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CN

MORSK HYDRO a.s  
FINAL WELL REPORT  
(OPERATIONS)  
WELL 31/6-8R

APRIL 1986

86-5084-B A  
18 JUNI 1986  
**REGISTRERT**  
OLJEDIREKTORATET

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2. POSITIONING AND ANCHORING OF THE RIG.

The location of the well 31/6-8 was defined as shot point 247 on the seismic line NH 8202-338 and shot point 795 on ST 8006-113. The well was spudded within a circle of radius 50 m.

Planned position of the well:

Geogr.	UTM
Lat : 60° 33'21,4"	6.713.670mN
Long: 03° 40'39,8"	537.168mE

The equipment onboard the rig for navigation and positioning was Pulse-8 while sat.nav. system was used to establish the final coordinates in the ED 1950 Datum.

Final position of the well:

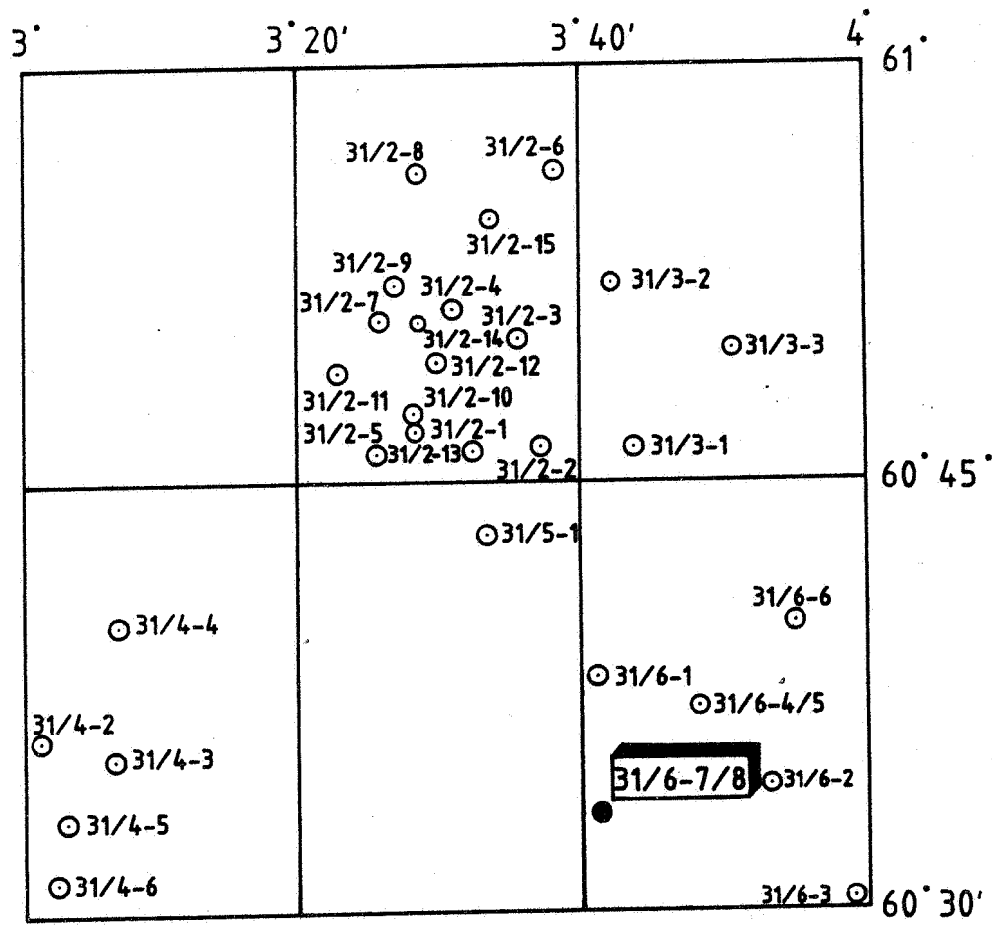
Geogr.	UTM
Lat : 60° 33'21,36"N	6.713.676,3mN
Long: 03° 40'39,07"E	537.156,0mN


The rig was anchored on northwesterly ( $310^{\circ}$ ) heading with eight anchors. A  $45^{\circ}$  regular anchor pattern was used according to the operation manual.

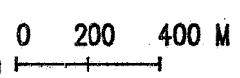
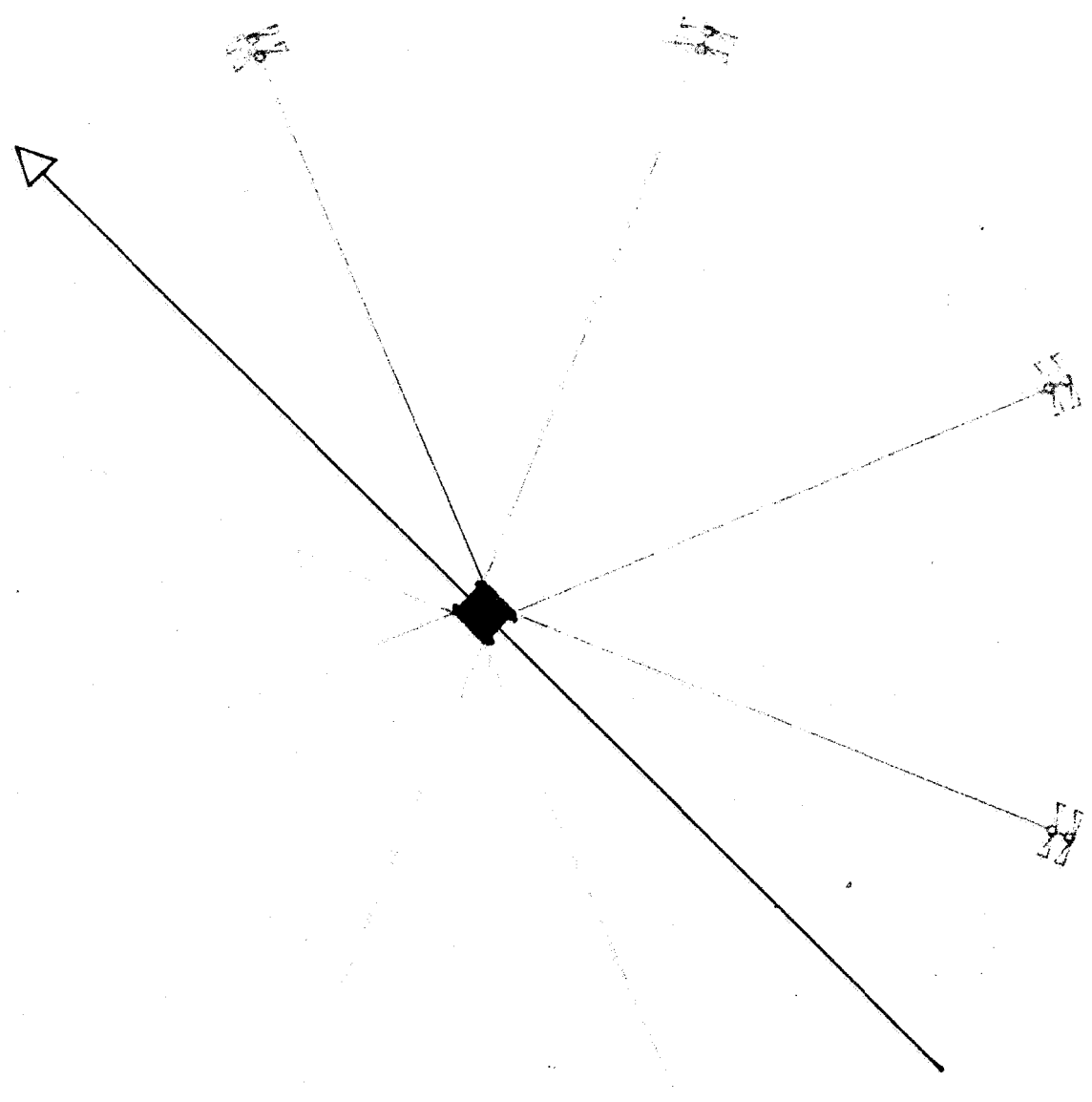
Ran piggyback on all the anchors. All the anchors were tension tested:

Pretension:	1070 kn (240.500 lbs)
Test tension:	1557 kn (350.000 lbs)

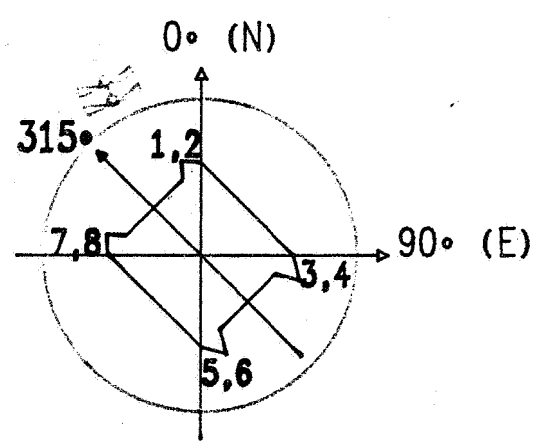
The mooring line pattern is shown in Fig. B - 2.



 Norsk Hydro Drilling Department	LOCATION MAP WELL 31/6-8R	Gr. no.: 9	Fig.: B - 1
		Date: 29.04.86 Sign: POR/AHJ	Dwg. no.: 01



ANCHOR NO	DIRECTION DEGREES	LENGTH METERS
1	337	1671
2	22	1684
3	67	1687
4	112	1686
5	157	1664
6	202	1705
7	247	1705
8	292	1705



Canadian Hydrographic Service  
 Hydrographic Department

Date: 1991-04-23

BEARING LINE PATTERN

TREASURE SEEKER

01,0-SRE

Fig. B - 2

SUMMARY BEFORE TEST

Treasure Seeker arrived the 31/6-8R location on August 20 th.

After retrieving off the corrosion cap, the wellhead profile was inspected with ROV and the ring groove was cleaned. Then the BOP was landed and tested according to N.H.'s requirements.

Made up the 8 3/8" milling assembly and milled on the bridge plug at 530m. Ran in the hole with the bridge plug to top of cement at 1588m and dressed cement to 1592m. Made up bit no.1 and drilled cement to 1615m. (31m above 9 5/8" casing shoe).

The 9 5/8" casing was then tested to 310 bar/10 min.

While milling on the bridge plug lost 40 m<sup>3</sup> mud due to open dump valve in the shaker pits.

Nortest washingtool on 3 1/2" PH6 tubing was ran in the hole to 1615m and the hole was displaced to seawater. The seawater was mixed with 7,95 m<sup>3</sup> (50 bbls) 15 % Hcl and inhibitor.

Received 174.9 m<sup>3</sup> brine (1.16 r.d.) from the stand by boat.

When displacing to KCL brine 4 m<sup>3</sup> viscous spacer was pumped ahead of the brine.

The entire mudsystem was then thoroughly cleaned and filled with CaCl<sub>2</sub> brine.

New string off 3 1/2" Ph-6 tubing arrived rig, but this had to be sent back as well, due to a chemical reaction had taken place with the internal coating which could be rubbed off by hand.

Did the dummy runs with both the 3" ID subsea tools and the 5" ID subsea tools and made up all connection that had to be done with rig tongs. 131 joints with new 3 1/2" Ph-6 good tubing arrived rig, and started to run in hole with same.

Commenced circulating well clean while waiting for more tubing. That one came out and was added to what was already in hole and the well was cleaned till we had a return with a particle size of 1.5 - 2 microns. The tubing was then pulled out.

b) Pre gravelpack/perforating string.

Before running in with the test string, SCHLUMBERGER ran in the hole with gauge ring/junk basket.

This zone was perforated from 1537.6m to 1557.6m using SCHLUMBERGER tubing conveyed perforating gun, 6" - 12 s.p.f. - 120° phasing - 32 gram charge.

After perforating, the gun was dropped in order to be able to go out of the tubing with wireline. It was then performed a test with a maximum flowrate of 26 MMSCF/D on a 60/64" choke. During this test, SANFLOG and PLT were used.

SANFLOG is a tool to detect any sandproduction and PLT is to give information how the well is behaving i.e. pressure/temp., flow characteristics, what kind of fluid etc.

Both SANFLOG and PLT were run by SCHLUMBERGER on 7/32" monoconductor cable.

It was planned to displace the landing string with nitrogen before perforating, but we ended up with NOWSCO not able to close the M.O.R.V by pumping with a rate high enough to displace more than 20 l/min of fluid through the ports of the M.O.R.V. The string was therefore filled with diesel, and the M.O.R.V closed with the BAKER pump.



After the well was killed, the perforating string was pulled out and gun fished out of hole for inspection and to enable sampling of eventual sand fill. The well was then internally gravelpacked using 12 gauge - st. steel - wirewrapped screens and 20 - 40 mesh gravel. This was done by BAKER SAND CONTROL after well fluid - 1.16 SG CaCl<sub>2</sub> brine, being cleaned to a particle size of 1.5 - 2 microns. Right before starting the gravel pumping it was discovered that BAKER OIL TOOLS had forgot to put in a blank pipe in the downhole assembly, so the gravelpack string had to be pulled and added this joint before run. The flapper valve downhole to avoid fluid loss was also accidentally crushed, but no major problems occurred due to the CaCl<sub>3</sub> pill being spotted across perforation.

c) Main production string.

After gravelpacking a special production string was run in, and after the well was acidtreated a high rate test was performed with a maximum flowrate of 138 MMSCF/D. This was done through 2 choke manifolds each on 2" choke. This will give an equivalent of 2.83" choke. For these high rates a special vertical separator was used to measure the flow.

During the flows/build ups, we could also monitor the bottomhole pressure and temperature all the time due to a press/temp gauge placed in a mandrel with a cable on the outside of the string up to surface. During wireline work to pull memory gauges, the 0.108" wire broke, but after great difficulties to pass through the surface test tree with fishing tools, everything was fished out and the test could proceed as normal.

Killing of the well was done without problems.

DST 2

It was the same zone that was perforated at 1522m to 1523.1m, 6 shots only with 0° phasing. This time the string was run in hole first, and the perforating was done through tubing with SCHLUMBERGER Enerjet guns run on 7/32" electric cable. The objective of this test was to find what caused sandproduction. SANFLOG was run in hole and well produced at the highest sandfree rate.

Another set of Enerjet guns was then run in the hole, and the well was reperforated at the same interval but 9 shots- 0 phasing this time.

SANFLOG was again run in hole and well produced at highest sandfree rate. From this we could find out if it was the pressure drop or the actual flow through each perforation that caused sandproduction.

After this test a fracture/formation strength test was performed with viscous brine prior to kill well.

### DST 3. Fracture test

SCHLUMBERGER ran in hole and perforated from 1416m to 1418m with 5" guns on electric cable. A bridge plug was then set at 1414m. A stinger was run in hole on drillpipe, and stung into bridge plug. The fracture test was then performed with viscous brine prior to perforations being squeezed off with cement.

### 2. CONCLUSION

All the objectives with this test were met without any main problems, and the complete test was finished in 62 days, including plug and abandon. If we sum up all the service companies involved they did a very good job.

TROLL HIGH RATE PRODUCTION STRING COMPONENTS (FROM BOTTOM UPWARDS)

Combined half mule shoe/reversed flapper valve knock out sub

The reversed flapper valve knock out sub was run to ensure that the complete flapper valve and seat was knocked out. Max. OD of the fluted section of this was 4.375" while the ID of the flapper valve with seat gone would be 4.75".

The fluted part of the knock out sub had grooves in the side in order to maximize the flow area around. In order to additionally increase the flow area the 2 3/8" tailpipe above was perforated with a large quantity of 1/2" holes below the lowest gauge point.

Tailpipe

2 3/8" EUE pipe was used as tail pipe in order to optimize the gas flow in the 2 3/8" x 5 1/2" annulus (11.88 in<sup>2</sup> between 2 3/8" EUE coupling and 5 1/2" blank pipe).

2 Baker "F" nipples (1.812" and 1.875") were installed in the tailpipe.

Flowports

1 x 2 7/8" Vanntage bar actuated vent and 1 x 3 1/2" Vanntage bar actuated pressure vent were used as flow ports. These were run in the hole in the closed position in order to enable circulation to wash out eventual gravel dropped on top of the reversed flapper valve prior to stinging into the packer with the sealassembly.

The vents were opened by running a 1.87" wireline stem through. Flow areas of the vents were:

2 7/8" size:	6 ea 1" holes =	4.71 in <sup>2</sup>
3 1/2" size:	4 ea 1"x 3.9" holes =	14.74 in <sup>2</sup>
Total:		19.45 in <sup>2</sup>

Baker indicating collet

This was run on top of the flow ports in order not to restrict the flow. It was designed to give a positive indication (10.000 lbs) when landed on top of the SC-IL 96-60 packer for space out purposes.

Camco 2.875" DS nipple

This was used to pressure test the string when RIH and represented the smallest restriction in the string.

Baker 20' seal assembly with 190-60 locator seal sub on top.

Flopetrol D.P.T.T. mandrel

This was run to enable monitoring in real time the downhole temperature and pressure both during flow and shut in periods.

The gauge used was a permanent (D.P.T.T.) strain type gauge mounted onto a standard Flopetrol holding mandrel 4 1/2", 12.6 lbs/ft.

The gauge was spliced to an unprotected 5/16" monoconductor cable which was clamped along the wall of the 7" tubing with close tolerance protectors (8.250" O.D.).

In order to maintain the pressure integrity of the slick joint and effect the by-pass around the sub-sea test tree the monoconductor cable was spliced at the fluted hanger, and crossed-over to a steel encased 3 mm O.D. mineral insulated cable. The 3 mm cable was fed through the slick-joint and the pressure barriers were maintained by hydraulic female type fittings on the outer steel casing of the cable. Above the sub-sea test tree the cable was again spliced back to a 5/16" monoconductor cable which then continued to surface.

The gauge was powered by a portable computer system (PCS) which processed the signals and stored the data on magnetic cassettes for teletransmission to the onshore offices via the onsite IBM-PC.

#### Flopetrol modified E-Z valve

Flopetrol modified their standard E-Z valve specially for this test.

The modified E-Z valve is a full opening, annulus pressure operated, downhole valve. It has a 3" bore and can be run in the hole in the open position to enable circulation, running wireline and stinging into a packer without a bypass below. The valve can be reverted to normally closed by applying annulus pressure. The valve can also cut wireline. Annular pump pressure opens the ball valve and holds it open. When that pressure is bled off, nitrogen pressure closes the ball valve. The valve can be opened or closed as many times as required to complete the test.

The valve offers the possibility to pump through the ball should the situation arise or so be required.

#### Baker annulus operated circulating valve

This tool was specially designed for the test through already known technology.

The valve operates through a system of a calibrated burst cartridge and a single sliding sleeve. Atmospheric pressure is contained within the burst cartridge and between the burst cartridge and the sliding sleeve. As long as the burst cartridge is intact, the well pressure and shear pins will keep the sleeve in the closed position. Applied annulus pressure (approximately 3600 psi) will burst the cartridge and annulus pressure will force the sleeve down leaving the circulating ports open.

Camco 3.75" DB-ID sliding side door

This was run mainly as a backup feature for the Baker circulating valve, but could of course also be used should the need for spotting fluid or a lighter cushion be required.

Expro full bore double gauge carrier

This tool was also specially designed for the test in order to monitor the pressure drop in the tubing at high flow rates. The tool consists of a 7.87" OD outer pipe with a 3.687" ID inner pipe welded to the outer pipe through ribs. The inner pipe has a 3.687" Camco DB lock on top to enable setting of gauges. The gauges are run in tandem side by side in a special mandrel.

Effective flows area with gauges installed is 24.28 in<sup>2</sup> (5.56").

Production tubing

The main production tubing was 7" OD, 29 lbs/ft, C-95 with Vam atac couplings.

Expro 5" ID Sub-Sea Test Tree

This is a 5000 psi W.P. full bore sub-sea test tree specially designed for high rate testing.

It incorporates dual independent ball valves with chemical injection facilities and hydraulic/mechanical latching and unlatching capabilities. The tree is short enough (51 in) to enable two rams to be closed below and the shear rams to be closed above in the latched position.

The electrical connection across the tree was made such that should it become necessary to unlatch, this would be broken at a point below the latch point. 1/4" steel tubes were fixed to the outside of the tree, the top one ending approximately 4 in. below the latch point and the 3 mm steel encased cable was locked to the ends of these through hydraulic female type fittings.

The sub-sea test tree could be shut in remotely from near the accomodation quarters.

#### Expro 5" ID lubricator valve

As for the Expro sub-sea test tree this is specially designed for high rate testing.

It requires applied hydraulic pressure to open and applied hydraulic pressure to close. Should the hydraulics fail, the vavle is of the pump through type.

The valve was mainly run to enable dumping large volumes of acid on the gravel packed completion. The landing string was filled above the lubricator vavle, the valve opened and the acid dumped. This was repeated a large number of times.

#### Flopetrol D.P.T.T. mandrel

This was run to enable monitoring in real time the flowing pressures above the sub-sea test tree/lubricator valve for evaluation of pressure drops at high flow rates. The gauge used was a permanent (D.P.T.T.) strain type gauge mounted onto a standard Flopetrol holding mandrel 7.29" lbs/ft. The gauge was spliced to a 5/16" monoconductor cable and run together with the cable from the lower gauge to surface. Powering, processing, storing of data and transmission to shore was identical to that of the downhole gauge.

### Expro 5" lubricator valve

This valve is identical to the lower lubricator valve but was used for wireline work.

### Scanarmature/WKM flowhead

The flowhead had a through bore of 5 1/8", two 4 1/16" side outlets set 45° up and a 2 1/15" kill entry between the master and swab valve set 90° down. The two 4 1/16" wing valves and the 5 1/8" master valve were equipped with hydraulic actuators, the master valve with manual override should so be required. The two wing valves were hooked up in parallel to one control unit. Erosion probes were installed downstream of each wing valve and a bimetal firefuse was used in the hydraulic line. Additionally the wing valves could be closed remotely from the separator area and near the accomodation quarters.

The master valve was operated from a separate hydraulic control unit.

The side outlets had 135° goosenecks, long sweep, mounted on each side.

### Flowline and standpipe

Two 3" ID 10.000 psi W.P. Coflexip hoses were used as flowlines, one from each side outlet. These were teed together at the 6" standpipe through long sweep elbows.

### Surface equipment

Flowline from the rig floor to the choke manifolds was one 6" 5000 psi W.P. and one 5" 10.000 psi W.P. in parallel. Two standard Expro 3" 10.000 psi W.P. choke manifolds were used to control the flow and manifolding was made to enable the use of either the standard horizontal separator an steam heat exchanger or the specially made high rate vertical Expro separator.



D a i l y r e p o r t

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19860513

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System : Boredata Sandnes  
Well: 31/6-8RF

Norsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST. PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
1				12:45	Started the operation of 31/6-8 reentry for test.
				22:30	In transit to location 31/6-8. Dropped the anchor number 5, on bottom at 22:25 hrs.
				24:00	Started to run anchor no. 1.
2	2138			24:00	Ran and set all 8 anchors with extension on each anchor chain to make total length of 5500 ft. Piggy back set on anchor number 3, 7, 6 and 2.
3	2138			14:15	Set piggy back on anchors number 5, 8 and 1, and pretensioned the anchors to 1070 kN.
				20:30	Ran in the hole with the wearbushing running tool and a 4 armed guide frame. Reestablished the guidelines with the ROV and retrieved the corrosion cap. Inspected the wellhead profile and cleaned the ring groove with the ROV.
				24:00	Inspected the wellhead profile and cleaned the ring groove with ROV. Made up the boosterpup and 2 joints of riser. Moved the BOP and the lower marine riser package to the spiderbeam.
4	2138			18:30	Ran the BOP stack and the riser. Landed and latched the BOP. Had an overpull of 225 kN. Tested all anchors to 1550 kN.
				24:00	Tested the BOP to Norsk Hydro's specifications. Performed the accoustic BOP test.
5	2138		1.20	00:30	Set the wearbushing.
				02:45	Tested all the surface equipment.
				04:45	Made up Servco mill and ran in the hole.
				09:00	Milled on the bridge plug.
				09:30	Ran in the hole.
				10:00	Circulated and conditioned the mud.
				12:30	Ran in the hole and washed the plug down.
				15:45	Dressed the top of the cement.
				18:00	Pulled out of the hole.
				20:00	Made up 8 3/8" bit and ran in the hole.
				22:00	Drilled the cement.
				23:30	Circulated the hole clean.
				24:00	Tested the casing to 310 bar.
6	1615		1.20	02:00	Pulled out of the hole with bit number 1

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System : Boredata Sandnes  
Well: 31/6-8RE

Horsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					and broke out same.
				05:00	Rigged up and ran CBL/VDL log.
				06:00	Pressure tested new test flowline to 517 bar. Testified by Det Norske Veritas.
				08:00	Made up bit and scraper and ran in the hole to 530 m. Worked the scraper and circulated mud. Continued running in the hole to 1615 m.
				13:30	Circulated and conditioned mud.
				15:15	Pulled out of the hole with bit and scraper. Broke out same.
				16:00	Picked up the cement kelly. Broke out cement head and removed kelly bushing.
				16:30	Slipped the drilling line.
				19:00	Waited on CET logging tool.
				22:45	Rigged up the log. Made CET logging run. Rigged down Schlumberger.
				23:00	Ran in the hole with open ended drill pipe to 343 m. Put up stuffing box.
				24:00	Rigged up 2 1/8" Enerjet perforating gun.
7	1615		1.20	00:45	Ran in the hole with 2 1/8" Enerjet.
				01:30	The collar locator stopped working. Pulled out of hole and repaired same.
				04:15	Ran back in the hole with 2 1/8" Enerjet to 1572 m. Closed middle ram and pressured up annulus to 35 bar. Perforated and flow checked. Pulled out of the hole with the log.
				04:30	Pulled out of the hole with the drill pipe.
				07:00	Rigged up the log and made a run to bottom with gauge ring and junk basket.
				09:30	Ran and set EZ-squeeze packer at 1570m with the wireline. Rigged down the log.
				13:00	Made up cement stinger and ran in hole to 1570m. Circulated bottoms up. Stung into the packer and established the injection rate.
				16:15	Stung out of the packer and mixed and pumped 4.5 m3 cement. Stung into the packer and squeezed 4 m3 into the perforations. Stung out of the packer and pulled out of the hole.
				18:30	Made up bit number 2 and ran in hole to 1560m.
				19:15	Circulated.
				24:00	Cleaned out the mudsystem while waiting on the cement.

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System : Boredata Sandnes  
Well: 31/6-8RE

Norsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
8	1615		1.20	03:15 06:15 08:15 09:30 11:30 14:30 17:30 19:30 20:15 23:00 23:30 24:00	Drilled out EZ squeeze packer at 1570m. Continued running in the hole to 1615 m, circulated bottoms up and pulled out of the hole. Made up scraper and ran in the hole to 1615 m. Worked scraper at 1570 m. Circulated and conditioned the mud. Pulled out of hole and broke out bit, scraper and junk basket. Rigged up the log and ran in the hole with CET. Rigged down same. Made up the packer and ran in the hole to 1500 m. Set the packer at 1500 m and performed an inflow test with drillwater in the string. Unseated the packer and reverse circulated water out of the string. Observed the well. Circulated the long way monitoring for gas. Negative. Pulled out of the hole and laid down RTTS packer. Slipped the drilling line. Cleaned the mud system.
9	1615		1.03	02:00 24:00	Cleaned out the mud pits and the sheaker pits. Rigged up 3 1/2" running equipment and ran in the hole with Nortest washing tool to 1615 m.
10	1615		1.03	21:30 22:30 24:00	Circulated with sea water. Cleaned the hole and the surface equipment. Pulled out of the hole with the tubing to 1220 m. Made up wearbushing retrieving tool and ran in the hole with same on drillpipe. Pulled the wear bushing.
11	1615		1.16	07:30 08:15 15:15 18:30 24:00	Tested the BOP stack to Norsk Hydro's specification. Pulled the test tool and ran the wear bushing. Ran in the hole with washing tool on 3 1/2" PH6 tubing. The internal and external coating on the 3 1/2" tubing started to flake off while circulating at max rate. Displaced the hole with 1.16 rd CaCl2 brine. Pulled out of the hole. Laid down the

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Well: 31/6-8RF

Norsk	Casing Size (in):	30	20	13 3/8	19 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					tubing.
12	1615		1.16	00:30 04:45 12:00 19:00 20:15 24:00	Continued to lay down the 3 1/2" tubing. Continued to clean out the pits and the equipment while waiting on new tubing. Offloaded, laid out and measured the tubing. Discovered failure with internal coating. Backloaded the tubing. Picked up and ran in the hole with 3 x 6 1/2" drill collar. Picked up and made a dummy run with 3" ID Subsea test tree to check the position of slick joint to middle pipe ram. Pulled out of the hole with 3" ID subsea test tree. Picked up, serviced and made up 1x7" tubing to 3" ID subsea test tree. Laid down same. Picked up, serviced and made up 1x7" tubing to 5" ID subsea test tree. Laid down same.
13	1615		1.16	05:00 20:00 24:00	Picked up and prepared to run the 5" sub sea test tree to dummy run to check the slick joint to the middle pipe ram. Pulled out of the hole and laid down same. Waited on 3 1/2" tubing. Cleaned 6 1/2" drill collar and displaced the surface system to brine. Picked up 5" ID subsea test tree and redressed same due to leaks.
14	1615		1.16	01:45 03:30 07:15 12:00 18:15 20:15 24:00	Continued to redress 5" subsea test tree Picked up 12 x 6 1/2" drill collar. Off loaded the tubing and measured the 3 1/2" tubing. Picked up and ran in the hole 131 joints 3 1/2" tubing. Circulated with brine while waiting on tubing. Transfer 40 M3 brine to rig. Picked up 34 joints 3 1/2" tubing. Tagged the bottom at 1615 m. Pulled back to 1585 m and circulated to clean brine through Baker filters.
15	1619		1.16	03:00 06:30 11:30 20:45	Circulated to clean the hole. Pulled out of the hole with 3 1/2" tubing. Ran gauge ring and junk basket. Ran in the hole with test string. Filled the sting with viscous fluid and Ca2Cl

D a i l y   r e p o r t

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System : Boredata Sandnes  
Well: 31/6-8RE

Horsk Casing Size (in): | 30 | 20 | 13 3/8 | 9 5/8 |  
Hydro Setting depth (m): | 411 | 687 | 1437 | 1646 |

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					brine. 21:35 Tested the surface lines and the string to 207 bar. 23:15 Continued to run in the hole and fill the string with Ca2Cl. 23:45 Tested the string to 207 bar. 24:00 Ran in the hole with the test string.
16	1619		1.16	10:15	Continued running in the hole with 3 1/2 tubing. Filled the string with CaCl2 and pressure tested to 207 bar. Picked up the subsea test tree and opened it. Picked up and tested the lubricator valve and landed the subsea test tree. 13:15 Rigged up the log and ran slim hole GR and CCL. 19:15 Picked up the surface test tree. Installed coflex hose and chichsans. Flushed and filled the lines with CaCl2. 24:00 Tested the lines against the wing valves. Closed the pressure control tester and pressure tested to 207 bar. Closed the master valve and bled off. Observed for 10 min. -ok. Equalized the pressure and bled off. Flushed through the burner
17	1619		1.16	02:00	Continued testing equipment. 02:15 Set the packer at 1500.5 m. 05:30 Rigged up and ran the GR/CCL logs. 06:15 Reset the packer at 1499 m. 08:00 Ran the GR/CCL logs. 09:00 Closed middle pipe ram and pressured up annulus to 83 bar to test the packer. 15:15 Opened middle pipe ram. Tested Baker lines to 207 bar. Opened the multi opening reversing valve and displaced with diesel. Switched to the Nowsco unit and displaced with diesel. Unable to close the multi opening reversing valve. 17:45 Waited for new Nowsco equipment. 20:30 Made up new Nowsco lines and tested same 23:00 Pumped 3.2 m3 viscous pill, 8 m3 brine and 3.8 m3 diesel with the Baker unit. Pumped and displaced with N2. While displacing, the Nowsco pump unit broke down. Bled off N2. 24:00 Prepared to use the Baker unit to open the multi opening reversing valve.
18	1619		1.16	01:45	Pumped 3.2 m3 diesel. Closed the multi opening reversing valve (MORV).

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System : Boredata Sandnes  
Well: 31/6-8RE

Horsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SC)	Mud dens. (SG)	Stop time	Short Summary
				03:30	Closed the middle pipe ram and pressured up annulus to open the pressure control tester. Increased the pressure to 238 bar and perforated from 1534.6 to 1557.6 m with 12 shots/ft. The well was shut in the choke manifold.
				05:00	Opened the pressure control tester with 83 bar. Flowed the well on 16/64 adjustable choke. Shut in on the choke at 05:00 hrs.
				10:30	Rigged up the wire line and pressure tested wire line lubricator. Ran in the hole and released the perforation gun at 1517 m.
				16:30	Rigged up the pressure control equipment Ran in the hole and set the sand flog tool.
				23:00	Opened and flowed the well on 24/64" choke.
				24:00	Closed the well in at the choke manifold and pulled out of the hole with the sand flog tool.
19	1619		1.16	00:45	Shut the operation down due to leaking acid tanks on deck.
				07:00	Pulled out of the hole with the sand flog tool. Ran in the hole with the production logging tool to 1540 m across the perforations.
				16:15	Opened the well to flow at various rates
				19:45	Pulled out of the hole with the production logging tool.
				23:45	Flowed the well. Choke size 28/64" to 72/64".
				24:00	Shut the well in on the choke manifold. Prepared to run the production logging tool.
20	1619		1.16	05:30	Closed the lubricator valve. Purged and pressure tested the N2 lines to 345 bar. Ran in the hole with the production logging tool.
				07:30	Opened the well to flow.
				10:00	Recorded the build up with the production logging tool.
				12:00	Flowed the well.
				14:30	Recorded the build up with the production logging tool.
				16:45	Pulled out of the hole with the production logging tool.
				19:00	Closed the pressure control tester and

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System : Boredata Sandnes  
Well: 31/6-SRE

Horsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Well depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					bled off the pressure. Prepared to kill the well. 21:45 Killed the well. Pumped 2.3 m3 CaCO3 and 3.2 m3 brine. 24:00 Opened the multi opening reversing valve and reversed out.
21	1619		1.16	01:00	Reverse circulated 36 m3. 01:30 Unseated the packer, landed the sub sea test tree in the wearbushing. Closed the middle pipe ram. 03:00 Reverse circulated 37 m3 through the degasser. 04:00 Reverse circulated 27 m3 through the reverse circulation line. 04:30 Opened the middle pipe ram and observed the well. 08:30 Circulated up the riser 64 m3. 20:00 Laid down the surface test tree, the lubricator, the landing string and the sub sea test tree. Laid down bottom hole assembly tools. 24:00 Ran in the hole with 8 1/8" overshot to fish the guns.
22	1619		1.16	01:00	Continued to run in the hole. 01:30 Reverse circulated 12.7 m3. 02:00 Continued to run in the hole. 02:45 Reverse circulated 12,7 m3. 03:00 Observed the well. 08:15 Latched on to the fish. Pulled out and laid down the fish and the fishing tool 18:30 Retrieved the wearbushing. Ran the BOP-testplug and tested the BOP according to WH's specification. 22:00 Laid down 27 joints of drill pipe and 15 joints of 6 1/2" drill collar. Ran in the hole with 12 stands of 5" drillpipe. Ran the wearbushing. 23:15 Circulated to clean 5" drillpipe. Flow checked. 24:00 Pulled out of the hole.
23	1619		1.16	02:30	Picked up and serviced the surface test tree. Found swivel not serviceable. 06:00 Made up 8 3/8" bit and casing scraper. Ran into the hole. 07:30 Reverse circulated, maximum gas 37 units 09:45 Pulled out of the hole with the bit and scraper 19:00 Rigged up the wire line and ran the sand

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System : Boredata Sandnes  
Well: 31/6-8RE

Worsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					bailer to 1617 m. Ran gauger ring and junkbasket to 1617. Made up, ran and set bridge plug at 1570. Ran and set Baker sump packer at 1562 m. Rigged down the wire line.
				21:30	Ran in the hole with open ended tubing and tagged the sump packer at 1562.5 m.
				24:00	Pulled up to 1528 m and circulated to clean the brine.
24	1619		1.16	06:30	Continued to clean the brine.
				08:45	Ran in the hole to 1560 m and reversed out.
				11:00	Pulled out of the hole.
				19:15	Picked up gravel pack equipment and ran in the hole. Closed upper piperam on 3 1/2" tubing.
				24:00	Waited on weather.
25	1482		1.16	08:30	Continued waiting on weather.
				11:00	Ran in the hole with the gravel pack string.
				12:00	Spaced out and tagged the sump packer.
				23:30	Tripped out of the hole to change the gravel pack assembly.
				24:00	Rigged up and circulated.
26	1482		1.16	02:00	Pressure tested all lines. Dropped the ball and set the packer. Pressured up the annulus to test the packer.
				07:00	Marked positions for packing and pumped the gravel as programmed.
				16:15	Reverse circulated with brine and spot 32 m3 high viscous pill. Observed the well,ok.
				17:30	Rigged down the circulation head and pulled out of the hole to 1350 m. Made a flow check, negative.
				21:30	Laid down the wash pipe assembly.
				24:00	Rigged up and ran the gravel packing production tool.
27	946		1.16	00:45	Continued to run the gravel packing production tool. Top of gravel at 1511 m.
				02:00	Picked up the sub sea test tree and function tested the same,ok.
				23:00	Picked up the test assembly. Tested the sub sea test tree,ok. Picked up 7" vam test string. Strapped coaxial cabel to tubing above and below



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System : Boredata Sandnes  
Well: 31/6-8RE

Horst	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					the connections. Continued to run in the hole with the test string.
				24:00	Cut and slipped the drill line.
28	1185		1.16	03:30	Ran in the hole with the test string to 1185 m. Ran in and set the wire line test plug. Tested the test string without success.
				08:00	Reset the test plug.
				08:30	Tested the string,ok.
				13:30	Ran in the hole with the test string on 5" drill pipe and spaced out. Observed the well,ok.
				14:30	Pulled out of the hole with the string and added one joint of 7" tubing below the sub sea test tree. Function tested the sub sea test tree.
				23:30	Made up the cabel head on the mono head cabel. Made up the same on the sub sea test tree.
				24:00	Made up the drill pipe test tool mandril and fixed gauges.
29	1482		1.16	01:00	Function tested the sub sea test tree and ran in the hole to 1219 m.
				02:00	Rigged up wire line and ran the test plug.
				03:15	Pressure tested the tubing.
				05:00	Retrieved the test plug.
				09:00	Continued to run 7" test string.
				19:00	Picked up the lubricator valve and tested same.Picked up the sub sea test tree. Rigged up the coflex flowlines,the surface manifold and the connecting lines.
				22:45	Rigged up the wire line equipment and the wire line BOP. Confirmed space out to the indicator callar.
				23:45	Flushed through 4" and 6" lines to the burners.Pressure tested the kill valve.
				24:00	Rigged up the wire line.
30	1482		1.16	01:45	Ran the wire line test plug.
				04:15	Tested the string.
				05:45	Retrieved the wire line test plug.
				09:45	Tested the surface equipment.
				12:00	Circulated bottoms up.
				13:30	Opened GEOVANN vent sub with the wire line.
				21:00	Ran the gravel packing production tool.
				22:45	Displaced the tubing with diesel.

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System : Boredata Sandnes  
Well: 31/6-8RE

Worst	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				24:00	Sting into the packer. Closed the middle pipe ram and tested the packer. Bled off to close the E.Z. valve. Confirmed that the valve was closed.
31	1482		1.16	04:45	Closed the master valve. Displaced the surface lines to the burner. Rigged up the lubricator and pressure tested the same. Opened the lubricator valve and the E.Z.test valve to set the gauges in the "F" nipple. 24:00 Opened the well to flow.
32	1482		1.16	24:00	Flowed the well.
33	1482		1.16	09:15	Flowed the well on 133/64" choke. 10:45 Shut in the well automatic at the master valve due to failure of the erosion probe on the surface test tree. Replaced the erosion probe. 14:15 Rigged up the wire line and retrieved the gauges. 23:00 Rigged up and ran the production logging tool. 24:00 Flowed the well.
34	1482		1.16	03:30	Shut in the well for build up. Pulled the production logging tool. 08:45 Pumped 4.5 M3 15%HCl on top of closed lubricator valve. Opened same and let the acid fall. Soak for 3 hrs. 13:15 Flowed the well to clean out the acid. 19:00 Rigged up the wire line lubricator. Pressure tested the lubricator. Found leaks in the quick connector. Retested, ok. 24:00 Ran in the hole with the pressure gauges on the wire line.
35	1482		1.16	00:45	Continued to rig down the wire line. 24:00 Flowed the well on adjustable choke.
35	1482		1.16	08:00	Continued to flow the well. 09:30 Shut in the well for pressure build up. 10:30 Closed the lubricator valve and rigged up the wire line to retrieve the pressure gauges. 11:30 Changed out empty N2 tank. 14:30 Tested the stuffing box. Found leak in the quick connection. Changed the O-ring and retested,ok. Ran in the hole with

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System : Boredata Sandnes  
Well: 31/6-8RE

Worst	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1546

Report number	Mid Depth (m)	EST. PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				24:00	gauge retrieving tool. Broke the wire when attempted to retrieve the gauges. Ran in the hole with 4.9" wire line grap. Lost wire line grap in the hole. Fished same out. Ran in with 2.9" wire line grap to fish the wire out, negative. Ran in the hole with 4.9" wire line finder.
37	1482		1.16	24:00	Modified the wire line fishing tool to comply with the restriction in the surface test tree. Located and caught the fish. Retrieved the same with the gauges.
38	1482		1.16	03:45	Pulled out of the hole with the gauges. Close lower lubricator valve and rigged down the wire line equipment.
				09:15	Rigged up and ran in the hole with the production logging tool.
				12:15	Flowed the well.
				16:45	Shut in the well for build up. Pulled out off the hole with the production logging tool.
				23:00	Flowed the well.
				24:00	Shut in the well. Closed lower lubricator valve and bled off the pressure. Pumped 4.5 m3 15% HCL into the landing string.
39	1552		1.16	03:30	Opened lower lubricator valve. Dropped acid to the perforations and soak for 3 hrs.
				24:00	Flowed the well to clean out the acid.
40	1552		1.16	03:30	Continued to flow the well.
				05:45	Shut in the well on choke manifold and E.Z. valve and waited on weather.
				24:00	Flowed the well on 20/64" choke.
41	1552		1.16	02:45	Continued to flow the well.
				04:00	The well shut in automatic on wing valve due to sand probes. Installed new sand erosion probe.
				10:15	Flowed the well.
				12:45	The well shut in automatic due to sand probes. Removed cracked probes and installed bull plugs. Changed out transducer on vertical separator.
				24:00	Flowed the well.

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System : Boredata Sandnes  
Well: 31/6-SRE

lorsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Well depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
42	1562		1.16	24:00	Continued to flow the well.
43	1562		1.16	17:45 24:00	Continued to flow the well. Shut in the well to rig up the sampling manifold.
44	1562		1.16	02:15 04:45 24:00	Repaired jammed filter in the horizontal separator. Pressure tested the separator and the sampling manifold. Flowed the well.
45	1562		1.16	13:15 23:00 24:00	Continued to flow the well for sampling. Got problems with hydrate in the heater inlet. Rigged up and tested the wire line equipment. Ran in the hole the SDB and the SDP gauges. Flowed the well for sampling.
46	1512		1.16	12:45 15:00 18:45 23:30 24:00	Continued to flow the well for sampling. Shut in the well for build up. Flowed the well. Shut in the well. Rigged up and tested the wire line equipment and retrieved the gauges. Waited on weather.
47	1512		1.16	07:15 11:00 17:15 22:30 24:00	Continued waiting on weather. Rigged up and ran the SDP gauges. Flowed the well. Rigged up and retrieved the gauges. Flowed the well for sampling.
48	1512		1.16	15:45 20:30 21:30 23:45	Continued to flow the well for sampling. Rigged up and ran in the hole with the wire line to retrieve the gauges. Bled down the tubing pressure over the choke manifold. Closed the flow valve and opened the kill valve. Pumped down the tubing 3.18 m3 HEC, 2.9 m3 CaCo3 pill and 22.7 m3 brine to kill the well.
49	1512		1.16	02:15 07:00 09:15	Bullheaded 2.4 m3 into the perforations and observed the well. Opened Backer circulation valve and reverse circulated through the choke manifold. Dumped 19 m3 of contaminated brine. Opened middle pipe ram and pulled the tubing hanger above the upper annular.

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System : Boredata Sandnes  
Well: 31/6-8RE

Norsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				11:30	Closed middle pipe ram and circulated the long way through the choke manifold. Opened middle pipe ram and circulated up the riser. Max gas 3 units. Pumped 4.7 m3 CaCo3 pill, 24.2 m3 brine and 1.6 m3 Caco3.
				12:00	Observed the well.
				24:00	Laid down the surface equipment, the landing string, the sub sea test tree and the production string.
50	1512		1.16	08:00	Continued to lay down the production string.
				11:15	Ran in the hole with the gravel packing production tool.
				12:00	Rigged down the gravel packing production tool and the test equipment.
				15:00	Ran in the hole to retrieve the packer.
				16:30	Repaired fot throttle on the draw work.
				18:30	Continued to run in the hole to retrieve the packer.
				20:15	Circulated and conditioned the brine.
				22:30	Latched on to the packer and pulled out to 1164 m.
				24:00	Flow checked for 15 min. Gained 0.5m3. Shut in the well. Picked up the kelly and observed the well. No pressure build up.
51	1512		1.16	03:30	Circulated up the riser with the booster pump. Circulated down the string and up the annulus. Closed in well and observed no pressure build up. Max gas 38 units.
				04:45	Opened the well on the choke manifold. Observed the well to be static. Circulated up the riser. Max gas 27 units.
				05:15	Displaced the string with 4.8 m3 CaCl2/ CaCo3.
				06:30	Ran in the hole to 1480 m.
				09:00	Circulated through the choke manifold. Max gas 21 units. Observed the well to be static.
				15:00	Pumped down the string 5.5 m3 CaCl2/ CaCo3 . Bull headed 2.3 m3 into the formation.
				16:30	Pulled out of the hole to 1340 m and observed the well,ok.
				24:00	Continued to pull out of the hole.
52	1570		1.16	01:00	Laid down the GP-packer.

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System : Boredata Sandnes  
Well: 31/6-8RE .

Worsk	Casing Size (in):	30	20	13 3/8	9 5/8
Hydro	Setting depth (m):	411	687	1437	1646

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				01:45	Observed the well.
				09:30	Made up and ran in the hole with 8 1/2" mill shoe and the wash pipe assembly.
				10:45	Tagged top of the screen at 1506 m.
				13:30	Circulated and conditioned the brine. Washed over the screen assembly to 1562 m.
				14:45	Circulated.
				19:15	Pulled out of the hole and laied down the wash pipe asssembly.
				22:45	Make up the over shot with the jar assembly and ran in the hole to 1500 m.
				23:45	Circulated.
				24:00	Spot 3 m3 CaCl2/CaCo3 on bottom.
53	1530		1.16	08:15	Pulled out of the hole with the over shot.
				14:30	Ran gauge ring and junk basket. Ran in the hole to set the squeeze packer at 1535 m.
				23:00	Sting into the packer and established the injection rate. Squeeze 2.9 m3 cement into the perforations.
				24:00	Reverse circulated out 1 m3 cement and pressure tested the packer.
54	1535		1.16	01:30	Pulled out of the hole with the cement stinger.
				02:00	Slipped 7.3 m of the drilling line.
				05:00	Made up 8 3/8" bit and 9 5/8" casing scraper. Ran in the hole and tagged the squeeze packer at 1535 m.
				08:30	Circulated bottoms up and displaced the hole with CaCl2 brine.
				10:00	Pulled out of the hole to 374 m.
				12:00	Retrieved the wear bushing.
				12:45	Broke out the bit and the casing scraper
				16:00	Picked up 3 x 6.5" drill collars and 30 x 5" modified drill pipe. Racked the same back in derrick.
				22:00	Tested the BOP according to Worsk Hydro specification. Pulled out of the hole with the test plug and ran in the hole with the wear bushing.
				24:00	Tested the choke manifold and the surface equipment.
55	1535		1.16	00:15	Continued to test the choke manifold and the surface equipment.
				13:00	Rigged up and ran in the hole with the test string for the drill steam test

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System : Boredata Sandnes  
Well: 31/6-8RE

Horsk Casing Size (in): |30 |20 |13 3/8|9 5/8 |  
Hydro Setting depth (m): | 411| 687| 1437| 1646|

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					number 2. Pressure tested the bottom hole assembly, the test string and the sub sea test tree.
				16:00	Made up the landing string, the lubricator and the surface test tree. Landed in well head.
				22:00	Hooked up the surface hoses and the manifold. Pressure tested the test string and the surface equipment. Sat the packer at 1477 m.
				24:00	Rigged up the wire line and opened the slide siding door.
56	1535		1.16	00:15	Pulled out of the hole with the wire line. Found the shifting tool damaged.
				01:45	Repaired the shifting tool.
				02:45	Pumped 3.2 m3 HEC pill into the test string. Pressure tested the N2 line and displaced HEC pill with 6.2 m3 N2.
				04:30	Ran in the hole with the shifting tool and closed the slide siding door. Checked the slide siding door closed by pressure up the test string to 14 bar.
				14:45	Pressure tested the lubricator. Opened the pressure control tool and ran in the hole with the perforation guns. Perforated from 1522,5 m to 1523.1 m.
				20:45	Ran in the hole with the sand bailer and recovered 0.25 kg sand.
				24:00	Rigged up and installed the sandflog. Pressure tested the lubricator.
57	1535		1.16	00:45	Ran in the hole with the sandflog.
				19:45	Flowed the well on various chokes to verify sand free rate. Shut in the well.
				24:00	Pulled out with the sandflog. Rigged up and pressure tested the sandbailer.
58	1535		1.16	13:15	Ran in the hole with the sandbailer. Top of sand at 1534.2 M. Rigged up, tested and ran 11/16" enerjet. Perforated from 1522.5 m to 1523.1 m. Ran in the hole with the sandflog.
				24:00	Flowed the well.
59	1535		1.16	00:15	Shut in the well.
				00:30	Flowed the well.
				11:00	Pulled out of the hole with the sandflog. Ran in with the sandbailer to top of sand at 1534.2 m. Pulled out of the hole with the sandbailer and landed three

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System : Boredata Sandnes  
Well: 31/6-8RE

Worsk | Casing Size (in): | 30 | 20 | 13 3/8 | 9 5/8 |  
Hydro | Setting depth (m): | 411 | 687 | 1437 | 1646 |

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					SDP/CRG gauges in "F"-nipple. 14:45 Flowed the well. 16:00 Shut the in the well and bled down the tubing pressure to 96 bar. 20:45 Bled down the tubing pressure and filled the string with 7.3 m3 high viscous pill 22:45 Performed a formation integrity test. 24:00 Ran in the hole to retrieve the gauges. Stopped at 396 m due to viscous brine.
60	1520		1.16	02:00	Changed to 1 7/8" tool diameter and added more weight. Came no further in than 400 m due to viscous brine. 03:00 Reverse circulated 17 m3 brine. 03:15 Unseated the packer. 04:30 Circulated. 05:10 Observed the well. 05:15 Pumped 8 m3 CaCo3. 09:30 Pulled the 5" landing string and laid down the sub sea test tree. 17:30 Pulled out of the hole with the test string. 21:45 Rigged up and ran the gauge ring and the junk basket. Ran in the hole and set the squeeze packer at 1520 m. 24:00 Ran in the hole with 5" open ended drill pipe.
61	1414		1.16	06:30	Laid down the 3 1/2" tubing and the 5" modified drill pipe. 09:00 Ran in the hole with the cement stinger. 11:30 Squeezed 2 m3 cement into the perforations and left 1 m3 cement above. 13:00 Circulated. 16:00 Repaired upper block K on the retractor cylinder. 18:15 Pulled out of the hole with the cement stinger. 24:00 Rigged up and ran in the hole with the perforation guns. Perforated from 1416 m to 1418 m. Ran gauge ring to 1416 m and sat the squeeze packer at 1414 m.
62	1414		1.16	00:30	Pulled out of the hole with the wire line. 02:30 Ran in the hole with the cement stinger to 1414 m. 03:00 Circulated. 05:00 Tested the cement lines and sting into the squeeze packer. Performed a fracture test.



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System : Boredata Sandnes  
Well: 31/6-SRM

Worsk | Casing Size (in): | 30 | 20 | 13 3/8 | 9 5/8 |  
Hydro | Setting depth (m): | 411 | 687 | 1437 | 1646 |

Report number	Well depth (m)	BST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				06:15	Mixed and pumped 4 m3 cement. Squeezed 3 m3 into the perforations.
				07:30	Pressure tested the cement plug, negative Reverse circulated.
				11:15	Pulled out of the hole to 900 m. Laid down 93 joints 5" drill pipe.
				11:30	Tested the cement plug.
				16:30	Perforated the 9 5/8" casing at 350 m to check for gas in the 9 5/8" by 13 3/8" annulus.
				22:00	Cut the 9 5/8" casing at 612 m.
				22:30	Slipped the drill line.
				24:00	Picked up the 9 5/8" casing spear assembly and ran in the hole.
63	530			03:30	Retrieved the 9 5/8" casing.
				07:15	Attempted to perforate the 13 3/8" casing at 375 m, misrun.
				09:00	Repaired the perforation gun. Perforated the 13 3/8" casing at 375 m and checked for gas in the 13 3/8" by 20" annulus, ok.
				14:30	Cut the 13 3/8" casing at 588 m.
				20:45	Retrieved the 13 3/8" casing.
				22:00	Ran in the hole with open ended drill pipe to 625 m.
				22:45	Displaced the hole with seawater.
				24:00	Mixed and pumped 12.7 m3 cement. Pulled up to 530 m and squeezed 8.7 m3 cement into the 13 3/8 by 20" annulus.
64	0			01:00	Mixed and pumped 35.46 m3 cement. Displaced the cement with 2.5 m3 sea water and pulled back to 330 m.
				02:00	Pulled out of the hole.
				14:00	Pulled the BOP.
				16:15	Cut the 20" and 30" casing with explosive at 330 M.
				23:30	Retrieved the wellhead, the permanent guide base and the temporary guide base.
				24:00	Started to deballast the rig from and removed chains from anchors number 2, 3, 6 and 7.

D a i l y r e p o r t

..Date..

19860512

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(ooo)

System : Boredata Sandnes

Well: 31/6-8RE

Norsk Casing Size (in): | 30 | 20 | 13 3/8 | 9 5/8 |  
 Hydro Setting depth (m): | 411 | 687 | 1437 | 1646 |

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
55	0			11:20	Rig deballasted to 8 m.
				19:30	Pulled anchors number 7, 3, 6, 8, 4, 2, 5 and 1. Last anchor on bolster at 19:30 hrs.
				24:00	Left the location at 19:30 hrs.

Time distribution

..Date..  
19860409

System : Boredata Sandnes

Well: 31/6-8RE

Rig name: TREASURE SEEKER

Norsk  
Hydro

Operations	Hrs	%	Hrs	%	Subtotal
<b>Rig moving-----</b>					
Rig moving	: 14.3	.92			
Mooring	: 59.8	3.86			
Sum -----			74.00	4.78	74.00
<b>Drilling-----</b>					
Drilling	: 4.3	.27			
Tripping	: 9.3	.60			
Circ. and cond. hole and mud	: 2.0	.13			
Sub sea equipment handling	: 28.8	1.86			
BOP testing/activities	: 5.5	.36			
Other equipment testing	: 2.3	.15			
Other	: 5.8	.37			
Sum -----			57.75	3.73	131.75
<b>Formation evaluation-----</b>					
Sum -----			.00	.00	131.75
<b>Production testing-----</b>					
Circulating	: 163.2	10.55			
Slip and cut drilling line	: 2.5	.16			
Wire line operations	: 217.8	14.08			
Tripping workstring	: 275.2	17.79			
Tripping other	: 32.0	2.07			
Rigging up/down	: 39.5	2.55			
Flowing/injection	: 336.3	21.74			
Pressure build up/fall off	: 15.5	1.00			
Equipment testing	: 83.8	5.42			
Plugging and squeezing	: 41.8	2.70			
Other	: 13.0	.84			
Sum -----			1220.50	78.89	1352.25
<b>Plug and abandonment-----</b>					
Tripping	: 6.0	.39			
Circ and cond mud/hole	: 2.0	.13			
Perforating	: 10.5	.68			
Cement plug	: 1.0	.06			
Mechanical plug	: .3	.02			
Squeezing	: 2.5	.16			
Cutting	: 13.3	.86			
Equipment recovery	: 30.5	1.97			
Slip and cut drilling line	: .5	.03			
Sum -----			66.50	4.30	1418.75
<b>Downtime-----</b>					
Drilling equipment repair	: 1.5	.10			
Production test equip repair	: 27.5	1.78			
Well control	: 1.5	.10			
Waiting on weather, prod test	: 23.3	1.50			
Fishing> due to wireline	: 33.5	2.17			
Production testing wait	: 41.0	2.65			
Sum -----			128.25	8.29	1547.00
<b>Reported time (of well total 1547.00) :</b>					<b>1547.00</b>

## 4. ABANDONMENT OF THE WELL

The abandonment program is shown in Fig. B - 5 on page 50 and was carried out in the following way (all depths in MD).

1. After squeezed off all the perforation with cement, the 9 5/8" casing was perforated at 375m to check for gas in 9 5/8" by 13 3/8" annulus.
2. Cut 9 5/8" casing at 612m and retrieved 24 joints of casing.
3. Perforated 13 3/8" casing at 375m to check for gas. Cut the 13 3/8" casing at 587m and retrieved 22 joints of casing.
4. Ran in with open ended drill pipe to 625m and pumped 12.7m<sup>3</sup> cement.
5. Pulled up to 530m and squeezed 8.7m<sup>3</sup> cement into the 13 3/8" by 20" annulus.
6. Pumped 35.4m<sup>3</sup> cement and pulled back to 320m and reverse circulated.
7. Cut the 20" and 30" casing by explosive at 330m.

Formation integrity

..Date..  
19860502

System : Boredata Sandnes.

Well: 31/6-8RE

Seabed at: 323 mRKB

Hydro Total depth: 2138 m,MD,RKB

Casing depth (m)	Open hole depth	Formation integrity strenght (SG)
1437		1.80

Bit record																					
Well: 31/6-8RE										Date: 19860512		Date: 19860512									
System : Boredata Sandnes																					
Norsk Hydro																					
BIT NUMBER	SIZE (in)	Manu- fact- urer	Trade Name	Serial number	LADC Code	Nozzles diameter (./32")	BHA no.	Depth out (m)	Bit meter (m)	Drill time (hrs)	Rot. hours (hrs)	ROP (m/h)	Rotation min/max (rpm)	Total bit revol.	Weight min/max (KN)	Flow min/max (m3/h)	Wear			Remarks	
																	T	B	G	Other	
1	8 3/8	SERV	ECONO	110 RF	321	12 12 12	2	1592	4	6.5	6	.6	60/90		111/155		8		0		
2	8 3/8	HTC	WTR2	110 RF	321	14 18 14	1	1615	23	2	11.5	11.5	60/90		111/155		7		0		BRICE PLUG DRILL. CWT. SQUE. PACK.
3	8 3/8	HTC	WTR2				2	1571	1	3.25	3	.3	30/30		155/155						

((( (ooo)	<u>B o t t o m   h o l e   a s s e m b l y</u>	..Date.. 19860512
Norsk Hydro	System : Boredata Sandnes Well: 31/6-8RE	

BHA no.:1 Item:no./name/OD,in/length,m    Depth interval MD,m:1592-1615							
1	Bit	8 3/8	.23	4	DC Steel	6 1/2	135.85
2	Junksub		.67	5	X-over		.72
3	Nearbit stab		1.29	6	HWDP	5	136.76
BHA no.:2 Item:no./name/OD,in/length,m    Depth interval MD,m:1570-1571							
1	Bit	8 3/8	.23	5	DC Steel	6 1/2	135.85
2	Junksub		.67	6	X-over		.72
3	Junksub		.62	7	HWDP	5	136.76
4	Nearbit stab		1.29				

(( (oo))		Daily mud properties										Date..			
Norsk Hydro		System : Boredata Sandnes										19860512			
		Well: 31/6-8RE													
		Mud Contractor: Anchor Drill. Fluid													
Date	Mud depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL/GEL/Ph 0 10 mPa	100 psi (cc)	HP/HT Cl- inn/out mg/l	Alkalinity Pf Pm Mf mg/l	Ca++ inn/out mg/l	Oil SOL %	H2O %	V.G. meter at 115WF rpm   rpm   rpm			Mud type
850720											100				
850721	2138										100				
850722	2138										100				
850723	2138	1.20									100				
850724	2138	1.20									100				
850725	1615	1.20	9	5							100				
850726	1615	1.20	9	5							100				
850727	1615	1.20	9	5							100				
850728	1615	1.03	0	0							100				
850729	1615	1.03	0	0							100				SEAWATER
850730	1615	1.16	0	0							100				SEAWATER
850731	1615	1.16	0	0							100				CaCl2-BRINE
850801	1615	1.16	0	0							100				CaCl2-BRINE
850802	1615	1.16	0	0							100				CaCl2-BRINE
850803	1619	1.16	0	0							100				CaCl2-BRINE
850804	1619	1.16									100				CaCl2-BRINE
850805	1619	1.16									100				CaCl2-BRINE
850806	1619	1.16									100				CaCl2-BRINE
850807	1619	1.16									100				CaCl2-BRINE
850808	1619	1.16									100				CaCl2-BRINE
850809	1619	1.16									100				CaCl2-BRINE
850810	1619	1.16									100				CaCl2-BRINE
850811	1619	1.16									100				CaCl2-BRINE
850812	1619	1.16									100				CaCl2-BRINE
850813	1482	1.16									100				CaCl2-BRINE
850814	1482	1.16									100				CaCl2-BRINE
850815	946	1.16	0	0							100				CaCl2-BRINE
850816	1185	1.16	0	0							100				CaCl2-BRINE
850817	1482	1.16	0	0							100				CaCl2-BRINE
850818	1482	1.16	0	0							100				CaCl2-BRINE
850819	1482	1.16	0	0							100				CaCl2-BRINE
850820	1482	1.16	0	0							100				CaCl2-BRINE
850821	1482	1.16	0	0							100				CaCl2-BRINE
850822	1482	1.16	0	0							100				CaCl2-BRINE
850823	1482	1.16	0	0							100				CaCl2-BRINE
850824	1482	1.16	0	0							100				CaCl2-BRINE
850825	1482	1.16	0	0							100				CaCl2-BRINE
850826	1482	1.16	0	0							100				CaCl2-BRINE
850827	1562	1.16	0	0							100				CaCl2-BRINE
850828	1562	1.16	0	0							100				CaCl2-BRINE
850829	1562	1.16	0	0							100				CaCl2-BRINE
850830	1562	1.16	0	0							100				CaCl2-BRINE
850831	1562	1.16	0	0							100				CaCl2-BRINE



..Date..  
19860512

..Date..  
19860512

D a i l y m u d p r o p e r t i e s

System : Boredata Sandnes

Well: 31/6-8RE

Mud Contractor: Anchor Drill. Fluid

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(ooo)

Norsk  
Hydro

Date	Mid depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- mg/l	inn/out mg/l	Alkalinity Pf Pm Mf mg/l	Ca++ inn/out mg/l	Oil Sol %	H2O %	V.G. meter at 115WF rpm			Mud type
																500	100	3	
850901	1562	1.16	0	0	0	0									100				CaCl2-BRINE
850902	1562	1.16	0	0	0	0									100				CaCl2-BRINE
850903	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850904	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850905	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850906	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850907	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850908	1512	1.16	0	0	0	0									100				CaCl2-BRINE
850909	1570	1.16	15	14											100				CaCl2-BRINE
850910	1530	1.16	0	0	0	0									100				CaCl2-BRINE
850911	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850912	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850913	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850914	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850915	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850916	1535	1.16	0	0	0	0									100				CaCl2-BRINE
850917	1520	1.16	0	0	0	0									100				CaCl2-BRINE
850918	1414	1.16	0	0	0	0									100				CaCl2-BRINE
850919	1414	1.16	0	0	0	0									100				CaCl2-BRINE
850920	530														100				CaCl2-BRINE
850921	0														100				CaCl2-BRINE
850922	0														100				CaCl2-BRINE

C e m e n t   r e p o r t s

..Date..  
19860502

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System : Boredata Sandnes

Well: 31/6-8RE

Norsk  
Hydro

Cement contractor: Halliburton

Type	Depth	Slurry	Slurry	Compress.	Thickening	Additive	Compo-	Total
of		Volume	Density	strenght	time	name	sition	used
Job	(m)	(m3)	(SG)	(bar/hrs)	(hrs:min)		((1/100kg)	(l)
Squeeze	1572	4.5	1.94	211/16	3.5	fresh	32.25	1999
						Halad-10L	7.99	495
						CFR-2L	1.29	80
Squeeze	1557	4	1.9			fresh	40.96	2130
						Halad-10L	3.54	184
						CFR-2L	0.89	46
Squeeze	1523	3	1.9			fresh	41.3	1569
						Halad-10L	3.57	136
						CFR-2L	0.89	34
Squeeze	1418	4	1.9			fresh	50	2550
						Halad-10L	2.33	119
						CFR-2L	0.89	45
Squeeze	688	13	1.9			salt	46.05	7368

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DRILLING EQUIPMENT FAILURES AND PROBLEMS

Date	Equipment	Failure
26.07.85	Casing Collar Locater- CCL	The log stopped functioning.
30.07.85	3 1/2" PH6 Tubing	Internal and external coating on the tubing came off when the hole was displaced with brine.
01.08.85	Non return Valve	The non return valve on the glucol injection line didn't hold the pressure when the sub sea test tree was pressure tested.
04.08.85	Instrument Manifold	Leak on the data header when testing the surface liner.
05.08.85	N <sub>2</sub> pump-unit Baker pump-unit Multiopening Reverse valve - MORV	Leaks on pump-unit. Leaks on pump-unit. Unable to close the MORV by pumping through the N <sub>2</sub> surface line due to insufficient flow capability.
06.08.85	Sub Sea Test-Tree- SSTT	When attempting to detonate the perforating guns, the SSTT unseated in the wellhead. Increased the closing pressure on the middle pipe ram before pressured up the annulus to detonate the perforating guns.

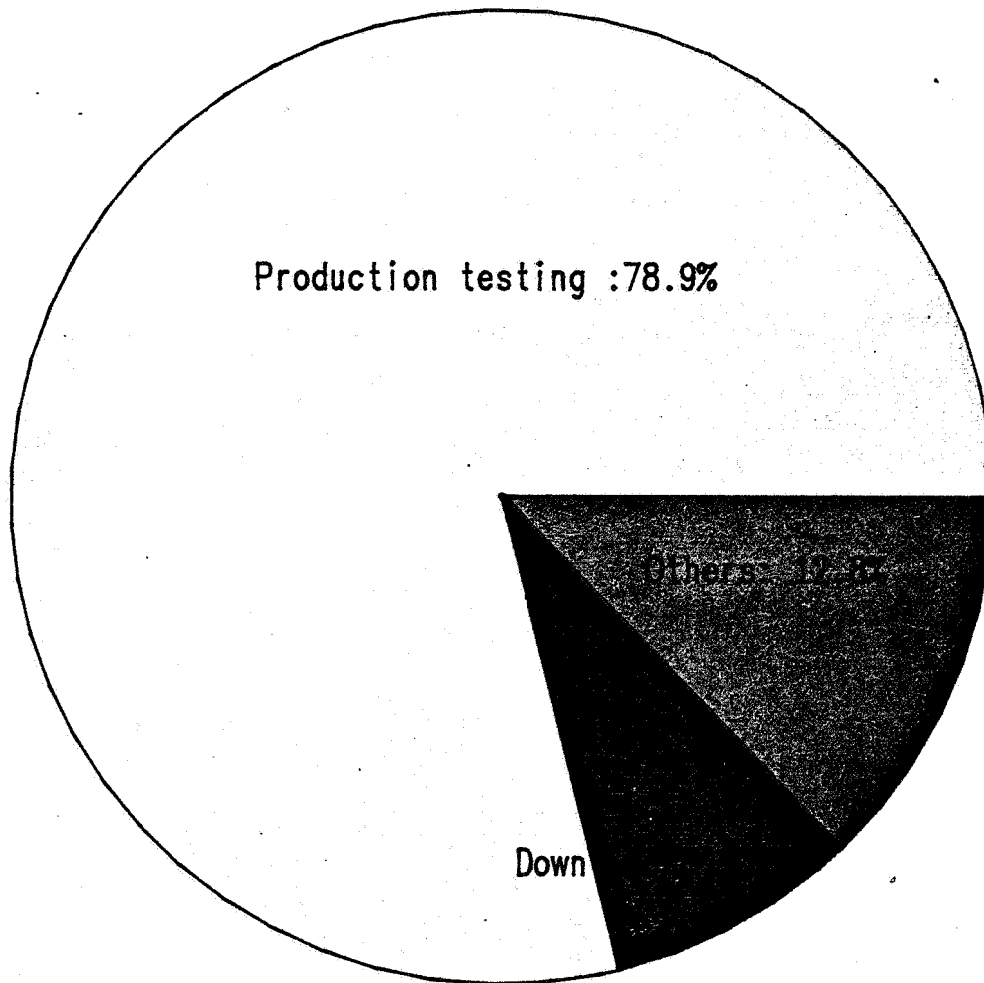
	Wire line Lubricator	Leaks on the lubricator.
07.08.85	Acid Tanks	Severe leaks from two acid tanks.
	Production Logging Tool-PLT	Pulled out of the hole with the PLT because of tool failure.
21.08.85	Erosion Probe	The well was shut in automatic due to failure in the erosion probe.
22.08.85	Stuffing Box	Leaks in the quick connector. Changed O-ring.
24.08.85	Wire line	Broke the wire when attempting to retrieve the pressure gauges. Made three attempts to get through the elevator sub on the surface test tree with the fishing tool. Found inside diameter in the elevator sub smaller than the outside diameter of the fishing tool.
29.08.85	Erosion Probe	The well shut in automatic on the wring valve. Had no sign of erosion on the erosion probe. Replaced the erosion probe with the bull plugs.
31.08.85	Separator	Shut in the well due to jammed filter in the separator.

01.09.85 Heater Inlet

Hydrate problems in  
the heater inlet.

13.09.85 Slide Siding

Had problem to open  
the SSD because of  
damaged shifting tool.



TIME REPORTED (HRS) 1547 OF TOTAL:1547

<u>TOTAL OTHERS</u>	<u>12.8 %</u>
Rig moving	: 4.8 %
Drilling	: 3.7 %
Plug and abandonment	: 4.3 %

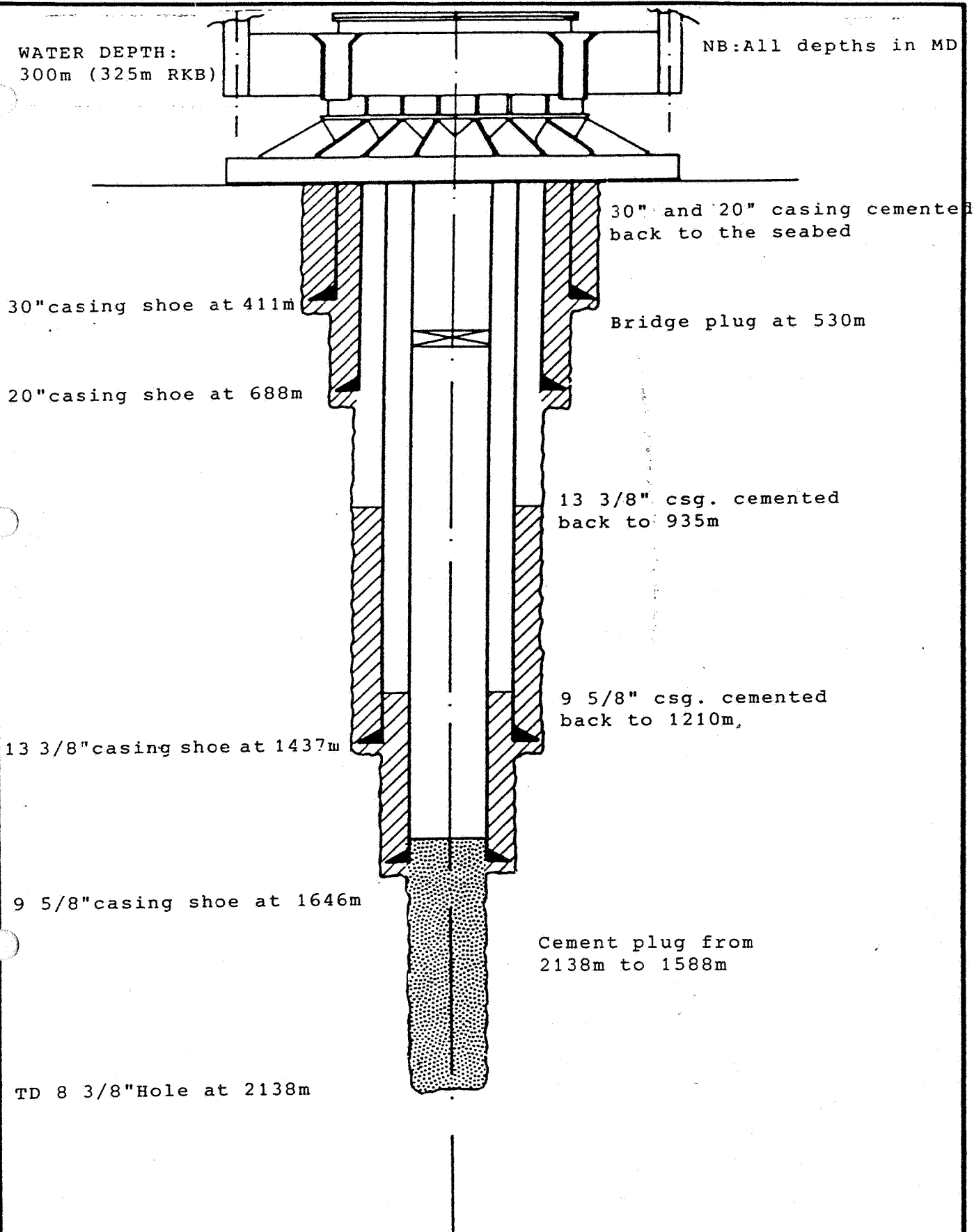
TIME DISTRIBUTION


WELL: 31/6-8RE Date:19860425

Fig.  
B - 3

WATER DEPTH:  
300m (325m RKB)

NB: All depths in MD



 **Norsk Hydro**  
Drilling Department

STATUS PRIOR TO  
RE-EVENTRY OF  
WELL 31/6-8R

Gr. no.:

7

Fig.:

B - 4

Date: 07.04.86

Dwg. no.:

16

Sign: POR/AHJ

ALL DEPTHS REFERS TO RKB

Seabed at 325M

30" csg. at 411M

20" csg. at 687M

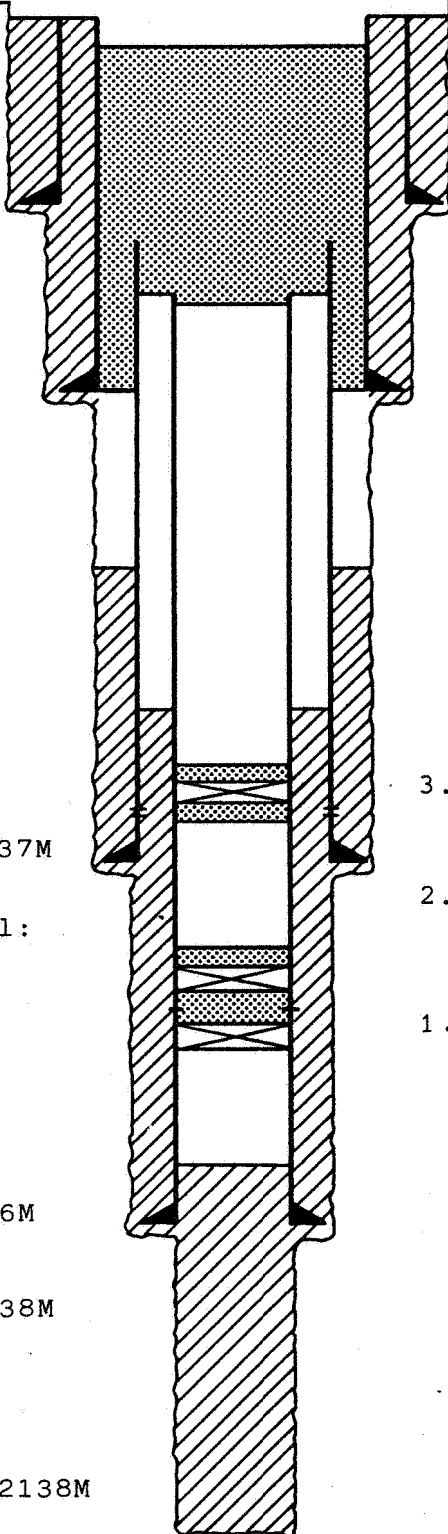
13 3/8" csg. at 1437M

Perforated interval:  
 1416,0 - 1418,0M  
 1522,5 - 1523,1M  
 1537,6 - 1557,6M

9 5/8" csg. at 1646M

Cementplug from 2138M  
 to 1615M

TD 8 3/8" Hole at 2138M



8. 30" and 20" csg. cut at 330M
7. Cementplug from 330M to 530M
6. Cementplug from 530M to 625M
5. Cut the 13 3/8" csg. at 587M
4. Cut the 9 5/8" csg. at 612M
  
3. EZ squeeze packer at 1414m
2. EZ squeeze packer at 1520m
1. EZ squeeze packer at 1535m

 <b>Norsk Hydro</b> Drilling Department	<b>WELL STATUS AFTER                  PERMANENT ABANDONMENT                  OF WELL 31/6-8 RE</b>	Gr. no.: 7	Fig.: B - 5
		Date: 08.04.86	Dwg. no.: 39
		Sign: POR/AHJ	