

INTERNATIONAL DEPARTMENT
INDEX - INDIVIDUAL WELL RECORD

COUNTRY Norway LEASE 17/12 WELL NO. 1X

FIELD Bream DATE COMPLETED June 21, 1971

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

NORWAY NORTH SEA

DRILLING PROSPECTUS

Well 17/12-1X
Location 58° 11' 15" N AFE NW 5605
03° 56' 06" E
Water Depth 380 ft.
RKB to Mean Sea Level 90 ft.
RKB to Ocean Floor 470 ft.

GENERAL

A 13,200 ft exploratory well is to be drilled in Block 17/12 using the semisubmersible rig "Ocean Viking" under contract Odeco Norway Inc.

This is a "tight hole" and the program outlined in the attached tight hole procedure should be followed.

ATTACHMENTS

The following attachments are issued with this prospectus:

- 1 Drilling Procedure
- 2 Hole fill-up Procedure
- 3 Casing and cementing Program
- 4 Well Profile
- 5 BOP - Well Head Program
- 6 Mud Program
- 7 Logging coring sampling Program
- 8 Testing
- 9 Geological Well Program
- 10 Tight hole Procedure.

The attachments detail the work program to be followed. Any planned changes or deviations from this plan should be cleared with Stavanger office in advance.

This prospectus and attachments are CONFIDENTIAL and not to be released except to the Drilling Contractor without approval of the Stavanger office.

A daily drilling report covering the period from 0600 to 0600 hrs is to be called to the Stavanger office at 0630 daily unless advised otherwise. A brief report of operation will be called to the Stavanger office at 1600 daily. All information reported over the radio should be in code.

Well 17/12-1X Drilling ProspectusDRILLING PROCEDURE

1. Drill 36" hole to $\pm$ 110' below ocean floor. After reaching TD., displace hole with 290 bbls high viscosity mud using both rig pumps at maximum pump rate. See mud program for make-up of mud.
2. Set 30" casing at $\pm$ 110' below the ocean floor. The casing should be spaced so that the final position of the national 30" landing hub and permanent guide structure is $\pm$ 10' above the ocean floor.
3. Drill a 26" hole to $\pm$ 1500' RKB. Use sea water for drilling and pump in slugs of high viscosity mud as required (see "Mud Program" for make up of high viscosity mud).
4. After reaching T.D. pump in 400 bbls high viscosity mud using both rig pumps at maximum rate. Pull out of hole to 30" casing and wait 1 hr. Go back in hole and displace with 1100 bbls high viscosity mud using both pumps at maximum rate. COOH slowly.
5. Run and cement 20" casing as shown in the cementing and casing program.
6. Test 20" Hydril on test stump prior to running. Run BOP, choke and kill line, and 24" riser. Test 20" casing with 1000 psi for 30 min. Follow standard National procedure for running, testing marine equipment.
7. WOC a minimum of 8 hrs. after pumping plug before drilling out. Drill 17 $\frac{1}{2}$ " hole to $\pm$ 3600'. Use an inhibited DAP mud system as outlined in the mud program. All mechanical means available to control drill solid build-up in mud should be utilized.
8. Use drill pipe float above bit in 17 $\frac{1}{2}$ " hole. Use standard PPCo. stabilizer program and follow drilling practices shown in the operational plan.
9. After reaching $\pm$ 3600' circulate and condition mud for logging. Make short trip to 20" casing shoe. Go back in hole and circulate one complete round or until shaker cleans up. COOH slowly. Run logs as shown in logging program.
10. GIH, circulate and condition mud for running casing. Continue circulating until shaker cleans up. Depending on hole condition it may be desirable to make a short trip before running casing. COOH, run and cement 13 3/8" casing as shown in the "Casing and Cementing Program".
11. Test the BOP stack on the test stump as per the National and Phillips procedure. Run BOP stack, choke and kill line. Test casing to 2500 psi. Run 16" riser and nipple up cellar deck. Run initial BOP test as per Phillips and National procedures.
12. WOC a minimum of 8 hrs. after bumping plug before drilling out. Drill 12 1/4" hole to $\pm$ 7900' RKB into the top of the Triassic as picked by the wellsite geologist. Follow the procedures shown in the attached mud program. Use all mechanical means available to control build up of drill

solids in mud. Use standard PPCo. stabilizer program and follow drilling practices shown in the operational plan while drilling 12 1/4" hole.

13. Test BOP's and choke manifold with 2500 psi weekly as per Phillips and National procedures. When out of hole close and open each set of rams individually. Leave all rams open after operational test.
14. After reaching 9 5/8" casing point at $\pm$ 7900' circulate and condition mud for logging. If necessary make short trip to 13 3/8" casing shoe. COOH slowly. Run logs as shown in the logging program.
15. GIH, circulate and condition mud for running casing. Continue circulating until shaker cleans up. COOH, run and cement 9 5/8" casing as shown in the casing and cementing program. After bumping plug test 9 5/8" casing to 4000 psi for 15 min. and release pressure.
16. Run 9 5/8" pack off. Test pack off and BOP stack with 5000 psi as per Phillips and National procedure.
17. WOC a minimum of 8 hrs. after bumping plug before drilling out. Drill 8 1/2" hole approximately 200' into salt. This could occur anywhere between 8300' and 13200'. Use standard PPCo. stabilizer program and follow drilling practices out-lined in the operational plan while drilling the 8 1/2" hole.
18. Test BOP and choke manifold with 2500 psi weekly. When out of hole close and open each set of rams individually. Leave all rams open after operational test.
19. After reaching T.D. at 8300 - 13200', pull up above salt, condition mud thoroughly and COOH. Run logs as shown in the logging program.
20. A procedure for completing the well and testing will be issued at a later date if log analysis warrants this.
21. An instrument to measure hole deviation is available on the rig. Surveys should be made every trip out of the hole. Intermediate surveyes are to me made only if deviation is a problem. The final hole deviation and direction can be taken from the dipmeter log. If collar assembly is stabilized according to outlined practices, deviation should not be a significant problem.

Well 17/12-1X Drilling ProspectusHOLE "FILL-UP" PROCEDURE

The following procedure should be followed to insure the accurate measurement of the fluid volume required to "fill-up" while tripping. It is important that the written records included in the procedure be kept on a permanent basis.

1. Open suction valves on slug tank and pits so that mud level will equalize into slug tank, No. 1 Suction Tank, and No. 2 Suction Tank.
2. Circulate bottoms up, drain "Possum Belly" (tank in front of shale shaker) and pull first stand slowly while observing fluid level in hole for swabbing. After two stands stop and observe hole for flow, continue to come out of hole until 10 stands have been pulled. Do not install pipe wiper until it is certain that the hole is static.
3. Close suction valve on No. 1 Suction Pit, open valve on slug tank and fill hole until flow light comes on. Count the number of pump strokes required, allow 2 or 3 extra strokes, stop pump and record number of strokes. Measure inches of fluid pumped out of the Slug tank and into hole. If the hole did not take the correct amount of fluid, find out why! After each 10 stand fill-up, open Suction valve on No. 1 Suction Pit and Suction valve on Slug Tank. This will allow pits to equalize and will also allow the pit level recorders to indicate accurate record of fill-up amount.
4. The driller on tour is to make a written record of hole fill-up data showing depth, number of stands of pipe pulled between fill-ups, amount of fill-up, date and time of trip.
5. As soon as the bit is up in the casing, stop and check for flow regardless of record showing proper fill-up. Stop again before pulling drill collars and check for flow and any other time deemed necessary or prudent.
6. The blind and pipe rams should be closed and opened one time each trip out of the hole as an operational check. This should be done after the bit is above the rotary table.
7. The Phillips Drilling Supervisor onboard will determine maximum rate of descent while going in hole. Avoid pressure surges set up when bit is "spudded" or descended too rapidly.

General Remarks:

1. Any time the mud is being circulated and open hole is exposed, mud weight and viscosity is to be checked and recorded at least every 15 minutes in pump room and at shale shaker.
2. Suitable floor safety valves threaded (or with proper subs) to fit both drill pipe and drill collars are to be in an accessible place on the rig floor at all times when not in use. Any time a "trip" is interrupted, a floor safety valve is to be installed. (NOTE: Use Hydril or T.I.W. type safety valve first. The Gray Inside B.O.P. will NOT be installed unless ordered by the Phillips Drilling Supervisor).

3. At all times, be aware of how much surface mud volume is on hand. Check Pit Level Recorder for Accuracy EACH TOUR. Measure volume to fill hole on each 10 stds. when making trip and record this figure.
4. The Phillips drilling supervisor is to be on the rig floor any time the hole is swabbing, when a core is being pulled or when a diamond drill bit is being pulled.

Fill-up Volumes for 5" D.P.

1. 10-90 foot stands 5" 19.5 lbs/ft. displaces 6.06 bbls., therefore, the hole should take 6.06 bbls to fill when 10 stands of pipe have been pulled.
2. If the same amount of drill pipe is pulled 100% full (wet) it will take 22.05 bbls to fill the hole. When the drill pipe is pulled wet the mud inside the pipe should be returned to the hole by draining the mud bucket into the drilling nipple. Then use 6.06 bbls of fluid to fill hole as the conditions are the same as when pulled dry.

Well 17/12-1X Drilling ProspectusCASING AND CEMENTING PROGRAM1. GENERAL

<u>Casing Size</u>	<u>Weight lbs/ft.</u>	<u>Grade</u>	<u>Type of Threads</u>	<u>Opt. Torque Ft/lbs</u>	<u>Burst</u>	<u>PPCo. Rating Collapse</u>	<u>Tension</u>
30"	309	Welded					1000lbs
20"	133	J-55	Vetco "L"	35,000	2883	1415	952
13 3/8"	68	J-55	ST&C	5,200	3271	1840	478
9 5/8"	47	N-80	Butt		6090	4484	803
7" Liner	29	N-80	LT&C	3,800	7300	6626	398

- NOTES:
1. Use light oil only on Vetco Type "L" threads
 2. Use PPCo. modified thread dope on all other casing threads
 3. Space out all casing strings so that the casing shoe will be $\pm 30'$ above T.D. when casing hanger landed on hanger seat approx. 10' above ocean floor.

2. 30" Casing in 36" hole at $\pm 580'$ a. Mechanical Accessories

1 Halliburton float shoe

- b. Running procedure: Run 30" casing and permanent guide base on drill pipe as per Phillips and National procedures. Run 90' of drill pipe below 30" handling tool.

c. Cementing Procedure

Cement with 1000 sxs class "B" cement blended with 3% Calcium Chloride mixed at 15.9 ppg using sea water. Displace cement with sea water.

Dry volume of cement 1267 cuft.

3. 20" casing in 26" hole at $\pm 1500'$ A. Mechanical Accessories

1. B-J Sub Sea cementing plugs.
2. Halliburton float shoe and baffle collar. These will be installed in Norsco yard. Five (5) centralizers at: 7' above shoe, 7' above baffle collar, top of second joint first coupling inside the 30" casing, first coupling below the 20" hanger.

- B. Running procedure: The shoe and collar will be welded to the casing in the Norsco yard. Bakerlok should be used on first joint above baffle collar.

- C. Cementing procedure: Use 40 bbls sea water wash behind bottom cementing plug. Cement with 1000 sxs class "B" cement blended with 8% bentonite mixed at 13.1 ppg using sea water followed by 1000 sxs neat class "B" cement mixed at 15.9 ppg using sea water.

Catch 3 wet and 3 dry samples of each type of cement while mixing. Release top plug, displace plug with sea water using both rig pumps at maximum rate, stop displacement after pumping volume of casing to baffle collar whether or not plug bumps.

Dry volume of cement

1000 sxs class "B" with 8% Bentonite	1125 cuft
1000 sxs class "B"	1000 cuft

4. 13 3/8" Casing in 17 1/2" hole at ± 3600'

A. Mechanical Accessories

1. B-J Sub Sea cementing plugs
2. Halliburton float shoe and float collar.
3. Five centralizer at 7' above shoe, 7' above float collar, and over couplings at top joints 2, 4 and 6.
4. 100 scratchers, 95 stop collars, 4 centralizers, and 1 metal petal basket as shown on attached sketch.
5. One centralizer over first coupling below the National hanger.

- B. Running Procedure: Bakerlok field connections on first two joints, tack weld mill connections. Run casing to total depth and set down on 20" wellhead. Pick up 2-3' and circulate one casing volume using both rig pumps at maximum rate. Work pipe with 4-6" stroke while circulating. Land casing prior to cementing.

- C. Cementing Procedure: Use 20 bbls fresh water wash behind bottom cementing plug. Cement with 1400 sxs class "B" cement blended with 4% Bentonite mixed at 14.1 ppg using fresh water, followed with 1000 sxs neat class "B" cement mixed at 15.9 ppg using fresh water. Catch 3 wet and 3 dry samples of each type cement while mixing. Release top plug and pump in 10 bbls fresh water. Displace plug with mud using both rig pumps at maximum rate until plug bumps or to calculated casing volume, do not over-displace.

Dry volume of cement

1400 sxs class "B" with 4% Bentonite	1488 cuft
1000 sxs class "B"	1000 cuft

4. 9 5/8" Casing in 12 1/4" hole at ± 7900'

A. Mechanical Accessories

1. B-J Sub Sea cementing plugs.
2. Halliburton float shoe and float collar
3. Five centralizer at: 7' above shoe, 7' above float collar, over couplings at the top of joints 2, 4 and 6.
4. Scratchers and centralizers will be used opposite all prospective zones based on log analysis. Have 171 scratchers 171 stop collars and 6 centralizers on hand for this.
5. At the 13 3/8" casing shoe 100 scratchers, 95 stop collars, 4 centralizers, and 1 metal petal basket as shown on the attached sketch.
6. One centralizer over first coupling below the National hanger.

- B. Running Procedure: Bakerlock the float equipment and the field connections on the first two joints. Run casing to total depth, and set down on hanger. Pick up 2-3' and circulate one casing volume at maximum rate possible (3000 psi pump pressure). Work pipe with 4-6' stroke while circulating. Land casing hanger prior to cementing.
- C. Cementing Procedure: Use 20 bbls of fresh water wash behind the bottom cementing plug. Cement with 1700 sxs class "E" cement blended with 4% Bentonite mixed at 14.6 ppg using fresh water, followed by 700 sxs neat class "E" cement mixed at 16.5 ppg using fresh water. Catch 3 wet and 3 dry samples of each type of cement while mixing. Release the top plug and pump in 10 bbls of fresh water. Displace plug with mud using rig pumps at maximum rate (3000 psi pump pressure).

Dry volume of cement

1700 sxs class "E" with 4% Bentonite	1807 cuft
500 sxs class "E"	500 cuft

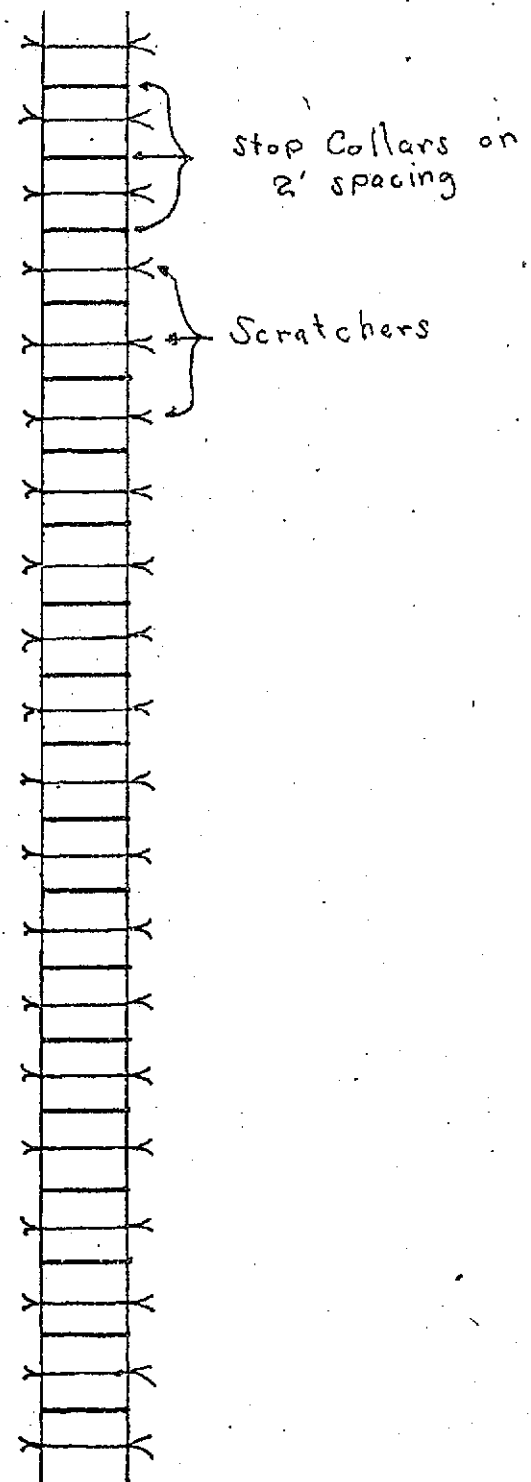
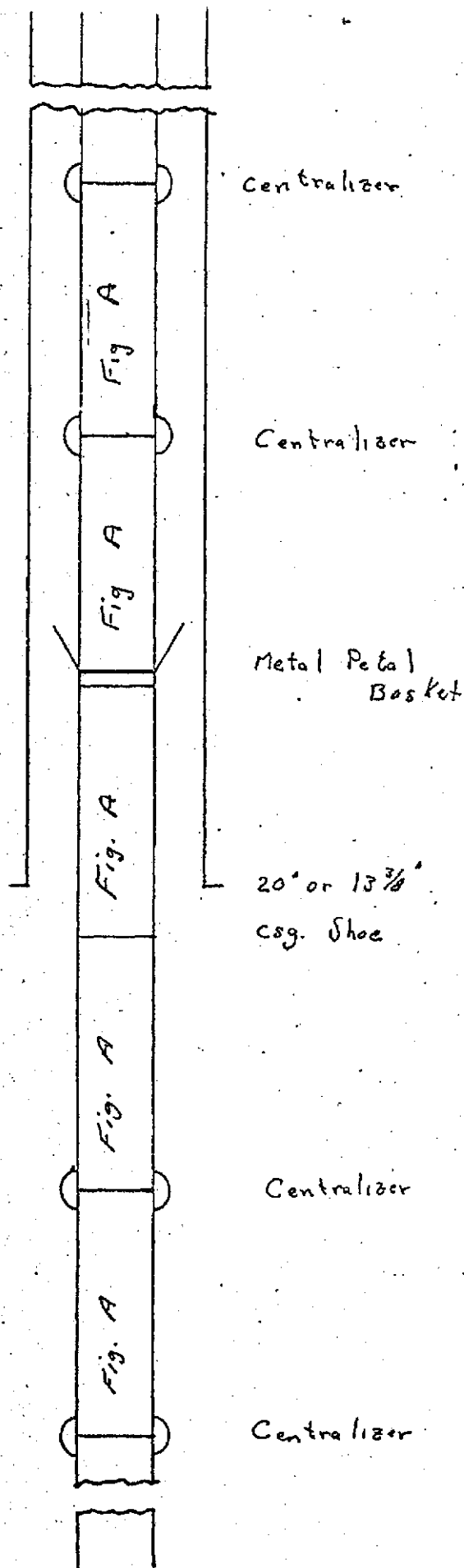
6. 7" Liner in 8½" hole at T.D.

A program for running and cementing this string will be issued pending final log analysis.

13³/₈" & 9⁵/₈" Casings

Well 17/12-1X

FIGURE A



Total Equipment

- 100 scratchers
- 95 stop collars
- 4 centralizers
- 1 Metal Petal Basket

WELL 17/12-1X DRILLING PROSPECTUS

WELL PROFILE

FORMATION TOPS

CASING SETTINGS

Paleocene 2340'
Danian 2540'
U. Cretaceous 2690'
L. Cretaceous 3590'

Jurassic Shale 6690
Jurassic Sand 7090

Zechstein 8300' to 13090'

30" 309 #/ft cemented
580' to the sea bed

20" 133 #/ft, J-55, Vetco
"L", Cemented to sea
bed

13 3/8" 68 #/ft, J-55, ST&C
Cemented to sea bed

9 5/8" 47 #/ft, N-80, Butt
Cemented to sea bed

7" 29 #/ft, N-80, LT&C
Liner cemented to liner top.

Note: All depths
measured from
R.K.B.

T.O. @ 13,400'

Well 17/12-1X Drilling Prospectus

BOP WELL HEAD PROGRAM

A National Supply subsea well head system will be utilized.

After setting 20" casing a 20" 2000 psi Hydril, Payne control system and 24" marine riser assembly will be installed and tested as per the National procedure.

After setting 13 3/8" casing, 13 5/8" 10,000 Shaffer Double, 13 5/8" 10,000 psi Shaffer single, a 13 5/8" 5000 psi Hydril, 10,000 psi choke and kill lines, Payne control system and 16" marine riser assembly will be installed and tested as per the National procedure. This assembly will be used to T.D.

WELL 17/12 DRILLING PROSPECTUSMUD PROGRAM30" Casing 580' RKB (36" Hole)

Drill the hole with sea water and returns to the sea floor. Pump slugs of thick mud through the hole as needed to reduce the torque and drag on connections. After the hole has been drilled displace the hole with 200 bbl of thick mud. Mix the mud as follows:

<u>Material</u>		<u>Properties</u>
Sea Water	-	Weight - 8.8 to 9.5 PP
Zeogol	- 20 PPG	Viscosity - thick
Flosal	- 2 to 3 PPB	Fluid Loss - No control
Bentonite	- 5 to 10 PPB	

Run the shearing device on the pits when using flosal and bentonite.

20" Casing - 1500' RKB (26" Hole)

Drill below the 30" casing with sea water and returns to the sea floor. Pump slugs of thick mud as needed to reduce the torque and drag on trips and connections. After the 26" hole is drilled fill the hole with 1000 bbls thick mud. Mix the thick mud as above.

13 3/8" Casing - 3600' RKB (17 1/2" Hole)

Drill the cement with sea water. After drilling the cement flush the casing with sea water then displace with D.A.P., Drispac, sea water mud prepared in pits as follows:

<u>Material</u>	<u>Properties</u>
Sea Water	Weight 9.5 to 10.5 ppg
1/4 PPB Caustic Soda	Viscosity 38 to 45 Sec/Qt.
8 PPB D.A.P.	Fluid Loss 15 to 25 cc/30min.
5 PPB Bentonite	Ph. Below 9.5
2 PPB Flosal	Oil 3 to 4%
2 PPB Drispac	D.A.P. 6 to 8 PPB
1/4 PPB Chromate	
1/2 PPB Desco	
4% Diesel Oil	

9 5/8" Casing 7900' RKB (12 1/4" Hole)

Drill the cement plug with D.A.P., Drispac, Seawater mud pre-treated with sodium bicarbonate. Drill below the 13 3/8" casing and control the mud properties as follows:

Weight	10.5	to 11.5	PPG
Viscosity	40	to 50	Sec/Qt
Fluid Loss	8	to 10	cc/30 min.
Ph.	Below 9.5		
D.A.P.	4	to 5	PPB
Oil	3	to 4%	

7" Liner 13,000' RKB (8 1/2" Hole)

Drill the cement plug with the D.A.P., Drispac, sea water mud pre-treated

with sodium bicarbonate. Drill below the 9 5/8" casing and control the mud properties as follows:

Depth	Wt/PPG	Vis/sec/Qt	Fluid-loss cc-30/min	DAP/ PPB	Oil %
7900' to 9500'	11.5 to 12.0	40 to 50	8 to 10	4 to 5	3 to 4
9500' to 10500'	12.0 to 12.5	45 to 55	8 to 10	4 to 5	3 to 4
10500' to 11500'	12.5 to 13.0	45 to 55	6 to 8	4 to 5	3 to 4
11500' to 13000'	13.0 to 13.5	45 to 55	6 to 8	4 to 5	3 to 4

NOTE:

The Zechstein salt could be encountered at any depth below 8,300'. If the salt is drilled, control the Calcium to below 800 PPM with sodium sulphate and continue with a Drispac, lignosulfonate mud.

Only 100 to 200' of Zechstein will be drilled and logged.

Should a packer fluid be required condition the drilling fluid as follows: Dilute as necessary then add:

Material	Properties
Barite - as needed	Weight 13.5 ppb
Caustic - 1/2 to 1 ppb	Ph. 11.0 to 11.5
Desco - 1/2 to 1 ppb	Yp. 10 to 15
Flosal - 2 ppb	Viscosity 42 to 48 sec/qt.
Bentonite- As needed	Bentonite 15 to 20 ppb

NOTE:

No starch or lignosulfonate is to be added to the packer fluid for conditioning.

Lost Circulation Procedure

Diaseal "M"

Diaseal "M" is never added to the drilling mud nor is it slurried as a pill in drilling mud. It is always pumped down as a separate pill, but is preceded and followed by drilling mud. The amount to be used varies from 25 to 200 barrels depending upon the amount of open hole and experience in the area.

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

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

1. Pull off bottom or just above the loss zone. Put the kelly back on and continue to work the pipe.
2. Mix the slurry as conditions dictate. If pill is to be mixed in suction pit, run necessary amount of water into pit with guns on pit. As water fills suction pit, begin opening sacks of Diaseal "M" and mix contents with water by maximum

agitation from guns. As slurry becomes viscous, begin addition of lost circulation material.

- 2a. If Diaseal "M" slurry is already mixed and being held in readiness in standby pit, agitate vigorously, add lost circulation material if it has not already been added.

Slurry is ready for use when thoroughly mixed and agitated.

3. When mixing is complete, pump the mixture in the hole and displace the slurry from the pipe with mud.
4. Pull up in the surface pipe and fill the hole with mud through the fill-up line.
5. If the hole does not fill with one foot of mud out of pits, mix another pit of Diaseal "M" slurry and repeat procedure.
6. If the hole does fill, proceed as follows:
 - (a) For depths less than 7000 feet, close the pipe rams, pump slowly through the fill-up line at 0,300 psi. and squeeze, and hold available pressure for 10 mins.
 - (b) For depths more than 7000 or when a squeeze pressure cannot be established, wait two hours, then if the hole will stand full, go to bottom and drill.

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

WELL 17/12-1 DRILLING PROSPECTUS

Logging-Coring-Sampling Program

See geological Well Program

WELL 17/12 DRILLING PROSPECTUS

Test Procedure

To be issued at a later date.

WELL 17/12 DRILLING PROSPECTUS

REVISED MUD PROGRAM

January 10, 1972

30" casing has been set at 583' RKB

20" casing has been set at 1503' RKB.

(Capacity of 20" casing = 502 bbls)

13 3/8" casing - 3600' RKB (17 1/2" hole).

Drill the cement in the 20" casing with sea water. Flush hole behind the cement with sea water then displace with a sea water, lignosulfonate, emulsion mud, prepared as follows:

<u>Material</u>	<u>Properties</u>
Sea Water	Weight 9.5 to 10.0 PPG
1 ppb Caustic Soda	Viscosity 40 to 45 sec/qt.
15 ppb Bentonite	Fluid loss 15 to 20 cc/30 min
1 ppb Drispac	
1 1/2 ppb Flosal	Alkalinity .3 to .5 Pf
2 ppb Detergent	Oil 5 to 6 %
6 % Diesel	
1/2 ppb AMOCO 405	
Barite as needed	

Lignosulfonate added as needed while drilling to control the flow properties.

C.M.C. added as needed to control fluid-loss.

Run the shearing device to shear the flosal and bentonite.

At 3,200' increase the mud density to 11.0 ppg. Continue with 11.0 ppg to the 13 3/8" casing point.

9 5/8" casing - 7,900' RKB (12 1/4" hole)

Drill the cement plug with the sea water, lignosulfonate - emulsion mud pre-treated with 1/2 ppb sodium bicarbonate. Drill below the 13 3/8" casing with a lignosulfonate - emulsion mud with the following properties:

Weight 11.0 to 11.5 ppg	Barite as needed
Viscosity 40 to 50 sec/qt.	Bentonite and/or C.M.C.
Fluid loss 8 to 10 cc/30 min.	C.M.C.

Alkalinity	.3 to .5 pf	Caustic Soda as needed.
Oil	4 to 5 %	Diesel as needed
Plastic Visc.	13 to 18 cp.	
Yield Pt.	5 to 12 lbs/100 ft. ²	
Solids	12 to 15 %	
Detorgent	1½ to 2 ppb.	

7" liner - 13,000' RKB (8½" hole)

Drill the cement plug with the sea water, lignosulfonate, emulsion mud pre-treated with ½ ppb sodium bicarbonate. Drill out below the 9 5/8" casing and control the mud properties as follows:

Depth	Density ppb	Viscosity Sec/qt	Fluid loss cc/30mins	Alkalinity P.f	Oil %	Sol %
7,900' to						
10,000'	11.5 to 12.5	40 to 50	6 to 8	.5 to 1.	4	
10,000' to						
11,000'	12.5 to 13.0	45 to 55	6 to 8	.5 to 1.	4	
11,000' to						
13,000'	13.0 to 13.5	45 to 55	6 to 8	.5 to 1.	4	

The addition of detergent is not recommended below the 9 5/8" casing. Should the hole require a lubricant other than oil, below the 9 5/8" casing add and maintain 4 ppb of soltex.

Note:

The Zechstein salt may be encountered anytime below 8500'. If the salt is encountered control the calcium 800 ppm or less with sodium sulphate.

Should a packer fluid be required, condition the drilling fluid as follows:

Dilute as necessary and add:

<u>Material</u>	<u>Properties</u>
Caustic Soda ½ to 1 ppb	Ph. 11.0 to 11.5
Desco ½ to 1 ppb	yp 10.0 to 14
Barite as needed	density as needed
Flosal 2 ppb	viscosity 45 to 55 Sec/qt.
Bentonite as needed	bentonite 15 to 20 ppb

Note:

No starch or lignosulfonate is to be added to the packer fluid for conditioning.

PHILLIPS PETROLEUM COMPANY

GEOLOGICAL WELL PROGRAM

Well No. 17/12-1X

Location: Shotpoint 45
Seismic Line PG 5811

Approx: 58° 11' 15"N
03° 56' 06"E

Prospect: Bream

Classification: Wildcat

ATE NW 5605

RKB Elevation: Est 90'

Water Depth: Est. 380'

A. Projected Total Depth: 13,200'

B. Anticipated Formation Tops: (XX = Seismic Reflectors)

	<u>Estimated</u>		<u>Actual</u>	
	RKB	Subsea	RKB	Subsea
<u>Tertiary</u>				
Paleocene	2340	-2250		
Danian	2540	-2450		
<u>Mesozoic</u>				
Upper Cretaceous XX	2590	-2500		
Lower Cretaceous XX	3590	-3500		
Jurassic Shale XX	6690	-6600		
Jurassic Sand Sect. XX	7090	-7000		
Triassic				

Paleozoic

Permian (Zechstein) XX 13090* -13000

*Zechstein may be encountered as high as 8300'. If such is the case T.D. will be approximately 8500'

C. Principle Objective Horizons:

Primary

Jurassic Sands estimated top 7090 (-7000) Estimated net 200'

Secondary

Sand developments within the Lower Cretaceous and Triassic sections are regarded as secondary objectives.

.../...

D. Logging Program

0 - 2000	Lithology and drilling rate Logs
Run 1 - 17½" hole, 2000' - 4000'	IES; S-GR (BHC) (run GR up to sea floor) *LL7; *MLL; *FDC; *SNP.
Run 2 - 12½" hole, 4000' - 8000'	IES; S-GR (BHC); *LL7; *MLL; *FDC; *SNP; possibly HDT *** and SWC***
Run 3 - 8½" hole, 8000' - 12000'	IES; S-GR (BHC); *LL7; *MLL; *FDC; *SNP; possibly HDT*** and SWC***.
Run 4 - 6½" hole, 12000' - T.D.	IES; S-GR (BHC); *LL7; *MLL; *FDC; *SNP; Velocity Survey; ** possibly HDT*** and SWC***.

- * Run over potential pay zones
- ** Run only at total depth
- *** To be determined at time of logging

E. Casing Program (for details see Drilling Prospectus)

Estimated	30"	at	600'
	20"	at	2000'
	13⅜"	at	4000'
	9⅝"	at	8000'
	7"	at	12000'

F. Sample Program

Samples should be caught as soon as returns are achieved below the 20" casing at approximately 2000'. Catch at 25' intervals until the drilling rate is slow enough to permit sampling at 10' intervals. Samples should be caught at 5' intervals as soon as the drilling rate will permit, continuing to T.D.

1. Catch six sets of washed and dried cuttings. Store samples on the rig until well reaches T.D. Then ship all samples at one time to Stavanger Shorebase for storage and/or distribution. Samples should be sorted into six complete sets prior to shipping to the shorebase in order to facilitate handling.
2. Catch two sets of unwashed cuttings, put in plastic bags and seal securely for shipment to:
 - a. Robertson Research. Ship as soon as metal ammunition box is full or no less than once per week.
 - b. Norges Geologiske Undersøkelse (Norwegian Geological Survey). Boxes should be marked "Kontinental Seclen" and should be stored on the rig until drilling is completed at which time the entire set should be shipped to Stavanger Shorebase for distribution to NGU.

.../...

G. Anticipated Coring and Testing

1. Coring will be limited to the evaluation of valid hydrocarbon shows at the discretion of the wellsite geologist.
2. Sidewall core samples should be taken every 50'-100' in any potential hydrocarbon source rock. These cores should be placed first in the S-J glass jars then each jar placed inside a cloth sample bag. Both the jar and the cloth bag should be identified as to well number and sample depth. Ship (via Stavanger Shorebase) to J.G. Erdman, Bartlesville. The London Office should be advised of the data samples are shipped to Mr. Erdman.
3. DSTs should be made of all significant hydrocarbon shows. Testing will be done through perforations after running casing.

H. Anticipated Hole Problems.

No unusual hole problems are anticipated with the exception of heaving shale which can be expected through the Tertiary and possibly Jurassic sections.

I. Daily Geological Reports

A daily geological report will be given to the London office - (01-828-9766) every morning between 9:00 and 9:30 A.M. This report should be given to T.L. Sandridge or in his absence to E.L. Benoit.

Night line numbers in the office are:

Sandridge	}	01 - 828 - 1690
Benoit		

Home telephone numbers are:

Sandridge	01 - 589 - 5875
Benoit	01 - 589 - 0974

All radio reported depths, formation tops and sample descriptions should be given in the code which will be provided.

J. Miscellaneous

Detailed well site instructions will be issued separately to those concerned.

.../...

Distribution

C. Arcilise	P.W. Reynolds (8)
R.E. Beck	T.L. Sandridge
E.L. Benoit	J.F. Settle
M.E. Evans	A.A. Slanis
A.B. Haywood	PPCo - E-A (r) S. Eha (3)
H.H. Heikkila	Petrofina
T.J. Jobin	AGIP
H.L. Megan	Elf, Paris (3)

File: NOR/PROD/WELLS - 17/12-1X

WELL 17/12-1X DRILLING PROSPECTUS

Tight Hole Procedure

For various reasons, it is necessary that certain information concerning the well be withheld from competitors and others. It will be the responsibility of the Supervisor on duty at the rig to see that only necessary and authorized individuals be allowed aboard. An unknown individual wishing to board should carry written permission signed by:

P.W. Reynolds, F.A. Kumpf or E.O. Seabourn

No information is to be given to any individual, except another Phillips employee, regardless of his credentials. This includes partners, government agents and all others.

All information released concerning this well will be released only from the Oslo Office. In this respect, reasonable caution is to be practised during conversation with associates, friends, etc.

All radio and R/T conversations are to be in code when reference is made to DRILL STEM TESTS; SHOWS, DEPTHS, FORMATION TOPS or LITHOLOGY. This code will be furnished by the well site geologist.



P.W. REYNOLDS

PHILLIPS PETROLEUM COMPANY - NORWAY
STAVANGER

Stavanger, April 26, 1972

WELL 17/12-1X

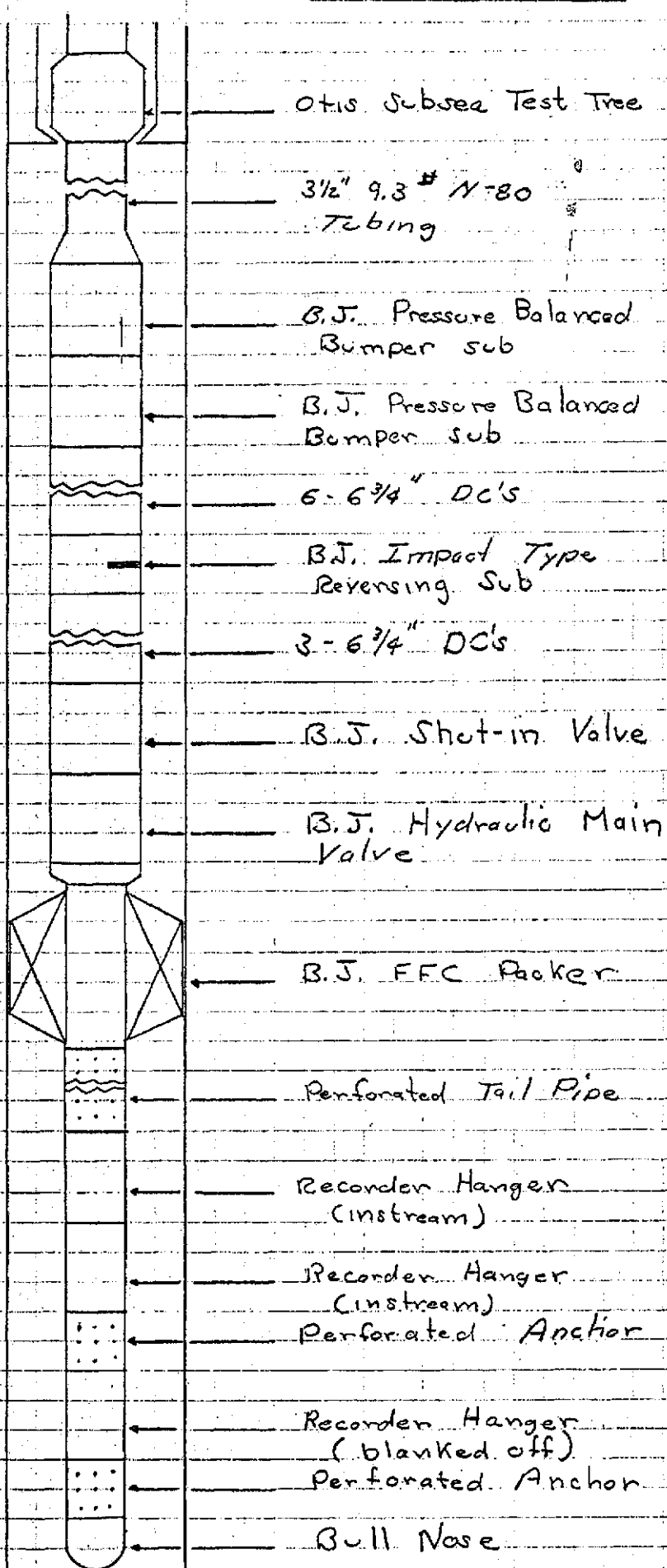
Test Procedure

1. After reaching T.D. (25 ft. into salt) pull above salt, condition hole, and run logs.
2. If logs indicate zones in the open hole that require a cement plug - depths will be provided by well site geologist - GIH to _____ ft. with drill pipe and 500' tubing stinger open ended. Mix 200 sxs class "E", cement and lay plug from _____ ft to _____ ft. Pull 10 stands and reverse out.
3. Pull out of hole to 8100'. Mix 200 sxs class "E" cement and lay plug from 8100 ft to 7670 ft. Pull out of hole to 7700' and reverse out excess cement. Pull out of hole.
4. GIH with bit and 9 5/8" casing scraper, drill out cement to 7720'. Circulate and condition mud for testing. COOH.
5. Run CBL and Gamma Ray-CCL surveys. Set bridge plug at 7715' on wire line. Test casing and plug with 3000 psi.
6. Perforate 9 5/8" casing at 7668 - 7682' with 4 shots per foot.
7. GIH with test string as shown on attached sketch. Use 1500' of fresh water cushion.
8. Pick up Otis subsea test tree. Strap Otis control hoses to tubing while going in hole. Space out tubing so that bottom recorder will be at $\pm$ 7675' when packer is set. Wrap Otis control hoses around tubing at surface so that tubing can be rotated 12 turns to the right to close and open shut-in valve.
9. Set packer and open HMV valve. Test well as follows:
 - A. Flow period No. 1 - maximum 12 hrs.
 - a) If oil or gas surfaces - clean up at maximum rate, then turn through test separator. Test through separator minimum of 4 hrs. Catch 2 sets of Phillips geochemical samples from separator.
 - b) If water surfaces - catch samples every 30 min., check chlorides and resistivity. When readings are constant catch 8, 1 liter samples.
 - c) If well dies, observe for 1 hr. then start shut-in period.
 - B. Shut in period No. 1 - 12 hrs.
10. If well flowed oil or gas, open shut-in valve and kill well using 12 lbs/gal mud. Drop impact bar and circulate and condition the mud. Release the packer and pull out of the hole.

11. If well flowed water, drop impact bar, and reverse water out of tubing. Condition mud and pull out of the hole.
12. If well died during flow period, drop impact bar and reverse out, catch samples of formation fluid while reversing out. Condition mud and pull out of the hole.
13. Set wire line retainer at 7650'. Squeeze perfs. (7668 - 7682') with 100 sxs class "E" cement to a maximum of 3000 psi.
14. Perforate 9 5/8" casing at 7600' - 7620' with 4 shots per foot.
15. GIH with test string as shown on attached sketch.
Use 1500' fresh water cushion.
16. Pick up Otis subsea test tree. Strap Otis control hoses to tubing while going in hole. Space out tubing so that bottom recorder will be at $\pm$ 7610' when packer is set. Wrap Otis control hoses around tubing at surface so that tubing can be rotated 12 turns to the right to close and open shut in valve.
17. Set packer and open HMV valve. Test well as follows:
 - A. Flow period No. 1 - maximum 12 hrs.
 - a) If oil or gas surfaces - clean up at maximum rate, then turn through test separator. Test through separator minimum of 4 hrs. Catch 2 sets of Phillips geochemical samples from separator.
 - b) If water surfaces - catch samples every 30 min., check chlorides and resistivity. When readings are constant catch 8, 1 liter samples.
 - c) If well dies, observe for 1 hr then start shut in period.
 - B. Shut in period No. 1 - 12 hrs.
18. If well flowed oil or gas, open shut in valve and kill well using 12 lbs/gal mud. Drop impact bar and circulate and condition the mud. Release the packer and pull out of the hole.
19. If well flowed water, drop impact bar, and reverse water out of tubing. Condition mud and pull out of the hole.
20. If well died during flow period, drop impact bar and reverse out, catch samples of formation fluid while reversing out. Condition mud and pull out of the hole.
21. Set wire line retainer at 7550'. Squeeze perfs. (7600-7620) with 100 sxs class "E" cement to a maximum of 3000 psi.
22. Plug well following P & A procedure.

Well 17/12 - 1X

TEST STRING



Notes:

1. Use pressure recorder
 - 2 - 6400 psi
 - 1 - 10,000 psi
2. Use 40 hr clocks
3. Surface equipment
 - a) Hydril floor Valve
 - b) B.J. swivel
 - c) Baker Test Head

REVISED ABANDONMENT PROCEDURE FOR 17/12-1X

1. Perforate interval 3568 ft to 3570 ft.
2. Set retainer at 3540 ft and squeeze-cement perforations with 100 sx Class B neat cement.
3. Follow standard procedure attached.

PHILLIPS PETROLEUM COMPANY • NORWAY •
STAVANGER

PROCEDURE TO ABANDON EXPLORATORY WELLS
FROM OCEAN VIKING

1. Pull 9 5/8-in x 13 3/8-in annulus packoff.
2. Cut 9 5/8-in casing approximately 30 ft below hanger and retrieve.
3. Pull 16-in riser and blowout preventers.
4. Cut 13 3/8-in casing approximately 25 ft below hanger and retrieve.
5. Cut 20-in casing approximately 20 ft below hanger and retrieve.
6. Run in hole with 30-in snaplock connector and 20-in autolock above 30-in casing cutter and tubing stinger below. Cut off 30-in casing approximately 15 ft below hanger.
7. Latch 30-in snaplock onto 30-in suspension joint and pick up wellhead and guide base to make sure they are free.
8. Lay plug of 600 sx Class B neat cement from 750 ft to seabed. Pick up wellhead and cutting string and lay down.

WELL 17/12-1X ABANDONMENT

100 sx Class B from 750
to seabed.
Cut 30-in pipe at 495 ft
Cut 13 3/8-in and 20-in
at 500 ft.

200 sx Class B from 1250
to 845 ft.

Cut 9 5/8-in casing at
1000 ft

queeze perfs with 200 sx
Class E

queeze perfs with 100 sx
Class E

queeze perfs with 100 sx
Class E
Plug of 200 sx Class E cement
from 8100 ft to 7740 ft

Plug of 200 sx Class E Cement
from 12800 ft to 12400 ft

30-in 309 lb/ft Conductor
set at 583 ft with cement
to seabed.

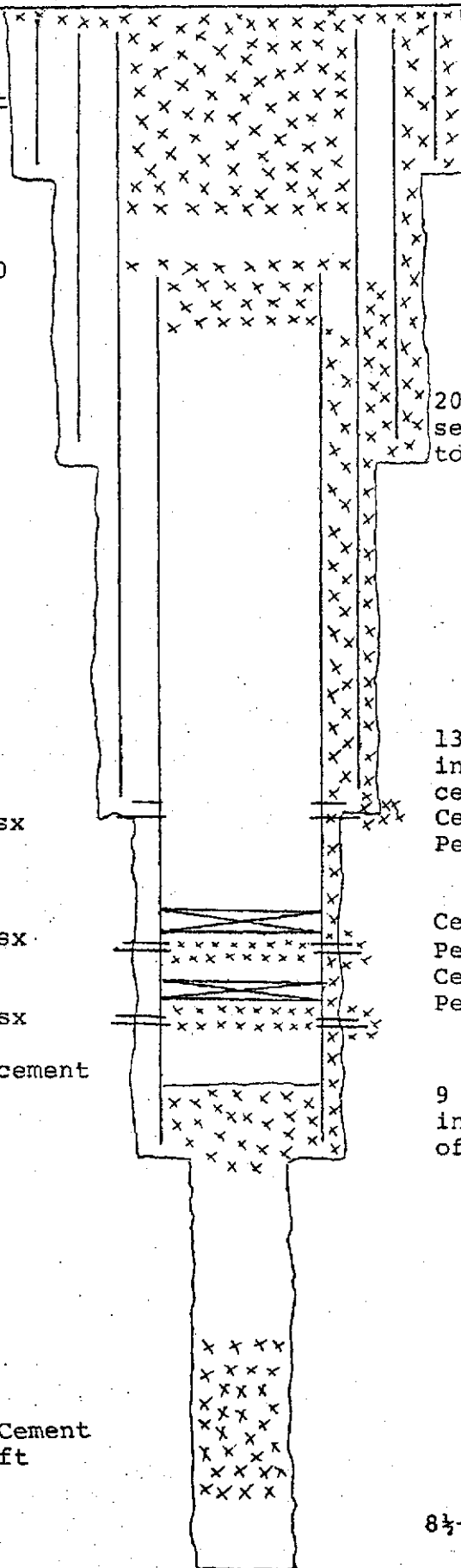
20-in 133 lb/ft J-55 casing
set at 1460 ft with cement
to seabed.

13 3/8-in 68 lb/ft J-55 cas-
ing set at 3557 ft with
cement at 700 ft.
Cement retainer at 3540 ft
Perforations 3568 to 3570 ft

Cement retainer at 7550 ft
Perforations 7600 to 7622 ft
Cement retainer at 7650 ft
Perforations 7668 to 7682 ft

9 5/8-in 47 lb/ft N-80 cas-
ing set at 7901 ft with top
of cement estimated at 1200ft

8 1/2-in hole to T.D. 14100 ft





Reynolds
Brean

DET KONGELIGE DEPARTEMENT FOR INDUSTRI OG HÅNDVERK

KONTOR: AKERSGT. 42 - TLF. 11 90 90 - RIKSTELEFONER OG FJERNVALG TLF. 02. 41 79 00
POSTADRESSE: OSLO-DEP. OSLO 1

Phillips Petroleum Company - Norway
P.O.Box 72

4001 STAVANGER

Deres ref.
GWB/GJ-309/71

Vår ref. (bes oppgitt ved svar)
ID/01je 2903/71 Hu/iG

Dato
19.10.71

Gjenpart:

Fiskeridepartementet
Forsvarsdepartementet
Kommunal-og arbeidsdepartementet
Direktoratet for Statens arbeidstilsyn
Elektrisitetstilsynet
Fiskeridirektoratet
Fyrdirektoratet
Helsedirektoratet
Luftfartsdirektoratet
Politimesteren i Stavanger
Sjøfartsdirektoratet
Sprengstoffsinspeksjonen
Skattedirektøren
Statens oljeråd
Statens utlendingskontor
Teledirektoratet
Tolldirektoratet
Sjøstridskreftene i Sør-Norge, Stavanger
Statens strålehygieniske institutt

KONTINENTALSOKKELEN. BORETILLATELSE NR. 64

Man viser til Deres brev av 11. oktober 1971.

I medhold av § 33 i kongelig res. av 25. august 1967 ved-
rørende sikkerhetsforskrifter m.v. for undersøkelse og
boring etter undersjøiske petroleumsforekomster gir

Industridepartementet herved Phillips Petroleum Company
- Norway tillatelse til å bore etter petroleumsforekomster
i posisjon:

58°11'15" N. og 03°56'06" Ø i felt 17, blokk 12.

Hullet gis betegnelsen 17/12-1. Denne betegnelse skal benyttes i all korrespondanse med departementet.

Underretning om den godkjente posisjon, samt boreplattformens navn, merking og signaler, dato for anbringelse etc. skal i god tid rykkes inn i "Etterretninger for Sjøfarende", "Kunngjøring fra Luftfartsdirektoratet" og kunngjøres i Norsk Rikskringkastings "Fiskerimeldinger". Dessuten skal Forsvarsdepartementet i god tid underrettes om de samme forhold.

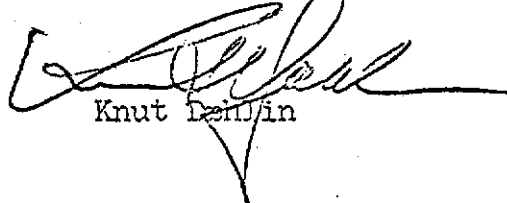
Phillips Petroleum Company - Norway plikter videre å holde disse organer underrettet om enhver forflytning av nevnte boreplattform og andre endringer i merking og signaler etc.

Phillips Petroleum Company - Norway plikter omgående å underrette Industridepartementet og de gjenpartsadressater som er nevnt i dette brev om boringens påbegynnelse og om hullets nøyaktige posisjon.

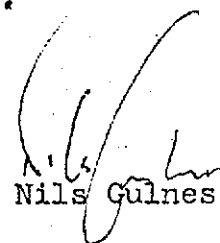
Phillips Petroleum Company - Norway må påse at det ikke kastes overbord jerngjenstander, tomfat eller lignende som kan rive istykker fiskernes redskaper. Ved flytning av plattformen må sjøbunnen være rensset for slike eventuelle gjenstander og jernkonstruksjoner.

Daglige meldinger pr. telex angående aktivitet og forhold ved borehullet skal inneholde generelle opplysninger som tid, sted, vær og vind, samt alle relevante opplysninger av teknisk og geologisk art.

Etter fullmekt



Knud Lønning



Nils Gulnes

Translation from Norwegian

THE ROYAL MINISTRY OF INDUSTRY AND HANDICRAFT

Akersgt. 42, Oslo-Dep., Oslo 1,

Norway.

Date: October 19, 1971

Our ref: ID/Olje 2903/71
HU/iG

Your ref:GWB/GJ-309/71

Phillips Petroleum Company - Norway,
Akersgt. 45,
Oslo 1.

Sirs,

Copies to:

Ministry of Fishery

Ministry of Defence

Ministry of Labour and Local Government

Directorate of the State Labour Inspection

Electricity Inspection Board

Directorate of Fishery

Directorate of Lighthouses

Health Directorate

Civil Aviation Directorate

Police Chief in Stavanger

Maritime Directorate

Inspector of Explosives

Director of Taxation

Norwegian Petroleum Council

State Aliens Office

Directorate of Telecommunications

Directorate of Customs

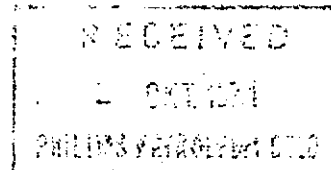
Naval Forces in South Norway, Stavanger

State Institute for Radiation Hygiene

THE CONTINENTAL SHELF. DRILLING PERMIT NO. 64.

We refer to your letter of October 11, 1971.

Pursuant to § 33 of the Royal Decree of August 25, 1967 relating to safety regulations etc. for exploration and drilling for submarine petroleum resources, this Ministry hereby grants to



Phillips Petroleum Company - Norway permission to drill for petroleum resources in position:

58°11'15"N and 03°56'06" E in Field 17, Block 12.

The well shall be designated 17/12-1. This designation shall be used in all correspondence with this Ministry.

An announcement of the approved position, and of the name, marks and signals of the drilling platform, the date of its positioning etc. shall be inserted well in advance in the publications "Notifications for Mariners", "Announcements from the Civil Aviation Directorate" and shall be broadcast in the "Fishery Reports" by the Norwegian Broadcasting Company. In addition, the Ministry of Defence shall be notified in good time of the same data.

Phillips Petroleum Company - Norway is moreover obliged to keep the above agencies informed of any change in the position of said drilling platform and of any change in marks, signals, etc.

Phillips Petroleum Company - Norway is obliged to promptly notify this Ministry and the copy addressees named in this letter of the commencement of drilling operations and of the exact position of the well.

Phillips Petroleum Company - Norway must ensure that no steel objects, empty drums or the like which can tear fishing gear are thrown overboard. When the platform is moved the seabed must be cleared of any such objects and steel structures.

Daily telex reports concerning the activities and conditions at the well shall contain general data such as the time, place, weather and wind, and all relevant information of a technical and geological nature.

By authority

Knut Dæhlin (signed)

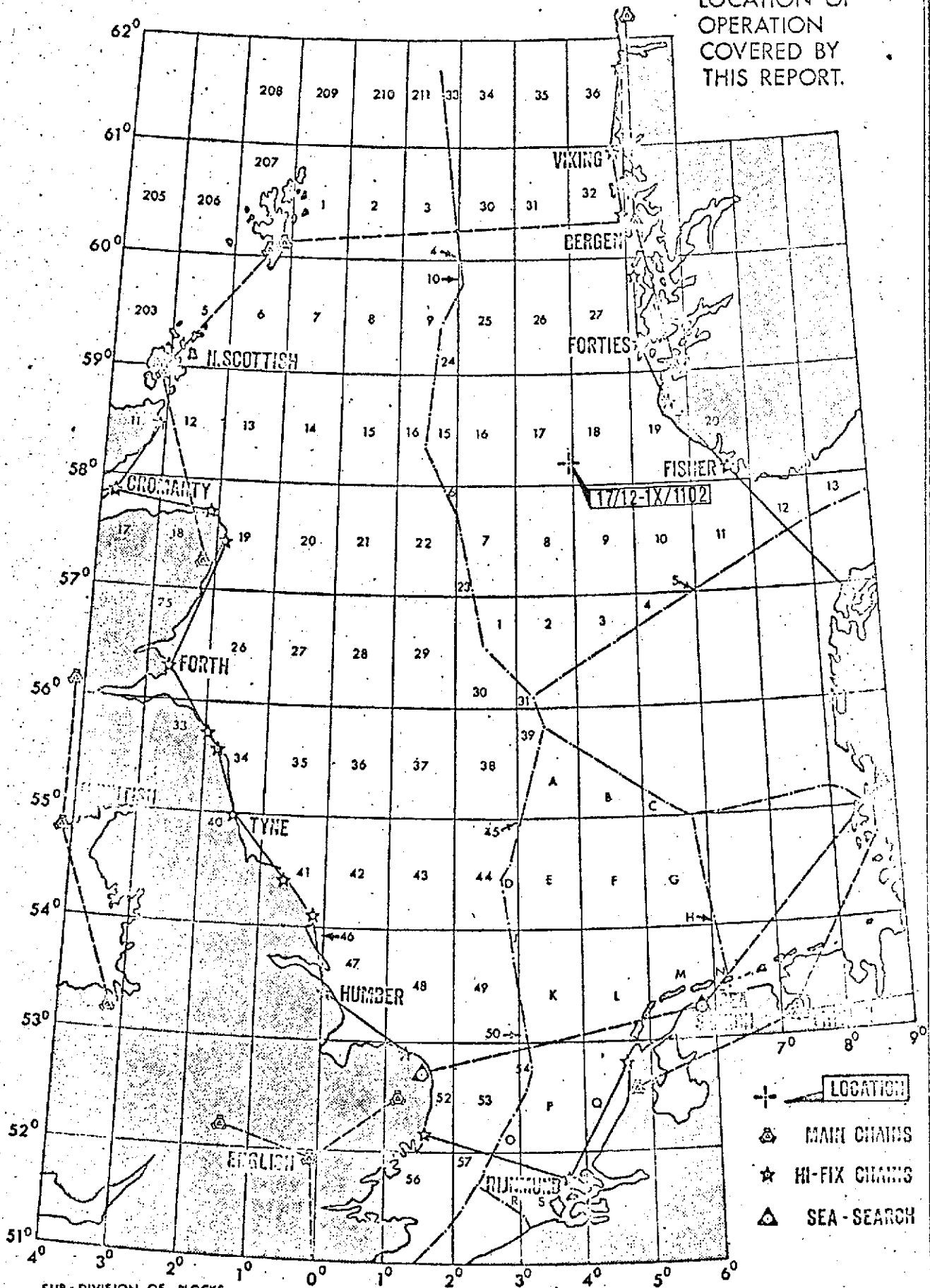
Nils Gulnes (signed)

True translation certified



Government Authorized Translator

LOCATION OF
OPERATION
COVERED BY
THIS REPORT.



- + LOCATION
- ⊗ MAIN CHAINS
- ★ HI-FIX CHAINS
- △ SEA-SEARCH

SUB-DIVISION OF BLOCKS
U.K.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

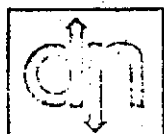
DUTCH

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18

NORWEGIAN

1	2	3
4	5	6
7	8	9
10	11	12

THE DECCA-NAVIGATOR CO. LTD.,
Survey Division, (North Sea Area),
Main Cross Road,
Great Yarmouth, Norfolk.



PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSIESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 340, 41 371 - CABLE: PHILLSTAV - TELEX: 33081

Stavanger, 2 November 1971

CONFIDENTIAL

The Ministry of Industry
Akersgaten 42
OSLO 1

ATTENTION: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From 26 Oct. 1971 To 31 Oct. 1971 Well No. 17/12-1X

	M	T	W	Th	F	S	S
Total Depth Beginning:				0	563	583	1503

Total Depth End:	563	583	1503	1503
------------------	-----	-----	------	------

Hole Size: _____

Geological Formations 1.

Drilled: 2.

3.

4.

Drilling Fluid Mud Density (lbs/gal) 8.9 Viscosity (API) 200 sec

Characteristics:	Water Loss	Chloride	ppm	pH
------------------	------------	----------	-----	----

Plastic Viscosity	Yield Point	Oil
-------------------	-------------	-----

Casing Details:

Diameter (Inches)	Weight (lbs/ft.)	Grade (API)	Length (Feet)	Condition	Depth (Feet)
----------------------	---------------------	----------------	------------------	-----------	-----------------

30 1" wall A 583

20 133 J-55 A 1460

Figure 1. A schematic diagram of the experimental setup. The subject is seated in a chair, viewing a screen. The screen displays a target (a small circle) and a starting point (a larger circle). The subject's hand is positioned at the starting point. The distance between the starting point and the target is labeled as d . The angle between the horizontal line and the line connecting the starting point to the target is labeled as θ . The subject's hand is positioned at the starting point, and the target is at a distance d from the starting point. The angle between the horizontal line and the line connecting the starting point to the target is θ .

10. The following table shows the number of people who have been convicted of a crime in the United States since 1970, by race and sex.

Figure 1. The effect of the number of trials on the mean number of correct responses for the 100 trials condition. The number of correct responses was significantly higher than the number of incorrect responses for the 100 trials condition.

Cementing Details: Cemented 30" casing with 1000 sacks class "B" cement blended with 3% Calcium Chloride, mixed with fresh water at 15.6ppg. Cemented 20" casing with 1000 sack class "B" cement blended with 8% bentonite mixed with sea water at 13.1ppg followed by 1000 sack neat class "B" cement mixed with sea water at 15.6 ppg.

Shows: (Oil, Gas, Water, etc.):

Logging Details:

Deviation Surveys, Deviation 3° at 1530'
Formation Tests,
Pressure Tests,
Temperature Measurements, etc:

Details of Fishing Jobs, Shooting, Perforating, Fracturing, Acidizing, Completion or Abandonment:

Details of Steps taken to protect Underwater Telecables, if requested:

Details of Accidents, Damages, Injuries and other as Ministry deems necessary

Details of Fire Drills held:

P. W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Ran in anchors and prepared to move rig to
Well 2/4-4AX

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire
Drills held:

P.W. Reynolds
P.W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY



PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 340, 41 391 - CABLE: PHILLSTAV - TELEX: 33081

KØT/ds - 194

Stavanger, March 20th, 1972

The Ministry of Industry,
Akersgaten 42,
Oslo-dep.,
Oslo 1.

ATTENTION: Petroleum Section

Dear Sirs,

This is to advise that Phillips Petroleum Company, Norway re-entered well 17/12 - 1X on the 17th of March 1972 with the drilling vessel "Ocean Viking".

The location of well 17/12 - 1X is:

Geographical:

58° 11' 17.3" N

03° 56' 28.0" E

Very truly yours,

P.W. Reynolds
Dist. Manager.

C.C.

J.T. Clark

T.J. Jobin

Direktoratet for arbeidsstilsynet

Sjøfartsdirektoratet

Elektrisitetsstilsynet



PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 340, 41 391 - CABLE: PHILLSTAY - TELEX: 33081

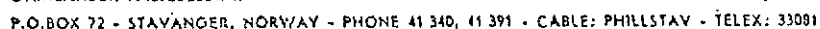
Ministry of Industry

- 2 -

March 20th, 1972

C.C. Continued

Sjøstridskreftene i Sør-Norge
Fiskeridepartement
Skattedirektøren
Fiskeridirektoratet
Sprengsstoffinspeksjonen
Forsvarsdepartementet
Statens Oljeråd
Fyrdirektoratet
Statens strålehygieniske institutt
Helsedirektoratet
Statens utlendingskontor
Kommunal og arbeidsdepartementet
Teledirektoratet
Luftfartsdirektoratet
Tolldirektoratet
Politimesteren i Stavanger
"Etterretninger for Sjøfarende"
"fiskemeldinger"
Sola Air Rescue Centre.

[illegible]

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Tested Hydrill, casing and laurent seal with 1000psi
OK

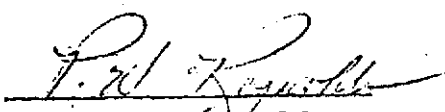
Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire
Drills held:

15th - Safety Drill

19th - Safety Drill


P.W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 340, 41 391 - CABLE: PHILLSTAY - TELEX: 33081

Stavanger, March 28th. 1972

CONFIDENTIAL

The Ministry of Industry
Akersgaten 42
OSLO 1

ATTENTION: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From 20th March To 26th March Well No. 17/12-1X

	M	T	W	Th	F	S	S
Total Depth Beginning:	3073'	3600'	3600'	3600'	3600'	3600'	3600'
Total Depth End:	3600'	"	"	"	"	"	"
Hole Size:	17½"	17½"					
Geological Formations	1. Chalk and traces of chert.						
Drilled:	2. _____						
	3. _____						
	4. _____						
Drilling Fluid	Mud Density (lbs/gal) 11.1 Viscosity (API) 49 sec						
Characteristics:	Water Loss 6.5 Chloride 20,000 ppm pH 10						
	Plastic Viscosity 20 Yield Point 7 Oil 62						

Casing Details;

[illegible]

Cementing Details: Mixed 1400 sxs class "E" cement with 4% gel. and 14.2ppg
slurry and 1000sxs class "B" neat 16.0 ppg. slurry. Plug
bumped with 1500 psi.

Shows: (Oil, Gas,
Water, etc.):

Logging Details: Run IES and SGR to 3600'

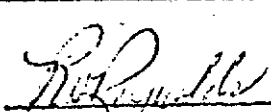
Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing Washed out around well head. Layed down 24" mud riser.
Jobs, Shooting, Ran well head saver sub. tested to 2000psi. Seals would not
Perforating, Frac- hold pressure.
turing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire March 26th - one safety drill
Drills held:


P. W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O.BOX 72 - STAVANGER, NORWAY - PHONE 41 340, 41 391 - CABLE: PHILLSTAY - TELEX: 33086

Stavanger, 4th April, 1972

CONFIDENTIAL

The Ministry of Industry
Akersgaten 42
OSLO 1

ATTENTION: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From March 27th To April 2nd Well No. 17/12 - 1X

	M	T	W	Th	F	S	S
Total Depth Beginning:	3600'	3600'	3600'	3600'	3907'	4950'	5407'
Total Depth End:	"	"	"	3907'	4950'	5407'	6027'
Hole Size:				12 1/4"	12 1/4"	12 1/4"	12 1/4"
Geological Formations	1. Chalk						
Drilled:	2. Clay						
	3. Mixture of chalk and clay						
	4. Shale with trace of clay and dolomite						
Drilling Fluid	Mud Density (lbs/gal) 11.0 Viscosity (APV) 40 sec						
Characteristics:	Water Loss 8.5 Chloride 19000 ppm pH 10.5						
	Plastic Viscosity 14 Yield Point 5 Oil 5%						

Casing Details:

[illegible]

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

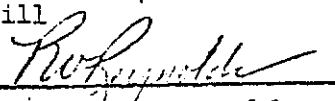
Replaced laurent ring on saver sub. Tested same to 2000psi.
O.K. Tested BOP to 5000psi. Blind rams would not hold.
Made adjustments and re-tested BOP. O.K. Tested 133/8" casing
to 2000psi. O.K.

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire
Drills held:

27th March - Safety drill
29th March - Safety drill
30th March - Safety drill


P. W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Tested choke and kill lines to 5000psi. OK. Changed
bumper sub due to pressure leak. Tested BOP OK.
Bail broke on drill-collar elevator. Dropped bit,
drill-collars, stablizers and bumper sub in hole.
Went in hole with fishing tool and picked up same.

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

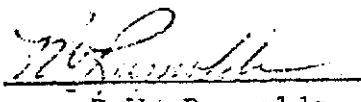
Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

April 3rd. 72. Buer Skog twisted his back while
racking drill-pipe.
April 8th 72. I. Sevland got a metal fragment
in his right knee when bail on drill-collar elev-
ators broke.

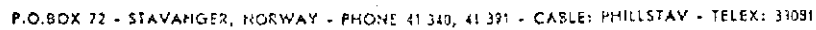
Details of Fire

Drills held:

9th April one safety drill



P.W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

[illegible]

Cementing Details: Mixed 2300 sxs Class "E" cement with 4% gel
14.6 ppg and 500 sxs Class "E" cement 16.5 ppg
Bumped plug with 3000 psi

Shows: (Oil, Gas,
Water, etc.):

Logging Details: Ran S-GR log, IES log and FDC log from seabed - 7927'
Ran CBL from seabed - 3550'
Ran and cut sidewall cores from 4500' - 7816'

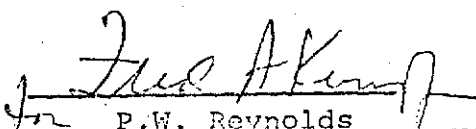
Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing Tested casing to 4000 psi ok
Jobs, Shooting, Tested BOP - ok
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci- NONE
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire 16th - Two safety drills
Drills held:


P.W. Reynolds
for PHILLIPS PETROLEUM COMPANY - NORWAY

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys, Tested BOP stack April 18
Formation Tests,
Pressure Tests,
Temperature Measurements, etc:

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

Details of Fire
Drills held:

April 17th - 1 Safety Drill

April 22nd - 1 Safety Drill

P. W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

Cementing Details:

Shows: (Oil, Gas,
Water, etc.):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Mea-
surements, etc:

Details of Fishing
Jobs, Shooting,
Perforating, Frac-
turing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Acci-
dents, Damages,
Injuries and other
as Ministry deems
necessary

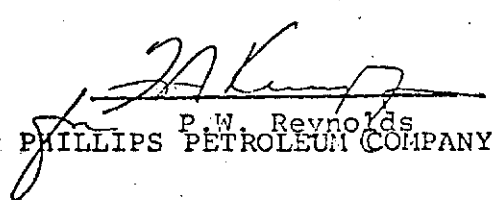
Details of Fire
Drills held:

Tested BOP - OK

25th April - Kåre Asland - slipped and bruised
leg - came ashore.

22nd - One safety drill

28th - One safety drill


P.W. Reynolds
for PHILLIPS PETROLEUM COMPANY-NORWAY

[illegible]

Cementing Details:

Shows: (Oil, Gas,
Water, etc):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements etc:

Ran totco, vert. dev. 1.5° at 11063'.

Details of Fishing
Jobs, Shooting,
Perforating, Fracturing,
Acidizing,
Completion or
Abandonment:

Tested BOP - ok. Broke and doped all connections in BHA.
Changed out bad stabalizer rubbers on drill pipe.

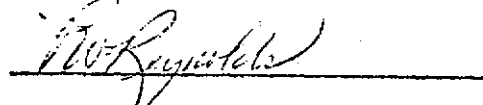
Details of Steps
taken to protect
Underwater Telecables, if requested:

Details of Accidents, Damages,
Injuries and other
as Ministry demms
necessary

Details of Fire
Drills held:

4th. May - Two Safety Drills

5th May - Pit Drill - reaciton time 20 seconds.



P.W. Reynolds

for Phillins Petroleum Co. Norway

PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 741 - CABLE: PHILLSTAV - TELEX: 33081

Stavanger, May 16th, 1972

CONFIDENTIAL

The Ministry of Industry
Akersgaten 42
OSLO 1

ATTENTION: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From May 8th 1972 To May 14th 1972 Well No. 17/12-1X

	M	T	W	Th	F	S	S
Total Depth Beginning:	12280'	12486'	12609'	12758'	12758'	12758'	12833'
Total Depth End:	12486'	12609'	12758'			12833'	12905'
Hole Size:	8½"	8½"	8½"			8½"	8½"
Geological Formations Drilled	1. Clay and brown shale interbedded with limestone 2. Sand and sandstone 3. Sandstone interbedded with marl and clay 4.						

Drilling Fluid Mud Density (lbs/gal) 12.9 Viscosity (API) 47sec
Characteristics: Water Loss 4.6 Chloride 23000 ppm pH 10.8
 Plastic Viscosity 28 Yield Point 12 Oil 5%

Casing Details:

[illegible]

Cementing Details:

Shows: (Oil, Gas,
Water, etc):

Logging Details:

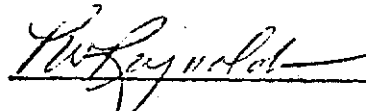
Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements etc:

Details of Fishing Lost one cone and piece of cone off 8½" bit.
Jobs, Shooting, Went in hole with junk basket and magnet.
Recovered all parts. Tested BOP - OK.
Perforating, Fracturing, Acidizing,
Completion or
Abandonment:

Details of Steps
taken to protect
Underwater Tele-
cables, if re-
quested:

Details of Accidents, Damages,
Injuries and other
as Ministry demands
necessary

Details of Fire 14th May - One safety drill
Drills held: One Pit-Drill action timed 35 sec.



P.W. Reynolds



PHILLIPS PETROLEUM COMPANY-NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 72 - STAVANGER, NORWAY - PHONE 41 741 - CABLE: PHILLSTAV - TELEX: 33001

Stavanger, May 23rd, 1972

CONFIDENTIAL

The Ministry of Industry
Akersgaten 42
OSLO 1

ATTENTION: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From May 15th 1972 To May 21st 1972 Well No. 17/12-1X

Total Depth Beginning:	M	T	W	Th	F	S	S
	12905'	13020'	13200'	13200'	7700'	7859'	10505'
Total Depth End:	13020'	13200'	13200'	7700'	7859'	10505'	13254'
Hole Size:	8 1/2"	8 1/2"			8 1/2"	8 1/2"	8 1/2"
Geological Formations	1. Sandstone interbedded with siltstone and Marl						
Drilled	2. Sandstone interbedded with Shale and brown clay						
	3. _____						
	4. _____						

Drilling Fluid Mud Density' (lbs/gal) 13.0 Viscosity (API) 46 sec
Characeristics: Water Loss 4.8 Chloride 23500 ppm pH 10.5
Plastic Viscosity 2.8 Yield Point 13 Oil 5%

Casing Details:

Diameter (Inches)	Weight (lbs/ft)	Grade (API)	Length (Feet)	Condition	Denth (Feet)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Cementing Details: Mixed and spotted 200 sxs Class "E" cement 16.2ppg from 8100'-7670'.

Shows: (Oil, Gas, Water, etc):

Logging Details:

Ran SGR-C from 13189'-7888', I.E.S. from 13190'-7890' and C.B.L. from 7888'-3500'. Ran Velocity Survey, shots at following depths: 13140'-12600'-11500'-10450'-9200'-8045'-7530'-6300'-5200'-3950'-2577'-2500'. Ran GR-CCL from 7890'-7000'.

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements etc:

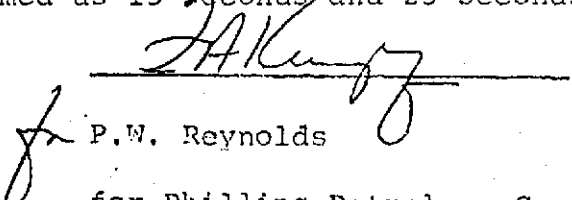
Details of Fishing Jobs, Shooting, Perforating, Fracturing, Acidizing, Completion or Abandonment: Washed and reamed from 8840'-13200'. Tested BOPS - OK.

Details of Steps taken to protect Underwater Telecables, if requested:

Details of Accidents, Damages, Injuries and other as Ministry demands necessary

Details of Fire Drills held:

20th May - Two Safety Drills.
21st May - One Safety Drill and two Pit Drills - the action timed as 15 seconds and 25 seconds.


P.W. Reynolds

for Phillips Petroleum Co. Norway

[illegible]

Cementing Details:

Shows: (Oil, Gas,
Water, etc):

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements etc:

Drilled Zechstein Salt at 13849'

Details of Fishing
Jobs, Shooting,
Perforating, Fracturing,
Acidizing,
Completion or
Abandonment:

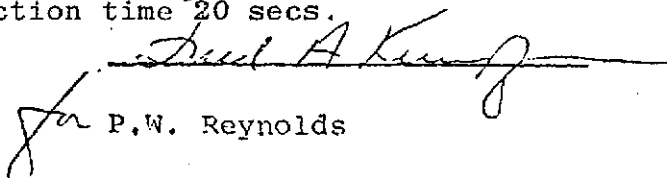
Tested BOP's O.K.
Circulated and conditioned mud for
running logs

Details of Steps
taken to protect
Underwater Telecables,
if requested:

Details of Accidents,
Damages,
Injuries and other
as Ministry demands
necessary

Details of Fire
Drills held:

22/5 1 - Pit Drill, reaction time 15 secs
23/5 1 - Pit drill, reaction time 15 secs
25/5 1 - Safety Drill, 1 - Pit Drill,
reaction time 20 secs.


P.W. Reynolds

STAVANGER

Cementing Details:

Mixed and spotted 150 sxs Class 'E' cement 16.2 ppg. Plug depth 12400'-12800'. Mixed and spotted 300 sxs Class 'E' cement 16.2 ppg. Plug depth 7600'-8100'. Mixed and spotted 100 sxs Class 'E' cement 16.9 ppg. and squeezed through perfs at 7668'-7682' with 3000p

Shows: (Oil, Gas, Water, etc.)

DST No.1 based on 7 hrs. 12/64" choke. FTP 330psi at 66° F, 885EOPD, API gravity 29.1 at 60° F, water nil a GOR 115cu.ft./bbl. DST No.2 based on 10 hrs. 8/64 choke. FTP 220psi at 65° F, 505EOPD, API gravity 34.1 water nil and GOR 270 cu.ft./bbl.

Logging Details:

Run FDC from 13876' to 7888', IES, from 13876'-13287' and SGR from 13876' to 13280'

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements, etc.:

Details of Fishing
Jobs, Shooting,
Perforating, Fracturing,
Acidizing, Completion or
Abandonment:

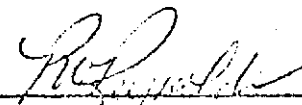
Set retainer at 7732' and tested to 3000 psi. Perforated 9-5/8" casing from 7668' to 7682'. Rigged up test string for DST No. 1. Set cement retainer at 7650' and tested to 3000 psi. Perforated 9-5/8" casing from 7600' to 7628'. Rigged up test string for DST No. 2

Details of Steps
taken to protect
Underwater Telecables, if
requested:

Details of Accidents, Damages,
Injuries and other
as Ministry deems
necessary:

Details of Fire
Drills held:

29/5 - 1 Safety Drill, 31/5 - 1 Safety Drill
3/6 - 1 Safety Drill, 1 Pit Drill, reaction time 20s
4/6 - 1 Safety Drill



P. W. Reynolds

for Phillips Petroleum Co.-Norway

STAVANGER

Cementing Details: Mixed and spotted 50 sxs Class E cement 16.2 ppg and squeezed into perforations 7600'-7628' with 3000 psi
Mixed and spotted 200 sxs Class E neat cement 16.2 ppg. Unable to squeeze. Mixed and spotted 360 sxs Class E neat cement 16.2 ppg and squeezed perfs.
7560'-7530' and 7594'-7574' with 3200 psi. Mixed and spotted 250 sxs Class E neat cement, 16.2 ppg and squeezed perfs 7500'-1530' and 7594'-7574' with 3200 psi.

Shows: (Oil, Gas, Water, etc.) DST No. 3 Well did not flow
DST No. 4 Well did not flow

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements, etc.:

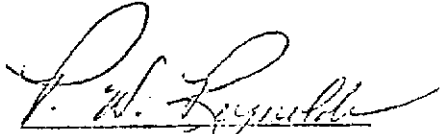
Details of Fishing Jobs, Shooting, Perforating, Fracturing, Acidizing, Completion or Abandonment: Set cement retainer at 7595'. Perforated 9.5/8" casing from 7574'-7594'. Rigged up test string for DST No. 3
Perforated 9.5/8" casing from 7530'-1560'. Rigged up test string for DST No. 4
Set cement retainer at 7515'. Drilled out cement retainer and cement to 7565'. Pressure tested squeeze perfs. Broke down at 1900 psi. Set retainer at 7515 and cemented perfs. 7560'-7530' and 7594'-7574'. Test squeezed perfs. to 3000 psi, O.K. Perforated from 766 to 7665', 7564' to 7650' and 7528'-7600'. Preparing to acidise perfs.

Details of Steps taken to protect Underwater Telecables, if requested:

Details of Accidents, Damages, Injuries and other as Ministry deems necessary:

Details of Fire Drills held:

1 - Pit Drill, reaction time 15 secs
1 - Safety Drill


P. W. Reynolds



PHILLIPS PETROLEUM COMPANY NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 69 - 4001 STAVANGER, NORWAY - PHONE 41741 - CABLE: PHILLSTAV - TELEX: 33081

ASL/PG-455/72

Stavanger, June 21, 1972

CONFIDENTIAL

The Ministry of Industry,
Akersgaten 42,
OSLO, 1.

Attention: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From June 12 To June 18 Well No. 17/12-1X

	M	T	W	Th	F	S	S
Total Depth Beginning:	7732'	7732'	7732'	7732'	7732'	7732'	7376'
Total Depth End:	7732'	7732'	7732'	7732'	7732'	7376'	3500'
Hole Size:							

Geological Formations 1. _____
Drilled 2. _____
3. _____
4. _____

Drilling Fluid Mud Density (lbs/gal) 12.1 Viscosity (API) 43 sec.
Characteristics: Water Loss 6 cc Chloride 43,000 ppm pH 12
Plastic Viscosity 23 Yield Point 7 Oil 2%

Casing Details:

<u>Diameter</u> <u>(Inches)</u>	<u>Weight</u> <u>(lbs/ft)</u>	<u>Grade</u> <u>(API)</u>	<u>Length</u> <u>(Feet)</u>	<u>Condition</u>	<u>Depth</u> <u>(Feet)</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

STAVANGER

Cementing Details: Set retainer at 7520ft. Mixed 200 sx Class E neat cement and squeezed DST 6 perforations to maximum of 4000psi. Set retainer at 7510ft. and spotted 50 sx Class E neat cement from 7510ft. to 7376ft. Set retainer at 3500ft. Mixed 200 sx Class E neat cement and squeezed perforations 3568 to 3570 ft. to maximum of 1800psi.

Shows: (Oil, Gas, Water, etc.)

Logging Details:

Deviation Surveys, DST 5: perforations 7600 to 7628ft, 7650 to 7654ft., 76 to 7684ft. Ran full water cushion; formation would not produce. DST 6: same perforations as DST 5. No water cushion. Flowed 1020 bbl/day, 0.250 MMCFD, 32.4° API at 60° F, through 8/64" choke. Flowing tubing pressure 36 psi, temp. 68° F, B.S. & W. 0.1%, GOR 247. Final shut-in pressure 625 psi after 12 hrs. DST 7: Perforations 7691 to 7703ft. Formation would not produce.

Formation Tests,

Pressure Tests,

Temperature Measurements, etc.:

Details of Fishing, Spotted 1000gal mud acid across perforations 7600 to 7628 ft, 7650 to 7654ft, and 7665 to 7684 ft. Pressure up to 2900psi for 3 hrs. without breaking down formation. Perforated 7691 to 7703 ft. Perforated 3368 to 3570 ft.

Jobs, Shooting,

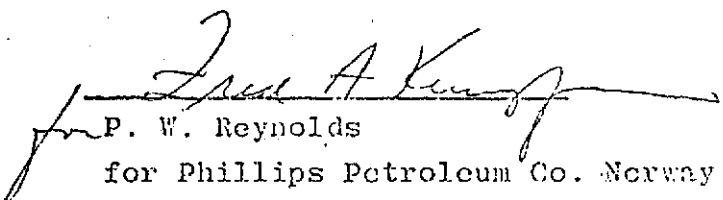
Perforating, Fracturing, Acidizing,

Completion or Abandonment:

Details of Steps taken to protect Underwater Telecables, if requested:

Details of Accidents, Damages, Injuries and other as Ministry deems necessary:

Details of Fire 3 Safety Drills
Drills held:


P. W. Reynolds

for Phillips Petroleum Co. Norway



PHILLIPS PETROLEUM COMPANY NORWAY

UTENLANDSK AKSJESELSKAP

P.O. BOX 69 - 4001 STAVANGER, NORWAY - PHONE 41741 - CABLE: PHILLSTAV - TELEX: 33081

KØT/PG-477/72

Stavanger, June 27, 1972

CONFIDENTIAL

The Ministry of Industry,
Akersgaten 42,
OSLO, 1.

Attention: Petroleum Section

PHILLIPS PETROLEUM COMPANY-NORWAY - WEEKLY DRILLING REPORT

From June 19 To June 21 Well No. 17/12-1X

	M	T	W	Th	F	S	S
Total Depth Beginning:	3500'	3500'	3500'				
Total Depth End:			Seabed				
Hole Size:							
Geological Formations 1.							
Drilled 2.							
3.							
4.							

Drilling Fluid Mud Density (lbs/gal) _____ Viscosity (API) _____ sec.
Characteristics: Water Loss _____ Chloride _____ ppm pH _____
Plastic Viscosity _____ Yield Point _____ Oil _____

Casing Details:

Diameter (Inches)	Weight (lbs/ft)	Grade (API)	Length (Feet)	Condition	Depth (Feet)

Cementing Details:

Cemented from 600' back to seabed with 600 sx Class B neat cement 15,7 ppg slurry.

Shows: (Oil, Gas, Water, etc.)

Logging Details:

Deviation Surveys,
Formation Tests,
Pressure Tests,
Temperature Measurements, etc.:

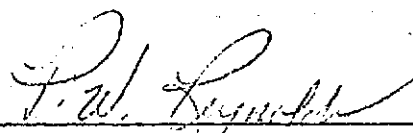
Details of Fishing
Jobs, Shooting,
Perforating, Fracturing,
Acidizing,
Completion or
Abandonment:

Pulled BOP stack. Cut 13.5/8" casing 45' below hanger. Picked up and layed down same. Cut 20" casing 35' below hanger. Picked up and layed down same. Cut 30" casing 20' below hanger. Pulled and layed down casing; guide base and guide lines. Pumped bage up to towing draft, pulled anchors and connected tugs. Barge under tow to new location well 2/7-4X, at 0800 hrs. 21/6-72.

Details of Steps
taken to protect
Underwater Telecables, if
requested:

Details of Accidents, Damages,
Injuries and other
as Ministry deems
necessary:

Details of Fire
Drills held:



P. W. Reynolds

for Phillips Petroleum Co. Norway

INDIVIDUAL WELL COMPLETION RECORD

Lease 17/12 - North Sea Norway Well No. 1X AFE # NW 5605

LINE MEASUREMENTS OF WELL:

58° 11' 15" N
03° 56' 06" E

ELEVATIONS:

Ground _____ Ft.
Water Depth 380' Ft.
RKB 466' Ft.
Top Csg. Flg. _____ Ft.
Or Bench Mark _____ Ft.

COST DATA:

Est. Total Mud _____
TOTAL PAID DRILLING CONTRACTOR:
Footage \$ _____
Day Work \$ _____

Measurement Taken From _____

CASING						CEMENT					
Date	Size	Weight	Condition & Grade	Amount Run	Where Set	No. Sacks	Kind	Depth Of Plug	Top In Annulus	Amount Pulled	Date Pulled
1971 Oct. 29	30"		1		583'	1000	Class B +3% CaCl				
Oct. 31	20"	133	1-J.55	25 jts	1460'	1000 1000	Class B +8% Gel Class B neat				
1972 Mar. 22	13.3/8"	68	1-J.55	79 jts	3557'	1400 1000	Class B +4% Gel Class B neat				
Apr. 14	9.5/8"	47	1-N80	195 jts	7901'	2300 500	Class E +4% Gel Class E neat				

177.69

PERFORATING AND SQUEEZE RECORD

Lease 17/12 North Sea, Norway

Well 1X

Date	Size of Casting	Perforating		No. of Feet Perforated	No. of Holes	Size of Holes	Gun Diameter	Gun Type	Perforating Company
		To	From						
1972									
May 31	9.5/8"	7682'	7668'	14	4/ft.				Schlumberger
June 3	9.5/8"	7628'	7600'	28	4/ft.				"
June 5	9.5/8"	7594'	7574'	20	4/ft.				"
June 6	9.5/8"	7560'	7530'	30	4/ft.				"
June 10	9.5/8"	7682'	7665'	17	4/ft.				"
June 10	9.5/8"	7654'	7650'	4	4/ft.				"
June 10	9.5/8"	7628'	7600'	28	4/ft.				"
June 16,	9.5/8"	7703'	7691'	12	4/ft.				"
Squeeze Job No. 1									
Date:	June 3, 1972								
Reason:	Squeeze perf. 7668	-7682'							
Retainer:	Howco "SV" at 7650								
Cement:	100 sx Class 'E'								
Squeeze Job No. 2									
Date:	June 5, 1972								
Reason:	Squeeze perf. 7600	-7628'							
Retainer:	Howco "SV"								
Cement:	50 sx Class 'E'								
Squeeze Job No. 3									
Date:	June 8, 1972								
Reason:	Squeeze perf. 7574	-7594', 7530'-7560'							
Retainer:	Howco "SV" at 7515'								
Cement:	200 sx Class 'E'								
Squeeze Job No. 4									
Date:	June 8, 1972								
Reason:	Squeeze No. 3 failed								
Retainer:	Howco "SV" at 7515'								
Cement:	360 sx Class 'E'								
Squeeze Job No. 5									
Date:	June 9, 1972								
Reason:	Squeeze Nos 3 and 4 failed								
Retainer:	Howco "SV" at 7515'								
Cement:	250 sx Class 'E' neat								
Squeeze Job No. 6									
Date:	June 15, 1972								
Reason:	Squeeze perf.								
Retainer:	Howco "SV" at 7520'								
Cement:	200 sx Class 'E' neat.								

8

EXPLORATION RECORD

Lease Norwegian North Sea, Block 17/12, Prod. lic. 016 Well 17/12 - 1X

Formation Name	Top	Base	Remarks
Oligocene	1500	2060	
U - M Eocene	2060	2280	
L. Eocene	2280	2540	
Danian (Marl)	2540	2577	
U. Cretaceous	2577	3955	
L. Cretaceous	3955	6260	
U. Jurassic	6260	7530	
M. Jurassic	7530	8023	
Triassic	8023	13,640	
Zechstein (U. Perm.)	13,640	14,100 +	
TD	14,100		

WELL NO.: 17/12-1X

NAME OF LOG	SCALE		RUN NO.	INTERVAL	
				From	To
Borehole compensated Sonic Log - Gamma Ray	1/200	1/500	1 ✓	476	3592
" "	1/200	1/500	2 ✓	3557	7919
" "	1/200	1/500	3 ✓	7888	13180
" "	1/200	1/500	4 ✓	13180	13865
Induction Elect. Log	1/200	1/500	1 ✓	1461	3598
" " "	1/200	1/500	2 ✓	3556	7906
" " "	1/200	1/500	3 ✓	7890	13187
" " "	1/200	1/500	4 ✓	13187	13875
Gamma Ray	1/200	1/500	1	7000	7888
Compensated Form. Density Log.	1/200		1 ✓	6900	7900
" " " "	1/200	1/500	2 ✓	7888	13876
Cement Bond Log	1/200	1/500	1 ✓	3500	7888

O K CRR

17
ROBERTSON RESEARCH INTERNATIONAL LIMITED

OILFIELDS REPORT NO. 621

THE MICROPALAEONTOLOGY AND STRATIGRAPHY

OF THE PHILLIPS NORWAY 17/12-1X

NORTH SEA WELL

by

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Project No. RRI/IIA/723/34 (RRI/IIA/242)

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June, 1972.

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Enclosures

③ Micropalaeontological Analysis Charts Nos. 1-14.

Biostratigraphic Chart showing the distribution of the diagnostic Foraminifera and Ostracoda in the Phillips Norway 17/12-1X North Sea Well. (2 sheets).

I

INTRODUCTION

This report summarises the results of micropalaeontological, palynological and stratigraphical analyses which have been completed on material covering the interval from 1500' to 14100' in the Phillips (Norway) 17/12-1X North Sea Well under Project No. RRI/IIA/723/34 (RRI/IIA/242).

Under this project a total of 888 ditch cuttings samples were analysed using standard micropalaeontological techniques. Additionally, 105 individual or composite samples from the Jurassic, Triassic and Permian sections of the well, were treated palynologically. The methods used in treating the samples and of assessing ages are similar to those described in earlier Oilfields Reports.

This well represents the first exploration hole to be drilled in Block 17/12 in the Norwegian concession area of the North Sea. It lies approximately 175 km due west of the southernmost tip of Norway and is situated close to the edge of the continental shelf on the western side of the Norwegian Trench.

Summaries of the determinations obtained by these analyses have already been communicated in a series of telex communications outlining the framework of factual information on which this present report is based. A complete summary of the stratigraphic sequence penetrated by this well is provided overleaf in Table 1.

The terminology adopted for the environmental conclusions follows that of Hedgpeth, 1957; from which report Table 2 is taken.

All the prepared samples and recorded information are now filed and curated in the confidential records section of these laboratories.

We wish to acknowledge the continued co-operation and assistance received from various members of the Phillips Petroleum Company with whom we have been associated in the course of this work.

II

SUCCESION

TABLE 1

<u>INTERVAL</u>	<u>THICKNESS</u>	<u>STAGE</u>	<u>SYSTEM/SUBSYSTEM</u>
457 1500' - 2040'	+ 540'	-	Oligocene
628 2060' - 2260'	± 200'	Bartonian-Lutetian	Upper - Middle Eocene
695 2280' - 2420'	± 140'	Ypresian	Lower Eocene
744 2440' - 2520'	± 80'	-	?Palaeocene
774 2540' - 2580'	± 40'	Danian	Lower Palaeocene
792 2600' - 3440'	± 840'	Maestrichtian	Upper Cretaceous
1055 3460' - 3680'	± 220'	Campanian	
1128 3700' - 3820'	± 120'	Santonian	
1170 3840' - 3980'	± 140'	Coniacian	
1219 4000' - 4380'	± 380'	?Albian	
1343 4405' - 5200'	± 795'	Albian	Lower Cretaceous
5225'	-	?Albian - Aptian & Barremian	
5250' - 5375'	± 125'	Lower Barremian - Hauterivian	
5400' - 5850'	± 450'	Hauterivian	
5875' - 5925'	± 50'	Hauterivian-Valanginian	
5950' - 6175'	± 225'	Valanginian	Upper Jurassic
6200' - 6225'	± 25'	Berriasian	
6250' - 6325'	± 75'	Kimmerdgian	
6350' - 6625'	± 275'	Lower Kimmeringian	

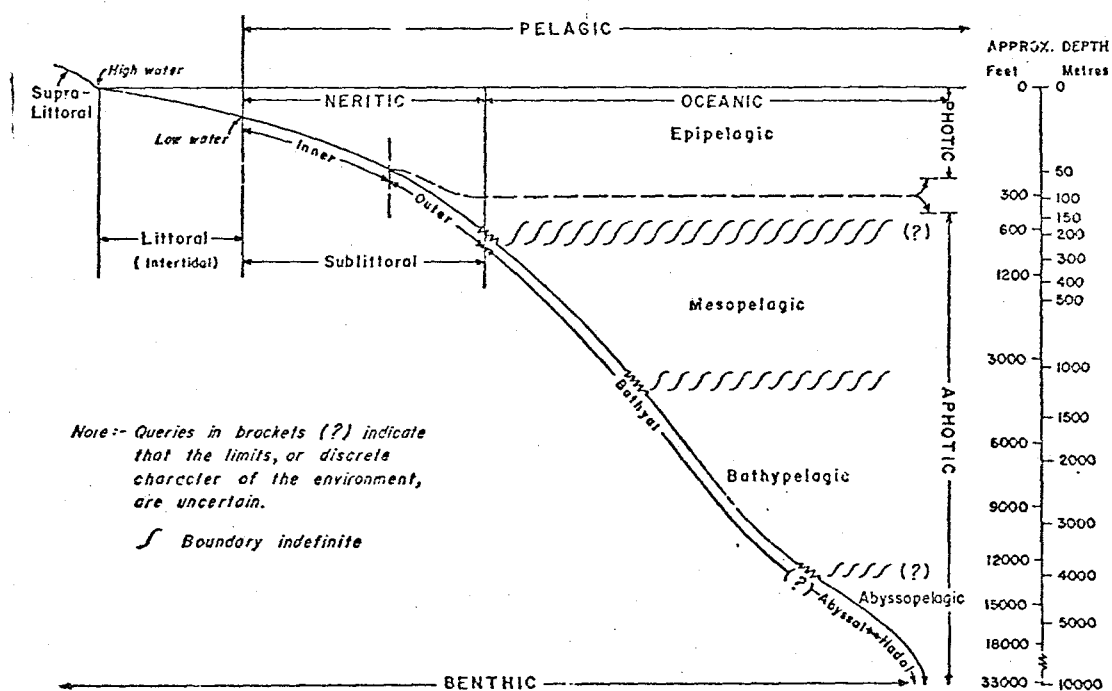
TABLE 1

Continued

<u>INTERVAL</u>	<u>THICKNESS</u>	<u>STAGE</u>	<u>SYSTEM/SUBSYSTEM</u>
6650' - 7520'	$\pm$ 870'	-	Upper Jurassic
7525' - 8040'	$\pm$ 515'	-	?Middle Jurassic
8050' -13610'	$\pm$ 5560'	-	Triassic
13640 -14100'	+ 460'	Zechstein	Upper Permian

TABLE 2

CLASSIFICATION OF MARINE ENVIRONMENTS



The classification of marine environments used in this report is presented in diagrammatic form above. Pelagic (water) and Benthic (bottom) environments are recognised.

PELAGIC

Neritic

Oceanic

Epipelagic

Mesopelagic

Bathypelagic

Abyssopelagic

BENTHIC

Supralittoral

Littoral (Intertidal)

Sublittoral

Inner

Outer

Bathyal

Abyssal

Hadal

The classification is after Hespeth (1957) and results from several years discussion by a Committee of the Division of Earth Sciences, National Research Council, National Academy of Sciences, Washington D. C.

III

TERTIARY

INTERVAL 1500 - 2040'; Oligocene

General Lithology

This interval consists mainly of grey, glauconitic clays. Glauconite is particularly common between 1900' and 1940' and some of it at least, appears to have been formed by the replacement of faecal pellets in the clay. Several beds of grey or brownish grey, cryptocrystalline limestone are found interbedded with the clay. The limestone contains traces of glauconite, pyrite and mica, and in places silty material and iron oxides are also present.

Micropalacontology and Stratigraphical Conclusions

Miocene forms such as Asterigerina staeschei and Uvigerina tenuipustulata were found as contaminants at the top of the well. An Oligocene age, however, is indicated for this upper section, based on the appearance of the following species Asterigerina gürichi, Globigerina ampliapertura and Gyroidina girardana. At 1840' Rotaliatina bulimoides and Alabamina perlata occur and these would indicate that the section below this depth at least, is of Middle - Lower Oligocene age.

Environmental Conclusions

A sublittoral environment is possibly indicated by the very varied calcareous benthonic microfauna, while the occurrence of various species of planktonic foraminifera indicates that open marine conditions existed at times.

INTERVAL 2060' - 2260'; Bartonian - Lutetian, Upper - Middle Eocene

General Lithology

In this section grey, pyritic clay, containing abundant green and yellowish green glauconite, predominates.

Micropalaeontology and Stratigraphical Conclusions

The top of the Eocene was taken at the first occurrence of Lenticulina decorata. Other characteristic forms present include Globigerapsis index, Truncorotaloides pseudodubia, Pseudohastigerina wilcoxensis, Uvigerina farinosa and Cibicides proprius. All the forms present within this interval range through the Upper and Middle Eocene and this age has been assigned to the section.

Environmental Conclusions

In this interval calcareous benthonic foraminifera such as Lenticulina spp., Polymorphinids and Gyroidina spp. become common, together with various planktonic foraminifera. According to Pokorny, Lenticulina (Robulus) spp. occur characteristically above 600m. while Gyroidina soldanii has been recorded in the Western Atlantic from 23 fathoms to 2369 fathoms and in the Bay of Biscay from 230m - 4200m with a maximum abundance at 1975m.

An outer sublittoral environment is therefore suggested for these sediments.

INTERVAL 2280' - 2420'; Ypresian, Lower Eocene

General Lithology

The upper part of this interval is composed of glauconitic clays similar to those found in the overlying section. Subordinate amounts of brownish grey, micaceous shale and hard, brownish grey chert occur at and below 2340'. The basal sample at 2420' contains some hard, pyritic, cryptocrystalline, grey limestone and abundant fragments of light grey, dark grey and brownish grey chert. Some of the chert has been tinged

pink or green by the iron compounds in it and it also contains finely disseminated pyrite and carbonaceous material.

Micropalaeontology and Stratigraphical Conclusions

Large radiolaria, which are taken to mark the top of the Lower Eocene in this region of the North Sea, dominate the samples around 2280'. Agglutinating forms such as Haplophragmoides spp., Cyclammina sp. and Bathysiphon eocenicus also become common at this level.

Environmental Conclusions

The appearance of more agglutinating foraminifera, especially Cyclammina sp., indicate a bathyal environment of deposition. Tests of Cyclammina spp. have been found in the Bay of Biscay between 560m - 4175m with a maximum abundance at 1800m.

INTERVAL 2440' - 2520'; ?Palaeocene

General Lithology

This interval is composed predominantly of very hard, light and dark grey chert containing pyrite and carbonaceous material. The chert is interbedded with subordinate amounts of grey and brownish grey shale. Brown, buff and grey, highly carbonaceous tuffaceous shales, including some medium brown shale with a characteristic white mottling, are found between 2480' and the base of the unit.

Micropalaeontology and Stratigraphical Conclusions

This interval is assigned tentatively to the Palaeocene on the appearance of Coscinodiscus sp. 1 at 2440' and the presence of tuffs and tuffaceous shales.

Environmental Conclusions

The dominance of chert pebbles within this interval and the impoverished nature of the microfaunas suggests an inner sublittoral,

or even a possible littoral environment, of deposition.

INTERVAL 2540' - 2580'; Danian, Lower Palaeocene

General Lithology

This interval consists of hard, white, chalky limestone containing buff coloured flints and abundant fragments of bryozoa.

Micropalaeontology and Stratigraphical Conclusions

Anomalinoides velascoensis, Gavelinella cf. danica and Globigerina pseudobulloides are found within this interval, and their presence together with the appearance of hard, white, chalky limestone is indicative of the Danian, which occurs here as a thin, chalky development.

Environmental Conclusions

The occurrence of planktonic foraminifera together with chalk deposits indicate an open marine environment. Benthonic foraminifera are in greater abundance than planktonic foraminifera, and with the appearance of lamellibranchs and bryozoa, an inner sublittoral environment may also be inferred.

IV

CRETACEOUS

INTERVAL 2600' - 3440'; Maestrichtian, Upper Cretaceous

General Lithology

Moderately hard, white chalk predominates in this section. Buff coloured flints are very common, especially in the upper part of the interval.

Micropalaeontology and Stratigraphical Conclusions

Faunal elements indicative of a Cretaceous age are first encountered in the sample at 2600'. Samples beneath this depth contain a typical Upper Senonian assemblage and the presence of such foraminifera as Bolivinoidea draco cf. draco, Bolivinita exigua, Bolivina incrassata gigantea and Spirillina subornata indicate that the uppermost beds are of Maestrichtian age.

Over the upper part of this interval the fauna consists almost entirely of calcareous benthonic species, with a small proportion of agglutinating forms and a marked paucity of planktonic species. Caved Tertiary material persists throughout and in some instances represents a significant portion of the samples.

Other species occurring in samples from the upper part of this interval, and which are typical components of an Upper Senonian fauna, are Stensibina pommerana, Praebulimina carseyae, Bolivinoidea decorata laevigata and Bolivina incrassata incrassata.

From 3400' to the base of this interval, somewhat richer faunas were encountered, in which Rugoglobigerina rugosa rugosa and Rugoglobigerina rugosa aff. rotundata become increasingly significant, and in which occasional Globotruncana arca were noted. These, together with such benthonic species as Reussella szajnochae, Stensibina

labyrinthica and Stensiöina aff. exsculpta are typical Campanian - Lower Maestrichtian components.

In the general absence of forms indicative of the upper zones of the Maestrichtian, it is presumed that the younger Maestrichtian beds are absent. A specimen of Pseudotextularia elegans elegans was noted in the sample at 3000' but its preservation leads us to presume that it is a reworked specimen which was caved from the Tertiary.

Environmental Conclusions

The virtual absence of planktonic foraminifera together with an abundance of bryozoan, crinoid and other fragmental extraneous material which is seen in samples over the upper 600' of this interval, must be taken to infer an inner sublittoral environment. At the commencement of Maestrichtian times, however, slightly more open marine conditions may have prevailed, though without necessarily implying any increased depth. This would account for the greater number of planktonic foraminifera found in samples between 3200' and 3440'.

INTERVAL 3460' - 3680'; Campanian, Upper Cretaceous

General Lithology

This interval consists of moderately hard, white chalk containing some buff coloured flints. The samples below 3600' are contaminated with cement.

Micropalaeontology and Stratigraphical Conclusions

Very little change is to be noted in the faunas from this interval, which for the most part are comprised of species already recorded in the overlying beds. Benthonic species still form the major part of this fauna, although planktonic species (mainly Rugoglobigerina are present.

Certain benthonic forms such as Stensiöina pommerana, Stensiöina aff. exsculpta and Globorotalites cf. miceliniana are often present in considerable numbers.

The top of this interval is marked by the first appearance of Globotruncana marginata and Globorotalites cf. miceliniana in the sample 3440' - 3460'; the Campanian age being supported by the occurrence in the following sample of Globotruncana linneiana linneiana. Lower in this Campanian interval, true Globorotalites miceliniana appear together with specimens of Gavelinella clementina, and supporting this age determination.

Environmental Conclusions

The environment of deposition during Campanian times would have been generally similar to that indicated above - a sublittoral environment (possibly more outer sublittoral), with fairly open marine connections.

INTERVAL 3700' - 3820'; Santonian, Upper Cretaceous

General Lithology

The samples in this interval are contaminated with cement and lost circulation material, but appear to consist of moderately hard, white chalk similar to that found in the overlying section.

Micropalaeontology and Stratigraphical Conclusions

Samples over this short interval display a noticeable increase in the numbers of Gavelinella costata and Stensiöina spp., coupled with a decrease in the number of planktonic foraminifera. The species of Stensiöina identified in these samples included S. exsculpta, S. exsculpta gracilis and S. praexsculpta. These would suggest a Santonian age.

Environmental Conclusions

Similar general conditions of deposition are reflected to those already indicated above. The meagre number of planktonic specimens suggest that the open marine connections had only developed at the close of Santonian times.

INTERVAL 3840' - 3980'; Coniacian, Upper Cretaceous

General Lithology

The interval consists mainly of soft, creamy white chalk. Traces of glauconite are first seen in the chalk at 3900', and from 3940' to the base of the unit highly fossiliferous, glauconitic, white limestone is interbedded with the chalk.

Micropalaeontology and Stratigraphical Conclusions

A resurgence in the numbers of planktonic foraminifera occurring in samples below 3820' leads us to believe that the interval to 3980' represents the Coniacian. Rugoglobigerina rugosa rugosa, Globotruncana marginata and Globotruncana linneiana linneiana occur frequently in these residues. In addition, Globotruncana linneiana tricarinata and Globotruncana aff. imbricata are also recorded from samples towards the base of this section. Throughout this interval, samples contain a fairly prolific fauna of the benthonic species already encountered in the higher levels of the Senonian.

Environmental Conclusions

A sublittoral environment seems to have prevailed throughout Senonian time. From the planktonic content of the Coniacian samples it would appear that at the beginning of the Senonian, more open marine conditions were in existence.

INTERVAL 4000' - 4380'; ?Albian, ?Lower Cretaceous

General Lithology

The top of this interval is marked by the incoming of soft, grey clays. The clays are glauconitic and contain traces of fine-grained, subangular sand and silt. Subordinate amounts of pyrite are also present. Between 4150' and the base of the section, stringers of light brown, sucrosic sphaerosiderite are common.

Micropalaeontology and Stratigraphical Conclusions

This interval contains an extremely poor microfauna which is composed primarily of fragments of calcareous benthonic and agglutinating foraminifera. The most distinctive feature of this unit, by comparison with the preceding one, however, is the incoming of glauconitic grey clays.

Environmental Conclusions

The sparse microfauna does not allow any firm environmental conclusions to be made, although it is suggestive of a sublittoral environment. The clear seas of the Upper Cretaceous obviously do not occur in the ?Albian when the area was receiving considerable amounts of fine-grained terrigenous material.

INTERVAL 4405' - 5200'; Albian, Lower Cretaceous

General Lithology

Glauconitic, grey clays containing some sphaerosiderite predominate in the upper part of the interval. Below 4550' the clays are interbedded with limestone, dolomite and siderite. The limestone is light brown or grey, cryptocrystalline and frequently micaceous. The dolomite and siderite are dark grey or brown in colour and are often closely associated with each other. They are generally cryptocrystalline and contain black

specks of carbonaceous material.

Micropalaeontology and Stratigraphical Conclusions

At 4405' there is a distinct change in the microfauna with the appearance of agglutinating foraminifera, Haplophragmoides spp., in significant numbers, and of Epistomina chapmani. Subsequently, the assemblages consist primarily of agglutinating foraminifera with occasional incursions of calcareous benthonic forms. At the base of the section (5075' - 5175') the samples are particularly rich in agglutinating species. The calcareous benthonic element of the microfauna is dominated by species of Epistomina viz., E. cf. caracolla, E. chapmani, E. cretosa, E. spinulifera polypioides, E. spinulifera spinulifera and E. reticulata. The presence of the various species of Epistomina and Verneuilinoides subfiliformis indicates that this unit is of Albian age.

Environmental Conclusions

The moderate to rich microfaunas dominated by agglutinating foraminifera are suggestive of an inner sublittoral environment. This is supported by the absence of planktonic forms which indicates the lack of any open marine connections.

INTERVAL 5225'; ?Albian - Aptian and Barremian, Lower Cretaceous

General Lithology

The single sample consists of clays containing stringers of limestone, dolomite and siderite similar to those found in the overlying interval. In addition a few small yellowish brown iron oolites are present in the clay.

Micropalaeontology and Stratigraphical Conclusions

An abrupt change in the microfauna is apparent at this level. Although considerable numbers of agglutinating forms persist in this

sample, the general assemblage is dominated by calcareous benthonic and planktonic foraminifera.

The association of species however, is anomalous, for we have an influx of Hedbergella infracretacea (which normally occurs in Albian or Aptian sediments) in association with the first appearance of typical Barremian species - Gavelinella barremiana, Conorotalites intercadens and C. cf. bartensteni and the ostracodes Cytherella pyriformis and Pontocyprrella rara. We would suggest, therefore, that although this sample is undoubtedly of Barremian age, we may here be dealing with a condensed sequence which represents both Albian - Aptian and Barremian sediments.

Environmental Conclusions

The influx of planktonic and calcareous benthonic species in this sample suggests that we are dealing with an outer sublittoral environment with good open marine connections.

INTERVAL 5250' - 5375'; Lower Barremian - Hauterivian, Lower Cretaceous

General Lithology

The interval consists mainly of soft grey, pyritic clays which contain subordinate amounts of dark brown and grey, cryptocrystalline siderite and dolomite.

Micropalaeontology and Stratigraphical Conclusions

The occurrence of Epistomina caracolla caracolla at 5250' and the subsequent appearance within this interval of Epistomina ornata and Lenticulina eichenbergi would strongly suggest that we are dealing with Hauterivian sediments, although these species do range into the Lower Barremian. The first appearance below the incoming of Epistomina caracolla caracolla of more typical Barremian species such as Planularia crepidularis, Lenticulina ouachensis ouachensis and L. ouachensis wisselmanni however, suggests the presence of Barremian rocks, but

we assume these forms have in all probability lived. The additional occurrence of Lower Barremian - Hauterivian forms such as Gavelinella ? sigmoicosta and Lenticulina schreiteri leads us to assign a Lower Barremian to Hauterivian determination to this unit.

Environmental Conclusions

An outer sublittoral environment is indicated for this interval by the large numbers of calcareous benthonic foraminifera which dominate the microfaunas.

INTERVAL 5400' - 5850'; Hauterivian, Lower Cretaceous

General Lithology

The upper part of this interval is composed of soft, grey, pyritic clays which contain traces of dark brown siderite. Fine to medium-grained, subangular sandstone is first seen at 5500' and below this depth the formation appears to consist of interbedded sandstones and clays. The sandstone contains fragments of carbonaceous material and is locally cemented with calcite. Some coarse, subrounded sand grains are present below 5650'.

Micropalaeontology and Stratigraphical Conclusions

The appearance of Hechtina antiqua, Citharina harpa and the more consistent occurrence of Epistomina ornata in this interval suggests that sediments of definite Hauterivian age have been encountered. The presence of the ostracodes Apatocythere simulans and Schuleridea rhomboidalis supports this determination.

Environmental Conclusions

The relatively rich microfauna dominated by calcareous benthonic foraminifera suggests an outer sublittoral environment for this interval.

INTERVAL 5875' - 5925'; Hauterivian - Valanginian, Lower Cretaceous

General Lithology

This section consists of interbedded clays and sandstones similar to those found in the overlying interval. Subordinate amounts of brown, cryptocrystalline dolomite are also present and traces of greenish grey, dolomitic shale are seen below 5885'.

Micropalaeontology and Stratigraphical Conclusions

The appearance in the essentially calcareous benthonic microfauna of the ostracodes Dolococytheridea aff. wolburgi and Schuleridea cf. thoerenensis tentatively suggests that Valanginian sediments have been penetrated. In the absence of any further evidence, however, we have assigned a ranging Hauterivian - Valanginian age, which is supported by the occurrence of Lenticulina nodosa.

Environmental Conclusions

A similar environment of deposition to that of the preceding interval is envisaged for this section.

INTERVAL 5950' - 6175'; Valanginian, Lower Cretaceous

General Lithology

Grey clay and soft, greenish grey shale predominate in this interval. Traces of sandstone, and some medium brown dolomite and light brown sphaerosiderite are found associated with the clay.

Micropalaeontology and Stratigraphical Conclusions

Initially the general microfauna is essentially similar to that of the overlying interval; but from 6100' until the base, a rich assemblage occurs, dominated by agglutinating foraminifera. The appearance of Ammoverbella cellensis and the ostracodes Protocythere hannoverana and Schuleridea praethoerenensis in this unit indicates

that it is of Valanginian age.

Environmental Conclusions

The increase in the agglutinating element of the microfauna at the expense of the calcareous benthonic fraction suggests that the outer sublittoral environment of the preceding interval is more restricted here and may be more inner sublittoral.

INTERVAL 6200' - 6225'; Berriasian, Lower Cretaceous

General Lithology

This interval is composed of soft, grey, pyritic clays which contain thin stringers of dark brown siderite and traces of fine-grained sand.

Micropalaeontology and Stratigraphical Conclusions

The upper of the two samples from this interval contains an influx of calcareous benthonic foraminifera, although agglutinating foraminifera still comprise a large part of the microfauna. The second sample is dominated by agglutinating forms with a corresponding reduction in calcareous benthonic species. The occurrence of the ostracodes Schuleridea juddi, Paracypris caerulea, Orthonotacythere speetonensis and Mandelstamia sexti allows a Berriasian age to be assigned to these sediments.

Environmental Conclusions

The presence of both calcareous benthonic and agglutinating foraminifera in this interval suggests a sublittoral environment which is less restricted than either the preceding or succeeding intervals.

JURASSICINTERVAL 6250' - 6325'; Kimmeridgian, Upper JurassicGeneral Lithology

The top of this interval is marked by a thin bed of creamy white cryptocrystalline, pyritic limestone. The remainder of the section consists of soft, grey clays containing traces of sandstone, siderite and pyrite.

Micropalaeontology and Stratigraphical Conclusions

The presence in an essentially agglutinating foraminiferal microfauna of Haplophragmoides sp. 2 and Mandelstamia aff. tumida is suggestive of a Kimmeridgian age for the first 50' of this section. There is a considerable increase in the numbers of agglutinating forms seen here when compared with the overlying interval.

At 6300' a further increase in agglutinating species is apparent, and the presence, as common species, of Trochammia spp. and the more common occurrence of Haplophragmoides sp. 2 leads us to assign a positive Kimmeridgian determination to these deposits.

Environmental Conclusions

A restricted sublittoral environment is indicated for this interval by the preponderance of agglutinating foraminifera in the microfauna.

INTERVAL 6350' - 6625'; Lower Kimmeridgian, Upper JurassicGeneral Lithology

This interval consists entirely of soft, grey clay containing traces of pyrite and fine-grained sand.

INTERVAL 6350' - 6625'; Lower Kimmeridgian, Upper Jurassic

General Lithology

This interval consists entirely of soft, grey clay containing traces of pyrite and fine-grained sand.

Micropalaeontology and Stratigraphical Conclusions

The microfaunas of this interval are a continuation of those recorded in the Kimmeridgian unit. The presence of the ostracodes Galliaecytheridea elongata, Mandelstamia rectilinea and Galliaecytheridea oertlii are, however, more suggestive of Lower Kimmeridgian sediments.

Environmental Conclusions

The appearance of radiolaria, in assemblages dominated by agglutinating foraminifera (particularly below 6425'), suggests some deep open marine influence on the environment. We would suggest therefore that these rocks were deposited in a bathyal or outer sublittoral environment.

INTERVAL 6650' - 7520'; Upper Jurassic

General Lithology

The upper part of this unit is composed of grey, sandy, pyritic, clays similar to those found above. Thin intercalations of light grey, cryptocrystalline limestone occur below 6925' and at 7075' there is a bed of medium grey, silty dolomite. Traces of carbonaceous material are seen in the sample at 7100' and below this dark, grey and brown, silty shales containing abundant carbonaceous material are the predominant lithologies. These shales are dissected by calcite veins and contain thin beds of light grey limestone and yellowish brown, cryptocrystalline dolomite. Traces of fine-grained sand are present in the samples from 7475' to the base of the section.

Micropalaeontology and Stratigraphical Conclusions

The microfaunas of this interval are dominated by agglutinating foraminifera, in particular Haplophragmoides spp. and Ammobaculites spp. Ostracodes are virtually absent from these sediments: those forms present are not stratigraphically significant and merely indicate an undifferentiated Upper Jurassic age for the section.

Environmental Conclusions

The radiolaria and agglutinating foraminifera which predominate in these rocks suggest that deposition occurred in an outer sublittoral or bathyal environment.

INTERVAL 7525' - 8040'; ?Middle Jurassic

General Lithology

The uppermost sample at 7525' is composed mostly of dark grey, carbonaceous shale containing traces of sandstone. At 7530' there is a bed of yellowish brown, glauconitic, locally silty dolomite containing traces of mica, pyrite and iron oxides, and immediately below this at 7540' yellowish, fine-grained, subangular sandstone becomes predominant. The rest of the interval is composed of dark grey shales interbedded with white, fine-grained sandstone and minor amounts of coal. From 7980' to the base of the section the samples are composed almost entirely of fine to medium-grained sandstone. Some of the sand has been stained pale green or amber.

Micropalaeontology and Stratigraphical Conclusions

The incoming of sands and coals at 7530' is accompanied by a marked reduction in the numbers of foraminifera recovered. No ostracodes occur in this section and it is possible that the foraminifera have all cavved. On the basis of this rather fragmentary evidence we have assigned a questionable Middle Jurassic age to the interval.

Environmental Conclusions

The presence of sand and coals in association with poor microfaunas suggests a nearshore or possibly lagoonal and deltaic deposits and environment for these sediments.

TRIASSICINTERVAL 8050' - 13610'; TriassicGeneral Lithology

This interval can be divided into a number of lithological units.

1) The first from 8050' to 10040' consists mainly of conglomeratic sandstone. The sandstone is composed of rock fragments, granules and small pebbles of quartz and fine to coarse-grained sand. Many of the quartz grains have been stained pink, green or amber and the majority are angular or subangular in shape. The sand is cemented with reddish brown or pale green marl or clay. Subordinate amounts of orange-red, reddish brown and pale green, locally silty shales and marls, and some soft, white, chalky limestone which grades into a creamy white, highly calcareous marl, are associated with the sandstones. Mica is a common constituent of both the shales and the sandstones, and the whole formation contains an unusual amount of accessory minerals. *113' Vulkan*

2) Between 10050' and 10700' the formation remains predominantly arenaceous, but contains up to 30% of white, chalky limestone and marl. Limestone is virtually absent from the samples between 10710' and 11020' but at 11030' becomes a prominent constituent of the rocks again. White, chalky limestone remains common down to 11550', and in this section some rounded and subrounded sand grains are present.

The rocks between 11560' and 11790' consist mainly of sandstone, but from 11800' to 12470' soft, white, chalky limestone and light pink, slightly sandy, highly calcareous marl are the predominant lithologies.

Sandstones and conglomerates similar to those at the top of the interval are the principal lithotypes from 12480' to 13220'. The section between 12820' and 12990' contains a high proportion of white, chalky limestone.

12480

The basal section from 13260' to 13610' is composed of fine to medium-grained sandstone interbedded with red, brown and pale green shales and marls. Light red marl is very common at 13280', and below 13480' buff and light pink, highly calcareous marls are abundant.

Palynology and Stratigraphical Conclusions

The lithologies encountered in this interval are unlike those normally encountered in the Triassic in the southern part of the North Sea. This makes correlation with the type section difficult. However, the predominance of coarse clastics in this interval and the presence of Zechstein sediments directly beneath it suggests that this interval is of Triassic age. The different character of the sediments in this well may be due to their having been derived from a different source area from those encountered to the south and west of the present well.

The only strongly arenaceous formation found in the Triassic elsewhere in the North Sea is the Middle Bunter, but the typical Middle Bunter sandstones are clean, rounded and moderately well-sorted whereas the sandstones in this well are angular and unsorted and contain many relatively unstable minerals. There is no definitive evidence in the ditch cutting samples that this interval belongs to the Bunter.

The middle part of the interval between 10050' and 12990' includes four sections rich in white, argillaceous limestone. These carbonates could have been deposited in the Muschelkalk sea, the margins of which probably lay fairly close to the location of this well. If the carbonate section does represent the Muschelkalk then the overlying sandstones would presumably belong to the Keuper and the sands beneath to the Bunter. The Muschelkalk is not normally so thick (nearly 3000') but the unusual aspect of the other Triassic sediments in this well indicates that conditions of deposition were rather different from those prevailing elsewhere.

Very few palynomorphs were recorded from this interval. The association of Cycadopites sp. NS1 and Duplicisporites cf. granulatus at 9490' strongly suggests that rocks of Neotriassic Carnian age (older Keuper) have been penetrated. This determination would be consistent with the theory that the white chalky limestones and marl at 10050' are representatives of the Muschelkalk. The indeterminate striate bisaccate recorded at 12000' and the single specimen of Striatoabietites sp. at 13460', together with the lithological evidence, provide further support for the Triassic age of this unit. Furthermore, the presence of a specimen with affinities to Aculeisporites variabilis at 13460' tentatively suggests that rocks of Palaeotriassic, Skythian age (Bunter) have been reached.

Environmental Conclusions

The coarse sands and conglomerates found in this interval were probably deposited by a large river which rapidly carried the eroded detritus down from the uplands and deposited it before many of the minerals in it could disintegrate or the more resistant grains become rounded or sorted. The white, chalky limestone could have been laid down on the margins of a large, partially enclosed sea where the rate of evaporation was not sufficiently high to precipitate the more soluble salts such as anhydrite and halite. It is probably therefore that these sediments were deposited in a restricted nearshore and arid environment.

VII

PERMIAN

INTERVAL 13640' - 14100', Zechstein, Upper Permian

General Lithology

The top of this interval is marked by the incoming of soft, greyish white anhydrite. The anhydrite has a sugary, fibrous or finely crystalline texture and is common throughout the interval. Soft, micaceous, locally silty buff and light greenish-grey, slightly dolomitic shales are interbedded with the anhydrite below 13660'. The subordinate amounts of reddish brown shale and sandstone present have probably caved from the overlying interval.

Palynology and Stratigraphical Conclusions

The abundance of anhydrite and dolomitic shales in the interval indicates that the Zechstein has been penetrated.

Rich microfloral assemblages were obtained from this interval and the association of Illinites tectus, Labisporites granulatus, Lueckisporites virkkiae, aff. Perisaccus granulatus, Protohaploxypinus cf. chaloneri, P. cf. pennatulus, Taeniaesporites cf. albertae, T. hexagonalis, T. novimundi and Vittatina hiltonensis provides ample evidence for an Upper Permian age (Zechstein).

Environmental Conclusions

These rocks were probably deposited in a shallow, inland sea in a hot arid climate where the rate of evaporation was rapid.

VIII

CONSLUSIONS

The oldest deposits encountered in this well are of Upper Permian age. They comprise a series of evaporitic sediments which are inferred to have been deposited in an enclosed sea or lagoonal environment. Only the upper part of the Permian sequence were penetrated, and this is succeeded by a section of more than 5000' of sediments which are regarded as being of Triassic age. It is probable that the Triassic section is separated by discontinuity from the Permian beds beneath, although there is no direct evidence available as to the magnitude of this unconformity.

The Triassic interval is seen to consist of a basal section of some 600' which passes upwards from marls to shales, medium-grained sandstone, coarser sandstones and eventually to conglomerates. This deposition probably occurred in an inland sea under a strong continental regime. In the mid part of the Triassic succession some 2900' of similar sandstones interbedded with white limestones and sandy marls could represent marginal deposits in this shallow sea. At the top of the Triassic section a further 2000' of conglomeratic sandstones with occasional silty shale and calcareous marls, represents continuing deposition in a similar environment.

Sediments of Jurassic age are found in the interval 6250' - 8050'. The Lower Jurassic appears to be completely absent and the lower 500' of the Jurassic section is thought to be of Middle Jurassic age. A major unconformity therefore exists at the base of this section, implying a lengthy period of non-deposition, or, if sediments were deposited, a subsequent erosion which stripped away all traces of Lower Jurassic deposits. It is probably that additional unconformities of slightly less magnitude, may be interspersed through Middle and Upper Jurassic

times. The Jurassic section seen here, is comparatively thin, and palaeontological control is broad and generalized. In addition, whilst the sediments of the supposed Middle Jurassic section are typical nearshore, or coastal deposits, the overlying section of clays with thin intercalations of sands and limestones are regarded as indicating a gradual increase in depth to a sublittoral or even bathyal environment.

The Jurassic section is followed by Lower Cretaceous sediments forming an interval of 2200'. Good palaeontological control indicates that a fairly broad succession is present from early to late Lower Cretaceous times. Sediments of Berriasian age are seen only in a single sample which would indicate either a residual fauna, a condensed sequence or an extremely thin layer of sediments of this age. Valanginian and Hauterivian intervals have been determined, and Barremian elements are recognised in another thin interval. A break in succession then occurs in which it appears that the entire Aptian stage may be missing. However deposition re-occurred at some stage in the Albian and the top 1170' of the Lower Cretaceous is recognised as Albian or questionable Albian. Whilst the Lower Cretaceous sediments consist mainly of soft clays with occasional shales and interbedded sandstones, the environment reflected by the palaeontology is essentially sublittoral, alternating between inner and outer sublittoral suggestive of an intermittent shallowing and deepening of an outer area of shelf sea.

A moderately thin Upper Cretaceous section is found to contain Senonian sediments ranging through Coniacian to Maastrichtian times. The absence of a Cenomanian - Turonian interval implies a further major, non-depositional break during which time this area was either elevated to form a land area, or has subsequently been denuded of all sediments of that age. Throughout the Upper Cretaceous interval, the lithology consists of chalk with a little limestone at base, which is thought to have been deposited in a shelf sea; the intermittent appearance of planktonic foraminifera being

regarded as indicating more open connections in an otherwise partly enclosed, or similiarly restricted sea.

Despite the presumed absence of Upper Maestrichtian beds implying another depositional break, similar conditions are seen to extend up into the base of the Tertiary section, where 40' of Danian chalk was encountered. Above this 80' cherts and shales, tentatively ascribed to the Palaeocene, suggest a further shallowing of the seas.

At 2420' a change of fauna indicates that the overlying clays, which are of Lower Eocene age, were deposited in outer sublittoral or even bathyal seas and this suggests a further discontinuity in the sequence. The topmost 750' of section constitutes a predominantly clay lithology and by the nature of the faunas observed in these beds, it is believed that deposition through Middle Eocene to Oligocene times occurred in a sublittoral environment in which open marine connections were maintained.

BIBLIOGRAPHY

- | | | |
|--|------|--|
| ARKELL, W.J. | 1933 | The Jurassic system in Great Britain.
Oxford. |
| BANDY, O.L. | 1967 | Cretaceous Planktonic Foraminiferal Zonation.
Micropaleontology, Vol. 13, No. 1. |
| BARNARD, T. | 1952 | Foraminifera from the Upper Oxford Clay (Jurassic) of Warboys, Huntingdonshire.
Proc. Geol. Assoc., Vol. 63, Pt. 4. |
| BARNARD, T. | 1953 | Foraminifera from the Upper Oxford Clay (Jurassic) of Redcliff Point, near Weymouth, England.
Proc. Geol. Assoc., Vol. 64, Pt. 3. |
| BARR, F.T. | 1962 | Upper Cretaceous planktonic foraminifera from the Isle of Wight, England.
Palaeontology, Vol. 4, Pt. 4. |
| BARTENSTEIN, H. et al. | 1962 | Leitfossilien der Mikropaläontologie.
Gebrüder Borntraeger, Berlin. |
| BARTENSTEIN, H.,
EETENSTAEDT, F. &
BOLLI, H.M. | 1957 | Die Foraminiferen der Unterkreide von Trinidad, B.W.I.
Eclogae Geol. Helv., Vol. 50, No. 1. |
| BARTENSTEIN, H. &
BRAND, E. | 1951 | Mikropaläontologie Untersuchungen zur Stratigraphie des Nordwestdeutschen Valendis.
Abh. senckenb. naturf. Ges., Vol. 485. |
| BATJES, D.A.J. | 1958 | Foraminifera of the Oligocene of Belgium.
Inst. Roy. des Sciences Nat. de Belgique, Mem. No. 143. |
| BERGGREN, W.A. | 1969 | Paleogene biostratigraphy and planktonic Foraminifera of Northern Europe.
Proc. 1st Internat. Conf. Planktonic Microfossils, Geneva 1967, Vol. 1. |
| CHALONER, W.G. &
CLARKE, R.F.A. | 1962 | A new British Permian spore.
Palaeontology, Vol. 4, Pt. 4. |
| CHRISTENSEN, O. B. &
KILENYI, T.I. | 1970 | Ostracod Biostratigraphy of the Kimmeridgian in Northern and Western Europe.
Geol. Surv. Denmark, II Series, No. 95. |

- | | | |
|---|------|--|
| CLARKE, R.F.A. | 1965 | Keuper Miospores from Worcestershire, England.
Palaeontology, Vol. 8, Pt. 2. |
| CLARKE, R.F.A. | 1965 | British Permian saccate and monosulcate miospores.
Palaeontology, Vol. 8, Pt. 2. |
| CORDEY, W.G. | 1962 | Foraminifera from the Oxford Clay of Staffin Bay, Isle of Skye, Scotland.
Senck. Leth., Vol. 43, No. 5. |
| DAM, A.T. | 1944 | Die Strat-Gliederung des Niederländischen Paläozäns und Eozäns nach Foraminifera.
Med. Geol. Stricht., Ser. C-V-No. 3. |
| DAM, A.T. & REINHOLD, Th. | 1942 | Die Stratigraphische Gliederung des Niederländischen Oligo-Miozäns nach Foraminifera.
Med. Geol. Sticht., Ser. C-V-No. 2. |
| DORING, H.,
KRUTZSCH, W.,
MAI, D.H. &
SCHULZ, E. | 1966 | Erläuterungen zu den sporenstratigraphischen Tabellen vom Zechstein bis zum Oligozän.
Abh. Zentr. Geol. Inst. Vorabdruck H.8. |
| FUCHS, W. &
STRADNER, H. | 1967 | Die Foraminifera und Nannoflora eines Bohrkernes aus dem Hörheren Mittel - Alb Der Tiefbohrung DELFT 2 (NAM) Niederlande.
Jb. Geol. B.A., Vol. 110. |
| GEIGER, M.E. &
HOPPING, C.A. | 1968 | Triassic stratigraphy of the southern North Sea Basin.
Phil. Trans. Roy. Soc. Lond., Series B, No. 790, Vol. 254. |
| GORDON, W.A. | 1961 | Some foraminifera from the Ampthill Clay, Upper Jurassic, Cambridgeshire.
Palaeontology, Vol. 4, Pt. 4. |
| GORDON, W.A. | 1965 | Foraminifera from the Corallian Beds, Upper Jurassic of Dorset, England.
Jour. Pal., Vol. 39, No. 5. |
| GROSSHEIDE, K. &
TRUNKO, L. | 1965 | Die Foraminiferen des Doberges bei Blinde und von Astrup.
Beih. Geol. Jb. No. 60. |
| HART, G.F. | 1965 | The Systematics and distribution of Permian miospores.
Witwatersrand Univ. Press. |

- | | | |
|------------------------------|------|---|
| HAYNES, J. | 1956 | Certain smaller British Paleocene Foraminifera. Pt. 1.
Cushman Found. Foram. Res., Contr., Vol. VII, Pt. 3. |
| HAYNES, J. | 1958 | Certain smaller British Paleocene Foraminifera. Pt. III: Polymorphinidae.
Cushman Found. Foram. Res., Contr., Vol. IX, Pt. 1. |
| HAYNES, J. | 1958 | Certain smaller British Paleocene Foraminifera. Pt. IV: Arenacea, Lagenidea, Buliminidea and Chilostomellidae.
Cushman Found. Foram. Res., Contr., Vol. IX, Pt. 3. |
| HAYNES, J. | 1958 | Certain smaller British Paleocene Foraminifera. Pt. V: Distribution.
Cushman Found. Foram. Res., Contr., Vol. IX, Pt. 4. |
| HAYNES, J. &
WOOD, A. | 1957 | Certain smaller British Paleocene Foraminifera. Pt. II: <u>Cibicides</u> and its allies.
Cushman Found. Foram. Res., Contr., Vol. VIII, Pt. 2. |
| HOFKER, J. | 1957 | Foraminiferen der Oberkreide von Nordwestdeutschland und Holland.
Beih. Geol. Jb., No. 27 |
| HOFKER, J. | 1966 | Maestrichtian, Danian and Paleocene Foraminifera.
Palaeontographica, Suppl. 10. |
| JANSONIUS, J. | 1962 | Palynology of Permian and Triassic Sediments, Peace River area, Western Canada.
Palaeontographica, B, 110. |
| KAASSCHIEETER, J.P.H. | 1961 | Foraminifera of the Eocene of Belgium.
Inst. Roy. des Sciences Nat. de Belgique, Mem. No. 147. |
| KEIJ, A.J. | 1957 | Eocene and Oligocene Ostracoda of Belgium.
Inst. Roy. des Sciences Nat. de Belgique, Mem. No. 136. |
| KEIZER, J. &
LETSCH, W.J. | 1963 | Geology of the Tertiary of the Netherlands.
Verhandelingen, Vol. 2, Pt. 2.
(Trans. Jubilee Convention Pt. 2). |

- | | | |
|-----------------|------|--|
| KILENYI, T.I. | 1969 | The Ostracoda of the Dorset
Kimmeridge Clay
Palaeontology, Vol. 12, Pt. I. |
| KLAUS, W. | 1960 | Sporen der karnischen Stufe der
ostalpinen Trias.
Jb. geol. B.A., Sonderband, 5. |
| KLAUS, W. | 1963 | Sporen aus dem südalpinen Perm.
Jb. geol. Band., 106. |
| LESCHIK, G. | 1955 | Die Keuperflora von Neucwelt bei
Basel: 11 Die Iso- und Mikrosporen
Schweiz. Palaeont. Abh., 72. |
| LESCHIK, G. | 1956 | Sporen aus dem Salzton des Zechsteins
von Neuhoof (bei Fulda).
Palaeontographica, B. 100 |
| LLOYD, A. J. | 1959 | Arenaceous Foraminifera from the
Kimmeridgian
Palaeontology, Vol. 1, Pt. 4. |
| LLOYD, A.J. | 1962 | Polymorphinid, Miliolid and Rotaliform
Foraminifera from the Type
Kimmeridgian.
Micropaleontology, Vol. 8, No. 3. |
| MADLER, K. | 1964 | Die geologische Verbreitung von
Sporen und Pollen in der Deutschen
Trias.
Beih. Geol. Jb., 65 |
| MICHAEL, E. | 1967 | Die Mikrofauna des NW-Deutschen
Barrême: Vol. 1, Die Foraminiferen
des NW-Deutschen Barrême.
Palaeontographica, Suppl. 12. |
| NEALE, J.W. | 1960 | Marine Lower Cretaceous Ostracoda
from Yorkshire, England.
Micropaleontology, Vol. 6, No. 2. |
| NEALE, J.W.. | 1962 | Ostracoda from the type Speeton
Clay (Lower Cretaceous) of
Yorkshire.
Micropaleontology, Vol. 8, No. 4. |
| SCHEURING, B.W. | 1970 | Palynologische und palynostratigraphische
Untersuchungen des Keupers im
Bölschentunnel (Solothurner Jura).
Schweizerische.
Paläontologische Abh., Vol. 88. |

- | | | |
|-------------------------------|------|---|
| SCHULZ, E. | 1967 | Sporenpaläontologische Untersuchungen
rätoliassischer Schichten im Zentralteil
des Germanischen Beckens.
Palacont. Abh. B, Vol. 2, No. 3. |
| SHERLOCK, R.L. | 1947 | The Permo-Triassic Formations:
A World Reveiw.
Hutchinson's, London. |
| SORGENFREI, Th. &
BUCH, A. | 1964 | Deep Tests in Denmark 1935-1959.
Geol. Surv., of Denmark, III Series,
No. 36. |
| STEJN, J. | 1957 | Micropalaeontological stratigraphy
of the Lower Cretaceous in Central
Poland.
Instytut Geologiczny. Prace.,
Vol. XXII. |
| TROELSEN, J.C. | 1957 | Some Planktonic Foraminifera of
the type Danian and their
stratigraphic importance.
Studies in Foraminifera. U.S. Nat.
Mus., Bull. 215. |
| VISSCHER, H. | 1966 | Palaeobotany of the Mesophytic III,
Plant microfossils from the Upper
Bunter of Hengelo, the Netherlands.
Acta Bot. Neerl., 15. |

17/12-1X

18

AFE NW 5605-40

STOCK NO	SIZE	TYPE	SERIAL NO	STOCK NO	SIZE	TYPE	SERIAL NO
26702330	✓ 8 1/2"	M44N	173513	26690350	✓ 112 1/4"	VSIG	N44 068
	✓	✓ M44N	193959	26690400	✓	✓ VTIA	NNR 151
	✓	✓ M44N	342233		✓	✓ VTIA	N7N 211
	✓	✓ M44N	331556		✓	✓ VTIA	NAW 024
	✓	✓ M44N	336706		✓	✓ VTIA	NRL 073
	✓	✓ M44N	312235	26708480	✓	✓ DSF	CH 053
	✓	✓ M44N	348744		✓	✓ DSF	CG 985
	✓	✓ M44N	348791	26708450	✓	✓ DGF	CF 747
26680350	✓	✓ F44	EE 495	26702515	✓	✓ SATG	313608
	✓	✓ F44	FX 229	26702405	✓	✓ M4LG	102201
	✓	✓ F44	FX 232	26708670	✓ 17 1/2"	DTF	CF 659
	✓	✓ F44	HC 110	26680650	✓	✓ OSC37	14170
26708350	✓	✓ 37S	GG 773	26690600	✓	✓ VTIA	467394
	✓	✓ 37S	GG 800	26680705	✓ 26"	SSG3A	RH 264
26702315	✓	✓ 588	310654				
	✓	✓ 588	313864				
26708345		✓ 555	FD 883				
		✓ 555	CP 364				
26708330	✓	✓ SVH	GE 966				
	✓	✓ SVH	GE 972				
26708360		✓ SDGH	FF 654				
		✓ SDGH	H5 200				
26680375	✓	✓ XV	20256				
26680320	✓	✓ XC	94532				
26708355	✓	✓ 47S	FV 722				
26708335	✓	✓ SWC	ED 758				

HOLE DEVIATION RECORD - WELL 17/12-1X

<u>Date</u>	<u>Depth</u>	<u>Reading</u> (degrees)
30.10.71	1503'	3
19. 3.72	3073'	2
20. 3.72	3600'	1/2
31. 3.72	5375'	1.3/4
3. 4.72	6798'	1/2
7. 4.72	7636'	1/4
15. 4.72	8073'	3/4
16. 4.72	8300'	1/2
25. 4.72	10034'	1
30. 4.72	11063	1 1/2

- GEOLOGICAL SUMMARY -

The Jurassic Sands top was encountered at 7520" , which is 430" low to the geologic prognosis estimated top. The uppermost sand was wet and the next two sands below yielded 1020 BOPD on a six hour test.

Sand developments within the Lower Cretaceous and Triassic sections were considered secondary objectives. No sands were encountered in the Lower Cretaceous and sand development within the Triassic is limited to thin, fine course grained, continental-type clastic beds.

As expected, the Danian Chalk section was not encountered in this well.

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 1

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
Oct. 26	5 hrs	Tugs moved O/V 2 miles ahead and connected 2 tugs to tow lines, port and starboard -all three tugs played out tow lines and towing to 17/12-1X location 0600 position 56° 45N 03° 15E Tugs Bugsier 27, Boss, Seefalk
Oct. 27	24 hrs	under tow (lost 2½ hrs in being turned around and started back to EKOFISK) Position 10 miles from 17/12-1X 0630 58° 02 N 03° 52 E 4.3 Knots towing speed
oct. 28 P.T.D. 563'	3 hrs	Under tow
	7½ hrs	Run anchors and dive to 80' drilling depth
	5½ hrs	offload OSI diving equipment & reposition No6 anchor. Tension and pull test all anchors, divers checked sea bed
	5½ hrs	Pick up BHA and run in hole and spud in at 0330 Oct. 28 1971
	2½ hrs	Drilling
	0630	Drilling 570', Sea bed to MSL=377' MSL to RKB = 89' Sea bed to RKB=466'
		Release Seefalk at 1635 hrs, Bugsier 27 at 1840 hrs Boss at 2020 hrs all tugs released
Oct. 29 P.T.D. 583'	1½ hrs	Drilling 36" hole 563' to 583'
	½ hr.	Circulating and spot 150 bbl 160 viscosity mud
	1 hr.	Short trip-spot 150 bbl 160 viscosity mud
	½ hr.	COOH
	6½ hrs	Running 30" through PGB
	3 hrs	Running and washing 30" csg to 583'
	½ hr.	Cement with 1000 sx class "B" with 3% CaCl mixed with fresh water-slurry weight 15.6ppg, job complete 1930 hrs Oct. 28, 1971
	10 hrs	WOC-made dive install spear in No 1 post, confirmed cement circulated--PGB 10' above sea bed, pick up BHA and RIH and stab in 30"
	½ hr.	Tag cmt at 545' & drlg. cement to 580'
	0630	DRLG f/shoe at 583'

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. IX SHEET NO. 2

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
Oct. 30 P.T.D. 1503'	1/2 hr.	Finish drilling cement 580' to 583' cement firm
	13 1/2 hrs	Drilling 26" hole to 1503', flush with 200 vis-mud when necessary
	1 hr.	Circulate 26" hole with sea water while raising mud volume in pits
	1 1/2 hrs	Spot 400 bbl high vis-mud and COOH into 30" casing
	1 hr.	Wait at shoe for hole to slough
	1 1/2 hrs	GIH last 4 stands dragging
	1/2 hr.	Spot 1100bbl mud high viscosity--to load and clean hole
	2 hrs.	COOH slow---SLM no correction
	3 hrs	Made up hanger and top plug and stood back rig up and running 20" 133lb casing
	0630	Running 20" casing
Oct. 31 P.T.D. 1503'	8 hrs	Finish running 25 jts-1331b 20" J-55 casing with Vetco type "L" connections- HOWCO shoe at 1460'-baffel collar 1420' RKB with BJ type "M" centralizers at 1452' -1412'-1363'-541' & 501'---top of 20" well head 453' RKB washed down casing from 1193' to 1460'
	1/2 hr.	Circulate with sea water
	1 hr.	Cemented with 1000sx class "B" cement with 8% gel mixed to 13.1ppg slurry weight followed with 1000sx class "B" neat cement mixed to a slurry weight of 15.6 ppg sub seaplug released with 1250psi-displaced to baffel collar with 323 bbl sea water-plug bumped 1200 psi---released pressure float held--worked casing 3' to 5' through job complete 1530 hrs Oct.30, 1971
	1 1/2 hrs	COOH with landing string
	4 hrs	Rig up and dive released all guide lines attached spar buoy to permanent guide base
	3 hrs	Lay down 5" drill pipe and 7 3/4" DCS
	6 hrs	WOW too much swell to run in anchors-would break pennent lines
	0630	WOW Tugs Atlas-Pacific arrived 0900 hrs Busier 26 2100 hrs

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 3

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
Nov. 1 P.T.D. 1503'	6 hrs 18 hrs	WOW to run in anchors Run in anchors and pump up to towing draft, connect tugs Atlas-Bugsier 26 & Pacific to tow lines, last anchor bolstered at 0600. Stop 17/12-1X report at 0600 hrs Nov. 1 1971 Buoy set at 138° --True and 1000' dead astern of Ocean Viking Was 8 hrs on 1 anchor
March 13th 1972 Trying to locate well head 0600	12 hrs 3 hrs 9 hrs	Under tow to 17/12-1X location disconnect two tugs from bow and connect to stern looking for well head with UTV good visibility think buoy drifted of location Decca will re-locate then move Viking over new bouy and am make dives to locate well head.
March 14th Repairing lights in diving bell	6½ hrs 6 hrs 3 hrs 2½ hrs 3 hrs 2 hrs 1 hr	Decca set new bouy rig located well head on UTV Running anchors 1-2-3-4-5-6-7-8- Dropped fisrt anchors 1230 hrs position O/V over location re- run anchors 6 and 7 pump barge to 80' drilling draft UTV ofuled up on spar bouy pennant line made surface dive and untangled UTV form spar bout pennant line searching for well-head - could not pull barge to port with No.8 anchor prepared diving bell launched bell and had light failure while descending repairing light in diving bell tugs Boss released 1430 hrs- Hercules 1745 hrs Poseiden still connected to tow line bow.
March 15th Testing operations of Blue and Yellow pod.	1 hr 1 hr 2 hrs 10 hrs	Finish repair light system in diving bell Dive unable to locate well reposition barge locate well head with UTV While de-compressing divers check out Blue and Yellow PODS - repair - Blue pod receptical (damaged in transit supply boat) repaired same - 1 retention all anchors re-run No 1 checkout both Blue and Yellow recepticles - retighten all bolts on stack and place jam nuts & mix mud volume

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 4

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 15 th cont.	2½ hrs	dive No2 connect all guide lines and cleaned and inspected 20" well head
	7½ hrs	De-compressing divers & set stack over slot on test stump - re-align Blue and Yellow pod guides - finish repair of Blue pod receptacle - Running operation check on 20" BOP stack and preparing to test 20" stack Mw:9.3, Vis:53, Pv:9.0, Yp:38
March 16th.		
Testing 20" casing and auto lock connector -0600	4½ hrs	finish running BOP operation check
	8½ hrs	repairing leaks and testing 20" stack to 2000psi
	5 hrs	rig up to run stack
	6 hrs	run 20" BOP stack with stinger and running auto lock tied in closed position running string 73/4 drill collars and 73/4 B/Sub - and X105 drill pipe latched up and pull test to 100000lbs Testing 20" casing and Laurent seal in stack auto-lock with 1000psi -0600 Mw:9.3 Vis:10,4 Pv:14 YP38
March 17th		
Preparing to run test plug-lining up barge 0600	½ hr	finish rest casing and laurent seal - small leak could not locate
	1 hr	COOH with landing string and running Auto lock
	3 hrs	working on 24" flex joint
	11½ hrs	running 24" riser and cleaning all connectors
	4 hrs	nipple up cellar deck
	1 hr	GIH with test plug
	2 hrs	Attempting to test 20" stack 2 runs on plug "O" rings rolling off in Hydril
	1 hr	prep. to run test plug lining up barge with hole
March 18th		
Drilling 0600	½ hr	Lining up barge with hole
	3 hrs	testing casing and laurent seal with 1000 psi - had slow leak
	2½ hrs	pick up BHA
	3½ hrs	GIH tag top of cement at 1414' displace sea water with mud - drill baffel collar with mud at 1420'
	½ hr	Test Hydril, casing and laurent seal with 1000psi - held no leak

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 5

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 18th cont.	1½ hrs	finish drill cement and shoe at 1460' and wash to 1503'
	12 hrs	Drilling
	½ hrs	circulating out mud ring
		Mw: 14.3 Vis: 41 Pv: 18 Yp: 6
March 19th	½ hr	circulating 2152'
COOH bit change 0600	1½ hrs	short trip no hole problems
	1 hr	slip and cur drilling line
	19 hrs	drilling
	½ hr	COOH - Survey
		Mw: 14.3 Vis: 43 Pv: 20 Yp: 80
March 20th	3½ hrs	COOH for bit change
Making short trip 0600	2½ hrs	raise weight in weight cans on 24" mud riser
	2 hrs	GIH with bit No. 4
	14 hrs	drilling 3073' to 3600'
	1 hr	circulate and condition for logs
	1 hr	make short trip to shoe 20" casing
		Mw: 10.9 Vis: 45 Pv: 20 Yp: 10
March 21st	½ hr	finish short trip
COOH to run casing	1½ hr	circulating
	3½ hrs	survey and COOH
	1½ hr	run IES would not go below 250', 24" mud riser not standing up
	3½ hrs	raised weight in cans for mud riser to 19.8ppg
	8 hrs	run IES and SGR - had 1 mis run on each
	1½ hrs	made up 133/8" casing hanger with sub-sea plugs and running tool on Bumper sub- stood back in derrick
	2 hrs	GIH no fill on bottom
	1½ hr	circulating
	½ hr	COOH to run casing
		MW: 11.1, VIS: 49, PV:20, YP: 7

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 6

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 22nd		2 hrs finish COOH
Laying down 24" mud raiser		10 hrs run 79jts 133/8 J-55 casing 8rd thd-68lb- R-2 landed at 3556.78=shoe F/C at 3518.45 - scratcher, metal petal basket and centralizer as per prospectu
		10 hr circulate volume of casing
		3 hrs cemented with 1400sx class "B" W/4% gel - 14.2ppg slurry wt - 1000sx class "B" neat 16.0 ppg slurry weight 10bbl water ahead and 10bbl behind 376 bbl fresh water to mix cement pumped plug down with 457bbl drilling mud plug bumped with 1150psi rel- eased pressure plug held - Job finished 2250 hrs. 3/21/72
		1/2 hr released running tool and washed out around well head through drill pipe and choke and kill lines - no cement in returns- had circulation throughout cem- ent job.
		1 hr COOH with landing string
		2 hrs rig down celler deck
		4 hrs lay down 24" mud riser. Mw: 11.1 Vis:49 Pv:2o Yp:7
March 23rd		
Running spare well head		2 hrs finish pulling and laying down 24" mud riser.
		16 hrs run string to retrieve 20" stack with jet sub and auto lock on stinger pull yellow pod and choke and kill lines - pull stack and landed on skid beams connected kranco beams - moved stack over to and landed on test stumps lost No. 1 guide line spear dis- connected and retrieve to cellar deck
		6 hrs run and retrieve spare well head saver sub-would not go over well head rig up jet and stinger and re-running - well head sxxx saver sub.

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 7

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 24th WOW	3½ hrs	finish running well head saver sub - on stinger foiled on UTV cable - COOH with saver sub and unfouled UTV cable
	2½ hrs	Re-run saver sub - stab stinger auto lock would not close - completely.
	2½ hrs	made dive No. 1 check auto lock disconnect hose check out ok
	1½ hrs	re-position barge latch auto lock test with 1000psi - seal would not hold - 800psi
	1 hr	because of the weather deteriorati release running auto lock and COOH
	13 hrs	WOW checking out 135/8" BOP stack and testing functions of blue and yellow pod.
MARCH 25th		
Washing off well head with jet sub	7 hrs	Waiting on weather while WOW testing 133/8" stack
	3 hrs	pick up jet sub and stinger stab into well head saver sub- pick up auto lock with stabliser below auto- lock - ran and latch onto well head säver-sub
	2 hrs	dive No. 1 - install No 1 guide line spear - change hose to opening side of auto lock on saver sub
	3 hrs	pull saver sub to cellar deck found laurent seal damaged
	5½ hrs	decompressing diverse and installing rubber laurent seal in saver sub
	3 hrs	Dive No. 2 inspect well head no damage to seal area of well head
	½ hr	wash sealarea and top of well head with jet.
March 26th Pull out W/saver sub	8 hrs	run saver sub latch and tested to 2000 psi slow leak out of bootom of auto lock 300 psi in 39 min. Released Auto Lock pulled and dressed same W/ steel luarent ring

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 8

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 26th cont.	5 hrs	divers decompressing working on B.O.P stack
	2 hrs	made dive to clean up burs from 133/8 well head where laurent rings seats
	8 hrs	run jet sub stab in well run & latch saver sub tested to 2500psi Lost 335 psi in 40 min
	1 hr	pulled saver sub pulled and put rubber laurent ring & GIH
March 27th Rig up to run 133/8" BOP stack	4 hrs	dress auto lock on saver sub with laurent ring RIH with stinger and lance and latch up
	1 hr	test saver sub with 2000psi - release pressure and retent to 2000psi - both test good
	1½ hrs	release running string and stringer & COOH
	1½ hrs	made dive Nol. and closed valve on closing side of auto lock on saver sub trapping 1500psi on closing side of auto lock - disconnect hose and retrieved to cellar deck
	9½ hrs	moved 133/8" BOP stack to skid beams from test stump on cellar deck tested to 5000psi - blind rams would not hold pressure - moved stack back to test stump and landed on test stump made adjustments on blind rams - tested to 5000psi
	6½ hrs	moved stack to skid beams - run in hole with jet sub and stinger and stab into well head saver sub - 0700 picking up running auto lock - cannot run stack until heave goes down.
March 28th Running 16" mud riser	4 hrs	preparing to run BOP
	5 hrs	waiting on swell to run down
	5½ hrs	run 133/8" BOP stack swell 3' to 6' timed period and latched up between swells (ran check and kill lines on BOP stack
	2 hrs	COOH with landing string and stinger and lay down running auto lock
	7½ hrs	rig up and running 16" mud riser 0700 picking up slip joints.

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 9

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 29th. Repairing T.V. Tilt Pan	4 hrs	Finished running mud riser, cleaning all connections. Free up dogs, Replaced broken locks
	2 hrs	Nipple up and rig under cellar deck.
	3 hrs	Run and set test plug, test pipe rams and kill and choke lines to 5000psi Test hydril to 2500psi.
	2 hrs	Repair 4" chicksan on ckoke line Test to 5000psi O.K.
	2½ hrs	Run long bore protector
	3½ hrs	Made up bottomhole assembly, strap pipe in hole, float cellar at 3520'
	4 hrs	Pumping grease in slip joint and working on slip jt packing, now O.K.
	½ hr	DRilled on plug and float cellar at 3520'
	2½ hrs	Checking for leaks on mud riser tilt pan on T.V. not working, pulled T.V. to surface and repaired tilt and pan.
March 30th Drilling	1½ hrs	Drilling dloat collar and 15' cement.
	½ hr	Test 133/8" casing to 2000psi OK
	2 hrs	Drilling cement and shoe at 3560'
	8½ hrs	Drilling from 3600 to 3822
	2 hrs	COOH
	2½ hrs	Pulled long bore protector, run and set test plug Test 133/8" auto lock, well had equipment and top pipe rams to 5000psi OK
	1 hr	Pull test plug run long bore protector
	1½ hrs	GIH with bit No. 6
	4½ hrs	Drilling from 3822-3907
		Lithology Chalk
		Materials no board Barite 108 ton
		Cement 500sxs class "E" neat
		" 900 sxs class "E" W/4% gel.
		Mw: 10.8, Vis: 38, Pv: 13, Yp: 2.
March 31st Drilling c	½ hr	Circ. with no. 1 pump while repairing no. 2 pump.

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 10

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
March 31st cont.	2 hrs	Drilling
	1½ hrs	Pulled bit up into casing due to mud leak at well head
	1½ hrs	Made dive, divers confirmed, that small ammount of mud was coming from between 133/8" & 20" annulus
	1 hr	COOH to drill collars
	1½ hrs	Rig up BJ, Closed Hydril, pressured formation to 200psi. Bleed off 50 psi in 15 min. Pressured to 500 psi bleed off 50 psi in 15 min. No communications between 133/8" & 20" casing annulus.
	1½ hrs	Trip in hole
	15 hrs	Drilling and observing well head with T.V. Camera, made dive. Divers confirmed taht occasionally small mud spray was coming from annulus. Now interval runs from 1 hr to 3 hrs Between mud leak from annulus Barite on board 208 tons Cement on board 1700 sxs class "E" with 4% gel " " 500 sxs class "E" neat " " 1000 sxs class "B" neat
		Lithology clay. Mw: 11.0 Vis: 40, Pv: 14, Yp: 5
April 1st Drilling	9½ hrs	Drilling from 4950'- 5375'
	½ hr	Survey
	8½ hrs	Made trip for new bit, changing out casing protectors on 5" drill pipe
	1 hr	Circ & cleaning hole
	3 hr	Circ with one pump while repairing second pump (valve seats & heads)
	1½ hrs	drilling Lithology mixture of chalk and shale Cement on board " 1000sx class B neat " 500 sx clss E neat " 1700sx class E W/4 gel Barite 150 tons bulk " 30 tons sx Mw: 11.1 Vis: 41, Pv: 14, Yp:8
April 2nd Drilling	14½ hrs	drilling 5407'-5891'

DAILY REPORT DETAILED

LEASE 17/12 WELL NO 1X SHEET NO. 11

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 2nd cont.		½ hr circulating 6 hrs Made trip for new bit no drag or fill up 3 hrs Drilling Lithology - shale w/trace clay and dolomite Barite 130 tons bulk " 33 tons sack Mw: 11.2 ,Vis:43 Pv: 18, Yp: 9
April 3rd		
Going in hole with bit		
No. 9		17 hrs Drilling 1 hr Circulating ½ hr Survey 5½ hr Made trip for new bit. Slm drill pipe no change in measurement Lithology - 40% Grey Shale 60% Clay Gas 0.2% Methane (Cl) 0.35% Cement on board 1000sx class B neat 500 sx class E neat 1700 sx class E W/4% gel Barite " " 150 tons bulk " " 33 tons sack Mw: 11.3, Vis: 45, Pv:18, Yp:12
April 4th		
Picking up and running 16" mud riser		1 hr Trip in hole to bottom casing ½ hr Slip drilling line 1½ hrs Finish trip in hole 1½ hrs Circulating bottom up at 6798' 4 hrs Due to high sea, pulled bit up into 133/9" casing, Picked up suspension plug to hang off drill pipe in well head, plug stop 9' higher than well head. COOH with bit. 6 hrs Release auto-lock on 16" mud riser. Pulled and layed down same 6½ hrs W.O.W. Max sea 22'. Packed 16" slip joint 3 hrs Picking up and running 16" mud riser Barite on board 145 tons bulk " " " 33 tons sack Mw: 11.3 Vis 42, PV: 15, Yp: 8

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 12

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 5th. Drilling	3½ hrs	Finish running 16" mudriser. Tested choke and kill lines to 5000psi OK
	3 hrs	Trip in hole
	3 hrs	Washed from 6623'-6798' 175' fill up
	5 hrs	Drilling
	3½ hrs	Pulled up bit into 13 3/8" casing. Hung off drill pipe with suspension tool. Wind 60mph, sea 16'-20'
	4 hrs	W.O.W.
	1½ hrs	Trip in hole
	½ hr	Washed 145' to bottom W/no fillup
		Lithology 40% grey shale 60% clay
		Barite on board 130 tons bulk
		" 30 tons sack
		MW: 11.3, VIs:48, Pv: 20, Yp:10
April 6th CooH, Pressue leak in Bumper SUB.	10½ hrs	Drilling 6968'-7300'
	4½ hrs	Trip out of hole, pulled long bore protector
	4 hrs	Weekly BOP test. Run and set 133/8" test plug. Pressure test. BOP inside and outside choke and kill line valves Tested bottomand top pipe rms to 2500 psi on blue and yellow pod.OK.
	2 hrs	Go in hole W/bit No.10
	½ hr	Washed 80' to bottom no fillup
	2 hrs	Drilling 7300'-7378'
	½ hr	Come out of hole, pressure leak in bumper sub.
		Lithology - Grey limestone and Grey shale
		Barite on board 180 tons bulk
		" 33 tons sack
		Mw: 11.5, Vis:54, Pv: 20, Yp:15
April 7th Trip for new bit.	4½ hrs	Pull out of hole, chained out pipe, packing washed out of bumper sub.
	4 hrs	Go in hole with bit No. 11
	1 hr.	Washed 190' to bottom
	6 hrs	Drilling
	1 hr	Circ. samples, at 7556'
	3 hrs	Drilling
	1½ hrs	Circ. samples at 7639'
	½ hr	Survey
	2½ hrs	Making trip for new bit
		Lithology 90% shale 10% sand
		Mw: 11.5, Vis: 49, Pv:21, Yp:13.

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 13

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 8th. Making up over-shot	3 hrs 1/2 hr 1 1/2 hrs 13 1/2 hrs 1/2 hr 4 1/2 hrs 1/2 hr	Trip out of hole, change bits. Run in hole to bottom 133/8" casin Slip drilling line Finished trip in hole Drilling 7639'-7856' Circ. samples at 7856' Trip out of hole, change bits. Going in hole W/drill-collars Zip Elevators, dropping bit, 15-73/4" drill collars, 6 stabs and 73/4" bumper-sub in hole Now picking up over shot Lithology - 50% clay, 40% shale, 10% stiltstone Mw: 11.5, Vis: 49, Pv: 22, Yp: 13
April 9th Picking up bottom hole assembly	21 1/2 hrs 1/2 hr 2 hrs	Fishing, picking up 9-73/4" drill collars. 1-Bumper sub, went in hole open ended, with 65/8" reg pin down. To 7273' Circ and cond mud. Washed to top of fish at 735 Screwed into fish, fish was free pulled out i std. of drill pipe fish became very tight, circ and pumpedout 6 jts, drillpipe COOH. Layed down fish 16 drill - collars, 6 stabs, 2 bumper subs, Np cones lost of bit Safey meeting with drill crew Pickingup bottom hole drilling assembly Cement of board 1000 sxs class B neat 500sxs class E neat 1700sxs class E W/ 4% gel Barite on board 145 tons bulk 33 tons sxs Mw: 11.5, Vis: 50, Pv: 22, Yp: 13
April 10th Drillling	5 hrs 12 1/2 hrs 6 1/2 hrs	Finished picking up bottom hole assembly and goigin hole Washing from 6950'-7856' = 906' Drilling Lithology 40% shale, 35% siltstone 25% clay Barite on board 85 tons bulk 33 tons sack Mw: 12.0 Vis: 50, Pv: 26, Yp: 13

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 14

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
April 11th	2 hrs	Drilling 7922'-7937'
W.O.W.	1 hr	Circ. samples at 7937'
	5 hrs	Coming out of hole tight hole at 7825'
	1½ hrs	Rig up to pullmud riser, riser leakin at sea level
	14½ hrs	W.O.W. Pulled and layed down mud riser Max sea. 25' Strung up new drillline Lithology 50% shale. 20% siltstone 20% clay 10% sandstone Barite on board 120 tons bulk " " " 33 tons sack
April 12th.	1½ hrs	W.O.W.
Coming our of hole to run logs	5½ hrs	Pick up run and latchup 16" mud riser
	2 hrs	Rig up cellar deck, displace mud riser with mud
	3 hrs	Trip in hole with rerun bit no. 14
	2 hrs	Washing from 7690'-7937'
	3 hrs	Circ and conditioning hole to run logs
	1½ hrs	Short trip W/10 stands, tight spot 7850'-7865' ream out same
	1½ hrs	Circ and cond hole
	4 hrs	Coming out of hole to run logs, no dra Slm drill pipe Cement on board 2300sxs class E W/4% gel " " " 500 sxs class E neat Barite on board 115 tons bulk " " " 32 tons sxs.
	0730 hrs.	Rigging up schlumberger Mw: 12.0, VIs: 50, Pv:26, YP: 14.
April 13th	1 hr	Rig up schlumberger
Going in holeW/bit to cond hole	17½ hrs	Logging well: Ran IES logging tool to 3500' tool quit working Pulled and repaired the same Ran S-GR log, IES log, FDC, 'log Schlumberger depth 7927' Ran CBL 3550' back to sea bed. Ran and cut sidewall cores, 7816'-4500' made 30 shots rec 26 cores
	½ hr	Rig down Schlumberger
	1½ hrs	Dress BJ cementeing head w/pump down plugs. made up 95/8" csg hanger Stood same back in derrick
	3½ hrs	Going in hole W/bit to cond hole for running 93/8" casing

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 15

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 13th cont.		Mw: 12.0, Vis:50, Pv:26' YP: 14.
April 14th GIH w/95/8" packoff seal assembly	1 hr 2 hrs 4 hrs 1 hr 10½ hrs ½ hr 1 hr 2 hrs 1 hr 1 hr	Fin. GIH W/rerun bit No. 14 rerun Circ and Cond hole for running 95/8" csg COOH Retreived long bore protector Ran 195 lgts 95/8" 47lbs. N-80 buttres csg. Shoe set at 7901. F.C. setat 7863. Centralizers, scratchers & metal petal bskt set as per prospectus Rigged up BJ cementing head Circ vol. of csg. Cemenred 95/8" csg w/2300 sxs class "E" w/4% gel followed by 500 sxs Class "E" cmt. 14.6 & 16.5 lb slurries. Bumped plug w/3000PSI. Job completed at 4.10 AM 4/14/72 Backed out running tool, Flushed BOPS & riser. COOH & layed dn. running tool Picked up 95/8" packoff seal assembly & now GIH w/same plus short bore protector Mw: 12.2 Vis 55, Pv: 29, Yp: 15
April 15th Drilling	6 hrs 2 hrs 3 hrs 4 hrs 3 hrs 1½ hrs 4½ hrs	Due to alignment of rig over hole, sheared 95/8 pack off seal assembly off while going thru BOPS-fished & recovered same. Ran and seated 95/8 packoff ass- embly. Ran short bore protector & test plug. Ran initial BOPS test-ok. Layed down 73/4" DCS Picked up BHA GIH & installing drill pipe protector rubbers Drilled F:C: at 7863, press. tested csg. w/4000PSI - ok. drilled cement, shoe at 7901 & wshd to bottom at 7937 Drilling Lith: 60% shale, 25% siltstone & 15% sand Mw: 11.9, Vis: 55, Pv: 28, Yp:14
April 16ht Drilling	3½ hrs 4 hrs	Drilling Drop survey & POH

DAILY REPORT DETAILED

LEASE 17/12

WELL NO. 1X

SHEET NO. 16

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 16th cont.	3½ hrs	GIH & slip drill line
	5½ hrs	Drilling
	5½ hrs	Trip for new bit
	2 hrs	Drilling
		Lith: 20% sd., 25% red clay, 20% chalk & 5% shale
		Mw: 11.9, Vis:47, Pv:25, Yp:9
April 17th		
Drilling	7 hrs	Drilling
	½ hr	Circ.
	7 hrs	Trip for new bit & slip drill line
	7 hrs	Drilling
	½ hr	Pump repairs
	2 hrs	Drilling
		Lith: 80% red clay & 20% sd
		Mw: 11.9, Vis:47, Pv:24, Yp: 9
April 18th 1972		
Drilling	7 hrs	drilling
	8½ hrs	Trip for new bit and change bumper sub
	8½ hrs	Drilling
		Lith: 45% shale, 40% limestone 10% chalk and 5% sandstone
		Mw: 12.0 Vis: 47, Pv: 22, Yp:10
APRIL 19th		
Drilling	4 hrs	Drilling
	4½ hrs	POH. Ran BHA, 1std. DP. & test plug
	2½ hrs	Ran weekly BOPS test ok
	1½ hrs	Pulled and layed dn. test plug. Ran bit to btm of csg.
	1½ hrs	Cut & slipped drill line
	1 hr	Fin. GIH
	9 hrs	Drilling
		Lith: Red clay and shale
		Mw: 12.0 Vis:46, Pv: 24, Yp: 8
April 20th		
GIH w/new bit	1 hr	Drilling
	5½ hrs	Trip f/new bit
	11½ hrs	Drilling
	6 hrs	Trip f/new bit
		Lith: 70% red clay, 30% brown shale
		Mw: 12.0 Vis: 46, PV: 24 Yp: 11

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 17

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 21st		
GIH w/bit no. 23	16½ hrs	Drilling
	2 hrs	Pulled bit up into csg. & slipped drill line
	1 hrs	Rig repair-attempted to tighten low chain.
	4½ hrs	Fin. POH, changed bit & now GIH Lith: 50% 40% sand & 10% shale MW: 12.1, Vis: 46 Pv: 24, Yp:12
APRIL 22nd		
Drilling	3 hrs	Fin GIH w/bit No: 23
	9 hrs	Drilling
	8 hrs	Trip for new bit
	4 hrs	Drilling Lith: 60% sand, 30% shale, 10% clay Mw: 12.2, Vis:46, Pv: 25, Yp: 12
April 23rd		
Drilling	24 hrs	Drilling Lith: 50% shale, 25% clay, 25% snadstone Mw: 12.2, Vis: 46, Pv: 26, Yp:12
April 24th		
GIh	8½ hrs	Drilling
	8½ hrs	POH, changed bits & RIH to btm of 95/8" csg.
	½ hr	Slipped drill line
	5½ hrs	W.O.W. Max wind 60MPH & max seas 26'
	1 hr	GIH w/bit No. 25. Lith: 40% sd., 20% shale, 20% clay & 20% marl Mw. 12.2, Vis: 45, Pv: 22, Yp:12
April 25th		
DRILLING	½ hr	FIN GIH w/bit no 25
	23½ hrs	Drilling Lith: 45% clay 30% sand, 15% shale, 10% marl Mw: 12.3, Vis. 46, Pv: 25, Yp:12

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 17

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
April 26th	14 hrs	Drilling
Running weekly BOP test	½ hr	Survey
	5½ hrs	POH broke & serviced stablizers
	½ hr	Safety meeting
	2 hrs	Picked up BHA & test plug RIH- to BOPS
	1½ hrs	Rings on test plug failed to hold pulled test plug changed rings & RIH Lith: 50% sand, 30% shale. 20% chalk Mw. 12.2, Vis. 45, Pv: 25, Yp:12
April 27th	1½ hrs	Fin running weekly BOPS test
Drilling	2½ hrs	Fin. GIH w/bit No.26
	20 hrs	Drilling Lith: 85% clay, shale and marl and 15% sand mw: 12.5, VIS: 55, Pv: 30, Yp:11
April 28th	23 hrs	Drilling
Drilling	1 hr	Short trip, no drag. Lith: 70% clay. & marl 15% shale 15% sand Mw: 12.5, Vis: 52, Pv: 29, Yp: 12.
April 29th	21½ hrs	Drilling
Drilling	2½ hrs	trip to shoe no hole trouble Lith: 40% shale, 40% chalk, 20% sand Mw: 12.5, Vis: 51, Pv: 26' Yp:10
April 30th	23½ hrs	drilling
Drilling	½ hr	fill weight cans with 19,500g mud Lith: 10% sand 25% sandstone 20% chalk. 10% clay Mw: 13.0, Vis: 45, Pv: 23, Yp: 6
May 1st	5 hrs	drilling with bit No. 26
Drilling	6 hrs	totoco and chain out of the hole & lay down 14½ts X-105 drill pipe
	½ hr	Change bits and work BOPS
	3½ hrs	RIH broke and dope all connections

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. LX SHEET NO. 18

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
May 1st	cont:	in BHA-PU-14 jts grade drill pipe - change ou bad rubbers on drill pipe 1 hr cut and slip drilling line 1 hr finish GIH to 11000' 1 hr reamed from 11000' to 11063' 6 hrs drilling with bit No. 27 Bit no. 26 J-24 Hughes averaged 11,050FPH Lith 10% sand, 15" sandstone, 45% chalk 10% clay, 20% siltstone Mw: 13.0, VIs: 46, Pv: 24, Yp: 6
May 2nd Drilling	24 hrs	Drilling Lith: 50% GYP & clay , 20% sand & siltstone, Chalk 10% Mw: 13.0, VIs: 46, Pv: 22, Yp: 6
May 3rd. Drilling	4 hrs 5½ hrs 2 hrs 4 hrs 8½ hrs	Drilling bit No. 27 COOH and lay down 14 jts x-grade drill pipe break and dope BHA GIH with bit No. 28 -PU 14 jts grade "E" drill pipe drilling with bit No. 28 Lith: 50% gyp, 30% sand and siltstone 20% clay Mw: 13.0, Vis:45, Pv:22, yP: 7
May 4th Drilling	23 hrs 1 hr	Drilling 10 stand wiper trip at 11730' lith: 80% sand, 10% sandstone, 10% GYP Traces of clay and silt Mw: 13.0, Vis:46, Pv:26, Yp:12
May 5th Drilling	23 hrs 1 hr	Drilling Work on engine fuel system-air in fuel to injectors. Lith: 60% GYP - 30% Clay - 10% Sand Mw: 13.0 , VIs: 47, Pv: 28, Yp: 13

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 19

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
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May 6th
Drilling

23 hrs	Drilling
1 hr	10 stand wiper trip at 12120' Lith: Clay brown interbedded with GYP Add 5 sx LCM to mud system - precaution only- Mw. 13.0 Vis: 47, Pv:28, Yp:13

May 7th
Drilling

2 hrs	Drilling
2½ hrs	COOH to 7718' and hung off drill pipe - first single off bottom drug
2½ hrs	WOW p Max wind 60mph, max sea 28'
3½ hrs	Finish COOH change out bumper sub-bit T1B1 -I
7½ hrs	Serviced BHA and run bit no. 28 to, bottom
6 hrs	Drilling - over all average bit No.28 - 9.90FPH Lith: Clay brown interbedded with limestone & gyp ferrous Mw:13.0, Vis:46, Pv:28, Yp:12

May 8th
Start out of hole

24 hrs	Drilling Lith: Clay & Shale Brown inbedded with limestone GYP Ferrous Mw: 13.0, Vis: 46, Pv: 28, Yp:12
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May 9th
Logging

3½ hrs	Drilling
2 hrs	Short trip stands 3-4 drug
2 hrs	Circulating
4 hrs	COOH
12½ hrs	Running logs IES-Sgr- snp- from TD to 133/8" shoe and running FDC from TD to 8800' at 1600 - all logs run from TD to 133/8" shoe Lith: Limestone white hard- no gas no flourecsense Mw: 14.6, Vis: 51, Pv: 27, Yp: 10

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. LX SHEET NO. 20

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
May 10th COOH	2 1/2 hrs 3 hrs	Drilling - torque up to 800 AMPS COOH Mw: 12.9, Vis: 46, Pv:28, Yp:12
May 11th GIH W/Reverse Bowen junk basket	4 hrs 2 hrs 1 1/2 hr 1 hr 1 1/2 hr 5 1/2 hrs 1/2 hr 4 1/2 hrs 3 1/2 hrs	COOH change bits and run BHA Attempt to test BOPS "O" rings would not hold pressure on test plug - will re-test after hole cleaned up GIH to shoe Cut 96' of drilling line and slip 32' finish GIH to 12112' reamed form 12112' as precaution only actual reaming 12' to 12758' work junk sub COOH lay down junk sub recoevered cup full of inserts some bearing & two small pieces of cones PU-Bowen Jars reverse junk basket & GIH 0630 Bowen junk basket hungup just below shoe 7863' jared loose and COOH Mw. 12.9, Vis: 47, Pv: 28, Yp: 12
May 12th COOH with Reverse Basket and magnet	6 hrs 1/2 hr 1 1/2 hr 1 1/2 hr 5 hrs 5 hrs 1 1/2 hr 3 hrs	GIH with reverse basket - tight hole 8000' (Corrected) COOH change shoe to 8 1/8" OD and RIH in shoe Slip drilling line 32' finish GIH dropped ball circulated and worked junk basket COOH- recovered 1-casing protector rubber and est. 60% of junk cone ect. dress reverse basket and GIH with mag magnet and basket drop ball circulate and work junk basket COOH (on trip that recovered 60% junk - found mill shoe worn off 4")) Pieces of formation recovered in junk basket is Quartzite Mw: 13.0, Vis:47, Pv:28, Yp:12

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 21

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
MAY 13th Drilling	2 hrs	Fin. COOH s/reverse vskt. & magnet Recovered 3 pcs of cone
	1 hr	GIHw/bit No.31 & BHA
	2½ hrs	Ran weekly BOPS test- ok
	1½ hrs	GIH to btm. of 95/8" csg
	½ hr	Slipped drill line
	1 hr	GIH to tight spot at 10,906
	1½ hrs	Rmd. tight hole for 10,906 to 10,944
	½ hr	GIH to 12,649
	1½ hrs	Rmd. fr. 12,649 to 12,756
	12 hrs	Drilling Lith: Cong. or Brecca, sandstone, clay & marl. Mw: 13.0 Vis:46, Pv:27, Yp:12
	May 14th Drilling	2 hrs
7½ hrs		POH, change bit & RIH to bottom of 95/8 csg
1 hr		Cut and slipped drill line
½ hr		GIH to 10512, xxxxxxx
1½ hr		Rmd. fr. 10,512 to 10,644
1 hr		Fin GIH
10½ hrs		Drilling Lith: sandstoen inbedded w/marl & clay Mw. 13.0, Vis:46, Pv, 29, Yp:12
May 15th Drilling at 0600 hr	12½ hrs	Drilling
	9 hrs	Trip for new bit
	½ hr	Wasing and working junk basket
	2 hrs	Drilling Lith: Sandstone imbedded with silt- stone and marl Mw: 13.0, Vis:48, Pv:30, Yp:14
May 16th COOH - SLM	20 hrs	Drilling
	1 hr	Circulating out 26' drilling break at 13090'
	3 rhs	Circulating and conditioning hole for logs Start out of hole at 0600 Lith: Sandstone brown interbedded with shale and clay brown MW. 13.0. Vis: 46, Pv: 28, YP: 13

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 22

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
May 17th		
GIH W/DP Opened ended	5 hrs	Pull out hole with bit 33 S.L.M. No. Corr.
	6½ hrs	Rig up Schl. Ran GRM. Sonic Log from 13189-7888
	½ hr	Repaired Schl. line
	2½ hrs	Ran I.E.S. 13190-7890
	3½ hrs	Ran C.B.L. 7888-3500 Good Bond
	1 hr	Working on XXXX C.C.L. XXXX Tool
	4½ hrs	Ran Volosity survey 13140-12600-11500-10450-9200-8045-7530-6300-5200-3950-2577-2500
	½ hr	Rig down Schl. Mw. 13.0, Vis:46, Pv:28, Yp:13
May 18th		
GIH to Dress of cement plug	3 hrs	Go in hole w/5" Drill pipe open ended
	5½ hrs	Laying down 5" drill pipe
	2 hrs	Pull out hole w/5" drill pipe
	2½ hrs	Ran Schl. Gym C.C.L. from 7890'-7000'
	3½ hrs	Picked up 17 jts 3½ 9.30 per ft N-80 Tubin and strapped D.P. in hole to 8100'
	½ hr	Slip drill line
	½ hr	Circ bottoms up to balance mud
	2½ hrs	Rig up B.J. and mix and spotted 200 sks. C/E Cement w/ 16.2 slurry from 8100-7670' Pulled tubin stinger to 7700' & reversed out water and trace cement rig down B.J.
	3½ hrs	Job completed at 12:00A.M. 5/18/72 Pull out hole and layed down 17jt 3½" tubing
	½ hr	Picked up bit and cement scraper and go in hole to dress of cement plug

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 23

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
May 19th		
Circulate and wait on orders	4½ hrs	Finish GIH 7665'
	½ hr	Rotate and wash from 7665' to 7740'
	1 hr	Circulate out trace of cement only
	3 hrs	Circulate and wait on orders at 7740'
	½ hr	Rotoate and wash from 7740' to 7859' - shoe is at 7863'
	14½ hrs	Circulate and wait on orders Mw: 13.0 Vis: 45, Pv:28, Yp:13
May 20th		
Washing and reaming	1 hr	Finish circulating - waiting on orders
	2½ hrs	COOH and lay down 95/8" casing scraper
	3 hrs	GIH to 7750'
	1 hr	slip and cut drilling line
	1½ hr	finish GIH picking up 5" drill pipe tp 8840'
	1 hr	Wash and ream from 8840' to 8919' recovered large ammount of soff Green cement over shaker
	2 hrs	Circulate and condition mud Recovered large amount of sand over shaker
	2hrs	short trip to shoe - tight hole
	4 hrs	wash and ream to 9449' recovered large amount sand over shaker sand is caving
	6 hrs	Wash and ream 9449' to 10505' Mw. 13.0, Vis: 55, PV: 34, Yp:12
May 21st		
GIH - Service all BHA	6 hr	Wash and ream from 10505' to 11680'
	1½ hr	PU 5" drill pipe and GIH to 12909'
	1½ hr	Wash and ream from 12909 12909' to 12964' and ciculate and clean hole
	4 hrs	Wash and ream from 12964' to 13200' on bottom
	3 hrs	Drilling from 13200' to 13254' = 54"
	6 hrs	COOH with bot No. 35 - RR-X1G

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 24

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
May 21st cont	2 hrs	GIH with bit No 36. J44- services BHA Lith: sandstone interbedded with clay M:w: 13.0, Vis:57, Pv: 36' Yp: 11.
May 22nd Drilling	3½ hrs	Test BOPS weekly test - used camerom cup tester
	3½ hrs	Finsih GIH
	1 hr	Circulating and condition mud and hole - large amount sand over shaker
	16 hrs	Drilling with bit No. 36, 5.86FPH AVG Lith: silty shale interbedded with clay no trace of gas Mw. 12.9, Vis: 51, Pv. 32 Yp: 10
May 23rd COOH	23½ hrs	Drilling
	½ hr	COOH Lith: Shale brown with some streaks of fine grain sandstone Brown Mw. 13.0, Vis, 55' PV: 34, Yp: 12
May 24th COOH	2 hrs	Finish COOH
	½ hr	slip drilling line 32"
	6 hrs	Finish COOH change bits and GIH
	½ hr	repair air line
	1½ hr	finish GIH - pipe stuck while picking up kelly - bit 20' off bottom - think drill pipe was stuck around 9000' no action in bumper sub- hole is giving some indication of caving to much sand coming over shale shaker.
	½ hr	work pipe free
	11 hrs	drilling
	2 hrs	COOH Lith: Brown shale - with some streaks of sandstone Brown Mw: 13.0, Vis: 55, Pv: 34, Yp: 11

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 25

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
May 25th Drilling	6½ hrs ½ hr 1½ hr ½ hr 15 hrs	Finish COOH change bits RIH to shoe slip drilling line Finish trip Ream to bottom as precaution only Drilling - Raised mud wt. slowly to 13.4ppg - no hole trouble - sand not running Lith: Shale brown imbedded with sand stone - fine grained 50/50% Mw: 13.4, Vis: 57, Pv: 36, Yp: 15
May 26 P.T.D. 13573'	8 hrs 8 hrs 1 hr 1½ hrs 1 hr. 4½ hrs	Drilling Trip to change bits Stopped at shoe cut 96' drilling line slipped 32' Finish trip Wash and work junk sub-seating diamond bit to bottom Drilling with bit No 39 Md31 Shale brown marl brown - some streaks sand- stone brown Mw: 13.4, Vis: 44, Pv: 28, Yp: 15
May 27 P.T.D. 13685'	½ hr. 3½ hr. ½ hr. 1 hr. 6½ hrs. 1½ hr. 1 hr. 2 hrs. ½ hr. 2 hrs	check pump pressure change in formation- Shale Softer Pull Bit up into casing- Hung off drill pipe in well head Nipple Down cellar deck and prepare to pull mud riser WOW Nipple up cellar deck retrieve Drill pipe RIH Wash to bottom Drilling Lith-Brown shale--brown marl--brown sand stone Mw. 13.3, Vis: 53, Pv: 32, Yp: 14
May 28 P.T.D. 14100'	2 hrs. 10 hrs. 5 hrs.	Circulating Spls 13851' Drilling Pull up to 13836' circulate and condition mud for logs Lith: Grey Siltstone-Imbedded with grey sandstone-Anhydrite and salt Mw: 13.3, Vis: 56, Pv: 38, Yp: 6

DAILY REPORT DETAILED

LEASE 17/12

WELL NO. 1X

SHEET NO. 26

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
May 29		
P.T.D. 14100'		5½ hrs. COOH-SLM- no correction 6½ hrs. Rig up and run FDC-13876' hole bridged-logged from 13876' to 7888' and 3 hrs. IES-logged from 13876' to 13287'-- 3½ hrs. SGR-from 13876' to 13280' ½ hr. rig down for SCHLUMBERGER Mw: 13.3, Vis: 67, Pv: 51, Yp: 20
May 30		
P.T.D. 7740' PBD		1 Hr. Circulate 2½ hrs. BJ mixed and pumped through drill pipe 150 sx class E cement slurry wt. 16.2ppg-plug depth 12800' to 12400'--COOH to 12360' and rev-out- no cmt-job complete 1320 hrs. 4½ hrs. COOH laying down 5" DP to 8100' ½ hr. reverse circulate to balance mud- 1½ hrs. BJ mixed and pumped through drill pipe 300 sx class E cement slurry wt. 16.2 ppg-plug from 8100' to 7600'-pull up to 7300' and reverse out est. 300' of cement plug--job complete 2000 hrs-- 3½ hrs. COOH chain out and layed down 17 jts 3½" tubing stinger 5½ hrs. PU bit and 9-5/8" casing scraper and SLM in hole to 7300'-washed to 7740' green cement across shale shaker-plug soft- 1 hr. Circulate and condition mud Mw: 13.4, Vis: 65, Pv: 52, Up: 17
May 31		
P.T.D. 7732' PBD		½ Hr. Finish circulating 3½ hrs. COOH laying down 9-5/8" casing scraper and 12x6½" dcs-- & stabilizers- 3½ hrs. Schlumberger ran and set Howco-SV-retainer at 7732' & test with 3000psi- 6½ hrs. PU and RIH 252 jts 3½" tubing. 12.60 lbspf--8rd thd N-80-tag cement ret. at 7744' rig slim. 4 hrs. circulate and cond. mud wt. back to 12.0 ppg- 3 hrs. COOH and slm tubing-- 2 hrs. Schlumberger perforated 9-5/8" casing from 7668' to 7682' 4 shots pf- 1 hr. run wire junk basket and recovered pieces of rubber depth ran 7660' Mw: 12.0, Vis: 43, Pv: 19, Yp: 4

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 27

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 1, P.T.D. 7732' PBD		4 hrs. making up otis test tree & B.J. test tree and laying out on walk- 5½ hrs. GIH with B.J. test tools-3½" tub. & otis SST-& landing string. 1 hr. Install B.J. test head. Test Bake: test seperator w/1000psi-Heater w/2500psi all surface lines w/5000psi- ½ hr. Rig up to flow well and set PKR at 7630' w/bottom of string set at 7675'. 2½ hrs. Opened well to B.J. tanks at 1700 hrs.-air immediately-water back to surface in 20 min. rate to B.J. tanks 1 bbl. in 45 sec. Turned through burner on 1½" choke at 1723 hrs.-oil and gas to surface in 28 min. flowed well thru burner at end of (2½ hr. period). 2%BS-Gravity 31.6 at 56°.- ½ hr. flowed well thru test seperator at 1930 hrs.-on 1"choke unable to level flow thru separator because not enough gas-also pump shaft broke on steam heater- 1 hr. flowing well thru test seperator while repairing steam heater-12/64 choke. 2 hrs. flowing well thru test seperator attempting to level out well. 7 hrs. flowing well thru test seperator on 12/64" choke-results not accurate gas not breaking out of oil(need to run shrinkage test for accuracy). Dst.No.1-flow period No.1-perfs-7668' to 7682'-4pf-24hr.rate based on 7hrs-12/64"choke-FTP-330-at66°-Oil 885BOPD-API gravity-29.1 at 60°-F---water nil. Grind out clean -GOR-115-cu.ft.bbl. Gas less than 1mcf.

Mw:

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 28

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 2, P.T.D. 7732' PBD		1½ hr. finish flow period No.1-DST-No.1 12 hrs. SI period No.1-12hrs-FSIP-703 1½ hr. kill well with 62 bbl 12.0ppg mud-max-PP-3000psi- 1 hr. release B.J. packer-pressured annulus with 500psi-dropped impact bar knock out pin in rev. sub-reversed out small amount gas and oil off bottom-- 2 hrs. rig down B.J. lines-pulled land- ing string and Otis-SST and layed down-- 5 hrs. COOH with test string and lay down test tools- 1 hr. Schlumberger running HOWCO"SV" retainer-wire line- Surface SHIP-after flow period-703psi--- (recorder No.5572at 7666'). Initial Hydro-4723psi--Start IF-2279psi--final FP No.1-3286psi. Shut in period No. 1-3561 psi Final Hydro-4690 psi---
June 3, P.T.D. 7650' PBD		1 hr. finish running Howco-'SV' cement retainer and set at 7650' 4 hrs. RIH with stinger on 5" DP- 2½ hrs. sting into ret.-rig up B.J.-est. 1½ bbl per min. 1500psi-mixed and spotted 100 sxs class 'E' cement- 16.9ppg-slurry wt. & squeezed perf at 7668' to 7682'-with 3000psi max pressure and holding-pull stinger out of cement ret. & reverse out 25 sx cement-job complete 1510hrs. 2½ hrs. COOH chain out and lay down stinger. 3 hrs. Schlumberger perforated 9-5/8" casing from 7600' to 7628' with 4 shots PF- ran wire line hunk baske to 7590' recovered small pieces of rubber- 7 hrs. PU test tool (B.J.) and GIH with 3½" tubing test string-PU Otis 'SST' and landing string-(1500' water cushion) 1½ hr. /...

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 29

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
.../ June 3,		1½ hr. install B.J. test head and surface lines-test to 5000psi-set packer at 7559' bottom of test string 7614'.-- 2½ hrs. DST No. 2-opened tool at 0325hrs. air immed.-water cushion to surf. in 40 min.-rate in B.J. tanks 1½bbl. in 40sec. turned thru burner 0414hrs.- on 1½" choke-oil and gas to surf. in 63min-at 0428hrs. after first hr.-FTP. 90psi--grind out 3% BS-gravity 34.5-60°-corrected no water-turned thru test separator-at 0600hrs. on 8/64" choke-FTP 160psi-clocks wound 1930hrs.-2, June, 72--
June 4, P.T.D. 7650'		12hrs. Flow period No. 1 on DST No. 2 12hrs. S.I.P. No. 1 on DST No. 2
June 5, P.T.D. 7595' PBD		2½hrs. unable in 3 attempts to kill well max-pressure 3000psi by pumping mud thru tubing unjayed packer dropped impact bar-knocked pin out of reverse sub and reversed out all gas and oil-- 1 hr. rig down B.J. lines-test head-- pulled and layed down Otis SST- 6 hrs. COOH with test string and lay down B.J. test tools.-- 2 hrs. Schlumberger ran and set Howco stinger on 5" drill pipe-- 3½hrs. pumped mud thru stinger-set stinger into ret.-could not pump into perfs. at 7600' to 7628' with 5000psi-pulled up above ret. and set down into ret. and turned 7 turns to right established P/R of 1½ BPM at 3000psi-mixed and spotted 50 sx. 'E' cement 16.2ppg slurry wt. and squeezed perfs. max. pressure 3000psi and holding reverse out est. 20sx cement-job complete 4 June, 72 at 2245 hrs. 3½hrs. chain out of hole lay down Howco stinger--

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 1X SHEET NO. 30

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
.../ June 5,		2½ hrs. Schlumberger perforated 9-5/8" casing at 7574'-7594' with 4 SPF-- 1 hr. GIH with B.J. test tools for DST No. 4. DST No. 2 - flow period No. 1 Perfs 7600 to 7628'-24 hr. rate based on 10 hr. test on 8/64" choke--FTP 220-65 F-505 BOPD-Api gravity 34.1 at 60°F-water 0--2%BS-gas ½.137 MMCF- GOR 270 cu.ft./bbl-recorder Noæ 4281-at7592' INHYD-4760psi-INF-start of flow-1111psi end of flow 2776psi-SHIP 3511psi Final Hydro-4764psi.--
June 6, P.T.D. 7595' PBD		6½ hrs. GIH with DST tools No.3-on 3½" tbg-landing string Otis SST-1500'water cushion. ½ hr. install B.J.test head and surf. lines-test to 5000psi-and set packer at 7529'-bottom of string at 7582'.-- 8 hrs. DST No.3 tool open at 1305hrs. for 3½hrs. weak to very weak blow at 1635 hrs. shut tool in for 3½ hr. build up at 2005 hrs.-oper tool-fill tubing with 25 bbl water surged well ten times could not cause well to flow-could not pump into well with 2500 psi.-- 1½ hrs. opened reverse sub-and reversed out water and water cushion-5bbl drilling mud and formation water 1st water sample C13500,1.1 res. at 68°F- 2nd spl C123500-.19res. at 68°F- 2 hrs. rig down B.J.test head pull landing string and layed down Otis SST- 1 hr. GIH to perforate-- DST No.3---perfs-at7574'-7594'-top rec-at 7564' No.2760-In Hydro=4844-Inflow start 854-1863psi-INshut in=3345-Final Hydro=4840psi-

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LEASE 17/12 WELL NO. 3X SHEET NO. 31

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 7, P.T.D. 7595		4 Hrs. Schl. fin. perforating 9-5/8" csg. from 7560 to 7530-4 holes. ft. Schl. had (2) misruns-2 1/2 hrs. Schl. ran W.L. jnk. bskt to 7525. 6 1/2 Hrs. Picked up & GIH with B.J. test tools on 3 1/2" tubing w/Otis sub-sea tree and landing string. Installed BJ test tree and sur- lines. Tested same with 5000psi ok. Set pkr at 7484. Bottom of string set at 7544. No wtr. blanket. 7 Hrs. Ran DST. No.4- Tool opened at 1623 hrs. Weak to strong blow f/30 mins. Very weak blow of air f/3hrs. FSI period for 3 1/2 hrs. 1/2 Hr. Dropped impact bar & reversed out 50bbbls. salt wtr & drlg. mud. Chlorides 66,000ppm, res. .09 at 60° & salt water 9.0 ppg/gal. 5 1/2 Hrs. POH & layed down B.J. test tools Recorder No.set at 7530. Init. hydro.=4612. Init flow period 1027. Final flow period=3438. 1/2 Hr. Rigging up Schl. Mw: 12.0, Vis: 44, Pv: 26, Yp: 8
June 8, P.T.D. 7595		1 1/2 Hrs. Schl. fin. GIH & set Howco W.L. type 'SV' retainer at 7515. 1 1/2 Hrs. Slipped & cut drill line. Tested csg. w/3000psi-OK. 3 Hrs. RIH w/Howco retainer on 5" drill pipe. 4 1/2 Hrs. Tested BJ surface lines w/5000 psi-OK. Broke circ. Pump-in rate 2 BPM at 1750psi. Mixed & spotted 200sxs. Class 'E' neat cmt. 16.2ppg slurry. Unable to get squeeze on 9-5/8" csg. perfs. 7560 to 7530 & 7594 to 7574. Holding press. 1100psi Reversed out-no cmt. Pump-in /...

DAILY REPORT DETAILED

LEASE 17/12 WELL NO. 3X SHEET NO. 32

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
June 8, .../		rate 6 BPM at 2500psi. Mixed & spotted 360 sxs. Class E near cmt., 16.2 ppg. slurry. Squeeze perfs. w/max. & holding press. 3200psi. reversed out an est. 260 sxs. cmt. Job completed at 1630 Hrs. 6-7-72. 2 Hrs. POH & Layed dn Howco stinger 4 Hrs. Picked up BHA-RIH (SLM) 7 1/2 Hrs. Drilled cmt. retainer at 7515 & cmt. to 7565. Pressured, awueezed perfs. Broke dn. at 1900psi at 1BPM: Mw: 12:0, Vis: 47, Pv: 28, Yp: 10
June 9, P.T.D. 7595		3 Hrs. POH w/bit No. 41 4 Hrs. Schl. ran W.L. jnk. bskt. to 7515-recovered pcs. of ret. rubber. Ran & set W.L. Howco type 'SV' retainer at 7515 2 Hrs. RIH w/Howco stinger on 5" drill pipe. 2 Hrs. Tested B.J. surface lines w/ 5000psi and broke circ. Pump-in rate 2BPM at 2500 PSI. Mixed & spotted 250 sxs. Class 'E' near cmt. Squeezed 9-5/8" csg. perfs 7530-7560 & 7594-7574 w/162sxs cmt. Reversed out an est. 88 sxs cmt. Job completed at 1700 hrs. 6-8-72. 2 Hrs. POH & layed dn. Howco stinger 3 Hrs. RIH w/bit & BHA on 5" drill pipe 8 Hrs. drilled cmt. retainer at 7515 & cmt. to 7564. 0700: Tested squeezed csg. perfs. w/ 3000psi - held OK Mw: 12.0, Vis: 45, Pv: 26, Yp: 8
June 10, P.T.D. 7732'		1/2 Hr. circulating 1/2 Hr. test perf. 7530'-7584' with 3000 psi. 2 1/2 Hrs. drilling on ret. at 7595' 6 Hrs. COOH C/B pick up 9 more dcs- and GIH- .../

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LEASE 17/12 WELL NO. 1X SHEET NO. 33

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 10, cont'd...		1/2 Hr. slip drilling line- 5 1/2 Hrs. drilled ret. at 7595' & cmt to 7628' ret. at 7650' cmt from 7672'-7682' and wash to 7732' 2 Hrs. circ. and condition mud 3 Hrs. COOH 2 1/2 Hrs. SCH.perforated 7682'-7665' & 7654'-7650' & 7628'-7600' 4-S/PF- 1 Hr. P/U test tools--- Mw: 12.0, Vis: 44, Pv: 26, Yp: 8
June 11, 1972 P.T.D. 7732'		6 Hrs. fin. picking up BJ test tools & RIH on 35 stds. 3 1/2" tubing 5 Hrs. POH & re-spaced BJ test tools below packer 6 Hrs. RIH w/BJ test tools on 3 1/2" tubing, picked up Otis subsea tree, ran landing string & installed BJ test tree. 1 Hr. Rigged up and tested BJ surface lines w/5000psi 6 Hrs. Pumped 12 bbls acid into tubing packer packed off with gun junk & pcs of rubber-unable to spot acid. Dropped (2) impact bars. Reversed out a large amt of gun junk & pcs of rubber.
June 12, 1972 P.T.D. 7732'		6 1/2 Hrs. rig down B/test tree-pull landing string-lay down SST-COOH-lay down BJ test tools-had metal wedged around packer 2 1/2 Hrs. GIH with 5" drill pipe and 2 junk subs open ended to 7732' pick up to 7720' 2 Hrs. reverse circulate and cond.mud circulated reverse and recovered 1 1/2 gall.junk across shale shakers-- 3 1/2 Hrs. COOH-No. 1 engine down had no rotary-chained out-recovered junk in J/subs- 6 Hrs. GIH with BJ test tools on 3 1/2" tubing pick up Otis SST and Baker test head- 1/2 Hr. install BJ surface lines & test to 5000 psi- /...

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LEASE 17/12 WELL NO. 1X SHEET NO. 34

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 12, cont'd...		3 Hrs. circulate 10 bbl mud before start acid job-spot 1000 gall. across perfs from 7684'-7665' from 7654'-7650' from 7628' to 7600'-set packer at 7577'. 10' perforated jt. at 7681'-bottom of test string at 7704' let acid set across perfs. for 1/2 Hr before attempting to pump acid into formation-brought press. up slowly with diesel oil in tubing to 2900psi-0630-formation has not taken acid-over 3 hrs. on formation. Mw: 12.1, Vis: 43, Pv: 26, Yp: 7.
June 13, 1972 P.T.D. 7732'		1 1/2 Hrs. unable to pump acid through perfs-7684'-7665' & 7654'-7650' & 7628'-7600'-max.press.2950 psi--DST No.5--- 1/2 Hr. open well to bruner well dead 1/2 Hr. unseat packer and reverse out 6 Hrs. COOH with BJ test tool 7 1/2 Hrs. RIH with BJ text tools on 3 1/2' tbg.no water cushion-Otis SST and landing string-Install BJ test head and lines to 5000psi-Set packer 7580'bottom of string 7686'-perfs.in 9.5/8" csg. same as DST No. 5-- 1 1/2 Hr. open well thru burner at 2200 hrs.-air immed. Gas to surface in 30 min. oil & gas cut md in 35 min. cleaned well up thru burner--- 6 1/2 Hrs. flowing well thru test seperato on 8/64" choke-- DST No.5 Innitial Hydro--4789psi--Initial flow-3005psi-(end of period)=3216psi---final Hydro=4783psi--max. bottom hole squeeze press.=6016psi-- DST No.6 Flow period No.1-perfs as above--24 hrs. based on 6 hrs.-8/64" choke--Flowing tbg.press.360psi--temp 68°--oil 1020 BOPD--32.4api-grav. at 60°. Grind out .1,water 0, Gas 0.25, GOR 247.

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LEASE 17/12 WELL NO. 1X SHEET NO. 35

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 14, 1972 P.T.D. 7732'		5 1/2 Hrs. final flow period No. 1 12 Hrs. unable to kill well with 3500psi on tbg. 2000psi on annulus- held 1000psi on annulus and unseat pkr and reverse out rig down B.J. tes head and lines 4 Hrs. J-up packer-COOH with landing string and Otis SST-COOH with t/test No. 6. DST No. 6--perforations 7684'-7665' and 7654'-7650' and 7628'-7600'. Flow period No. 1- 24 Hrs. based on 6 Hrs.--8/64" choke--FTP=360psi--temp. 68° ---1020BOPD-32.4api gravity at 60° ---Grind out.1%--water 0---Gas 0.25--Gor 247. Final shut in pressure 625 psi--- Mw:12.0, Vis: 51, Pv: 29, Yp: 12
June 15, 1972 P.T.D. 7732'		1 1/2 Hr. finish COOH and lay down BJ test/tool. 3 Hrs. ran and set Howco 'SV' retainer at 7520' test with 3000psi.-- 2 1/2 Hrs. ran in hole with stinger on 5" drill pipe- 2 Hrs. rig up BJ test head and floor line and test to 5000psi-broke circ. set stinger into retainer-broke formation down with 2800psi-pump rate 3BPM at 2000psi-mixed and spotted through drill pipe 200sx Class E cement-16.2-ppg and squeezed perf in 9.5/8" csg.-from 7682'-7665' from 7654'-7650' from 7628'-7600'---with 125 sx cmt.max pressure 4000psi and holding-pull stinger out of retainer and reverse out 75 sx cmt.--job complete 1500hrs June 14/72.--- 3 Hrs. COOH 1 Hr. slip and cut drilling line.- 3 1/2 Hrs. RIH with bit No.44- 4 1/2 Hrs. circulate and condition mud- 3 Hrs. drilling cmt ret 7520'-soft cmt and ret.junk & soft cmt. 7676' INHYDRO-4767psi-INFLOW=769psi--FLOW PERIOD No.1=3315-SIPERIOD No.13543psi-Final Hydro=4778psi-REC.No.2658 set at 7613' Mw: 12.0, Vis: 44, Pv: 26, Yp: 8

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LEASE 17/12 WELL NO. 1X SHEET NO. 36

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 16, 1972 P.T.D. 7732'		1 Hr. finish drilling retainer junk and soft cement at 7676' to 7697'--& cement 7797'-7707' washed to top of ret. at 7732'PBD 3/4Hrs. circulate and condition cement contaminated mud--- 3/4Hrs. COOH and chain out-recovered ret. junk in 2/junk baskets-- 1/2 Hr. BJ rested aqueezed perfs with 3000psi--- 3 Hrs. Schl. perforated 9.5/8" casing at 7703' to 7691' 4 shots per foot-- ran wire line junk basket and recovered pieces of rubber from dp. protector rubbers-- 6 1/2Hrs. RIH with BJ test tools on 3 1/2" tbgl. landing string with Otis SST-- install test head and surface lines. 2 Hrs. repair leak in BJ test head--test head and lines to 5000 psi--- 3 Hrs. DST No. 7--open well to burner 1 1/2" choke--0210 hrs. strong to weak blow for 32. min.-- well died in 35 min.-- at 0245 hrs.--shut well in at 0510 hrs. 1 Hr. taking FSHIP-DST No.7--- Mw: 12.0, Vis: 47, Pv: 26, Yp: 5
June 17, 1972 P.T.D. 7376'	14100'	2 Hr. finished final shut in pressure No.1 for DST 7 1 Hr. Reversed out estimated 2 bbl mud and 51 bbl salt water. Bottom sample: 70000 ppm Cl, Resistivity 0.08 at 76' 11 Hrs. Broke and layed down test head and subsea tree, test tools and cont'd COOH laying down test string. 2 Hrs. layed down 6 1/2" drill collars. 2 Hrs. Schl. ran and set Howco retainer at 7510 ft. 2 Hrs. ran in hole with Howco stinger on 5" drill pipe. Broke circulation and set down into retainer. 1 Hr. Unable to get pump rate with 4000 psi. Picked up, rotated retainer 20 turns to right and set down into retainer. Unable to break down fmn.

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LEASE 17/12 WELL NO. 1X SHEET NO. 37

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 17, cont'd		2 Hrs. BJ mixed and spotted 50 sx Classe neat cmt, 16.2 lb/gal slurry wt. from 7510' to 7376' COOH 5 stds and rev. out.
		1 Hr. COOH laying down drill pipe
June 18, 1972 P.T.D. 3500'	14100'	3 Hrs. COOH layind down 112 jts. 5" drill pipe-
		1 $\frac{1}{2}$ Hrs. perforate 9.5/8" csg. with 2 SPF at 3570' to 3568' -ran and set Howco "SV" ret. at 3500'---
		1 $\frac{1}{2}$ Hrs. SLM-RIH with Howco stinger on 5" drill pipe--
		2 Hrs. broke circ-test all surface lines to 5000 psi-set stinger into ret. with 900 psi on annulus-broke down formation with 2500 psi--PR 4 BPM at 1800 psi--mixed and spotted 200 sx Class B cmt. 16.7 ppg slurry wt.-pumped 200 sx below retainer at 1800 psi max-holding 1600 psi-pull stinger out of ret. and reverse out trace of cmt.-job complete 1400 Hrs.--
		2 Hrs. COOH layind down 5" drill pipe--
		3 $\frac{1}{2}$ Hrs. pull short bore protector-pull 9.5/8" packing-both short bore protector and packing damaged by drill pipe wear-pack off cut thru-
		3 $\frac{1}{2}$ Hrs. RIH with A-1 curring tools-cut 9.5/8" csg. 50' below hanger in 6 min.-COOH with cutting tools had cut jt. of 9.5/8" csg. on cutting tools with friction hold--rec. 49.75' of 9.5/8" csg.--hangei and csg. worn badly drill pipe grooved--these tools because rig was not held over hole--
		6 $\frac{1}{2}$ Hrs. was out B OPS lay 'down excess 5" drill pipe-nipple down cellar deck-pull choke and kill lines-COOH laying 16" mud riser--

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LEASE 17/12 WELL NO. 1X SHEET NO. 38

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
June 19, 1972 P.T.D. 3500'	14100'	2 1/2 Hrs. finish pulling 16" mud riser- 4 1/2 Hrs. pull choke and kill line- 2 Hrs. run BOP ret. string to cellar deck 1 1/2 Hrs. WOW--sea 18' heave 4' wind 40mph- 1 Hr. finish running BOP ret. string latched up-closed 5" rams top-on stinger-released lower Auto-lock-pick up stack 5' above well head saver sub- 1 Hr. pull blue and yellow pods- 4 Hrs. pull BOP stack and secure on cellar deck- 3 Hrs. run in hole and latch ret. auto-lock onto well head saver sub- 1 1/2 Hrs. made dive No.1-connect opening hose to auto-lock on bottom of well head saver sub-open auto-lock 2 Hrs. COOH with well head saver sub and set on rig floor-- 1 Hr. pick up and GIH with 13.3/8" A-1 csg. cutter----- Note: PGB looks to be leaning-when flex joint ret. to cellar deck-found to be drillpipe groove- -rig reports this item needs to be replaced (think when moved 'O/V' back over this hole we hung an anchor chain under PGB)this would explain pipe cutting or grooving of pack off. hanger & short bore protector of 9.5/8"
June 20, 1972 P.T.D. 3500'		5 Hrs. finish GIH with 13.3/8" csg.cutter A-1-cut 13.3/8" csg below 45' below hanger COOH-pick up spear GIH and ret. cut joint- 5 Hrs. make up 20" cutting tool with 20" autolock and RIH and cut 20" 35' below hanger-COOH and lay down cut joint-- 8 Hrs. pick up 520' of 3 1/2" tbg.stinger and run below 30" cutting tool-ran 20" auto lock and 30" snap lock-GIH and cut on 30" for 37min-pin on sub on top of marine swivel twisted off-- 6 Hrs. COOH-make up Bowen over shot with 6.1/4" grapple-RIH-overshot would

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LEASE 17/12 WELL NO. 1X SHEET NO. 39

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
June 20, cont'd		not go over fish-COOH and cut 11" off of guide on overshoot making a short catch overshoot-RIH overshoot would not go over fish-COOH-to change grapples-Tugs Neptune, Jason and Salvator on location----
June 21, 1972 P.T.D. Seabed	14100'	7 Hrs. Rigged up W.L. sling on 5" DP and RIH to top of fish. Made dive. Diver latched sling around fish. POH and recovered all of fish. 1 Hr. Removed sub w/broken pin and changed cutters in cutting tool. 4 Hrs. RIH w/A-1 30" cutting tool assy. and latched snaplock - 30" csg. was free. Pulled 30" csg, guide-base and guide lines to surface and removed cutting tool assy from 3 1/2" tubing stinger. 1 Hr. Rigged up BJ. Cemented from 600' back to seabed with 600 sx Class B neat cmt. 15.7 ppg slurry. 2 1/2 Hrs. Layed down 3 1/2" tubing stinger & cleared floor setting out guide base, guide lines and cutting tools. 8 1/2 Hrs. Preparing to move rig. Pumped barge upto towing draft and pulled anchors Nos. 1, 3, 4, 5, 6 and 8 and bolstered same. Lack number 2 and 7 anchors. Tugboats: Neptune, Jason and Salvatore on location.
June 22, 1972 P.T.D. Seabed	14100'	2 Hrs. Connected tugs Neptune, Jason and Salvatore to tug lines. Fin. pulling anchors 2 and 7. Last anchor bolstered and barge undertow to new location 2/7-4X at 0800 hrs. 6-21-72. Seabed was left in its natural state. Drop from report.