 1, 3 and 4 together.

DATE
8.7.82

Continued RIH with fishing assembly. Rotated on to fish. POOH (40.000 lbs overpull). Made up bottom hole assembly with 12 1/2" bit and casing scraper. Set packer - tested casing to 3000 psi.

Active pit dumped by a mistake. Mixed up pit no. 1 and weighted up to 1.18 SG.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON/BLANCHARD

DATE 9.7.82

POOH. Made up 12 1/4" bit. RIH. Drilled float collar at 1724 m. Drilled new hole 1745 m to 1750 m. Circulated clean. Leak off test equivalent to 1.45 SG. POOH. Made up 150 m of 2 7/8" tubing for stinger. RIH to 1750 m. Cemented and pulled back to 1600 m. Squeezed cement (total 25 bbls). Slugged pipe and POOH. Laid down stinger.

Mixed total + 1000 bbls new seawater/Drispac mud.
Dumped and cleaned sand traps.

DATE 10.7.82

Made up 12 1/4" bit and new BHA. RIH and tagged cement at 1675 m. Drilled out cement from 1678 m to 1750 m. Drilled from 1750 m to 1752 m. Circulated hole clean (1 1/2 hours). Leak off test equivalent to 1.61 SG. Continued drilling 12 1/4" hole from 1752 m to 1812 m. Drilling break. Circulated bottoms up. Drilled ahead from 1812 m to 1842 m. Circulated bottoms up. POOH to core.

Changed active pit to no. 2. Dumped 25 bbls in pit no. 1 and cleaned out. Mixed kill mud in pit no. 4 to 1.40 SG (310 bbls).

DATE 11.7.82

Finished POOH. Made up 8 15/32" core bit and barrel and new BHA. RIH. Washed and reamed from 1652 m to 1678 m. Continued RIH. Washed from 1833 m to 1842 m. Dropped ball and cored from 1842 m to 1851.5 m. POOH - recovered core (100%) no. 1. Made up 18 m core barrel. RIH. Cored from 1851.5 m to 1870 m. Pumped slug and POOH.

Maintained rheology with Drispac. Kept mud weight below 1.22 SG.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON

DATE 12.7.82

Recovered core no. 2 (95% recovery). Made up new core head. RIH. Washed from 1861 m to 1870 m. Cored from 1870 m to 1888.5 m. Pumped slug and POOH. Recovered core no. 3 (100% recovery). Made up new 12 1/4" bit and BHA. RIH. Reamed 8 1/2" hole from 1842 m to 1888.5 m. Drilled new 12 1/4" hole to 1896 m.

Kept mud weight at 1.22 SG max. Maintained rheology and fluid loss control as necessary.

DATE 13.7.82

Drilled 12 1/4" hole from 1896 m to 2106 m with surveys. POOH. Tight at 2016 m. Worked and jarred pipe. No success.

Rigged up circulation head and circulated. Returns O.K. Attempts made to free stuck pipe.

DATE 14.7.82

Attempted freeing pipe by jarring. Pumped + 80 bbls pipe free pill at 1.20 SG. Chased with 70 bbls mud - pipe came free. Pulled out to shoe. Retrieved survey. RIH to 2105 m. Continued drilling 12 1/4" hole to 2172 m. Circulated bottoms up.

POOH to change bit.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON

DATE
15.7.82

Made up new bit. Added junk basket to BHA (broken teeth in hole).
RIH. Drilled 12 1/4" hole from 2172 to 2278 m. Survey.
(11 stds. short trip.) Drilled ahead from 2278 m to 2336 m.

Maintained rheology, fluid loss and alkalinities as per spec.
Dumped gumbo box and shaker box as required.
Maintained mud weight at 1.23 SG max.

DATE
16.7.82

Drilled 12 1/4" hole from 2336 m to 2382 m. 8 stds. short trip.
Tight hole 2280 m - 2261 m (30-50.000 lbs overpull). RIH to
2382 m. Drilled ahead from 2382 m to 2416 m. Circulated bottoms
up. POOH for bit change. Made up new bit. RIH.

Maintained properties as previously.
Changed one broken 150 Thule screen.
Dumped gumbo box as necessary.

DATE
17.7.82

Continued RIH. Drilled 12 1/4" hole from 2416 m to 2522 m.
14 stds. short trip.

RIH. Drilled from 2522 m to 2568 m.



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DAILY SUMMARY REPORT

WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON

DATE 18.7.82

Drilled 12 1/4" hole from 2568 m to 2669 m. Survey. 10 stds. short trip. RIH. Drilled from 2669 m to 2743 m. Circulated bottoms up at casing point. Survey. POOH to shoe. RIH. Circulated to clean hole prior to logging.

Maintained rheology, alkalinities and fluid loss in line with spec. - Water additions for max mud weight of 1.24 SG.

Dumped gumbo and shaker boxes as necessary.

DATE 19.7.82

Finished circulating hole clean. POOH. Ran logs.

Dumped and cleaned out shaker box and gumbo box.

DATE 20.7.81

Continued logging.



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OSLO -- STAVANGER

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OPERATOR A/S NORSKE SHELL

ENGINEERS ATKINSON/ BLANCHARD

DATE
21.7.82

Rigged down Schlumberger. Made up 12 1/4" bit (no nozzles) and BHA. RIH to TD for wiper trip. Circulated hole clean (2 hours). POOH. Rigged up to continue logging.

DATE
22.7.82

Logged. Rigged down. Made up 12 1/4" bit and BHA. RIH to TD for wiper trip. Reamed and washed last joint to bottom. Circulated hole clean. POOH to run casing.

Dumped and cleaned out sand trap (40 bbls).

DATE
23.7.82

POOH to run casing. Ran 9 5/8" casing and cemented.

Displaced the cement with 111 bbls freshwater followed by 549 bbls of mud. Full returns throughout.



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OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD

DATE 24.7.82

Tested seal assembly and BOPs. Ran wear bushing and laid down drill collars. Made up new BHA (8½").

DATE 25.7.82

RIH with new BHA. Tagged cement at 2684 m. Drilled to 2748 m. Made leak off test to 1.89 SG equivalent. POOH. RIH with bit no. 14.

Drilled to 2763 m. Added 2 lbs/bbl Lignosulphonate to mud system.

DATE 26.7.82

Drilled to 2783 m. Circulated bottoms up. Drilled to 2808 m. Dropped survey. POOH to casing shoe. Recovered survey. Drilled to 2827 m. Circulated bottoms up for sample. Drilled to 2867 m and circulated hole clean. Ran survey. POOH. Dumped 140 bbls mud from sand traps and cleaned these.

Changed shaker screens and mud cleaners screens.



WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD

DATE
27.7.82

Drilled to 2903 m. Dropped survey. Retrieved same.

Drilled to 2965 m.

DATE
28.7.82

Drilled to 2988 m. High torque at 2988 m - 2998 m. Ran survey.
POOH 11 stands to retrieve survey. Drilled to 3019 m. High torque.
POOH. Changed bit and stabilizer. RIH.
Drilled to 3024 m. Added prehydrated Bentonite to active
system.

DATE
29.7.82

Drilled to 3049 m. High torque at 3049 m - 3055 m.
Worked pipe and reamed. POOH. Misrun on survey.
RIH. Drilled to 3059 m. Dropped survey and retrieved.
Drilled to 3060 m. High torque. POOH.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD

DATE 30.7.82

RIH. Reamed to 3060 m. Drilled to 3070 m. Drilling break.
Circulated bottoms up. Drilled to 3080 m.

Reamed from 3055 m to 3080 m. POOH. No drag.

DATE 31.7.82

RIH to 3060 m. Reamed from 3060 m to 3080 m.

Drilled 8½" hole from 3080 m to 3198 m. Circulated
hole clean. Dropped survey at 3198 m.

DATE 1.8.82

Made wiper trip to 3002 m.

Retrieved survey. RIH from 3198 m to 3317 m.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD

DATE

2.8.82

POOH looking for washout. Retrieved survey. RIH.
Drilled ahead to 3341 m. POOH looking for second washout.

Found on stand no. 42.

RIH and drilled to 3362 m.

DATE 3.8.82

Drilled from 3362 m to 3375 m. Circulated bottoms up.

Made wiper trip to 9 5/8" shoe. Circulated hole clean.
Dropped survey at 3375 m. POOH.

Ran logs. Cleaned out sand traps.

DATE

4.8.82

Ran logs in 8½" hole.



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WELL NAME 31/2-8

OPERATOR A/S NORSKE SHELL

ENGINEERS BLANCHARD

DATE
5.8.82

Finished running logs.

RIH to set cement plugs in 8½" hole.

DATE
6.8.82

Set cement plugs.

DATE

SUMMARY OF EVENTS

OPERATOR: A/S NORSKE SHELL

WELL NO. 31/2-8

36" HOLE/ 30" CASING INTERVAL

Well was spudded on 16.6.82 in 345.5 m water with a 17½" bit and 36" hole opener .

36" hole was drilled from 370 m to 480 m. with sea-water and havis pills (prehydrated gel) as required.

After a check trip the hole was displaced with + 900 bbls havis mud (100% excess) and then 30" casing was run to 469.5 m and cemented.

SUMMARY OF EVENTS

OPERATOR: A/S NORSKE SHELL
WELL NO. 31/2-8
26" HOLE/ 20" CASING INTERVAL
(14 3/4" Pilot hole)

A gel/sea water mud system was used in this section which was obtained by watering back hi-vis spud mud.

A 14 3/4" pilot hole was drilled from 480 m to 840 m. Mud weight kept below 1.10 SG by continuous dilution and running of all solids control equipment. After circulating the hole clean, the open hole was displaced with 1.35 SG and then logs were run.

It was decided to under-ream the section to 26" due to suspected gas zone at \pm 520 m from the logs.

Under-reamed from 485 m to 820 m - kept mud weight at 1.13 SG max with heavy dilution. Costs were greatly increased for the section due to the need for rheology maintenance with CMC hi-vis/Drispac/XC-Polymer which normally not are required when the hole is opened up without the riser on and only hi-vis pills used.

After a short trip the hole was displaced with \pm 1100 bbls of 1.30 SG mud (TD - seabed) and log run.

The riser dump valve was opened to check for flow as zone flow was suspected. Well flowed. Under-reaming then continued to 840 m. Well flowed. At this point \pm 1100 bbls of 1.40 SG mud were used to displace the hole to seabed. Again the well was seen to flow after opening the dump valve. Well flowed.

After various attempts of stopping flow a volume of 400 bbls of 1.65 SG mud was spotted, and eventually the well was judged to have stopped flowing. A log was then run and the riser pulled, after which another log was run and the hole found to be in gauge. 20" casing was then run. This was filled with 1.65 SG mud while running in and after landing the casing a further 700 bbls of 1.65 SG mud was pumped to clean the hole. The casing was then cemented and preparations made to run the BOP stack.

Costs for the section were greatly increased above normal, due to the need for the \pm 2700 bbls extra weighted mud used after under-reaming.

SUMMARY OF EVENTS

OPERATOR: A/S NORSKE SHELL

WELL NO. 31/2-8

HOLE/ 13 3/8" CASING INTERVAL

17½" hole with 8½" Pilot hole

The cement in the 20" casing was drilled out and the hole was displaced to fresh KCl mud. After drilling to 845 m a leak-off test was performed to 1.80 SG equivalent. A pilot 8½" hole was drilled due to a suspected gas zone. Tight hole was encountered from 932 m to 948 m. Also tight hole was found at 1019 m and again, while pulling out, at 999 m. At this point a new BHA was set up for 17½" hole.

Reaming was done from 845 m to 1063 m. While drilling ahead tight hole occurred at 1130 m, and at 1504 m trip gas was circulated out of hole. At 1685 m the well was circulated clean and a wiper trip was made. After running in hole to 1583 m a tight spot was reamed 3½ stands above bottom. Drilled ahead to 1745 m and ran a wiper trip and circulated well clean prior to logging. Ran first log but unable to get past 1605 m. Ran in hole and reamed from 1592 m to 1628 m and increased KCl content in mud to 43 lbs/bbl for better inhibition. Ran log no. 2. Made a wiper trip. Ran 13 3/8" casing. During displacement of the cement 365 bbls was lost and the plug did not bump. Mixed up new mud and reduced mud weight to 1.20 SG. Dumped sand traps and tested BOP's for next section of hole.

SUMMARY OF EVENTS

OPERATOR: A/S NORSKE SHELL

WELL NO. 31/2-8

12 1/4" HOLE/ 9 5/8" CASING INTERVAL

After making up the 12 1/4" BHA and RIH, cement, 13 3/8" shoe and 5 m new hole were drilled. A leak-off test gave 1.45 SG breakdown equivalent indicating a bad cement job so a squeeze job was carried out.

It was necessary to mix + 1000 bbls of new seawater/Drispac mud during the drilling of cement. Due to bad contamination dumping was necessary.

A second leak-off test at 1752 m gave 1.61 SG breakdown equivalent so it was decided to drill ahead, 12 1/4" hole being drilled to 1842 m. After a drilling break gas was found on bottoms up. Coring was started with 8 15/32" core bit and continued until 1880.5 m. Drilling of 12 1/4" hole continued from this point.

Pipe became stuck when POOH at 2016 m after drilling to 2106 m, and was eventually freed after 10 hours by pumping a 80 bbls free pipe weighted pill.

Drilled ahead then to 2743 m - casing point, maintaining max mud weight of 1.24 SG by dilution and keeping fluid loss below 5 cc with LF-5 additions.

Logs were then run for 3½ days with one wiper trip carried out after 2 days and the hole in good shape.

Ran and cemented 9 5/8" casing with shoe at 2732 m.

SUMMARY OF EVENTS

OPERATOR: A/S NORSKE SHELL
WELL NO. 31/2-8
8½" HOLE/ - CASING INTERVAL

Tagged cement at 2684 m and drilled to 2748 m. Ran leak off test and pulled out of hole for a new bit. The system was then treated with 2 lb/bbl Ligno-sulphonate.

At 2988 m high torque was encountered and also at 3019 m. It was suggested at this time to add 2% lubricant to the mud, but hole problems appeared to be due to the formation and not the drilling fluid. Prehydrated Bentonite was added to the system to help torque. At 3049 m to 3055 m there was still a torque problem and this area was reamed. When running back in hole all areas of high torque were reamed. When drilling ahead to 3080 m, no drag was encountered while pulling out of hole. Fewer torque problems occurred after 3080 m and we drilled to 3317 m. At this depth a drop in pressure made it necessary to pull out of hole because of a washout. Then at 3341 m another washout was found on the 42nd stand. Drilling continued to 3375 m. A wiper trip was made to the 9 5/8" shoe and the hole was circulated clean at 3375 m for logging. Logs were run and the 8½" section was plugged with cement.

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

MATERIAL CONSUMPTION & COST ANALYSIS

36" HOLE DRILLED TO 480 ^{Meters} ~~Feet~~ 30" CASING SET AT 469 ^{Meters} ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 109 ^{Meters} ~~Feet~~ DAYS ON INTERVAL 3

DRILLING FLUID SYSTEM PREHYDRATED GEL (SPUD MUD)

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST US \$
BENTONITE	M/T	20	28	+ 8	9 184,-
CAUSTIC SODA	25 kg	20	32	+ 12	608,-
SODA ASH	50 kg	3	16	+ 13	296,-
LIME	25 kg	6	8	+ 2	40,-

COST/DAY US \$ 3 376,- TOTAL COST FOR INTERVAL US \$ 10 128,-

COST/Mt. US \$ 92,92 PROG. COST FOR INTERVAL US \$ 7 025,50

ENGR. COST COST VARIANCE FOR INTERVAL US \$ 3 102,50

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

MATERIAL CONSUMPTION & COST ANALYSIS

26" HOLE DRILLED TO 840 ^{Meters}~~Feet~~ 20" CASING SET AT 826 ^{Meters}~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 361 ^{Meters}~~Feet~~ DAYS ON INTERVAL 7

DRILLING FLUID SYSTEM GEL/SEAWATER

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST US \$
BENTONITE	M/T	45	10	- 35	3 280,-
BARITE	M/T	0	397	+ 397	53 198,-
CAUSTIC SODA	25 kg	49	57	+ 8	1 083,-
SODA ASH	50 kg	8	21	+ 13	388,50
CMC HI VIS	25 kg	0	121	+ 121	7 381,-
DRISPAC REG.	25 kg	0	59	+ 59	9 988,70
XC POLYMER	50 lbs	0	28	+ 28	9 296,-
LF 5	25 kg	43	0	- 43	-

COST/DAY US \$ 12 088,- TOTAL COST FOR INTERVAL US \$ 84 615,20

COST/Mt. US \$ 234,39 PROG. COST FOR INTERVAL US \$ 17 903,-

ENGR. COST COST VARIANCE FOR INTERVAL US \$ 66 712,20

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

MATERIAL CONSUMPTION & COST ANALYSIS

17 1/2" HOLE DRILLED TO 1745 Meters ~~XXXX~~ 13 3/8" CASING SET AT 1736 Meters ~~XXXX~~

ACTUAL AMOUNT OF HOLE DRILLED 905 Meters ~~XXXX~~ DAYS ON INTERVAL 12

DRILLING FLUID SYSTEM KCl/POLYMER

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
KCl (Brine)	bbls	-	990	-	US \$ 15 304,41
KCl	50 kg	1122	1065	- 57	19 063,50
DRISPAC REG.	50 lbs	106	127	+ 21	21 501,10
CMC LO VIS	25 kg	95	156	+ 61	9 204,00
LF-5	25 kg	212	241	+ 29	11 568,-
ANCOPOL	25 kg	100	67	- 33	8 844,-
CAUSTIC SODA	25 kg	135	110	- 25	3 090,-
SODA ASH	50 kg	35	56	+ 21	1 036,-
DRILLING DETERGENT	200 l.	18	0	- 18	-
BARITE	M/T	241	263	+ 22	35 242,-
AL. STEARATE	25 kg	-	1	-	80,-
SOD. BICARBONATE	50 kg	-	6	-	115,50
XC POLYMER	50 lbs	-	6	-	1 992,-

COST/DAY US \$ 10 505,30 TOTAL COST FOR INTERVAL US \$ 126 040,51
 COST/Mt. US \$ 139,30 PROG. COST FOR INTERVAL US \$ 108 817,10
 ENGR. COST COST VARIANCE FOR INTERVAL + US \$ 17 223,41

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

MATERIAL CONSUMPTION & COST ANALYSIS

12 1/4" HOLE DRILLED TO 2743 ^{Meters}~~Feet~~ 9 5/8" CASING SET AT 2732 ^{Meters}~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 998 ^{Meters}~~Feet~~ DAYS ON INTERVAL 18

DRILLING FLUID SYSTEM SEAWATER/DRISPAC (KCl/POLYMER from previous section initially)

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T	156	109	- 47	14 606,-
DRISPAC REG.	50 lbs	95	108	+ 13	18 284,40
CMC LO VIS	25 kg	40	111	+ 71	6 549,-
LF 5	25 kg	78	202	+ 124	9 696,-
CAUSTIC SODA	25 kg	109	81	- 28	1 539,-
SODA ASH	50 kg	6	20	+ 14	370,-
SOD.BICARBONATE	50 kg	0	11	+ 11	211,75
MICA C	25 kg	0	3	+ 3	51,30
BENTONITE	50 kg	342	0	-342	-
LIGNOSULPHONATE	25 kg	272	0	-272	-
XC POLYMER	50 lbs	23	0	- 23	-
DRILLING DETERGENT	200 l.	16	0	- 16	-
FREE PIPE	200 l.	0	8	+ 8	6 360,-

COST/DAY US \$ 3 203,75 TOTAL COST FOR INTERVAL US \$ 57 667,45
 COST/Mt. US \$ 57,78 PROG. COST FOR INTERVAL US \$ 69 241,30
 ENGR. COST COST VARIANCE FOR INTERVAL - US \$ 11 573,85

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

MATERIAL CONSUMPTION & COST ANALYSIS

8 1/2" HOLE DRILLED TO 3375 ^{Meters}
~~XXXX~~ CASING SET AT ^{Meters}
Feet

ACTUAL AMOUNT OF HOLE DRILLED 632 ^{Meters}
~~XXXX~~ DAYS ON INTERVAL 13

DRILLING FLUID SYSTEM

SEAWATER/DRISPAC

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T	95	46	- 49	US \$ 6 164,-
BENTONITE	50 kg	235	87	- 148	1 539,90
LIGNOSULPHONATE	25 kg	175	55	- 120	946,-
DRISPAC REG.	50 lbs	65	27	- 38	4 571,10
XC POLYMER	50 lbs	0	8	+ 8	2 656,-
CMC LO VIS	25 kg	99	90	- 9	5 310,-
LF 5	25 kg	0	97	+ 97	4 656,-
KCl	50 kg	0	16	+ 16	286,00
CAUSTIC SODA	25 kg	75	43	- 32	817,-
SODA ASH	50 kg	5	5	0	92,50
DRILLING DETERGENT	200 l.	10	0	- 10	-

COST/DAY US \$ 2 079,92 TOTAL COST FOR INTERVAL US \$ 27 038,90
COST/Mt. US \$ 42,78 PROG. COST FOR INTERVAL US \$ 41 762,50
ENGR. COST COST VARIANCE FOR INTERVAL -US \$ 14 723,60

OPERATOR A/S NORSKE SHELL

WELL NO. 31/2-8

TOTAL CONSUMPTION & COST ANALYSIS

TOTAL DEPTH 3375 Meters
~~XXX~~

TOTAL HOLE DRILLED 3004,50 Meters
~~XXXX~~

TOTAL DAYS 52

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T	492	815	+ 323	109 210,-
BENTONITE	M/T	65	38	- 27	12 464,-
CAUSTIC SODA	25 kg	388	323	- 65	6 137,-
DRISPAC REG.	50 lbs	266	321	+ 55	54 345,30
CMC LO VIS	25 kg	234	357	+ 123	21 063,-
LF 5	25 kg	333	540	+ 207	25 920,-
SODA ASH	50 kg	57	118	+ 61	2 183,-
SOD.BICARBONATE	50 kg	0	17	+ 17	327,25
BENTONITE	50 kg	577	87	- 490	1 539,90
LIGNOSUPHONATE	25 kg	447	55	- 392	946,-
XC POLYMER	50 lbs	23	42	+ 19	13 944,-
DRILLING DETERGENT	200 l.	44	0	- 44	-
LIME	25 kg	6	8	+ 2	40,-
CMC HIVIS	25 kg	0	121	+ 121	7 381,-
KCl (Brine)	bbls	0	990	-	15 304,41
KCl	50 kg	1122	1081	- 41	19 349,90
ANCOPOL	25 kg	100	67	- 33	8 844,-
AL.STEARATE	25 kg	0	1	+ 1	80,-
FREE PIPE	200 l.	0	8	+ 8	6 360,-
MICA C	25 kg	0	3	+ 3	51,30

COST/DAY	US \$ 5 874,81	TOTAL COST FOR INTERVAL	US \$ 305 490,06
COST/Mt	US \$ 10,17	PROG. COST FOR INTERVAL	US \$ 244 749,40
ENGR. COST		COST VARIANCE FOR INTERVAL	+ US \$ 60 740,66

WELL NAME: 31/2-8 AREA: NORTH SEA NORWAY
 OPERATOR: A/S NORSKE SHELL RIG: BORGNY DOLPHIN
 ENGINEERS: ATKINSON/BLANCHARD/WERSLAND

Drilling Fluid & Material Consumption Report

MUD SYSTEM: SPUD MUD/ GEL/ SEAWATER/ KCL/POLYMER

Day No	DATE	ESTIMATED DAILY MUD VOLUMES				BULK MATERIALS			SACK MATERIALS			THINNERS	MATERIALS ADDED TO CONTROL PROPERTIES																							
		LOSSES SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BARITE M/T	BENTONITE M/T	BARITE	BENTONITE	LIGNO	DRISPAQ	REG.		CMC	LOUIS	CMC H VIS	XC POLYMER	TF-5	KCL	SXS	KCl	CAUSTIC	SODA ASH	BICARBON	LIME	FREE PIPE	AT. STEARATE	MICA	CaCl2	FOL							
																														LOSSES SUB SURFACE	LOSSES SURFACE	LOSSES SURFACE	LOSSES SURFACE	CAUSTIC	SODA ASH	BICARBON
1	15.6			1400	16	120														16	8															
2	16.6																																			
3	17.6			1000	12															16	8															
4	18.6		122	550	20																															
5	19.6		91	900																11	5															
6	20.6	*	300	377	19											4				8	8															
7	21.6	*	60	360	30									51	28	77				12																
8	22.6	*	220	170	60	3								8		40				14	2															
9	23.6	*	1190	340	114	5														12	6															
10	24.6		570	180	78	2																														
11	25.6	**	1550	200	1325	76															8	8														
12	26.6			95	49																															
13	27.6																																			
14	28.6		80	1000	73																															
FORWARD																																				
ESTIMATED TOTALS		3890	1920	9760	519	38	120							120	28	121					990	11465	68													15612

REMARKS

* Dump valve

** Disp. by casing

WELL NAME 31/2-8 AREA NORTH SEA NORWAY
 OPERATOR A/S NORSKE SHELL RIG BORGNY DOLPHIN
 ENGINEERS ATKINSON/BLANCHARD/WERSLAND

Drilling Fluid & Material Consumption Report

UD SYSTEM KCL - POLYMER/ SEAWATER/ DRISPAC

DAY NO	DATE	ESTIMATED DAILY MUD VOLUMES		BULK MATERIALS			SACK MATERIALS			MATERIALS ADDED TO CONTROL PROPERTIES																				
		LOSSES SURFACE	LOSSES MUD BUILT	BARITE M/T	BENTONITE M/T	BARITE	BENTONITE	LIGNO	THINNERS	DRISPAC	CMC REG.	CMC	LOUIS	CMC H VIS	KC	POLYMER	LF-5	KCL	SXS	KCL	CAUSTIC	SODA	BICARBON	LIME	FREE PIPE	AT. STEARATE	MICA	CaCl2	ANCO	
15	29.6	142		26																										3
16	30.6		486	10													18	153			9	8							17	
17	1.7	191	380	29													27	200			27	6							6	
18	2.7	614	515	45													4	64	350		19	10							11	
19	3.7	251	320	19													2		130		21	4							13	
20	4.7	215		2																	4								3	
21	5.7	100		10														90			5									
22	6.7	365	300																		2									
23	7.7		400																		28									
24	8.7	13	380	21																	17	10	4							
29	9.7	1365	1000	30																	8	8								
26	10.7	89	100	20																										
27	11.7	20	67																											
28	12.7		55																											
FORWARD		3890	9760	519	38	120															100	990	114	65	6	8		1	56	12
ESTIMATED TOTALS		4268	5437	731	38	120															1065	990	254	113	17	8		1	56	67

REMARKS

WELL NAME: 31/2-8
 AREA: NORTH SEA NORWAY
 OPERATOR: A/S NORSKE SHELL
 RIG: BORGNY DOLPHIN
 ENGINEERS: ATKINSON/BLANCHARD/WERSLAND

Drilling Fluid & Material Consumption Report
 SEAWATER/DRISPAC

JD SYSTEM

DATE	ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS				SACK MATERIALS				MATERIALS ADDED TO CONTROL PROPERTIES																					
	LOSSES SURFACE	LOSSES SUB SURFACE	VOLUME MUD BUILT	BARITE M/T	BENTONITE M/T	BARITE	BENTONITE	LIGNO	THINNERS	DRISPAC	CMC	LOUIS	CMC	H VIS	XC	POLYMER	TF-5	KCL	SXS	KCI	CAUSTIC	SODA	ASH	BICARBON	TIME	FREE PIPE	AT. STEARATE	MICA	C	CaCl2			
1982																																	
9 13.7	85	177							6							9																	
0 14.7	90	154	7													16									8								
1 15.7	80	200	6						7							14					7												
2 16.7	50	137	3						6							9					6												
3 17.7	60	170	4						6							18					6												
4 18.7	125	210	5						6							18					7												
5 19.7	20								1																								
6 20.7									1																								
7 21.7	40								1							7																	
8 22.7	40																																
9 23.7	635																																
0 24.7																																	
1 25.7		89	4						5	18					3	8																	
2 26.7	140	24	11						4	21					1	7																	
FORWARD	4268	5437	13683	731	38				260	267	121	34	352	1065	990	254	113	17	8	1	3	56	67										
ESTIMATED TOTALS	4268	6802	14844	784	38		45		803	306	121	38	458	1065	990	280	116	17	8	1	3	56	67										

WELL NAME 31/2-8 AREA NORTH SEA NORWAY
 OPERATOR A/S NORSKE SHELL RIG. BORGNY DOLPHIN
 ENGINEERS ATKINSON/BLANCHARD/WERSLAND

Milling Fluid & Material Consumption Report
SEAWATER/DRISPAC

WUD SYSTEM

DAY DATE	ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS			SACK MATERIALS			THINNERS			MATERIALS ADDED TO CONTROL PROPERTIES																			
	LOSSES SURFACE	LOSSES SUB SURFACE	VOLUME MUD BUILT	BARITE M/T	BENTONITE M/T	BARITE M/T	BENTONITE M/T	BENTONITE	LIGNO	DRISPAC	REG.	CMC	LOUIS	CMC	H VIS	XC	POLYMER	LF-5	KCL	SXS	KCL	bbbls	CAUSTIC	SODA ASH	BICARBON	LIME	FREE PIPE	AT. STEARATE	MICA	C	CaCl2	
1982																																
43 27.7			206	3						3					4	19	16					6	2									
44 28.7	44		20	2				78	10	2	7					4	4				4											
45 28.7	40		30	10						1	5					4	4				5											
46 30.7	76		30							1						9					3											
47 31.7			27	7						3						19					6											
48 1.8			227							4						27					12											
49 2.8			108	7						2	25										7											
50 3.8	271		2							2	14																					
51 4.8								9																								
52 5.8			56																													
FORWARD	4268	6802	14844	784	38			45		303	306	121	38	458	1065	990	280	116	17	8	8	1	3	56	6							
ESTIMATED TOTALS	4268	7233	15548	815	38		87	55		321	357	121	42	540	1081	990	323	118	17	8	8	1	3	56	6							

REMARKS

ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

WELL NAME 31/2-8 AREA NORWAY, NORTH SEA
 OPERATOR NORSKE SHELL RIG BORGNY DOLPHIN
 ENGINEERS CHRIS ATKINSON

Drilling Mud Properties Record

MUD SYSTEM SPUD MUD/GEL/SEAWATER/ KCL/POLYMER

Day No.	DATE	DEPTH FEET <input type="checkbox"/> METERS <input checked="" type="checkbox"/>	DENSITY					VISCOSITY			FLUID LOSS 30 Min cc's		CAKE 32 nds	H.T.H.P. cc's	PH	Cl-ppm	Filtrate Analysis				RETORT	BENTONITE #/BBL	KCL #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS											
			PPG <input type="checkbox"/>	SG <input type="checkbox"/>	sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq ft	GELS	% SOLIDS	% OIL	% SAND																										
1	15.6		+	1.07	100																																	
2	16.6	479	+	1.07	100																																	
3	17.6	479	+	1.07	100																																	
4	18.6	545		1.06	50																																	
5	19.6	839		1.08	52																																	
6	20.6	575		1.10	45																																	
7	21.6	821		1.09	41																																	
8	22.6	840		1.21	42																																	
9	23.6	840		1.65	45																																	
10	24.6	840		1.85	45																																	
11	25.6	840	M	I	X	I	N	G	KCL/	POLYMER	S	Y	S	T	E	M																						
12	26.6	840	1.26	52	34.5	22	25	2	2	4.5	1	10.0	79	100	0.6	1.75	12																					
13	27.6	840	1.26	52	34.5	22	25	2	2	4.5	1	10.0	79	100	0.6	1.75	12																					
14	28.6	938	1.27	52	35.5	23	25	1	2	4.0	1	10.1	77	80	0.6	1.75	12 1/4																					

REMARKS



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

WELL NAME 31/2-8 AREA NORWAY NORTH SEA
 OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
 ENGINEERS C. BLANCHARD/WERSLAND/ C. ATKINSON

Drilling Mud Properties Record

MUD SYSTEM KCL - POLYMERS/ SEAWATER/DRISPAK

Day No.	DATE	DEPTH FEET <input type="checkbox"/> METERS <input type="checkbox"/>	DENSITY PPG <input type="checkbox"/> SG <input type="checkbox"/>				VISCOSITY				GELS	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	PH	Filtrate Analysis				RETORT			BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS	
			sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq ft.	10	0	% SAND	% OIL						% SOLIDS	Ca + ppm	Cl ppm	PI	T.R.	T.R.	T.R.							
1982																													
15	29.6	1063	1.29	50	33	21	23	4	2	4.2	1	11	70K	400	1.0				13	T.R.	40	38							
16	30.6	1228	1.32	55	46.5	36	21	3	3	4.8	1	10.5	565K	720	1.0				13	1	14	40							
17	1.7	1427	1.32	59	40	31	18	2	4	6.6	1	10.5	570K	480	0.6				13		20	41							
18	2.7	1610	1.36	54	38	36	16	7	7	6.0	1	10	70K	260	0.3				14	T.R.	22	41							
19	3.7	1745	1.36	53	35.5	25	21	2	10	6.1	1	10	71K	240	0.4				15	1	24	38							
20	4.7	1745	1.37	61	37.5	30	15	7	10	5.6	1	10	71K	220	0.4				14	1	23	38							
21	5.7	1745	1.4	54	37	37	31	18	18	6.6	1	10	79K	240	0.3				14	1	24	43							
22	6.7	1745	1.4	46	27.5	22	12	1	3	6.2	1	10	78K	220	0.3				13	0.5	22	42							
23	7.7	1745	1.22	59	39	28	22	2	3	4.0	1	10	49K	480	0.5				12		12.5								
24	8.7	1745	1.18	69	47.5	28	39	4	5	4.2	1	11	26K	240	1.4				8		2								
25	9.7	1750	1.20	60	41	27	28	3	5	4.2	1	11.5	36K	200	0.9				8		2.5								
26	10.7	1842	1.21	48	35	23	24	2	3	4.2	1	11.1	139K	160	1.2				9	1/4	7								
27	11.7	1870	1.21	47	34.5	23	23	2	2	4.2	1	11.0	38K	170	1.1				9	1/2	7.5								
28	12.7	1896	1.21	47	32.5	22	21	2	2	4.0	1	11.2	37.5K	150	1.05				9	1/4	7.5								

REMARKS

WELL NAME 31/2-8 AREA NORWAY NORTH SEA
 OPERATOR NORSKE SHELL RIG _____
 ENGINEERS C. ATKINSON/C. BLANCHARD

Drilling Mud Properties Record
 MUD SYSTEM SEAWATER/DRISPAC

Day No.	DATE	DEPTH FEET <input type="checkbox"/> METERS <input checked="" type="checkbox"/>	VISCOSITY						GELS	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.P. cc's	PH	Cl ppm	Ca ++ ppm	Filtrate Analysis			RETORT			BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
			DENSITY PPG <input type="checkbox"/> SG <input checked="" type="checkbox"/>	sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq ft.	0								10	% SOLIDS	% OIL	P/MF	% SAND							
1982																											
29	13.7	2106	1.22	51	35	24	22	2	3	4.0	1	11.033.5K	150	0.85			9.5	1/4		7							
30	14.7	2173	1.22	50	34	24	20	2	2	4.0	1	11.030K	120	0.70			9.5	1/4		9							
31	15.7	23	1.22	50	33.5	24	19	2	2	4.0	1	10.926K	130	0.65	1		10	1/4		10							
32	16.7	2416	1.23	50	33.5	24	19	2	2	4.0	1	10.825K	120	0.60	1		10	1/4		9							
33	17.7	2571	1.23	51	35	25	20	2	3	3.9	1	10.822.5K	100	0.60	1		10.5	1/4		7.5							
34	18.7	2743	1.24	50	35	26	18	2	3	3.8	1	10.821.5K	100	0.65	1		11	1/4		8							
35	19.7	2743	1.24	50	35	26	18	2	3	3.8	1	10.821.5K	100	0.60	1		11	1/4		8							
36	20.7	2743	1.24	50	35	26	18	2	3	3.8	1	10.821.5K	100	0.60	1		11	1/4		8							
37	21.7	2743	1.24	52	35.5	26	19	2	3	3.8	1	10.821.5K	100	0.55	1		11	1/4		7.5							
38	22.7	2743	1.24	50	35.5	26	19	2	3	3.9	1	10.721K	100	0.50	1		11	1/4		7.5							
39	23.7	2743	1.25	50	35.5	26	19	2	4	4.2	1	10.722K	100	0.5	1		11	T.R.		8.0							
40	24.7	2743	1.24	49	35.5	26	19	2	3	4.2	1	10.822K	100	1.0	1		11	T.R.		8.0							
41	25.7	2761	1.24	53	40	30	20	3	4	4.0	1	11.218K	300	0.9	1		11	T.R.		8.0							
42	26.7	2867	1.24	52	40	30	20	3	4	4.0	1	11.019.0K	220	0.8	1		12	.5		8.5							

REMARKS



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

WELL NAME 31/2-8 AREA NORWAY NORTH SEA
 OPERATOR NORSKE SHELL RIG BORGNY DOLPSHIN
 ENGINEERS C. BLANCHARD / C. ATKINSON

Drilling Mud Properties Record

MUD SYSTEM SEAWATER / DRISPAC / LIGNOSULPHONATE

Day No.	DATE	DEPTH FEET METERS	DENSITY PPG SG	VISCOSITY					FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	PH	Filtrate Analysis			RETORT			POLYMER #/BBL	POTASH #/BBL	BENTONITE #/BBL	% SAND	OPERATION REMARKS			
				A.V. cps	P.V. cps	Y.P. #/100 sq ft.	GELS	CI ppm					Ca. + ppm	% OIL	% SOLIDS	% SAND										
	1982																									
43	27.7	2964	1.24	53	38	27	22	2	3	3.9	1	14	10.9	19K	230	.3	1	12.5	.5	8.5						
44	28.7	3019	1.24	54	30	20	20	3	5	3.8	1	14	10.8	20K	240	.5	1	12.5	.25	9.0						
45	29.7	3060	1.24	55	42.5	30	25	2	4	3.9	1	14	10.9	18K	220	.8	1	12	.25	9.0						
46	30.7	3080	1.24	53	35.5	26	19	2	4	4.0	1	14	10.8	19K	220	.4	1	12	.25	9.5						
47	31.7	3198	1.24	53	37	27	20	2	4	3.9	1	12.5	10.7	19K	160	.8	1	12	.25	9.0						
48	1.8	3317	1.24	52	38.5	28	21	3	8	4.0	1	13	10.9	18K	120	.7	T.R.	13	.5	10.0						
49	2.8	3360	1.24	54	36	27	18	3	5	4.2	1	13	11.0	19K	120	.9	T.R.	12.5	.25	8.0						
50	3.8	3375	1.24	50	26	26	17	3	5	4.0	1	13	10.8	19K	120	.2	T.R.	13	.25	8.0						
51	4.8	3375	1.24	43	31	24	14	2	2	4.5	1	14	10.5	19K	120	.6	T.R.	13	.25	8.0						
52	5.8	3375	1.24	62	35	35	27	4	12	4.4	1	14	10.7	12K	120	.6	T.R.	13.5	T.R.	5.0						
53	6.8																									
54	7.8																									
55	8.8																									
56	9.8																									
REMARKS																										

GRAPHI-CAP

OPERATOR: Norske Shell PAGE NO: 1
 WELL NAME: 31/2-8 SPUD DATE: 16/6-82
 CONTRACTOR: Dolphin Services RIG: Borgny Dolphin

