WELL SUMMARY

Nr.:

A/S NORSKE SHELL
EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

ANCHOR DRILLING FLUIDS AS

WELL SUMMARY

A/S NORSKE SHELL
EXPLORATION & PRODUCTION

WELL NO. 31/2-3

GENERAL SUMMARY

OPERATOR	A/S NORSKE SHELL ECPLORATION & PRODUCTION
WELL NO.	31/2-3
OPERATOR'S REPRESENTATIVES	J. HULME W. ELLIS S. CRAEN H. UNDAHL P. HUSTAD
CONTRACTOR	DOLPHIN SERVICES A/S
RIG	BORGNY DOLPHIN
CONTRACTOR'S REPRESENTATIVES	J. BRODIE J. BUTCHART J. FLANAGAN
ANCHOR ENGINEERS	A. YOUNG C. ATKINSON

WATER DEPTH	334
SEABED to RKB	359
36" HOLE DRILLED TO	450M
30" CASING SET AT	445
26" HOLE DRILLED TO	814M
20" CASING SET AT	803.5M
17½" HOLE DRILLED TO	1 364M
13⅜" CASING SET AT	1 353M
12¼" HOLE DRILLED TO	1 827M
9⅝" CASING SET AT	1 816M
8½" HOLE DRILLED TO	2 601M
7" LINER SET AT	
6" HOLE DRILLED TO	

ANCHOR DRILLING FLUIDS AS
OSLO – STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 27.03.80

Engineer A. Young arrived at rig. Mixed 1500 ± bbls hi-vis spud mud. Bentonite had been pre-hydrated prior to arrival. After dilution with seawater, 1 ppb approx. Lime was added to increase viscosity to 120+ sec.

Checked chemical inventory.
" shaker screen stock on board.
" VSM 200 screen stock on board.
and ordered 6 x 200, 6 x 150 mesh.
Rig setting template + preparing to spud.

DATE 28.03.80

Spudded well at 1500 hrs.
Drilled ahead with 26" bit and 36" hole opener to 429 M.
Pumped 20 bbl.visc. mud pills to assist hole cleaning as required.

Time: Rig up - 3½
Drill - 7½
Trips - 11
Survey - ½
Log - 1½

DATE 29.03.80

Drill from 420 M - 450 M.
Pumped 20 bbls hi-vis mud and displace with 2000 strokes. Run survey - 1/4°.
Spot 100 bbls on bottom. Wiper trip to T.G.B.
- no drag, no fill.
- Fill hole with 600 bbls mud + P.O.H. to run casing.
- Mixed 130 bbls $CaCl_2$ mix water for cement job. Run 30" casing - shoe at 445 M.

Cement casing.
Mixing new mud volume (3 pits) for next section (1050 bbls±).

Time: Drill - 3½
Circ+cond. - 1½
Trip - 7½
Survey - ½
Run + cmt casing - 12

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DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 30.03.80

Stab into well head + move rig 40'.
R.I.H. + tag cement at 435 M. Drill cement 435 to shoe at 445 M. Drill out to 454 M + P.O.H. Run 21" riser.
Pick up 17½" bit and BHA to drill pilot hole.

Dressed shaker screens $\frac{B40}{40}$ $\frac{B40}{40}$ $\frac{B40}{100}$

Mixed further 350 bbls spud mud.

Time: Drill - ½
Circ+cond. - ½
Nipple up BOPs - 8½
Trip - 12½
WOC - 1½
Drill cmt. etc.- ½

DATE 31.03.80

Having problems running 21" riser + latching to guide base.
Pulled riser and re-fabricated guide frame.
Started mixing wt. to pit no. 4 for required kill mud wt. of 1.32 SG.
Kill mud pit no. 4 ready.

Time: Trips - 14½
Modify G.B. - 9½

DATE 01.04.80

Wait on weather to run riser.
Running riser.

Time: Nipple up BOP - 9½
W.O.W. - 8½
Work on 30 "
pin ca. - 6

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DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 02.04.80

Drilled 17½" pilot hole from 454 to 727M - pumping 20± bbl pills every second connection. Hole condition very good. Drilling rate 1-3 min/metre.
Dressed shaker screens TO $\frac{20}{B40}$ all round. Shakers not capable of handling 25+ bbl/min.
Weighted up kill mud + further 150 bbls to 1.40 s.g. for spotting in hole after wiper trip pre-logging.

Time : Drill - 16½
Trip - 2
Survey - 1½
Log - ½
Nipple up BOP - 2½
Test BOP - 1

DATE 03.04.80

Drilled 17 1/2" hole to 814M - encountered firm shale last 100± - shakers performing better.
Circ. bottoms up + circ. out 100 bbl hi-vis mud. Check trip to shoe - hole condition very good - one spot only, stand off bottom w/10000 o/pull.
R.I.H. + circ. 25 bbl hi-vis mud. Spot 450 bbls 1.40 s.g. in open hole + P.O.H. to log w/Schlumberger. Mixing mud for 26" hole - pits 1+2 - 7½" hi-vis spud mud. No.3 + no. 4 - 1.40 s.g. mud for spotting before casing.

Time : Drill - 7
Cond/circ. - 3½
Trip - 2½
Log - 11

DATE 04.04.80

Pull marine riser. Move rig to stab into well head with 17½" bit and 26" hole opener.
Drilled 26" hole to 614M - up to 60M per hour - slugging 25 bbls pills every 2 connections. Hole condition good. Weighted up pit no. 2 to 1.40 s.g. to give 3 pits mud to displace 26" o.h. before casing.

Time : Cond/circ. mud - ½
Trip - 6
Survey - ½
W/L Logs - 1
Pull riser - 7
Position rig - 2½
Open hole - 6½

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DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 05.04.80

Drilled (hole-opener) 26" to 814M - penetration rate varied 0.75-3 min/m. Hole condition very good on connections.
Pumped 20-25 bbl visc. mud pills every 2 connections. (Mixed further 150 bbls by diluting + mixing lime). Pumped 100+ bbls around at T.D. + wiper trip to shoe - hole condition excellent.
R.I.H. to bottom + tag 6M fill on bottom. Pumped 25 bbl visc. pill + washed to bottom - circulated out.
Displaced hole with 1150+ bbls 1.40 s.g. mud.
P.O.H. to run 20" casing. Run 20" casing.
Mix 170 bbls $CaCl_2$ mix water for cement job.
Dump and clean out all pits + start mixing Gyp/Ligno system for 17½" hole sec.
Mixing Gyp/Ligno with 12 ppb (sack) bentonite to ensure low MBT as per operator requirements.

Time : Reaming - 9½ Trip - 3½ Casing cmt. - 6
Cond/circ. - 3½ Survey - 1½

DATE 06.04.80

Ran 20" casing - shoe set at 803.5M. Cemented 20" casing.
Started mixing full volume Gyp/Lignos system to required specifications - repair work to cameron B.O.P. stack has reduced help.
Still mixing at 2400 hrs. Dressed shaker screens to 20/B40, B40/40, 20/B40 Thule VSM 200 - 150x2.

Time : Trips - 6
Casing/Cement - 18

DATE 07.04.80

Mixing Gyp/Ligno system. Stack being repaired + tested + run to seabed.

Time : Cut + stup line - ½
Nipple up BOPs - 10
Test BOPs - 2
Work on BOPs - 11½

ANCHOR DRILLING FLUIDS AS
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DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 08.04.80

Mixed extra gyp/lignosulfonate/caustic in all pits to obtain 7.5 ppb. excess gyp and other properties as required.

Time: Run BOPs and nipple up - 6½
W.O.W. - 16½
Position - 2

DATE 09.04.80

Test BOPs. Make up new B.H.A. Pick up 'E' grade pipe. Test kelly cock valves. Ream and wash cement. Tag top of cement at 748 M. Drill out cement/shoe. Clean out hole to 815 M. Displace hole with mud. No. 2 pump down - work on pump. Carry out leak-off test at 819 M. Drill ahead 17½" hole to 828 M.
Start making up both pits 2 and 4 with reserve mud after displacing hole with all available mud.

Time: Drill - 2
Ream - 1
Circ.and condiction - 2½
Trip - 8½
Drill cement, shoe - 4½

DATE 10.04.80

Drill 17½" hole from 828 M - 834 M. P.O.O.H. to shoe - take leak-off test. Equiv. mud wt. 11.9 ppg. (1.46 SG). R.I.H. to 834 M - repair depth line. Drill 834 M - 899 M. Circ. 15 mins. and survey (1/4°). P.O.O.H. to 20" at 804 M. R.I.H. to 899 M. Wash down 2 M fill. Drill 899 M - 928 M. P.O.O.H. to change nozzles in bit due to no. 1 pump down with cracked fwd. end. R.I.H. to shoe. Finish repairs to pump. R.I.H. No fill. Drill 928 M - 956 M.
Finish making up new mud in pits no. 2 and no. 4 (total 710 bbls). Add 2 ppb. drilling detergent to active system to reduce balling possibilities. Losing vast amount of mud over shakers due to stickly clay. Make up pit no. 2 again (383 bbls). Make up hi-vis pills to clean hole after survey and wiper trip. Lost mud when emptying gumbo box and shaker box seven times. Start to mix up pit no. 3 - dilution mix.
Time: Drill-12/Trip-6½/Circ.and cond.-1/Survey-½/Leak off test-1/
Repairs-3

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DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG. C. ATKINSON

DATE 11.04.80

Drill 17½" hole from 956M-994M. Circ. and drop survey. P.O.O.H. to shoe. R.I.H. tight hole. slight swabbing. Wash 991M-994M (3M of fill). Drill 994M-1006M. (No. 1 pump down) Drill 1006M-1087M. Clean out gumbo box periodically as required.
Pump 30 bbls. hi-vis pills to clean hole. Survey at 1083M (1°). Wiper trip - no fill. Pump 40 bbls. hi-vis pills and circ. Drill 1087M-1163M
Losing mud continuously due to blocked gumbo box. Frequently digging out clay.

Time : Drill - 17
Circ. - 2
Trip - 3
Repairs - 1
Survey - 1

DATE 12.04.80

Drill 17½" hole from 1163M-1182M. Circ. B.V. and work string. Survey at 1182M (1°). Wiper trip - no fill. Drill ahead 1182-1276M. Pump 30 bbls. hi-vis pill. Circ. Survey at 1272M (1 1/4°). P.O.H. to shoe. Circ. 15 mins. R.I.H.- no fill. Drill ahead 1276-1364M. Pump 40 bbls. hi-vis pill. Circ. and cond. mud prior to wiper trip.
Continue dilution mix batch treatment of active system to try and control solids and M.B.T. Dump settling pits regulary due to high build up of fine solids. Fine solids appear to be getting thro shaker. Gumbo box blocking off. Clean as required. Change of formation no gumbo problems at present 1240M.
Mix D.D. to prevention of bit balling. Also C.M.C. (lo-vis) for fluid loss. Adding dilution mix.

Time : Drill - 16 Circ. and cond. - 4 Trip - 4

DATE 13.04.80

Circ. and cond. mud 1/2 hr. Survey (3/4°). P.O.H. to shoe. Work thro tight spots at 1280M. 1198M-1086M-994M. R.I.H. to 1360M. Wash down 4M fill to 1364M. Circ. and work string. Flow check + P.O.H. Rig up Schlumberger. Run in tool - stood up at 833M. P.O.H. w/tool. Rig down Schlumberger. Wash and ream from 830-845M. Circ. at shoe.
Repair surface leak on blue pod reel. Run to bottom - no fill.
Circ. + cond. mud (1.30 s.g.) P.O.O.H. to shoe (no drag). R.I.H. to bottom (no fill). Pump 40 bbls. hi-vis pill. Circ.
Dilution treatment while circ. for solids reduction. Thule unit services again (also ran on active pit during trips). Maintain pH (keep little over 10.5 for further Ca^{++} reductions). Made up 370 bbls. (pit no. 3) dilution mix.

Time : Circ. and cond. - 9½
Ream - ½
Trip - 8½
Logging - 3½

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WELL NAME 31/2-3

OPERATOR SHELL ..

ENGINEERS A. YOUNG, C. ATKINSON

DATE 14.04.80

Circ. and work string. Slug pipe and P.O.O.H. Prepare to run Schlumberger (install insert packer). Run tool in hole - stood up at 977M. P.O.O.H. w/tool. Break out and lay down 17½" stab and R.I.H. to bottom (1364) - no fill.
Pump hi-vis plug and circ. (2x50 bbls). Slug pipe and P.O.O.H. to 660M. Circ. inside 20" casing shoe. Continue P.O.O.H. Rig up and run Schlumberger ISF/Sonic/GR then FDC/CNL.
Made up several hi-vis pills for cleaning hole after Schlumberger stood up - no excessive returns of cavings over shakers. Change out broken 150 Thule screens (right).
Shaker screen inventory - 12x20's; 0x30's (6 on order); 11x40's (6 on order) 10x60's; 9x80's

Time : Circ. and cond. - 4½ Logging - 12
Trip - 7½

DATE 15.04.80

Run Schlumberger sidewall cores (2 barrels). Rig down. Pick up + make up 13 3/8" cement plug + 13 3/8" X/O running tool. Break and lay down same. Repair sheared bolts on travel blook hook. Dismantle lower trolley on travelling block (twisted arms). Make up bit and stab and R.I.H. Break circ. at T.D. - no fill. Circ. B.V. Slug pipe and P.O.O.H. Pull wear bushings.
Dump and clean settling pits. Dump ½ of pit no. 4 and dilute back to 1.05 (approx.) s.g. with drill water. Treat for required properties . This gives ± 250 bbls. required for pumping down to cement.

Time : Logging - 8½
Circ. and cond. - 1½
Trip - 9
Repairs - 5

DATE 16.04.80

Make up cement plug calipier and running tool - stand in derrick. Rig up to run 13 3/8" casing. Rig up and fit low trolley on travelling block. Run casing . Land same - shoe at 1353M. Circ. casing to clean hole - o.k. Pump 250 bbls of 1.05 s.g. mud prior to cmt. Cement casing. Back out landing string and circ. around wellhead - no cement returns. P.O.O.H. with casing running tool.
Redesign set up for settling/solids control pits - 1st pit as settling alone. 2nd as desanding pit - 3rd/4th for Thule Unit/degasser. Change suctions so that solids build up will not block the lines. (Raise levels of suctions). Now degasser pump to be used for degasser alone and desilter pump for Thule only.

Time : Circ./cond. - 3
Trip - 3
Repairs - 2½
Run + cement casing - 15½

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WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 17.04.80

P.O.O.H. and lay down running tool. Set seal assembly (pack off) test to 200 psi. (15 mins). Run 13 3/8" test plug. Test BOPs run and set wear bushings.
Break out and lay down 17 ½" B.H.A. Make up new B.H.A. and R.I.H. Run BOP drill and hang off proceedure. Break circ. Tag cement at 1 326M - drill out float to 1 350M (very slow.)
Treat for reduced fluid loss and maintain excess gyp level. Wt. up pit no. 4 for kill mud at 1.40 s.g. Dress left hand shaker to 20/60 during drilling of cement - handling all volume o.k.

Time: Trip - 15 ½
Test BOPs - 2
Drill - 6
BOP drill - ½

DATE 18.04.80

Drill out cement and show and clean out hole to 1 364M. Drill 12 1/4" hole from 1 364M-1 372. Circ. B.V. Run leak off. Test at 1 353M (break down equiv. 1.45 s.g.). Drill ahead 1 372M-1 412M. Drill break at 1 384M - flow check - o.k. Circ. out 8 % gas cut mud. Slug pipe and P.O.O.H. Make up core barrel assembly and R.I.H. Circ. B.V. Core no. 1 - 1 412M-1 421M. P.O.O.H. Break down core barrel - 4.5M recovery (50 %). Make up 18M core barrel and R.I.H.
Diluting system continuously during drilling and coring to reduce mud wt. slowly (require 1.27/1.28 s.g. eventually). Finish dressing of all shakers to 20/60.

Time: Drill - 3 ½
Circ./cond. - 4
Trip - 13
Core - 1 ½
Drill cement etc. - 1
Leak-off test - 1

DATE 19.04.80

R.I.H. with core barrel to 719M - continue R.I.H. - hang off string - core head at 1 075M. W.O.W. (winds to 65 knots). Heave 3-4 ½M. Displace riser to seawater. Still latched to well head. Dump and clean settling pits.

Time: Trip - 3 ½
W.O.W. - 20 ½

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WELL NAME 31/2-2

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 20.04.80

Continue W.O.W. Heave 4 M. Wind 45 knots. Riser still latched. Displace riser to mud. R.I.H. and retrieve hang off tool. P.O.O.H. and service hang off tool. Start R.I.H. with core barrel.

Time: W.O.W. - 20½
Circ./cond. - 1
Trip - 2½

DATE 21.04.80

R.I.H. to 1412 M. Break circ. and wash out rat hole to bottom 1421 M. - no fill. Circ. bottoms up - trip gas 10 % - space out for coring. Start core no. 2 - 1421 M - 1435 M - barrel jammed. P.O.O.H. - recovery 100% (sand). R.I.H. for core no. 3 - cut 1425 - 1443 M. P.O.O.H. with barrel. Recovery - 97% (sand and mica). R.I.H. for core no. 4 - break circ Treat system for reducing fluid loss.

Time: Coring - 5
Trip - 16½
Circ./cond. - 2½

DATE 22.04.80

Cut core no. 4. 1443 - 1450 M. Circ. out trip gas (10%) slug pipe and P.O.O.H. Recover core no. 4 98% (sand/sh/lst). Make up core barrel and R.I.H. to 430 M. Slip and cut drill line. Continue R.I.H. Cut core from 1450 - 1462 M. Slug pipe P.O.H. and recover core (97%). Dress core bbl. + R.I.H. Coring from 1462 - no go. P.O.O.H. Recover 0.4 M Screens 20/60, 40/60, 20/60

Time: Coring - 6½
Cond./circ. - 2½
Trips - 14
Cut line - 1

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ENGINEERS A. YOUNG, C. ATKINSON

DATE 23.04.80

Cont. making up core bbl. - R.I.H.
Break circ. + circ. 15 min. - tag bottom - no fill. Space out kelly, drop ball - core no. 7 from 1462 M - no progress. F/C - neg. Slug pipe + P.O.O.H. Make up new BHA + R.I.H. w/12 1/4" bit. Ream from 1412 M - 1465 M. Drill 12 1/4" hole to 1465 M. P.O.O.H. + pick up core bbl. R.I.H. to cut core no. 8. Treating system w/CMC, caustic + dilution mix to maintain properties + mud wt.

Time: Ream - 2
Core - 5
Cond.+ circ. - 2
Trip - 14½
Survey - ½

DATE 24.04.80

Cut core no. 8 from 1469 M - 1473 M. Flow check neg. P.O.O.H. Recover core + make up 60' core bbl.R.I.H. Tag bottom at 1473 - no fill. Cut core no. 9 from 1473 - 1485 M. Flow check neg. - P.O.O.H. Blow out drill - cont. P.O.O.H. Recover core. Treated system to increase pf./reduce Y.P. + vis. Dressed screens to B40/60, 40/60, B40/60.

Time: Core - 4
Trip - 16
Repairs - 8
Lub. rig - ½
Blow out drill - ½

DATE 25.04.80

Service core bbl. - change out bit. R.I.H. and tag bottom at 1485 M - no fill. Circ. 15 mins. - space out kelly + drop ball core no. 10 at 1485 M - no progress.
Flow check neg. - slug pipe + P.O.O.H. Service core bbl. R.I.H. Cut core no. 10 at 1485 - 1496. R M (100% recovery). P.O.O.H. Recover core. R.I.H. to cut core no. 11 from 1496.5 M. 2400; - 1501 M. Treated system to maintain YP only. Change out 1 broken Thule screen - 150 mesh.

Time: Coring - 8
Trips - 15½
Lub. rig - ½

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WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 26.04.80

Instructed to allow mud wt. to reduce naturally to 1.27 SG. Cut core no. 11 to 1515 M. Treat system with CMC lo-vis to maintain YP at 15^{+}.
Flow check negative - P.O.O.H. Recover core + stand core bbl. in derrick. B.O.P. test. Make up core barrel + R.I.H. with same to cut core no. 12.

Time: Coring - 8½
Trips - 13
Test BOP - 2½

DATE 27.04.80

Instructed (p.m.) to allow mud wt. incr. back to 1.28.
Dumped settling pits 1+2 x 3 (not d/gasser pit) 100 bbls.
- dumped pit no. 3 and mix bentonite pre-mix for addition to system - (170 bbls.) maintain Y.P. with less use of CMC hi-vis.
Drilled/cored - no. 2 to 1533M. P.O.O.H. - recover core. R.I.H. + cut core no. 13 to 1551M - full barrel. P.O.O.H.

Time: Coring - 16
Trips - 8

DATE 28.04.80

Cont. P.O.O.H. Recover core - service core bbl. (44% recovery). R.I.H. to 1548 + ream 3 M to bottom. Cut core no. 14 from 1551 - 1565 M. Break core - work pipe due to 1 hr strike by Norwegian hands. Attempt to core - barrel jammed. Flow check neg.- P.O.O.H. Recover core. Service core bbl. R.I.H. - ream 2 M to bottom. Cut core from 1565 - 1567 M - no progress. Flow check negative - slug pipe + P.O.O.H.

Time: Ream - ½
Core - 10½
Trip - 12
Shut down - 1

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OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 29.04.80

Cont. P.O.O.H. Retrieve core no. 15. Change out bit. R.I.H. - tag bottom at 1567 - no fill.
Core no. 16 - 1567-1575M. Flow check neg. - slug pipe + P.O.O.H.
Recover core (100%) - service core bbl. R.I.H. - pick up 6½" D.C.
Core no. 17 from 1584-1592M. Treating system slowly with pre-hydrated bentonite to maintain CEC.

Time : Coring -10
Trips - 13
Shut down - 1

DATE 30.04.80

Cont. cut core no. 17 to 1601.5M. Flow check neg. - slug pipe + P.O.O.H. Recover core + service core barrel.
R.I.H. to cut core no. 18. Cut core no. 18 - 1601.5-1619M. Flow check neg. - slug pipe + P.O.O.H.

Time : Coring - 15
Trip - 9

DATE 01.05.80

Cont. P.O.O.H. Recover core no. 18 (100%). Service core bbl. - change bit. R.I.H. Cut core no. 19 1619-1624M - barrel jammered - P.O.O.H. Recover core no. 19 - 100% - service core bbl. R.I.H. - core 1624-1628M (core no. 29) - very slow progress. P.O.O.H. - service core barrel.

Time : Coring - 8
Trips - 15
Cut/slip line - 1

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OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 02.05.80

R.I.H. - tag bottom at 1628M - no fill.
Cut core no. 21 - 1628-1645.5M (full barrel).
P.O.O.H. - recover core + service core barrel. Pick up bit (12 1/4") and new B.H.A. R.I.H. + ream 8 15/32" hole to 12 1/4" - to 1600M.
Transferred 75 bbls. from pit no. 2 to no. 3 to make enough 1.28 s.g. mud to complete 12 1/4" hole section.
Treated system to maintain Y.P. and alkalinity. Changed out 150 mesh Thule Screen. Dressed no. 3 to 20/B40.

Time : Ream - 7½
Core - 5½
Trip - 11

DATE 03.05.80

Ream 1600-1645M. Survey - flow check o.k.
P.O.O.H. to shoe - retrieve survey. R.I.H. - drill to 1676M - survey - ret. at shoe. R.I.H. - drill to 1762M - survey - hole tight (P.O.O.H. to shoe) 1762-1677M. 25-50 overpull. R.I.H. to 1762M.
Drill ahead to 1791M. Running desilter + mud cleaner to control mud wt. at 1.28 s.g. (also water addition).

Time : Drill - 15
Ream - 2
Cond./circ. - 1½
Trip - 5
Survey - ½

DATE 04.05.80

Drill 12 1/4" hole 1791-1823M - bit quit. P.O.O.H. to shoe - stop to replace monkey board in derrick. One spot - 30-35,000 overpull (bit ½" underguage - stabilizer caused drag).
Repair monkey board. Circ. in shoe 30 min. R.I.H. to bottom - 1½M fill.
Circulate and condition mud - pump 40 bbl. hi-vis pill to surface - hole very clean. Pump slug + P.O.O.H. to log w/Schlumberger. Treated mud only to maintain wt. No overpull on way out of hole. Started dumping settling pits, ditches, shaker box - clean + service Thule Unit - wash down degasser - clean screens etc.

Time : Drill - 7
Cond./circ. - 3
Trip - 5½
Repair rig - 1½
Logging - 7

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 05.05.80

Logging w/Schlumberger. Make up 12 1/4" bit + junk basket (inserts from last bit still in hole - logs show hole in good condition). R.I.H. - ream from 1791-1824M. Drill 1824-1827M. Pump 50 bbls. hi-vis mud + circulate bottoms up - hole very clean - work junk basket. P.O.O.H. Conditioned mud w/lignosulfonate + caustic. Diluted mud in pit no. 2 to 1.28 s.g. as reserve.

Time : Logging - 17½
Trip - 4
Reaming - 1
Drilling - ½
Circ./cond. - 1 (junk basket)

DATE 06.05.80

Cont. P.O.O.H. Run no. 1 RFT recover sample. Run no. 2 RFT misrun. Run no. 3 RFT. Prepare to run no. 4 RFT.

Time : Trip - 1½
Logging - 22½

DATE 07.05.80

Run RFT no. 4 - recover sample. Run RFT no. 5. Rig down Schlumberger. R.I.H. wash down - 6M fill. Circulated hole.

Time : Logging - 17
Trip - 3½
Circ. - 3½

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 08.05.80

P.O.O.H. - rig up Schlumberger. Prepare + run RFT no. 6 - recover sample. Run RFT no. 7 - recover sample - run RFT no. 8, 9 and 10.
Maintain vis. and reduce F.L. in pits no. 1 + 2 with CMC hi-vis.
Company man "concerned" to have F.L. below 4 cc.

Time : Logging - 21½
Trip - 2½

DATE 09.05.80

Finish RFT no. 10 - recover sample. Prepare and run CST's no. 1 (30 samples) and no. 2 (28 samples). Rig down Schlumberger. Make up 9 5/8" casing hanger and stand in derrick. R.I.H. with 12 1/4" bit - wash down. 7M - fill (1819-1826M). Circ. hole clean. (5% trip gas) - work string. Flow check, pump slug and P.O.O.H. Rig up and run 9 5/8" casing.

Time : Trip - 7½
Logging - 9
Rig to run + run casing - 7½

DATE 10.05.80

Run 9 5/8" casing and land same with shoe at 1816M. Circ. casing 1½ hours. Pump 125 bbls. of 1.10 s.g. mud prior to cementing. Displace cement with 345 bbls. of 1.28 s.g. mud. (Collect as much mud as possible from cement job) pressure test casing to 4000 psi for 15 mins. Pull out with landing string (circ. to clean hanger) W.O.C. Repair lower trolly guide frame on compensator. Break out and lay down 8" monel D.C., 8" hars, and 12 1/4" stabs. Make up 9 5/8" seal assembly - R.I.H. and seat assembly.

Time : Run and cmt. casing - 11½
Repairs - 8½
Trip - 1
Make up seal assembly - 3

ANCHOR DRILLING FLUIDS AS
OSLO – STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 11.05.80

Attempt to test seal assembly - no success - P.O.O.H. Check running tool - o.k. R.I.H. - set assembly test BOPs. R.I.H. with 9 5/8" wear bushing and set same. Pick up 8 ½" bit and 6 ½" D.C. and R.I.H. Tag cement at 1 784.5M. Circ. and cond. mud to 1.20 s.g. Drill cement float collar and shoe. Clean out rat hole 1 815M- 1 827M (cond mud to 1.18 s.g. as drilling ahead). Drill 8 ½" hole 1 827M-1 832M. Circ. b.u. - survey. Slug pipe and P.O.O.H. Start make up RTTS packer. Treated system for properties as per spec., while diluting back to 1.18 s.g. Also adding bicarb. for cement contamination. Shaker screens as per 12 1/4" section - slight losses over shaker. Drill with slightly lower strokes.

Time:

Drill	- 4	Trip	- ½	Test BOPs	- 5
Circ./cond.	- 2 ½	Survey	- 11 ½	Make up RTTS	- ½

DATE 12.05.80

R.I.H. with RTTS packer. Make up circ. head. Pump 10 bbls. - circ. o.k. Set RTTS - leak off test. Equiv: Breakdown at 1.66 s.g. P.O.O.H. - lay down "G" pipe - lay down RTTS. Pick up new B.H.A. and R.I.H. Pick up "E" pipe - break circ. Drill 8 ½" hole from 1 920M - nor fill. Drill ahead to 1 966M. Treat system to maintain vis. and wt. at 1.18 s.g. (diluting). Add prehydrated bentonite for MBT level maintenance.

Time:

Drill	- 11
Trip	- 10 ½
Make up and lay down RTTS	- 1
Leak off test	- ½
Survey	- ½
Circ./cond.	- ½

DATE 13.05.80

Drill 8 ½" hole from 1 966M-2 015M. Circ. b.u. Drop survey (2°). P.O.O.H. - tight from 1 977M (10,000 overpull). P.O.O.H. to shoe at 1 816M. Circ. at shoe. R.I.H. to bottom - no fill. Drill 8 ½" hole from 2 015M-2 059M - flow check - o.k. P.O.O.H. for bit change. R.I.H. to shoe. Slip and cut drill line.

Time:

Drill	- 11 ½
Circ./cond.	- 1 ½
Trip	- 9 ½
Cut and slip line	- 1
Survey	- ½

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE	
14.05.80	Continue R.I.H. - run to T.D. No fill. Drill 8 ½" hole from 2 059M-2 096M. Flow check at drill break-2 092M. Drill ahead to 2 116M. Flow check. Circ. b.u. Survey. Slug pipe and P.O.O.H. Service core bbl. and R.I.H. to bottom (no fill). Circ. then core 18M. P.O.O.H. and retrieve core (sand 100 %). Change out broken 150 screen (R.H.S.) on Thule Unit. Time: Trip - 11 Circ. - 4 Drill - 5 ½ Coring - 3 ½

DATE	
15.05.80	Rack core barrel. R.I.H. vith 8 ½" bit. Ream 2 116M-2 148M. Survey (1 3/4°). Drill ahead to 2 293M. Ream and flow check every connection. Small water stream to maintain wt. at 1.20 s.g. Treat for required properties.

DATE	
16.05.80	Drill 8 ½" hole from 2 293M-2 357M. Flow check - slug pipe. P.O.O.H. Work tight hole (2217-2048M) max 150,000 lbs. overpull. (Possible stabilisers?) Remainder of hole in good shape. Make up new bit and R.I.H. Pick up 30 joints of "E" D.P. Drill 8 ½" hole from 2357-2367M. Circ. Drill ahead to 2375M. Time: Drill - 13 ½ Trip - 9 ½ Survey - 1

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 17.05.80

Drill hole (8 1/2") from 2375-2472M. Circ. - survey (1½°). Drill ahead to 2484M. Circ. and work string. (Electrical fault at rotary). Slug pipe and P.O.O.H. to 9 5/8" casing shoe. Work string through tight spot (2472-2317M). Shut down while repair rotary blower motor. R.I.H. to bottom. No fill. Break circ. and drill ahead to 2485M. Small water stream to keep wt. at 1.20 s.g. maximum.

Time : Drill -16
Circ. - ½
Trip - 3
Repairs - 3½
Survey - 1

DATE 18.05.80

Drill 8 1/2" hole from 2485M to 2518M. Circ. and work pipe while repair electrical fault on retory. Drill ahead to 2600M. Treat for max. 1.20 s.g. Wt and fluid loss control. Mud cleaner shut down while checking out desander. Replace faulty valve to desander.

Time : Drill - 23
Circ. - 1

DATE 19.05.80

Drill to 2601M T.D. Circ. b.u. and work pipe. Drop survey (1 1/4°) slug pipe and P.O.O.H. to 9 5/8" casing shoe at 1816M. Work through tight spot 2474-2432M. (Overpull 80,000 lbs). Recover survey. R.I.H. Break circulation and wash down 12M to T.D. 2589-2601M (no fill). Circ. b.u. and work string. Slug pipe and P.O.O.H. No drag off bottom - no tight hole. Rig up Schlumberger E-logs etc.

Time : Circ./cond. - 3½
Trip - 6
Survey - ½
Logging - 14

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE 20.05.80

Logging. Rig down Schlumberger. Make up 3 ½" tubing stinger and start in hole 237M of tubing - remainder 5" D.P.

Time: Trip - 2
Logging - 22

DATE 21.05.80

R.I.H. to 2 595M (open ended). Circ. and cond. (b.u.). Test surface cement lines to 1 000 psi. o.k.
Set cement plugs no. 1 - 2 595 - 2 395M
2 - 2 365 - 2 165M
3 - 2 130 - 1 930M
4 - 1 900 - 1 700M
P.O.O.H. with cementing string. Make up 8 ½" bit + 9 5/8" casing scraper and R.I.H. Failed to get through wellhead. P.O.O.H. Wear bushings. Jarred on scraper - remove same. Make up 8 ½" bit and R.I.H. P.O.O.H. and make up wear bushing running tool.

Time. Circ./cond. - 1 ½
Trip - 15 ½
Cmt. - 7

DATE 22.05.80

Attempt to make up wear bushing . no go. P.O.O.H. with BHA while repair with bushing. R.I.H. set w/bushing. R.I.H. w/8 ½" bit - tag top of cement at 1 714M - polish cement 1 714-1 720M. Set 30,000 /lbs on cement plug. Circ. b.u. and slug pipe.
Set packer at 1 660 - test 5 min. at 2 600 psi - o.k. Slug pipe + P.O.O.H. R.I.H. + retrieve wear bushing. Displace riser to sea-water. Pick up riser handling tool.
Time: Trip - 16 ½
Circ. - 2
Cut drl. line - 1
P.T. csg. - 1
Pull BOP + riser - 3 ½

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 31/2-3

OPERATOR SHELL

ENGINEERS A. YOUNG, C. ATKINSON

DATE	
23.05.80	Retrieved riser + stack. Attempting to change out rams. Cleaned out settling pits, header box, ditches, slug pit, trip tank. Flushed through all lines + mixing pumps to clean. Dressing shakers to 60/80 x 3, Thule to 2 x 200. Weighted up 1408 bbls. in pits no. 1-4 to 1.28 s.g. as kill mud.

DATE	

DATE	

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

36" OPEN HOLE (30" CONDUCTOR CASING SET AT 445)

Prior to spudding of the well, 1 500 bbls. high viscosity (100^{+} sec M/F viscosity) were mixed in the mud pits using 35 ppb pre-hydrated bentonite and approximately 1.0 ppb lime.

Chemical inventory was checked, as were available stocks of shale shaker and mud cleaner screens.

The well was spudded at 1 500 hrs, March 28th, 1980 and drilling commenced with 26" bit and 36" hole opener using seawater and 20 bbl hi-vis pills to assist hole cleaning as required.

Hole was drilled to 450M, 100 bbls mud were spotted on bottom and wiper trip made to T.G.B. (no drag or fill).

The hole was displaced with 600 bbls. mud prior to setting 30" conductor casing.

Casing was run and cemented with shoe at 445M.

1 000 bbls. reserve mud were mixed for use in next section.

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

26" OPEN HOLE/17 ½" PILOT HOLE (20" casing set at 803.5M)

The cement was tagged at 435M and drilled out to 454M. The 21" riser was run after modification of pin connector guide frame. One pit (350± bbls.) of mud at 1.32 s.g. was mixed as kill mud. Shale shaker screens were dressed to B40/40, B40/40, B40/100.

The 17 ½" pilot hole was drilled from 454M to 814M using sea water and hi-vis pills every second connection. Drilling rate during this section was in 1-3 min/metre range. Shale shaker solids removal proved to be very inefficient at the circulating rate being utilized (25+ bbl/min.) and it was necessary to re-dress screens to 20/B40 with varying effectiveness. The shale shaker performance improved considerably during the last 100± M of this section when a firm shale section had been encountered. 100 bbls. hi-vis mud were circulated out and a check trip made to the 30" casing shoe - hole condition was good with one stand from bottom requiring 10,000 lbs overpull.

The bit was run back to bottom and 25 bbls. hi-vis mud circulated out to clean hole prior to logging. 450 bbls. mud at 1.40 s.g. were spotted in hole before P.O.H. to run logs. 1 500 bbls. hi-vis spud mud were mixed for use in 26" open hole section.

Logging was completed riser removed and hole re-entered with 17 ½ bit and 26" hole opener. The 26" hole was drilled with R.O.P. 1.0 - 3.0+ min/M with hi-vis pills being pumped on every second connection. 1 500± bbls. 1.40 s.g. mud were prepared for spotting in open hole.

The 26" hole was drilled to 814M, with hole condition proving to be very good on connections. 100 bbls. hi-vis mud were circulated out and wiper trip made to shoe - hole condition good.

On R.I.H. to bottom 6M fill were encountered, 25 bbl. hi-vis pills was pumped and washed to bottom prior to circulating hole clean.

Hole displaced with 1 150+- bbls. mud at 1.40 s.g. prior to P.O.H. to run 20" casing.

Casing was set and cemented at 803.5M.

All pits were cleaned out and work started on preparation of gyp/ lignosulfonate system to be utilized in 12 1/4" hole section.

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

17 ½" OPEN HOLE (13 3/8 casing set at 1 353M)

The gympsum-lignosulfonate system was mixed to required specifications, using minimum concentrations of bentonite (10-12 ppb.) and XC-Polymer to provide viscosity, and sufficient gypsum to provide at least 6.0 ppb. excess. Additional fluid loss control was attained with low viscosity C.M.C.

The cement was tagged at 748M- cement and shoe were drilled out and hole cleaned out to 815M prior to displacing the hole to mud at 1.31 s.g. 17 ½" hole was drilled to 834M and leak-off test carried out (1.46 s.g. equivalent).

The 17 ½" hole was drilled through an active gumbo shale section which resulted in problems of blocked flow-line; gumbo box, shale shaker header box etc. Much mud was being lost at the shale shakers during this section and it was necessary to resort to coarse screens (20 mesh) for much of the time to prevent severe losses. The desander/desilter proved to be very inefficient at this time and the Thule VSM200 was fully utilized to prevent excessive drilled solids build-up. The mud system was treated continually to maintain required properties - the main treatment being bulk dilution with sea water pre-treated with caustic soda, lignosulfonate and gypsum. Additions of drilling detergent (2.0-2.5 ppb.) were made to reduce possibility of bit-balling during this section. Due to very inefficient primary solids control equipment the control of drilled solids accumulation and bentonite levels proved to be very difficult during this section and it was necessary to dump and clean out settling pits frequently. Several tight spots were encountered during short trips to recover surveys and hi-vis pills were pumped to aid hole cleaning when drilling was resumed. 17 ½" hole was drilled to 1364M and 40 bbls. hi-vis mud circulated out and system conditioned prior to wiper trip to shoe. At this point it was necessary to further treat active system to reduce solids content and bentonite levels. Settling pits required frequent dumping due to ineffecient primary screening although the problem was reduced with change of formation at circa 1 240M. Thule mud cleaner required to be stripped and cleaned thoroughly due to blocking with mud solids at this point.

During wiper trip, tight spots were encountered at 1 280M, 1 198M, 1 087M an 994M. On R.I.H. to bottom, worked through tight spots and washed down 4M fill to bottom. The hole was circulated until clean prior to P.O.H. to run logs.

Cont'd ./..

17 ½" OPEN HOLE (13 3/8" casing set at 1353M) cont'd

Schlumberger tool stood up at 833M on first run - 3 x 18 jets were removed from bit and ran in hole to wash and ream from 830M - 845M. Bit was run to bottom (no fill). The mud was circulated and conditioned prior to wiper trip to shoe, no drag or fill encountered during wiper trip - further batch dilution treatment was reguired to reduce solids concentration, and mud cleaner again required to be cleaned and serviced. 40 bbls. hi-vis mud were pumped and circulated out prior to P.O.H. for logging.

Schlumberger tool stood up at 977M on second run - the tool was recovered and hole re-entered with 17 ½" bit (no stabilizer) and R.I.H. to bottom (no fill). 100 bbls. hi-vis mud were pumped and hole circulated clean. Logging proceeded as per programme.

The hole was circulated clean prior to casing (no fill) and 13 3/8" casing run and cemented at 1 353M.

At this point work was carried out on settling pits and suctions were raised to prevent blocked lines due to excessive solids build-up.

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

12 1/4" OPEN HOLE (9 5/8" casing set at 1816M)

Cement was tagged at 1326M, and cement and shoe drilled out - hole cleaned out to 1364M. 12 1/4" hole was drilled to 1372M and leak-off test carried out. (1.45 s.g. equivalent)
12 1/4" hole was drilled to 1414M with a drilling break at 1384M. Well was observed for flow and hole circulated out (80% gas) prior to P.O.H. The core barrel was made up and R.I.H. to commence coring programme. During coring the system was treated continuously to reduce mud weight to 1.28 s.g. as per instructions. One pit (350 bbls) of kill mud at 1.40 s.g. was held in reserve throughout this section. Shale shaker screens were dressed to 20/60 mesh to provide more effective primary solids control at reduced rate of flow during coring. Cores no. 1 - no. 21 were cut from 1412M - 1645M using 8 15/32" core head. During this section very little chemical treatment was required and shaker screens were dressed to B40/60, 40/60, B40/60. System was treated occasionaly to maintain properties as required, continuous dilution was made to maintain mud weight at 1.28 s.g.
On completion of coring programme - 12 1/4" bit and new BHA were picked up and 8 15/32" hole reamed out to 1645M. The 12 1/4" hole was drilled to 1823M, the system being treated with pre-hydrated bentonite and hi-viscosity c.m.c. to provide required yield point and low fluid loss and with drilling detergent to assist hole cleaning and reduce torque. The desilter and mud cleaner were run constantly to help control mud weight at 1.28 s.g. Screens were dressed to B40/60, 20/B40 to handle increased rate of flow.
The hole was circulated clean (40 bbl. hi-vis pill to surface) and system conditioned prior to P.O.H. to run logs.
Hole was very clean on trip out.
Settling pits shaker box, ditches all dumped and cleaned out. Degasser and Thule mud cleaner cleaned and serviced, shaker screens cleaned. Trip in hole required during logging suite to fish for junk from last 12 1/4" bit - reamed from 1791-1824M and drilled further 3M 12 1/4" hole from 1824-1827M. 50 bbl. hi-vis pills pumped and hole circulated clean prior to P.O.H. for remaining logs.
On completion of logging suite/RFT's/CST's hole was conditioned and 9 5/8" casing run and cemented at 1816M.

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

8 1/2" OPEN HOLE

Cement was tagged at 1784.5M. System was circulated and conditioned to 1.20 s.g. Cement, float and shoe drilled out and hole cleaned out to 1827M. 8 1/2" hole drilled from 1827-1832M and system conditioned to 1.18 s.g. System treated to maintain properties as required with some treatment for cement contamination. Shale shakers remain as per 12 1/4" hole section, although flow rate reduced.
Carried out leak-off test (1.66 s.g. equivalent).
The 8 1/2" open hole was drilled to 2116M (drilling break at 2092M) and P.O.H. to pick up core barrel. Annular velocity maintained at 330 ft/min. maximum to maintain laminar flow in annulus. Cut core from 2116M-2134M. The core was recovered and R.I.H. with bit to ream down to 2134M. The 8 1/2" hole was drilled to T.D. at 2601M with penetration rates ranging from 2-30 min/metre. The system was treated during this section to maintain constant mud weight and other properties as required.
During wiper trip to shoe, hole tight from 2474-2432M (80,000 lbs. max. over pull). R.I.H. and wash down 12M to bottom. Hole circulated clean and P.O.H. with no drag. Run Schlumberger logs.
On completion of logging suite, cement plugs were set at 2595-2395M, 2365-2165M, 2130-1930M, 1900-1700M. Mud returns from cement jobs collected in pits to obtain maximum surface volume.
The top of cement was dressed to 1720M and marine riser displaced to seawater - 250 bbls. mud collected in pits.
The surface mud (1400 bbls.) was weighted up to 1.28 s.g. and settling pits. header box, slug pit, trip tank and all ditches dumped and cleaned out.
Shale shakers cleaned and screens dressed to 60/80 mesh.
Thule VSM 200 mud cleaner cleaned and serviced, screens dressed to 2x200 mesh.
Desander, desilter, degasser and mixing pumps flushed through with seawater.

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

36" HOLE DRILLED TO 450 Meters ~~Feet~~ 30" CASING SET AT 445 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 93 Meters ~~Feet~~ DAYS ON INTERVAL 2

DRILLING FLUID SYSTEM SPUD MUD

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BENTONITE	M/T		22		$ 6.270.00
CAUSTIC SODA	25/50KG		10		224.10
LIME	25KG		18		81.00

COST/DAY $ 3.287.55 TOTAL COST FOR INTERVAL $ 6.575.10

COST/Mt. ~~or Ft.~~ $ 70.70 PROG. COST FOR INTERVAL $ 5.398.00

ENGR. COST $ 700.00 COST VARIANCE FOR INTERVAL $ 1.177.10

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

26" HOLE DRILLED TO 814 Meters ~~Feet~~ 20" CASING SET AT 803.5 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 364 Meters ~~Feet~~ DAYS ON INTERVAL 8

DRILLING FLUID SYSTEM SPUD MUD

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		134		$ 16.616.00
BENTONITE	M/T		23		6.555.00
CAUSTIC SODA	25/50 KG		18		448.20
LIME	25KG		5		22.50
SODA ASH	50KG		12		210.00

COST/DAY $ 2.981.46 TOTAL COST FOR INTERVAL $ 23.851.70

COST/Mt. ~~or Ft.~~ $ 65.5 PROG. COST FOR INTERVAL $ 12.622.00

ENGR. COST $ 2.800.00 COST VARIANCE FOR INTERVAL — $ 11.229.70

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

17 1/2" HOLE DRILLED TO 1364 Meters ~~Feet~~ 13 3/8" CASING SET AT 1353 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 550 Meters ~~Feet~~ DAYS ON INTERVAL 10

DRILLING FLUID SYSTEM GYPSUM/LIGNOSULFONATE

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		238		$ 29.512.00
BENTONITE	50KG		255		3.378.75
CAUSTIC SODA	25/50KG		167		1.710.30
LIGNOSULFONATE	25KG		759		11.916.30
XC-POLYMER	50LB		51		15.402.00
CMC LO VIS	25KG		102		5.406.00
SODA ASH	50KG		32		560.00
GYPSUM	50KG		550		5.445.00
AL. STEARATE	25KG		3		189.00
D. DETERGENT	200L		21		6.195.00

COST/DAY	$ 7.971.43	TOTAL COST FOR INTERVAL	$ 79.714.35
COST/Mt. ~~or Ft.~~	$ 144.93	PROG. COST FOR INTERVAL	$ 46.285.00
ENGR. COST	$ 3.500.00	COST VARIANCE FOR INTERVAL	$ 33.439.35

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

12 1/4" HOLE DRILLED TO 1827 Meters ~~Feet~~ 9 5/8" CASING SET AT 1816 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 463 Meters ~~Feet~~ DAYS ON INTERVAL 24

DRILLING FLUID SYSTEM GYPSUM/LIGNOSULFONATE

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		91		$ 11.284.00
BENTONITE	M/T		5		1.425.00
LIGNOSULFONATE	25KG		162		2.543.40
GYPSUM	50KG		80		792.00
CAUSTIC SODA	25KG		82		1.020.90
CMC LO VIS	25KG		76		4.028.00
CMC HI VIS	25KG		89		4.984.00
D. DETERGENT	200L		2		590.00
AL. STEARATE	25KG		1		63.00
SODA ASH	50KG		4		70.00

COST/DAY	$ 1.116.68	TOTAL COST FOR INTERVAL	$ 26.800.30
COST/Mt. ~~or Ft.~~	$ 57.88	PROG. COST FOR INTERVAL	$ 43.612.00
ENGR. COST	$ 8.400.00	COST VARIANCE FOR INTERVAL	- $ 16.811.70

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

8 1/2" HOLE DRILLED TO 2601 Meters ~~Feet~~ – CASING SET AT – Meters Feet

ACTUAL AMOUNT OF HOLE DRILLED 774 Meters ~~Feet~~ DAYS ON INTERVAL 12

DRILLING FLUID SYSTEM GYPSUM/LIGNOSULFONATE

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		11		$ 1.364.00
BENTONITE	50KG		18		238.50
LIGNOSULFONATE	25KG		70		1.099.00
XC-POLYMER	50LB		13		3.926.00
CMC LO VIS	25KG		57		3.021.00
CMC HI VIS	25KG		80		4.480.00
CAUSTIC SODA	25KG		34		423.30
GYPSUM	50KG		77		762.30
AL. STEARATE	25KG		1		63.00
D. DETERGENT	200L		4		1.180.00
BICARBONATE	50KG		10		175.00

COST/DAY	$ 1.394.34	TOTAL COST FOR INTERVAL	$ 16.732.10
COST/Mt. ~~or Ft~~	$ 21.62	PROG. COST FOR INTERVAL	$ 34.852.00
ENGR. COST	$ 4.200.00	COST VARIANCE FOR INTERVAL	- $ 18.119.90

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

MATERIAL CONSUMPTION & COST ANALYSIS

TESTING

-	HOLE DRILLED TO	-	Meters / Feet	-	CASING SET AT		Meters / Feet

ACTUAL AMOUNT OF HOLE DRILLED - Meters / Feet

DAYS ON INTERVAL -

DRILLING FLUID SYSTEM SEAWATER/BRINE

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
CMC HI VIS	25KG		13		$ 728.00
XC-POLYMER	25KG		3		906.00

COST/DAY	-	TOTAL COST FOR INTERVAL	1.634.00
COST/Mt. ~~or ft.~~	-	PROG. COST FOR INTERVAL	-
ENGR. COST	-	COST VARIANCE FOR INTERVAL	-

OPERATOR A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO. 31/2-3

ANCHOR DRILLING FLUIDS AS

TOTAL CONSUMPTION & COST ANALYSIS

TOTAL DEPTH 2601 Meters ~~Feet~~

TOTAL HOLE DRILLED 2244 Meters ~~Feet~~

TOTAL DAYS 56

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		1474		$ 58.776.00
BENTONITE	M/T		50		14.250.00
BENTONITE	50KG		273		3.617.25
CAUSTIC SODA	25/50KG		311		3.826.80
LIGNOSULFONATE	25KG		991		15.558.70
LIME	25KG		23		103.50
GYPSUM	50KG		707		6.999.30
CMC HI VIS	25KG		182		10.192.00
CMC LO VIS	25KG		235		12.455.00
XC-POLYMER	50LB		67		20.234.00
SODA ASH	50KG		48		840.00
SODIUM BICARBONATE	50KG		10		175.00
D. DETERGENT	200L		27		7.965.00
AL. STEARATE	25KG		5		315.00

COST/DAY $ 2.773.35

TOTAL COST ~~FOR INTERVAL~~ $ 155.307.55

COST/Mt. ~~Ft~~ $ 69.21

PROG. COST ~~FOR INTERVAL~~ $ 142.769.00

ENGR. COST $ 21.000.00

COST VARIANCE FOR INTERVAL $ 12.538.55

ARCHER DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 31/2-3 AREA NORTH SEA
OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
MUD SYSTEM SPUD MUD/GYP LIGNOSULFONATE
ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE	BENTONITE	SACK MATERIALS: BARITE	BENTONITE	LIGNOSULF.	THINNERS		POLYMERS: XC	CMC LO-VIS	CMC HI-VIS			OTHERS: CAUSTIC SODA	SODA ASH	GYP	AL. STEARATE	D.D.	LIME				
1	27.3.			1450		22											8					8				
2	28.3.	285															2					10				
3	29.3.	800		700		8											6	4								
4	30.3.	20		350		4											3	2								
5	31.3.			15	17																					
6	1.4.																									
7	2.4.	338			20																					
8	3.4.	772		1089	39	11											9	6								
9	4.4.	230		235	44																	2				
10	5.4.	1544		150	14																	3				
11	6.4.			1055	34			100	60			4	12				9	4	70							
12	7.4.			387	67			50	60			16	28				18	4	65							
13	8.4.								68								16		45							
14	9.4.		139					70				10	16				16	4								
FORWARD		3989	139	5431	235	45		220	188			30	56				87	24	180			23				
ESTIMATED TOTALS																										

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 31/2-3 AREA NORTH SEA
OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE	BENTONITE	SACK MATERIALS: BARITE	BENTONITE	LIGNOSULF.	THINNERS			POLYMERS: XC	CMC LO VIS	CMC HI VIS			OTHERS: CAUSTIC SODA	SODA ASH	GYP	AL. STEARATE	D.D.	LIME					
15	10.4.		515	1070	51			35	150				7	8				8	2	105	1	10						
16	11.4.		124	329	20				210				6	8				40	6	125	1	6						
17	12.4.		22		31				126					24				42	7	80		5						
18	13.4.		50		17				60				1					14	4	40	1							
19	14.4.		5		8								3															
20	15.4.		45		10				25				4	6				4	1	20								
21	15.4.					NONE USED																						
22	17.4.				9				40					30				14		40								
23	18.4.				4																							
24	19.4.		140																									
25	20.4.				3				55					4				10	3	40								
26	21.4.				15									19														
27	22.4.				6									5														
28	23.4.	(30)							10					4	3			8										
FORWARD		3989	139	5431	235	45		220	188				30	56				87	24	180	3	21	23					
ESTIMATED TOTALS		4019	1180	6830	409	45		255	864				51	164	3			227	47	630	3	21	23					

REMARKS:

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 31/2-3 AREA NORTH SEA
OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No	DATE 1980	ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS		SACK MATERIALS		MATERIALS ADDED TO CONTROL PROPERTIES																	
										THINNERS			POLYMERS				OTHERS									
		LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BARITE	BENTONITE	BARITE	BENTONITE	LIGNOSULF.				XC	CMC LO VIS	CMC HI VIS		CAUSTIC SODA	SODA ASH	GYP	AL. STEARATE	D.D.	LIME				
29	24.4.			77	9				20						5		4			1						
30	25.4.														10											
31	26.4.				2										11		5									
32	27.4.			94	1	5			15					9	2		10	1								
33	28.4.				7										1		4									
34	29.4.			10	8				8						6		3									
35	30.4.																3									
36	1.5.				4																					
37	2.5.				3												4									
38	3.5.								6						10		6				2					
39	4.5.				6										11		6									
40	5.5.								8						2		2									
41	6.5.				5																					
42	7.5.				6									1	17		2									
FORWARD		4019	1180	6830	409	45		255	864				51	164	3		227	47	630	3	23	23				
ESTIMATED TOTALS		4019	1180	7011	460	50		255	921				51	174	78		276	48	630	4	23	23				

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 31/2-3 AREA NORTH SEA
OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE	BENTONITE	SACK MATERIALS: BARITE	BENTONITE	THINNERS: LIGNOSULF.				POLYMERS: XC	CMC LO VIS	CMC HI VIS			OTHERS: CAUSTIC SODA	SODA ASH	GYP	AL. STEARATE	D.D.	BICARB.	LIME			
43	8.5.		4												5												
44	9.5.			35	3									4	6			1									
45	10.5.		10																								
46	11.5.		39						46				13	8	18			3		40			10				
47	12.5.			36				18							34			1									
48	13.5.			23										19	3			5			1	4					
49	14.5.			29											2			1									
50	15.5.			43										3	21			8		37							
51	16.5.			7					16									5									
52	17.5.			27										11				11									
53	18.5.		7						8					16	2												
54	19.5.			49																							
55	20.5.																										
56	21.5.		30																								
FORWARD		4019	1180	7011	460	50		255	921				51	174	78			276	48	630	4	23	10	23			
ESTIMATED TOTALS		4019	1270	7260	463	50		273	991				64	235	169			311	48	707	5	27	10	23			

REMARKS

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 31/2-3 AREA NORTH SEA

OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN

MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No	DATE	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE	BENTONITE	SACK MATERIALS: BARITE	BENTONITE	MATERIALS ADDED TO CONTROL PROPERTIES: THINNERS: LIGNOSULF.				POLYMERS: XC	CMC LO VIS	CMC HI VIS			OTHERS: CAUSTIC SODA	SODA ASH	GYP	AL. STEARATE	D.D.	BICARB.	LIME		
57	22,5		DUMP 207																							
58	23.5		59		11																					
59	24.5			50																						
60	25.5		121												4											
61	26.5												3		9											
FORWARD		4019	1270	7260	463	50		273	991				64	235	169			311	48	707	5	27	10	23		
ESTIMATED TOTALS		4019	1657	7310	474	50		273	991				67	235	182			311	48	707	5	27	10	23		

REMARKS.

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 31/2-3 AREA NORTH SEA
OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN
MUD SYSTEM SPUD MUD/GYP LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	DEPTH FEET / METERS	MUD PROPERTIES: DENSITY PPG / SG	VISCOSITY: sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32nds	H.T.H.P. cc's	pH	Cl ppm x1000	Filtrate Analysis: Ca ++ ppm	Pf/Mf	RETORT: % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	GYPSUM #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
																								Seabed 359M b.r.t.
1	27.3.	PRE SPUD	1.03+	120+																				Spud Mud.
2	28.3.	429	1.03+	120+																				Drl. 36" hole w/s.w. + visc. pills.
3	29.3.	(450)	1.03	100+																				3011 shoe at 445M Mixing new mud.
4	30.3.	454	1.03	100+																				R.I.H. to drill 17 1/2".
5	31.3.	454	1.03	100+																				Mix kill mud to 1.32.
6	1.4.	454	1.03	100+																				W.O.W. to run riser.
7	2.4.	727	1.03	100+																				Drl. 17 1/2" pilot hole.
8	3.4.	814	1.40 1.03	100+																				Logging at 20" casing depth (pilot hole)
9	4.4.	614	1.40 1.03	100+																				Opening pilot hole to 26".
10	5.4.	814	Mix.																					Run 20" casing start Gyp/Ligno.
11	6.4.	803.5 (814)	Mix.																					Mixing Gyp/Ligno. for 17 1/2".
12	7.4.	(814)	1.31	54	37.5	27	21	5/12	7.2	1		9.5	11	1680	0.2 0.8	0	9		12	5.5				3ppb Gyp+Ligno+caustic to incr. excess to 6.0+ ppb.
13	8.4.	(814)	1.31	54	39	28	22	4/11	7.3	1		10.5	11	1680	0.25 1.1	0	9		12	7.5				
14	9.4	828	1.31	52	37	26	22	4/11	7.6	1		10.5	11	1620	0.2 1.0	0	10	NIL	12.5	7.25				

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 31/2-3 AREA NORTH SEA

OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN

MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	DEPTH FEET □ METERS ☒	MUD PROPERTIES																							OPERATION REMARKS
			DENSITY PPG □ SG ☒	VISCOSITY sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm x1000	Ca ++ ppm	Pf/Mf	RETORT % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	EXCESS GYP #/BBL	POLYMER #/BBL	"N"	"K"	
15	10.4.	956	1.31+	51	32	21	22	5/16	6.7	1		10.4	12	1680	.2/1.0		12½	1/4	15.5	6.1					
16	11.4.	1156	1.31	59	35	23	24	6/22	6.0	1		10.2	14	1420	.2/1.0		14	1/4	24	7.0					
17	12.4.	1364	1.30+	70	45	32	26	7/34	6.6	2		10.5	15	1380	.225/.95		16	1/2	28	6.5					Drill to 17 1/2" hole casing point.
18	13.4.	1364	1.30	60	35.5	26	19	5/21	6.9	2		10.5	16	1320	.25/1.10		15	1/2	27	6.9					
19	14.4.	1364	1.32	60	35.5	25	21	5/22	7.0	2		10.5	16	1330	.225/1.05		14	1/2	26	6.75					
20	15.4.	1364	1.32	59	35	25	20	4/19	7.0	2		10.4	16	1350	.225/1.05		14	1/2	26	6.4					
21	16.4.	1364	1.32	58	35	25	20	4/20	7.1	2		10.4	16	1360	.2/1.05		14	1/2	26	6.2					Run & cement 13 3/8" casing.
22	17.4.	1364	1.31	68	37	26	22	5/24	6.6	2		10.6	16	1300	.35/1.50		13½	1/2	26	6.4					
23	18.4.	1421	1.29+	63	39	28	22	4/24	6.3	1		10.7	16	1320	.50/1.70		13½	1/2	25	6.5					Core no. 1.
24	19.4.	1421	1.29	61	38	27	22	4/22	6.3	1		10.7	16	1320	.50/1.70		13½	1/2	25	6.5					W.O.W.
25	20.4.	1421	1.28+	57	36	26	20	4/20	6.4	1		10.7	16	1330	.50/1.50		13½	1/2	25	6.5					
26	21.4.	1443	1.28	52	32	23	18	3/15	5.9	1		10.7	16	1330	.50/1.50		12½	1/2	24	6.85					Core no.2 1421-1425 " " 3 1425-1443
27	22.4.	1462	1.28	47	29	21	18	3/8	5.9	1		10.7	16	1720	.5/1.60		11	1/4	24	10.0					
28	23.4.	1469	1.28	46	27	20	14	3/7	5.6	1		10.5	15.5	1520	.4/1.4		10	1/4	23	5.9					

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 31/2-3 AREA NORTH SEA

OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN

MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	DEPTH FEET □ METERS ☒ at 2400	MUD PROPERTIES																						OPERATION REMARKS
			DENSITY PPG □ SG ☒	VISCOSITY sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm	Ca⁺⁺ ppm	Pf/Mf	RETORT % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	EXCESS GYP #/BBL	"N"	"K"		
29	24.4.	1484	1.28	45	26	20	12	2/5	5.0	1		10.7	16	1480	0.5 1.6		9	TR	22.5	6.85					
30	25.4.	1501	1.28	45	30	22	16	2/5	4.5	1		10.6	16½	1680	0.5 1.6		9	TR	20.5	6.04					
31	26.4.	1514	1.28	47	30	22	16	2/5	3.8	1		10.7	16½	1720	0.7 2.0		9	1/4	19.5	6.25					
32	27.4.	1551	1.28	48	34	26	16	2/5	4.0	1		10.8	17	1720	0.65 1.8		10	1/4	22	6.57					
33	28.4.	1566	1.28	47	30.5	23	15	2/5	4.0	1		10.7	15	1400	0.6 1.7		10	TR	17.5	6.45					Add. pre-hydr. bent.
34	29.4.	1592	1.28	48	30.5	23	15	2/5	3.8	1		10.6	13	1320	0.6 1.6		10	TR	18	6.15					
35	30.4.	1619	1.28	49	32.5	26	15	2/5	3.8	1		10.6	14	1280	0.5 1.6		10	1/4	19.5	6.15					
36	1.5.	1628	1.28	48	33.5	26	15	3/5	3.8	1		10.6	14 1/4	1280	0.55 1.6		10	1/4	19.5	6.25					
37	2.5.	1645	1.28	50	34.5	26	17	4/12	4.0	1		10.6	13	1200	0.5 1.6		10	1/4	19	6.25					Reaming out to 12 1/4".
38	3.5.	1788	1.28+	51	31.5	22	19	3/12	3.8	1		10.7	13	1200	0.58 1.73		12	1/2	21	6.65					Drilling 12 1/4".
39	4.5.	1823	1.28+	50	30.5	22	17	3/6	4.0	1		10.6	12	1200	0.5 1.6		11	1/4	20	6.58					12 1/4" T.D.
40	5.5.	1826	1.28+	52	32.5	23	19	3/8	3.8	1		10.5	12	1080	0.45 1.55		11	1/2	19.5	5.27					Wiper trip before RFT's
41	6.5.	1826	1.28	42	22	17	10	2/4	4.8	1		10.6	12	1040	0.4 1.4		10	1/4	20.0	5.4					Logging.
42	7.5.	1826	1.28+	50	29	20	18	2/7	4.0	1		10.7	12	1000	0.45 1.5		10	1/4	19	5.2					

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 31/2-3 AREA NORTH SEA

OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN

ENGINEERS A. YOUNG, C. ATKINSON

MUD SYSTEM GYP/LIGNOSULFONATE

Day No.	DATE	DEPTH FEET □ METERS ☒	MUD PROPERTIES: DENSITY PPG □ SG ☒	VISCOSITY: sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis: Cl⁻ ppm x1000	Ca ++ ppm	Pf/Mf	RETORT: % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	EXCESS GYP #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
1980																								
43	8.5.	1826	1.28+	51	31.5	24	15	2/5	3.8	1		10.8	12	1000	0.5/1.3		10½	1/4	19	5.3				
44	9.5.	1826	1.28	50	31.5	24	15	2/5	3.9	1		10.8	12	1080	0.47$/1.32$		11	1/4	18	5.2				Run 9 5/8"csg after wiper trip.
45	10.5.	1826	1.28	49	31	24	14	2/5	4.0	1		10.8	12	1080	0.45/1.30		11	1/4	18	5.2				Cmt. Test stack.
46	11.5.	1831	1.18	50	29.5	21	17	3/9	4.0	1		10.5	10	1340	0.30/1.10		9½	1/4	13.5	4.6				Drill 8½" hole.
47	12.5.	1966	1.18	48	27	19	16	3/7	4.0	1		10.6	10	1320	0.32$/1.15		9½	1/4	14	4.6				
48	13.5.	2058	1.18+	50	30	21	18	3/5	3.7	1		10.6	9½	1220	0.30/1.10		9½	1/4	14	4.5				
49	14.5.	2134	1.19	49	29.5	21	17	3/5	3.8	1		10.5	10	1160	0.30/1.0		10	1/4	14	4.4				
50	15.5.	2293	1.19+	48	29	21	16	3/5	3.8	1		10.4	9½	1400	0.22$/0.90		10	1/4	14.5	4.3				
51	16.5.	2373	1.19	48	29	20	18	2/4	3.5	1		10.6	9½	1360	0.32$/1.25		9	TR	14.5	3.9				
52	17.5.	2485	1.19+	48	28.5	20	17	2/3	3.5	1		10.6	9½	1220	0.35/1.30		9½	1/4	15	3.8				
53	18.5.	2600	1.19+	48	29	21	16	2/4	3.5	1		10.5	9¼	1120	0.25/1.05		9½	1/4	17	3.7				
54	19.5.	2601	1.19+	48	29	21	16	2/4	3.5	1		10.5	9¼	1080	0.22$/1.0		10	1/4	17	3.7				Well T.D. wiper trip--logs.
55	20.5.	2601	Pit 1.19+	49	29	21	16	2/4	3.5	1		10.5	9¼	1080	0.22$/1.0		10	1/4	17	3.7				
56	21.5.	2601	Pit 1.20	47																				Set plugs in 8½" hole.

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 31/2-3 AREA NORTH SEA

OPERATOR NORSKE SHELL RIG. BORGNY DOLPHIN

MUD SYSTEM GYP/LIGNOSULFONATE ENGINEERS A. YOUNG, C. ATKINSON

Day No.	DATE 1980	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES: DENSITY PPG ☐ SG ☒	VISCOSITY: sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0 / 10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis: Cl ppm	Ca ++ ppm	PI	RETORT: % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
57	22.5.		1.20	47																				
58	23.5.		1.28	46																				Wt. up remaining vol as kill mud.

REMARKS

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

RIG EQUIPMENT

Mud Pumps	Continental EMSCO FA1600 (12 inch stroke, 6½" liner)

SOLIDS CONTROL EQUIPMENT

Shale Shakers	Hutchison-Hayes 'Rumba' 103 Triple double-deck shale shakers
Desander	SWACO (3 x 12 inch cones)
Desilter	SWACO (10 x 4 inch cones)
Degasser	WELLCO Series 5200
Mud Cleaner	Thule VSM 200

A/S NORSKE SHELL EXPLORATION & PRODUCTION

WELL NO.: 31/2-3

THULE VSM200 - Screens replaced (broken)

17 1/2"	hole section	-	1 x 150 mesh
12 1/4"	"	-	2 x 150 "
8 1/2"	"	-	2 x 150 "