ESSO EXPLORATION INC.

EUROPE-AFRICA

FINAL WELL REPORT

Well 15/6-4

Norway

JULY-AUGUST 1976

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FINAL WELL REPORT

WELL 15/6-4

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OPERATIONS SUMMARY

15/6-4

The H-3 semisubmersible "Norjarl" was assigned from Conoco to Esso for a one well program on 12 45 hours, 26 June, 1976.

The rig moved from its previous location 10/5-1 to 15/6-4 in 22 hours. Using a supply vessel for tow assistance, transit speed averaged 8 knots.

Positioning on the 15/6-4 location was by a pattern of Decca Aqua Fix acoustic transponders supplemented by Decca Main Chain and Magnovox Satelitte Navigation.

From the time of arrival on location, all anchors had been run after 11.50 hours, and the well was spudded after 27.75 hours.

19.25 hours were lost on relocating the rig and drilling a second 36" hole when the 30" casing could not be stabbed into the first hole.

The final location of the well was 400 ft on a bearing of 344 degrees from the intended location.

The 30" casing was set to 558 ft and cemented to the sea floor.

At 580 ft in the 17 1/2" pilot hole, returns were completely lost into the original 36" hole. A total of 43.50 hours were spent on spotting cement in the 17 1/2" hole as well as the old 36" hole and drilling out cement, before drilling of new hole could be resumed.

The 17 1/2" pilot hole was drilled through sands and soft clays in one pass to 1293 ft in 7 hours, where a Sonic - GR log was run.

The hole was opened to 26" in 5.50 hours, and 20" casing was set to 1243 ft and cemented to the sea floor.

Total time required to rig, run, hook up and test the BOP stack was 29 hours.

The PIT on the 20" shoe yielded an equivalent of 11.9 ppg.

A 17 1/2" hole was drilled in one pass to 3600 ft, averaging 116.8 ft/hr. While drilling the sands below 2500 ft, there were two cases of swabbing during short trips which required returning to bottom and circulating out to insure the well was not flowing.
Logs were run, followed by 13 3/8" casing to 3552 ft and cemented to 2500 ft in the annulus.

The PIT on the shoe was stopped at 15.8 ppg equivalent without leak-off occurring.

The 12 1/4" hole was drilled into the Upper Cretaceous chalk to 9150 ft in 7 passes with milled tooth and insert bits using mud weight of 9.2 increasing to 9.7 ppg. Penetration rate averaged 40.9 ft/hr for this interval, but running at 9 - 11 ft/hr for the chalk section. Swabbing was again experienced during a trip from 8537 ft.

On the first ISF - Sonic - GR run in the 12 1/4" hole, 7 hours were lost for a rerun when the Sonic function did not work.

The 9 5/8" casing was run to 9103 ft and cemented to 5807 ft in the annulus. 87.75 hours were lost on several unsuccessful attempts to obtain a seal across the 9 5/8 x 13 3/8 annulus. Eventually, a 1000 ft cement plug was squeezed down the annulus, leaving the 13 3/8" 61 lb/ft casing exposed to well pressure at the wellhead.

When the wellhead was inspected after retrieval at the completion of the well, the 9 5/8" casing hanger was found to be of the CIW torque set type, rather than of the intended weight set type. Discussion of this event is included in the Rig Time Distribution and Equipment Failure Report sections of this report.

After the shoe had been drilled out with a milled tooth bit, a PIT was taken to 14.1 ppg equivalent at the shoe without leakoff, limited by the integrity of the 13 3/8" casing.

Of the Upper Cretaceous chalk and marl section, 1138 ft - 9180 to 10 318 - were drilled with a 7 1/4 Neyrpic turbodrill with a Christensen MT 501 PP bit, averaging 23.1 ft/hr. The turbine performance is estimated to represent a savings of M$ 175 over the best previous performance in this section. A detailed discussion of the turbine performance has been included in the Bit Record section.

Overpressure as determined from gas unit data developed from about 9400 ft through the entire Cretaceous formation, requiring mud weight to be increased in steps from 9.5 to 9.6, 9.9, 10.9, 11.5 and eventually 11.7 ppg.

Because of the pore pressure increase in the Cretaceous, it was decided to pull the turbine assembly to ensure adequate well control capabilities prior to drilling into the Dogger.

Another two passes with milled tooth bits brought the well through the remaining Cretaceous and the 210 ft of Malm shale, into the Dogger, ending up with mud weight of 12.8 ppg to overbalance the pore pressure estimated at 12.6 ppg based on gas units.

A total of 4 cores, or 190 ft, were cut, followed by an ISF - Sonic - GR log which revealed the sand to be wet.

Drilling was resumed, and a J-22 insert bit drilled the well to TD of 11500 ft into the Triassic, averaging 16 ft/hr.

Logs were run, followed by five FITs. Of these two were successful, one at 10570 ft and the other at 10863 ft - indicating pore pressures of 12.7 ppg and 12.6 ppg, respectively, in the Dogger.

47.75 hours were lost while rerunning and conditioning the whole for the logging tools, and another 27.25 hours were spent on malfunctioning FITs.

The wellhead was successfully retrieved, and all 8 anchors were pulled in 9.50 hours.

The rig was turned back to Conoco on 1130 hours, August 16, 1976, whereupon the rig proceeded to Stavanger to be laid up.

Stavanger 21. September, 1976.

LØ/thd

CUMULATIVE RIG TIME DISTRIBUTION

WELL: 15/6-4

		Hours	%
I.	**MOVE/MOOR**		
1	Moving	22.00	-
2	Mooring	36.75	3.06
	Sub Total	58.75	-
II.	**DRILLING OPERATIONS**		
3	Drilling (Rotate)	290.75	24.22
4	Open hole	5.50	0.46
5	Underream	-	-
6	Trips	125.75	10.47
7	Csg., Cmt., & WOC	84.50	7.04
8	Subsea Equipment	3.00	0.25
9	AP. Detection	58.50	4.87
10	Routine C & C	16.25	1.35
11	Ream	6.75	0.56
12	Survey	16.50	1.37
13	P & A	55.00	4.58
14	Equipment	5.50	0.46
15	B.O.P. Activities	50.50	4.21
16	Other	33.00	2.75
	Sub Total	751.50	62.59
III.	**FORMATION ELEVATION**		
17	Coring	56.50	4.70
18	Logging	46.25	3.85
19	Circ. Samples	15.00	1.25
20	W/L Form. Test	12.50	1.04
21	Other	11.25	0.94
	Sub Total	141.50	11.78
IV	**DOWNTIME**		
22	Rig Repairs	3.00	0.25
23	Fishing	-	-
24	Subsea/B.O.P.	9.00	0.75
25	Lost Circ.	43.50	3.62
26	Well Control	11.75	0.98
27	Hole instability	5.75	0.48
28	Form. Eval.	82.00	6.83
29	Mooring	-	-
30	WOW	-	-
31	Ancillory Cntr. Repair	-	-
32	Production testing	-	-
33	Casing & Wellhead	110.00	9.16
34	Drill string	-	-
35	Unforseen Events	-	-
36	Other waiting	-	-
37	Other	6.00	0.50
	Sub Total	271.00	22.57
V	**PRODUCTION TESTING**	-	-
	TOTAL EXCLUDING I, 1 & V.	1200.75	100.00
	TOTAL	1222.75	

03 Sep. 76

ESSO EXPLORATION AND PRODUCTION NORWAY INC.

DAILY DRILLING REPORT
RIG TIME DISTRIBUTION

WELL: 15/6-4

WATER DEPTH: 365 ft.

TOTAL DEPTH: 11.500 ft. RKB

TOTAL DAYS: 50.9

Date	Depth	MOVE-MOOR: Moving (1)	Mooring (2)	DRILLING OPERATION: Drilling (Rotate) (3)	Open Hole (4)	Underream (5)	Trips (6)	Csg; Cmt. WOC (7)	Subsea Equipment (8)	AP Detection (9)	Routine C & C (10)	Ream (11)	Survey (12)	P&A (13)	Equipm. Remove & Sal. (14)	BOP Activities (15)	Other (16)	Remarks
26 JUN	–	11¼																
27	–	10¾	13¼															
28	515		14	9½			½											
29	561			3¼			1	1			¼		½					
30	580			1			2¾	6¼								6		
01 JUL	580																	
02	1293			7			¾				1¼		½				¾	WIPER TRIP
03	1301				5½		7¼	3¾	3		1¼		½				1	WIPER TRIP
04	1301						2¾	8¾								12½		RUN BOP AND RISER
05	1741			5¾			1	¼			½					10½		
06	3600			15¾							1¼		1¼				2¼	WIPER TRIPS
07	3600						2½	16¼										
08	3640			3¼			3¾	12¾			¾					3	½	PIT (15.7+)
09	5417			18¼							1¼		3¼				¾	CHANGE SWIVEL PACKING
10	6705			11½			7¾				2½		1			¼	1	WIPER TRIP
11	7830			18¾							1½		¾					
12	8262			12¾			7½				½		½				1¼	SLIP AND CUT DRILL LINE
13	8537			12			8				½		1					
14	8666			10¼			11¾						1¼			¼		
15	8890			23¼														
16	9050			14½									½				3¾	WIPER TRIP
17	9050						3¾						¾				¾	WIPER TRIP

Date	FORMATION EVALUATION: Coring (17)	Logging (18)	Circ. Samples (19)	W/L Form. Test (20)	Other (21)	Remarks
26 JUN						
27						
28						
29						
30						
01 JUL						
02		1				SONIC. GOVIT REQUIREMENT
03		1¾				SONIC
04						
05						
06						
07		4¼			1	CONDITION HOLE
08						
09						
10						
11			1½			
12						
13						
14			½			
15			¾			
16			2½			
17		8			3¾	CONDITION MUD

Date	DOWNTIME: Rig Repairs (22)	Fishing (23)	Subsea/BOP (24)	Lost Circ. (25)	Well Control (26)	Hole Instab. (27)	Form. Eval. (28)	Mooring (29)	WOW (30)	Ancillory Cntr. Repair (31)	Production Testing (32)	Casing & Wellhead (33)	Drill String (34)	Unforseen Events (35)	Other Waiting (36)	Other (37)	Remarks	PROD. TEST: Production Testing (38)
26 JUN																		
27																		
28																		
29												18					30" WOULD NOT STAB BLIND ON	
30				6¾								1¼					FIRST TRY. NEW HOLE DRILLED	
01 JUL				24													LOST RETURNS TO FIRST HOLE, CEMENTING	
02				12¾													CEMENT AND DRILLING CEMENT	
03																		
04																		
05			6														STACK TEST METHOD ADJUST RIG POS (1/2)	
06					3½												TWO SWAB-INJ	
07																		
08																		
09						½											DRAG 70 000 LBS	
10																		
11					1½												CIRC. TO RAISE MW DUE BGG	
12						1½											REAM TIGHT HOLE 5880-5940 AND 7700-7962	
13					1¾											¾	SWABBING-RUN BACK TO BTM REMIX:REPUMP SLUG	
14																		
15																		
16						2¾											REAM AND WASH BRIDGE 6950-6980	
17							7										SONIC MALFUNCTION	

DAILY DRILLING REPORT
RIG TIME DISTRIBUTION

WELL: 15/6-4

WATER DEPTH: 365 ft.

TOTAL DEPTH: 11.500 ft. RKB

TOTAL DAYS: 50.9

Date	Depth	MOVE-MOOR: Moving (1)	Mooring (2)	DRILLING OPERATION: Drilling (Rotate) (3)	Open Hole (4)	Underream (5)	Trips (6)	Csg; Cmt. WOC (7)	Subsea Equipment (8)	AP Detection (9)	Routine C&C (10)	Ream (11)	Survey (12)	P&A (13)	Equipm. Remove & Sal. (14)	BOP Activities (15)	Other (16)			Remarks
18 JUL	9150			9			5¼	½					½				3			WIPER TRIP
19	9150						3¼	15½			2¾		¼			½	1¾			WT CUT AND SLIP LINE
20	9150							11½												
21	9150																			
22	9150																			
23	9150																			
24	9150			½			4¼	8			¾					3¼	1			PIT
25	9347			10¾			11¼										¼			PIT
26	9723			14						¼			¾				9			TRIP TO CHECK TURBINE. OK.
27	10055			14						9¼			¾							CIRC., WT's AND INCR. MW x 2
28	10318			13¼			3¼			5¼			1							
29	10444			10½			7¼			2¾						2½	1¼			HANG OFF DRILL: 1/4 CUT AND SLIP LINE: 1
30	10506			4½			9			8¾			¾							CIRC., WT AND INCR. MW TO 12.0
31	10585			4¾						13½							2¾			PIT
01 AUG	10607						4¼			5		½	½							
02	10655									3½						2¾				
03	10734			2			8¼			3	1½	½	¼							
04	10812									5¾							1			SLIP AND CUT LINE
05	10900			2			4½			1¾		2¾				1				
06	11225			22¾								1¼								
07	11500			16¼								1¾								
08	11500 TD						4¼													

Date	Depth	FORMATION EVALUATION: Coring (17)	Logging (18)	Circ. Samples (19)	W/L Form. Test (20)	Other (21)	Remarks
18 JUL	9150		3¼	1½			
19	9150						
20	9150						
21	9150						
22	9150						
23	9150						
24	9150						
25	9347						
26	9723						
27	10055						
28	10318						
29	10444						
30	10506			1			
31	10585			3¼			
01 AUG	10607	12		1¾			CORE NO-1-30 FT.
02	10655	17¾					CORE NO-2-60 FT.
03	10734	4¼		1¼			CORE NO-3-60 FT.
04	10812	15¼					CORE NO-4-60 FT.
05	10900	7¼	4¾				CORE NO-4-60 FT.
06	11225						
07	11500		1	1			
08	11500 TD		12¾				

Date	Depth	DOWNTIME: Rig Repairs (22)	Fishing (23)	Subsea/BOP (24)	Lost Circ. (25)	Well Control (26)	Hole Instab. (27)	Form. Eval. (28)	Mooring (29)	WOW (30)	Ancillary Cntr. Repair (31)	Production Testing (32)	Casing & Wellhead (33)	Drill String (34)	Unforseen Events (35)	Other Waiting (36)	Other (37)	Remarks	PROD TEST: Production Testing (38)
18 JUL	9150						1											WASH/REAM 77 FT TO BOTTOM	
19	9150																		
20	9150												12½					9⅝ S/A WOT HOLDING PRESSURE	
21	9150												24					FURTHER ATTEMTS NEW S/A	
22	9150												24					FURTHER ATTEMPTS NEW S/A	
23	9150												24					UNSUCCESSFUL S/A SQUEEZING ANN.	
24	9150												6¼					CBL NOT PASSING WELLHEAD: 3	
25	9347	1¾																REPAIR PUMPS	
26	9723																		
27	10055																		
28	10318	1¼																	
29	10444																		
30	10506																		
31	10585																		
01 AUG	10607																		
02	10655																		
03	10734																3¼	WAITING ON ORDERS TO CUT CORE NO.3	
04	10812																2	WAITING ON ORDERS TO CUT CORE NO.4	
05	10900																		
06	11225																		
07	11500					4													
08	11500 TD					1		6											

DAILY DRILLING REPORT
RIG TIME DISTRIBUTION

WELL: 15/6 - 4

WATER DEPTH: 365 ft.

TOTAL DEPTH: 11.500 ft. RKB

TOTAL DAYS: 50.9

MOVE-MOOR / DRILLING OPERATION

Date	Depth	Moving 1	Mooring 2	Drilling (Rotate) 3	Open Hole 4	Underream 5	Trips 6	Csg; Cmt. WOC 7	Subsea Equipment 8	AP Detection 9	Routine C & C 10	Ream 11	Survey 12	P&A 13	Equipm. Remove & Sal. 14	BOP Activities 15	Other 16			Remarks
09 AUG	11500TD																			
10	11500																			
11	11500																			
12	11500																1			SLIP AND CUT 103' DRLG. LINE
13	8885 PB													21½						
14	1410													24						
15	500 PB													9½	3½	8				
16	P & A		9½												2					
TOTALS		22	36¾	290¾	5½		125¾	84½	3	58½	16¼	6¾	16½	55	5½	50½	33			

FORMATION EVALUATION

Date	Depth	Coring 17	Logging 18	Circ. Samples 19	W/L Form. Test 20	Other 21	Remarks
09 AUG	11500TD		2¾				
10	11500		3½				
11	11500		3¼			6½	SWC
12	11500				10		FIT
13	8885 PB				2½		
14	1410						
15	500 PB						
16	P & A						
TOTALS		56½	46¼	15	12½	11¼	

DOWNTIME / PROD. TEST

Date	Depth	Rig Repairs 22	Fishing 23	Subsea / BOP 24	Lost Circ. 25	Well Control 26	Hole Instab. 27	Form. Eval. 28	Mooring 29	WOW 30	Ancillary Cntr. Repair 31	Production Testing 32	Casing & Wellhead 33	Drill String 34	Unforseen Events 35	Other Waiting 36	Other 37	Remarks	Production Testing 38
09 AUG	11500TD							21¼										HOLE BRIDGING	
10	11500							20½										REAMING AND COND.	
11	11500							14¼										FIT's NOT SEALING	
12	11500							13											
13	8885 PB																		
14	1410																		
15	500 PB			3															
16	P & A																		
TOTALS		3		9	43½	11¾	5¾	82					110				6		

GRAND TOTAL: 1222.75

MAJOR DOWNTIME ITEMS

15/6-4

1. STABBING 30 IN. CASING

The practice of drilling the 36 in hole without a temporary guidebase and stabbing the 30 in casing blind, has been successfully adopted on Esso wells in the Norwegian sector for some time.

On this occasion, 4.25 hours were spent on unsuccessful attempts to stab the casing - including 3 hours with divers observing to assist. However, visibility was very poor,and the casing could not be made to enter the hole.

The rig was moved slightly under direction of the divers in search of the hole. Eventually, a new hole was spudded where the rig was at the time.

It is likely that the sea bed was hard and so well consolidated in the first location so as to prevent the casing from sliding through the customary soft sea beds encountered into the hole, and for the same reason, no "funnel" was produced in the upper part of the hole.

A total of 19.25 hours were lost for this reason.

2. LOST CIRCULATION

Following the successful stab-in and cementing of the 30 in casing, drilling of the 17 1/2 in pilot hole commenced. The 30 in shoe was drilled at 556 ft,and at 580 ft. complete loss of returns were suffered.

The fluid level in the riser fell to sea level.

Two batches of neat cement, 250 and 300 sacks respectively, were spotted across the shoe without effect on the fluid level in the riser.

At this stage, a lockout dive was made while fluid was pumped into the riser. The divers observed fluid coming out of a hole of about 4 ft diameter next to the No.4 guide post.

This hole appeared to be the first 36 in hole that had not been found before,and the thin formation between the two holes had either been fractured or drilled through.

Two more batches of cement, of 400 sacks neat and of 1200 sacks 8% gel, were pumped into the second hole, followed by 1700 sacks of 8% gel pumped into the old hole through open ended drill pipe which was entered about 90 ft into the hole.

Fluid level could then be maintained in the riser and drilling of the 17 1/2 in hole was started again.

The failure to move the drilling vessel some definite distance away from the first hole before respudding the well, thus resulted in a loss of 43.50 hours.

3. <u>9 5/8 IN TORQUE SET CASING HANGER</u>

A major set back was suffered when the 9 5/8 x 18 3/4 in seal assembly could not be made up in the hanger, resulting in the loss of 87.75 hours.

The technical details are described in the two failure reports.

The wellhead and hanger system in use was the 18 3/4 in CIW weight set type, rated at 10.000 psi.

Two different weight set seal assemblies were run several times, but it was found that these could not be made up in the hanger, nor would they hold pressure when tested.

Based on measurements of marks on these seal assemblies, work proceeded on the basis that a torque set type hanger had been incorrectly run into the well. The running tool threaded sections of the weight set and torque set types are identical, so this could well have happened, even though all witnesses were adamant that the hanger was of the weight set type.

The CIW torque set system is not used elsewhere in the North Sea, and even though a torque set seal assembly was readily available from CIW Leeds plant, a running tool to go with it proved difficult to find. Eventually one was found aboard the "Sedco 700" drilling rig on location in the Atlantic West of the Shetlands and another one in Singapore. The "Sedco 700" unit was transferred to the "Norjarl" by helicopter via the Shetlands during the night.

Again, several attempts to obtain a seal with this assembly failed. From studying marks and imprints on this seal assembly, it appeared possible that weight set type make up threads had incorrectly been cut into a hanger body blank for a torque set hanger.

A standard set seal assembly was redesigned and remachined in Stavanger, with help from the CIW Engineering Dept. in Leeds,to fit the hanger dimensions that would have resulted from such an error.

This assembly was run unsuccessfully, had a modification made to its ratch-latch and run unsuccessfully again.

At this point it was decided to resort to squeeze cementing the 9 5/8 x 13 3/8 annulus below the wellhead, so that drilling could proceed.

Drilling then proceeded with great caution through the chalk where casing had been set, and into a 12.6 ppg pore pressure Dogger sand.

Upon recovery of the wellhead, inspection showed that a properly manufactured torque set type casing hanger had in fact been installed. It is believed that sufficient damage was done to the upper thread on the hanger when the weight set seals were being jarred down, to prevent the correct seal assembly to be made up later, but a shop test to determine this had not been completed.

Throughout the work to tackle this problem, the local CIW representative was present with our drilling group staff. Good communications were maintained with the CIW Leeds Engineering Dept.,and CIW were most helpful in locating and bringing on site the torque set components as required.

4. FORMATION EVALUATION

During the logging operations at TD, 47.75 hours were lost as follows:

- 6 hours on ISF tool malfunction
- 41.75 hours on two abortive dipmeter requiring two trips to ream bridging hole below about 10 500 ft.

5. FORMATION INTERVAL TESTING

A further 27.25 hours were lost on non-sealing FIT attempts in the Dogger, followed by a reaming and conditioning trip to obtain FIT's.

Stavanger, 21.September, 1976.

LØ/thd

FINAL WELL COST REPORT

COUNTRY NORWAY — Report By L. Øien

CONCESSION PL 029 — Date 15 September 1976

WELL 15/6-4 — Rig NORJARL

M$ (Memo: 1 US$ = 5.4 N.kr.)	Total AFE	Estimated Final Well Report	Well Report vs. AFE	Acctg. Final	Acctg. Final vs. AFE
Rig	1982	1776	(206)		
Transportation:					
Marine	393	242	(151)		
Air - Helicopters	168	160	(8)		
Air - Fixed Wing	-	57	57		
Total Transportation	561	459	(102)		
Logging:					
Mud Logging	85	41	(44)		
Electric Logging	147	204	57		
Fixed Testing Costs	17	16	(1)		
Velocity Survey	10	6	(4)		
Total Logging	259	267	8		
Mud Handling	124	90	(34)		
Cementing	75	109	34		
Diving	95	104	9		
Well Location	75	44	(31)		
Materials and Supplies	561	699	138		
Land Facilities	3	3	0		
Supervision:					
Direct (Rig/Venture Company)	414	369	(45)		
Distributed (Region/Headquarters)	167	161	(6)		
Total Supervision	581	530	(51)		
Other:	209	152	(57)		
Total Dry Hole	4525	4233	(292)		
Production Testing:	-	-	-		
Total Well Cost	4525	4233	(292)		

Statistical Cost Data	Total AFE	Estimated Final Well Report	Well Report vs AFE	Acctg. Final	Acctg. Final vs AFE
Operating days	60	50.9	(9.1)		
Footage Drilled	11700	11500	(200)		
Operating Cost per/day (dry hole)	75.4	83.2	7.8		
(Total)	75.4	83.2	7.8		
Operating Cost per/foot (dry hole)	0.387	0.368	(0.019)		
(Total)	0.387	0.368	(0.019)		

Esso Exploration & Production Norway Inc.

Drilling Well Review.

Well No. 15/6-4 Date 31 August 1976

1. Was programmed vessel heading used? Yes
Were anchors tested to values specified in drilling program? Yes
Was programed fluke angle used?
Remarks

2. Was casing program followed?
30" Yes 20" Yes 13 3/8" Yes 9 5/8" Yes
Were all casing strings set at programed depth?
Remarks 9 5/8" casing torque set hanger incorrectly run.
9 5/8" x 18 3/4" seal assembly not sealing. Squeeze cemented
9 5/8" x 13 3/8" annulus below mudline.

3. Was cementing program followed? Yes
Remarks

4. Was hydraulics program followed?
Pump rates Yes Nozzle Sizes Yes Pump Pressure Yes
Remarks

5. Were drilling parameters within specified range?
WOB Yes RPM Yes
Remarks Neyrpic turbodrill with Christensen MT 501 PP diamond bit successfully used to drill Cretaceous chalk section.

6. Was Mud Program followed?
Mud Wt No PV Yes YP Yes HTHP No pH Yes
Remarks Transition zone encountered in Cretaceous chalk.
Max. pore pressured measured as 12.6 ppg in Jurassic, requiring 12.8 ppg mud to control. Max. forecasted pressure was 10.7 ppg.

7. Was target curve met? Yes (See attached copy)
Comment on major deviations and associated times
1. Blind stabbing of 30" casing into first hole unsuccessful.
Drilled new hole - lost 19.25 hours.
2. Lost circulation to first 36" hole; extensive cementing - lost 43.50 hours.
3. Incompatible 9 5/8" casing hanger and seal assembly - lost 87.75 hours.
4. Formation evaluation, reaming and washing, FIT malfunctions - lost 82.00 hours.

8. Compare the following:

	Goal	This well	Remarks
Time Break Down			
Drilling	58%	24.22%	Rotating only; Drilling operations 62.59%
Formation Evaluation	12%	11.78%	
Subsea equipment	3.3 days	2.2 days	Efficient BOP handling system.
Casing & cementing	4.5 %	7.04%	
Downtime	17 %	22.57%	Wrong type 9 5/8" casing hanger 9.16%.
P. & A.	2.3 days	2.5 days	
Mooring	0.9	1.5 days	
Avg.Footage per Rig/day	130 ft/day	226	Fast drilling formations. Chalk section successfully drilled with turbine
Avg.Mud Cost per Ft.	§ 6.67/Ft.	7.45 $/ft	

9. Comment on Rig Crew Efficiency

Excellent overall performance.

10. Comment on Service Company Personel Efficiency

Diving - Oceaneering: Complete, efficient.

Mud engineering - Milchem: Uncooperative and inexperienced.

11. Suggestion for Improvement

Adopt Rowan practice of one supply vessel to tow between locations to rig propulsion on our other rigs in this area. Average speed increased by 40 to 50 per cent. Especially attractive as vessel must accompany rig anyway.

EQUIPMENT FAILURE REPORT

RIG: NORJARL. WELL: 15/6-4

Date of failure: 4 July/76 . Downtime: From:

Date of report: " " " To:

Report by: . JIM. KERBY Time:

Equipment Involved: Double eye socket 25' pennant wire: eye socket @ one End failed: Anchor #7 has no pennant wire bouy:

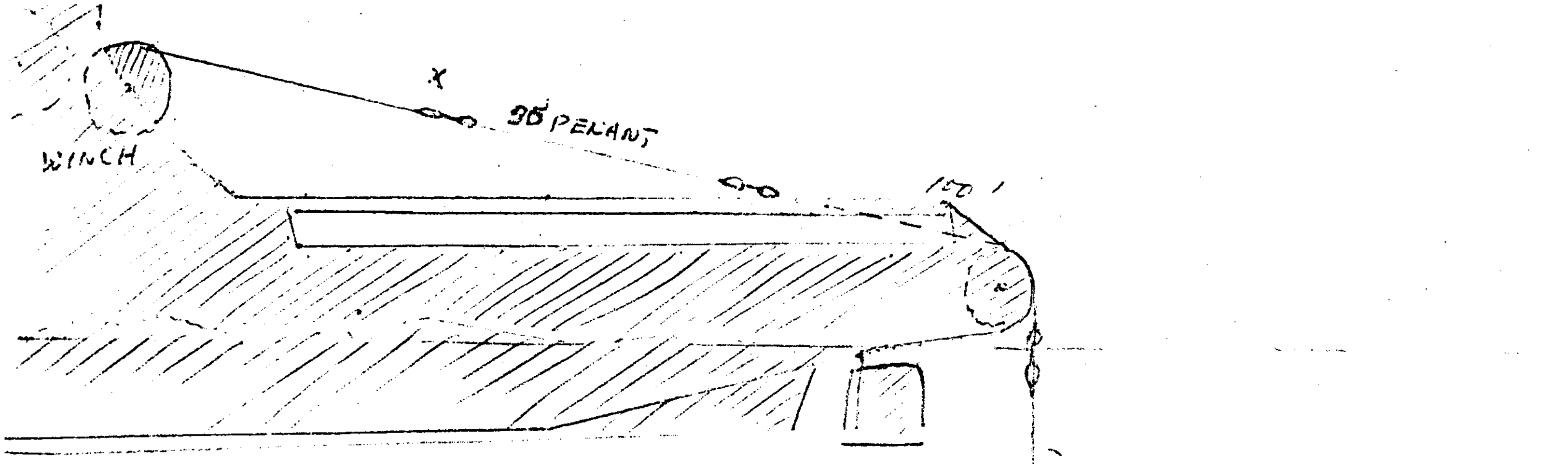
Cause: Great stress & force in the eye of socket while on the drum of winch

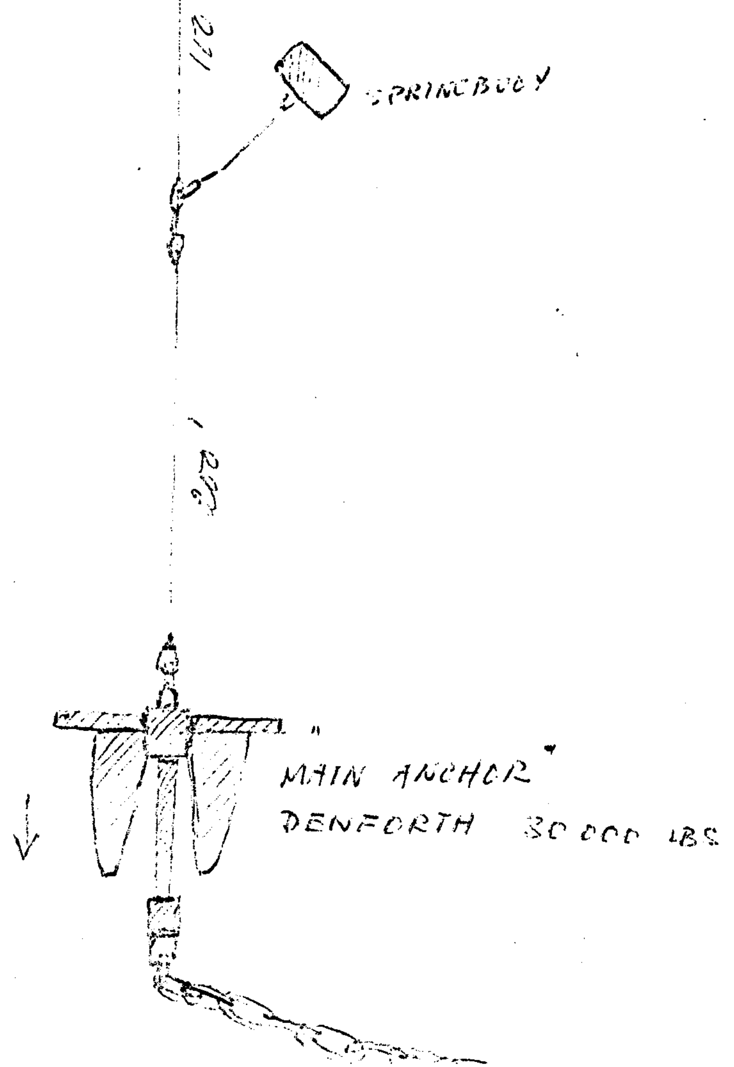
Comments/Recommendations: May be they are using wrong type of socket: No down time now. But when pulling anchor #7 will have to be stripped to retrieve.

Details of the Insident: The insident happened as the anchor was to be lowered down to seabed: The spring-bouy had already been lowered into wake: As The rest of the pennants were played out from winches the socket on the 25' pennant next to upper most pennant line and the anchor dropped. The broken socket had been run off winch and was in free position when it broke.

The above details were given to the first mate over radio by the Captain of the "Seddes' Mariner" @1900hrs. on the 4 July/76.

See drawing: attached is picture.





Damage pennant wire
& Anch break.

EQUIPMENT FAILURE REPORT

RIG: NORJARL WELL: 15/6-4

Date of failure: 20 July, 1976 Downtime: From: 1300 hrs 20 July

Date of report: 27 July, 1976 To: 0315 hrs 24 July

Report by: Dave Grindle Time:

Equipment Involved: (1) 1- Cameron $18\frac{3}{4}$" X $9\frac{5}{8}$" Flow Thru Casing Hanger
(2) 3- Cameron $18\frac{3}{4}$" X $9\frac{5}{8}$" Seal Assemblies - Weight Set
(3) 1- Cameron $18\frac{3}{4}$" X $9\frac{5}{8}$" Seal Assembly - Torque Set

Cause: Unknown, but suspected undergauge weight set casing hanger

Comments/Recommendations: Visually inspect and caliper all casing hangers and seal assemblies prior to running to insure that the seal assembly will make up in the casing hanger.

Details of the Incident: SEAL ASSEMBLY NO. 1 : The $9\frac{5}{8}$" weight set seal assembly was landed in the casing hanger at 1115 hrs. 20 July. The seal was energized in accordance with the procedure in the Cameron manual. The seal assembly would not pressure test. The seal assembly was picked up and jarred and re-landed, and an attempt was made to again energize the seal. Again the seal would not pressure test. The seal assembly was pulled out of the hole at 1230 hrs. and visually inspected. The seal had not been energized. The lower lip just below the ratchet-latch was marked and flared out in such a way to suggest that the seal assembly was not fully landed in the casing hanger. The jetting tool was run in order to clean the well head of any possible obstructions.

At 1400 hrs. the same seal assembly was run back in the hole, and an attempt was made to set the seal assembly and energize the seal.

Cont./.............

The seal assembly would not make up in the casing hanger. The seal assembly was pulled out of the hole and visually inspected. The main seal ring had been torn off and lost in the hole, and the lower lip below the ratchet-latch was observed to be more marked and flared than previously.

At 1500 hrs. circulation was begun and approximately 4 hours were spent trying to flush out the lost seal ring with no success.

SEAL ASSEMBLY NO. 2 : At 2015 hrs. 20 July, a second weight set seal assembly was made up, inspected, and run under the direction of a Cameron representative. At 2045 hrs., while running in the hole, a wrench was dropped in the hole. The seal assembly was pulled out of the hole. At one point, the seal assembly became stuck, but was eventually worked free. An 8" O.D. rabbit was run to check for debris.

The seal assembly was run back in the hole and landed, and an attempt was made to set the seal assembly and energize the seal at 2345 hrs. Again, the seal assembly would not pressure test. The seal assembly was pulled out of the hole and visually inspected. The seal had been energized and the seal was torn and marked. Again, the lip below the ratchet-latch was marked and flared out as with the first seal assembly. It is possible that even though the seal assembly was not landed in the casing hanger, enough weight was set on the seal assembly to energize the seal.

SEAL ASSEMBLY NO. 3 : At this point, it was theorized that a torque set casing hanger may have been run by mistake, and it was decided to run a torque set seal assembly. A torque set seal assembly and a running tool were flown to the rig on 2 special helicopter flights. The torque set seal assembly was made up and run in the hole at 0045 hrs., 22 July. The seal assembly was landed at 0125 hrs. and torqued. The seal assembly was turned 6 turns to the right and built up torque to 8000 ft-lbs. and then the torque fell off. The seal assembly was turned 2½ more turns to the right and torque built up again. A pressure test was attempted but would not hold pressure. The seal assembly was turned 2 more turns to the right and the torque dropped off. Another pressure test was attempted but the seal would not hold pressure. The seal assembly was turned until the torque dropped off again, and the running tool was pulled out of the hole and to the surface at 0430 hrs. The seal assembly remained in the casing hanger. Two dogs on the running tool had ends sheared off. On the second attempt to recover the seal assembly with running tool, the seal assembly was retrieved at 0945 hrs. The seal had not been energized but the seal ring was torn and scarred, and the main body of the seal assembly was scarred along the outside surface.

SEAL ASSEMBLY NO. 4 : A modified weight set seal assembly was received from Stavanger at 0130 hrs., 23 July. The modified seal assembly had been machined down on the cylindrical part immediately below the ratchet-latch. The modified seal assembly was made up and landed in the casing hanger at 0330 hrs. The seal assembly was turned 18 turns to the right and 1¼ turn to the left in order to energize the seal. A pressure test was attempted and pressure was built up to approx. 3500 psi in stages before leaking. The pressure was bled off and the lines were tested. The pressure was built up to 2800 psi before leaking. The pressure was bled off and built back up to 2400 psi before leaking.

The running and testing tool was pulled and the lead plug indicated the seal was energized. Ran in the hole with bumper subs at 0615 hrs. and jarred down on the seal assembly, and attempted to pressure test. Pressured up in stages to 3000 psi before leaking. The pressure was bled off and the seal assembly jarred again and pressure tested to 2500 psi before leaking. The pressure was bled off and built back up again to 2500 psi before leaking.

The running tool was pulled, and the seal assembly also came with the running tool. The driller reported no weight indication when pulling out of the hole, indicating that the seal assembly had never been latched in the casing hanger. The seal assembly was visually inspected. The seal ring was badly scarred and torn and the threads on the ratchet-latch were badly damaged except for about the top ½" of the ratchet-latch.

The modified seal assembly was re-dressed and the threads on the ratchet-latch ground down in order to land the seal assembly in the casing hanger. The modified seal assembly was run back in the hole and landed at 1815 hrs., 23 July. The seal assembly was jarred and an attempt was made to re-set the seal assembly and pressure test. The seal assembly would not hold pressure and bled down quickly from 3000 psi.

The modified seal assembly was then pulled out of the hole and open ended drill pipe was run in the hole in order to squeeze cement the 13⅜" X 9⅝" annulus. The squeeze cement job was successful and the modified seal assembly was run back in the hole, the 9⅝" wear bushing run and landed, and normal drilling operations resumed.

ENGINEERING REPORT

Supplemental to Equipment Failure Report of 20 July, 1976.

Rig: Norjarl

Well: 15/6-4

Report by: W. D. Grindle

Date of report: 24th August, 1976

The wellhead for 15/6-4 was shot and recovered on 16th August, 1976. Upon examination of the 9⅝" casing hanger, it was discovered that a torque set casing hanger had been run instead of a weight set hanger.

The following dimensions, provided by Cameron, are for the threaded section which makes up with the seal assembly for both weight set and torque set casing hangers:

CASING HANGER

	Weight Set	Torque Set
Minimum Bore:	11.592" $\pm$ 1/32"	10.875" -10.865"
Thread Root:	11.725" $\pm$ 1/32"	11.295" -11.285"

SEAL ASSEMBLIES NOS. 1 and 2: As can be seen from Figure 4, the lower lip below the ratchet-latch on the weight set seal assembly is 11⅜" diameter, which explains why it would not make up in the casing hanger.

SEAL ASSEMBLY NO. 3: Apparently by jamming down on the casing hanger with the first two weight set seal assemblies, the top thread on the casing hanger was damaged such that the torque set seal assembly would not make up. The torque set seal assembly showed marks indicating that it had started but did not make up the first thread as shown in Figure 2.

SEAL ASSEMBLY NO. 4: The modified weight set seal assembly was machined down such that it would clear the minimum bore for a torque set hanger. Marks on the casing hanger showed that the modified seal assembly had cut weight set threads down through two of the three threads on the torque set hanger as shown in Figure 1. This indicates that the seal assembly had been made up approximately 4½" into the casing hanger. The lower most "O" ring on the seal assembly would have been just on the edge of the sealing area of the casing hanger, Figure 3. This offers an explanation as to why the seal assembly would seal only to about 2500 psi. As the pressure was increased, the "O" ring was apparently pushed over the edge of the sealing area into the larger diameter bore at the top of the casing hanger.

CONCLUSIONS: Other dimensions of the equipment used are on the attached drawings. The casing hanger and seal assemblies were found to be dimensionally correct. Examination of the 18¾" wellhead found the wellhead to be dimensionally correct and the sealing area in good shape; thus the problems experienced can be attributed to the incorrect casing hanger.

/Continued.....

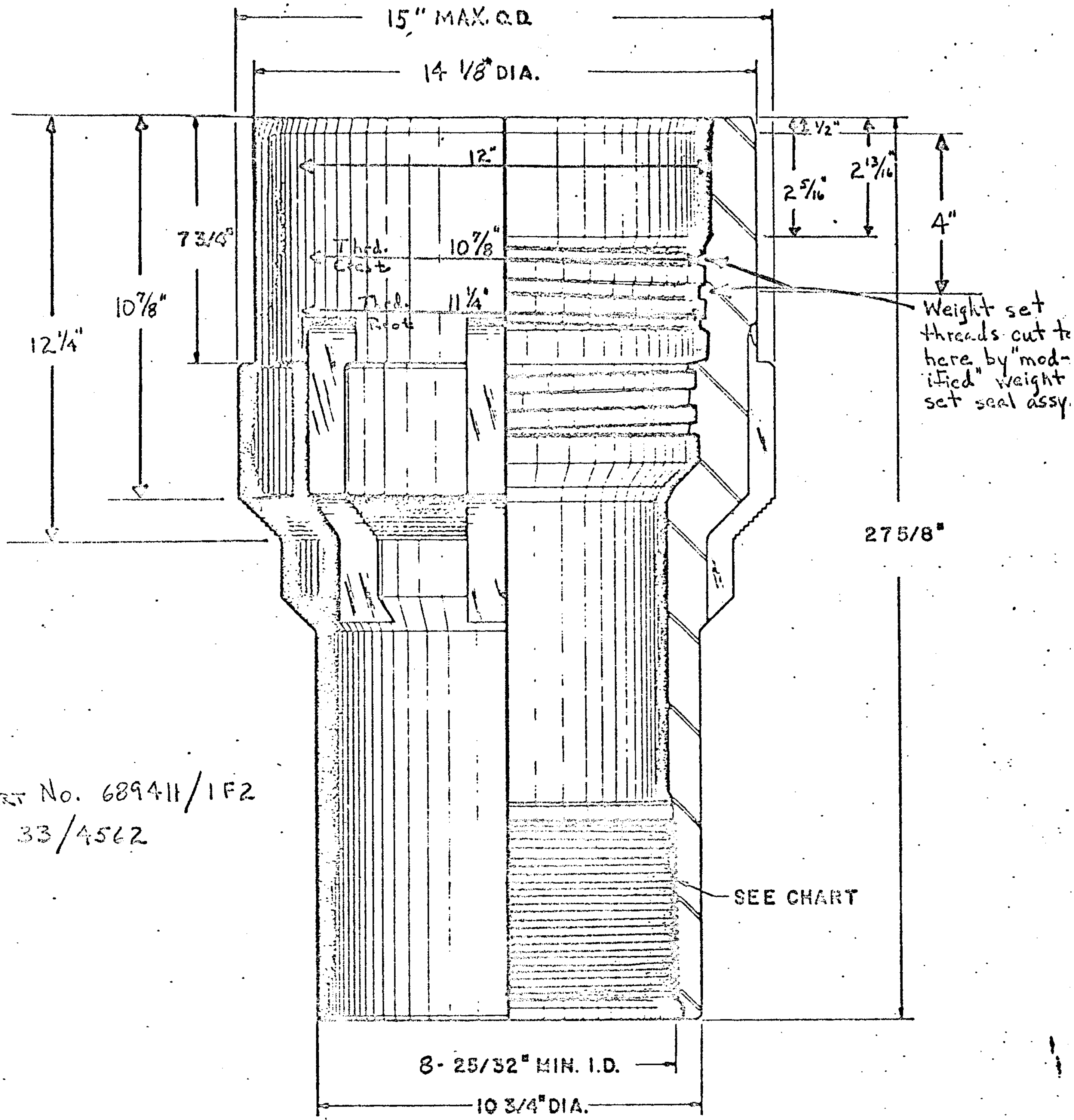
<u>RECOMMENDATIONS</u>: The following recommendations are offered to hopefully avoid similar problems in the future.

1) Equipment and part numbers should be checked at the base before being sent to the rig.

2) Rig personnel should examine and measure equipment prior to running it in the hole.

3) The engineering department should obtain drawings of such equipment in order to assist rig personnel and aid in identifying problems.

LØ/gb
3/11/76



PART No. 689411/1F2
33/4562

PART NO.	DESCRIPTION
689411-1	9 5/8" BUTTRESS CSG THD.
689411-2	9 5/8" A.P.I. L. CSG 8RD. THD.
689411-3	9 5/8" SEMI FINISHED HANGER

18 3/4" x 9 5/8" FLOW THRU HANGER (TORQUE SET)

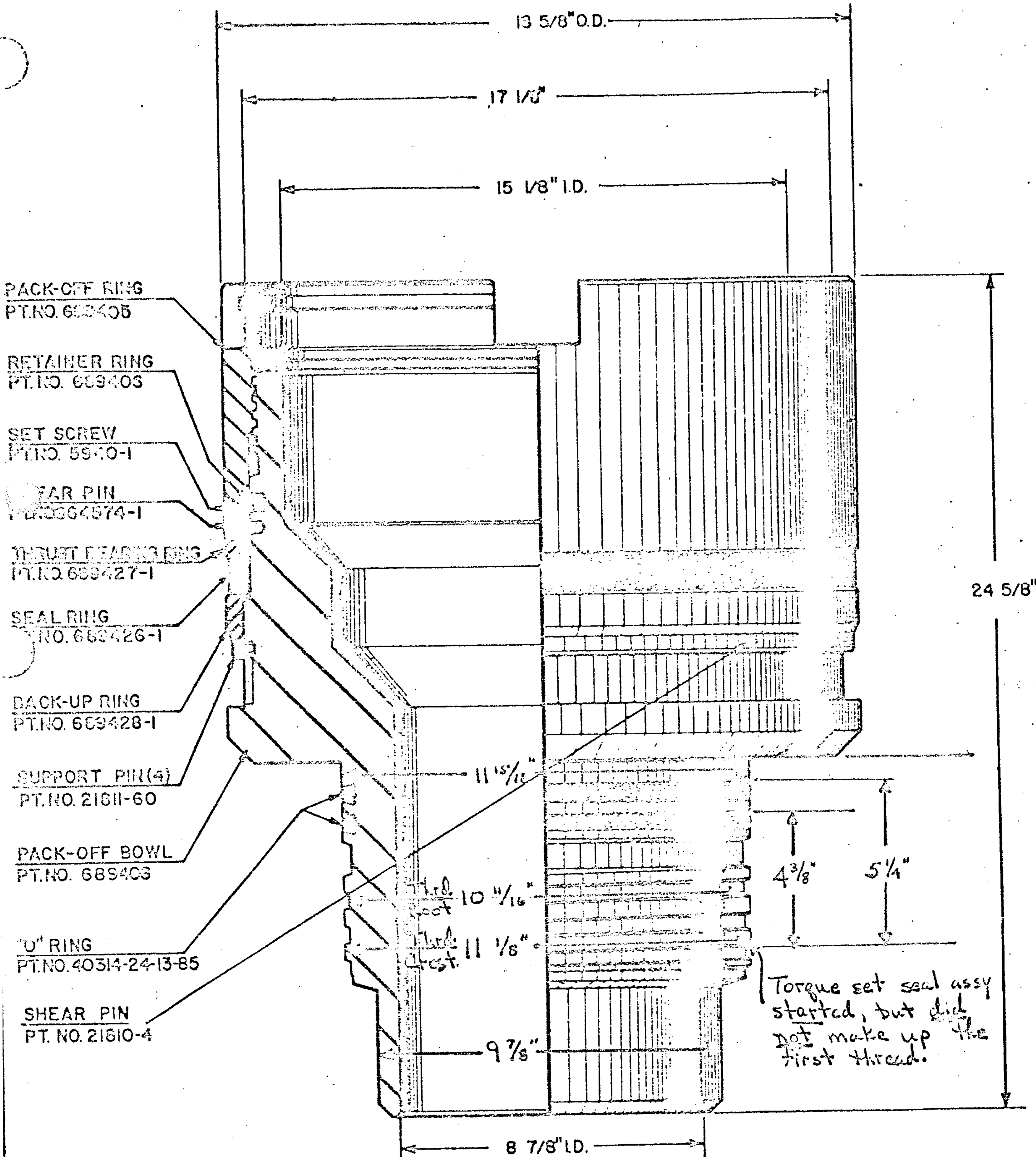
PT. NO. 689411-NO.

FIGURE 1

3-24-71

FILE NO. C 3 A

SD1040-2



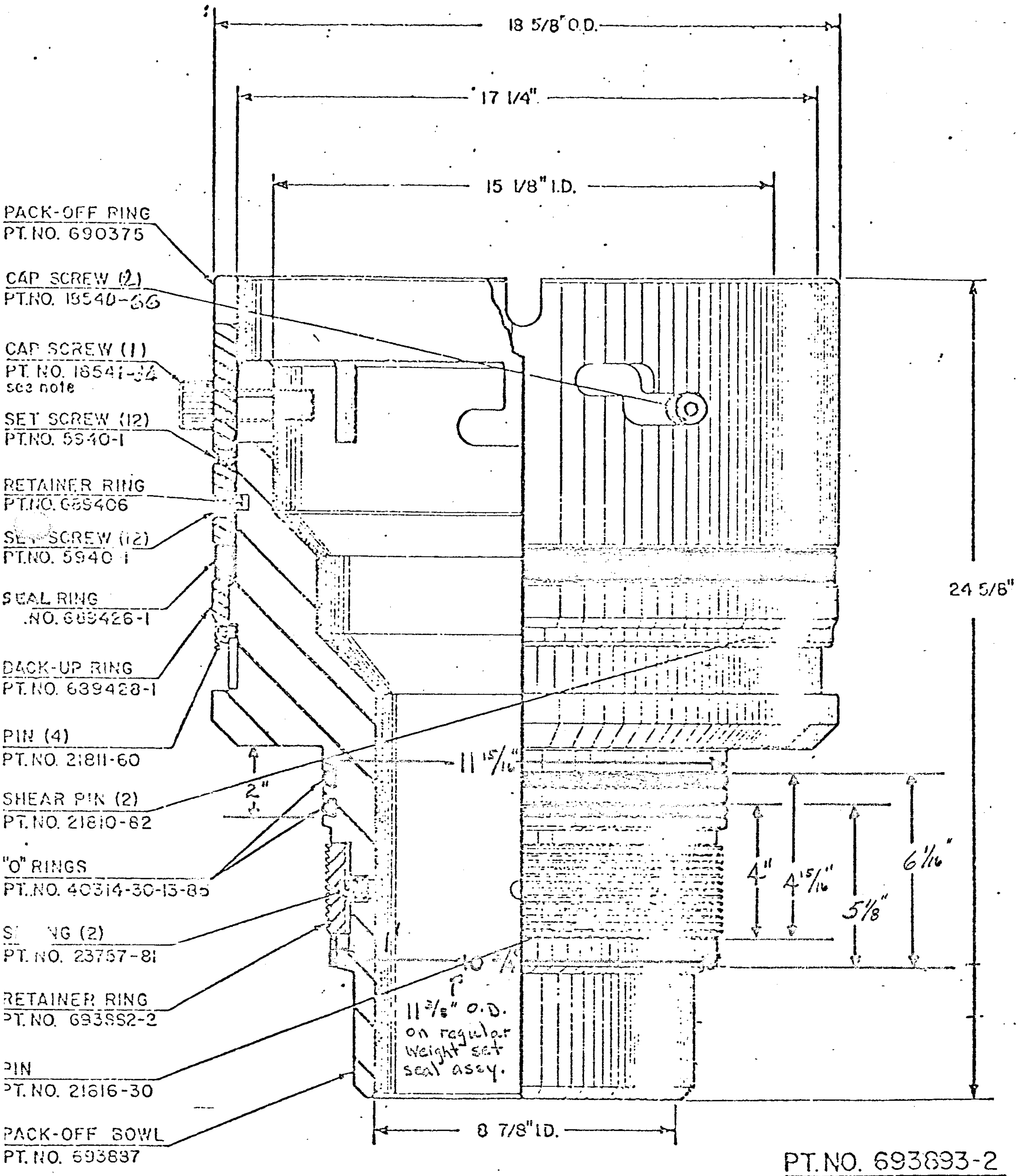
PT. NO. 689403

18 3/4"X 9 5/8" SEAL ASSEMBLY TORQUE SET

FIGURE 2.

C & A

SD-1032-2



PT. NO. 693893-2

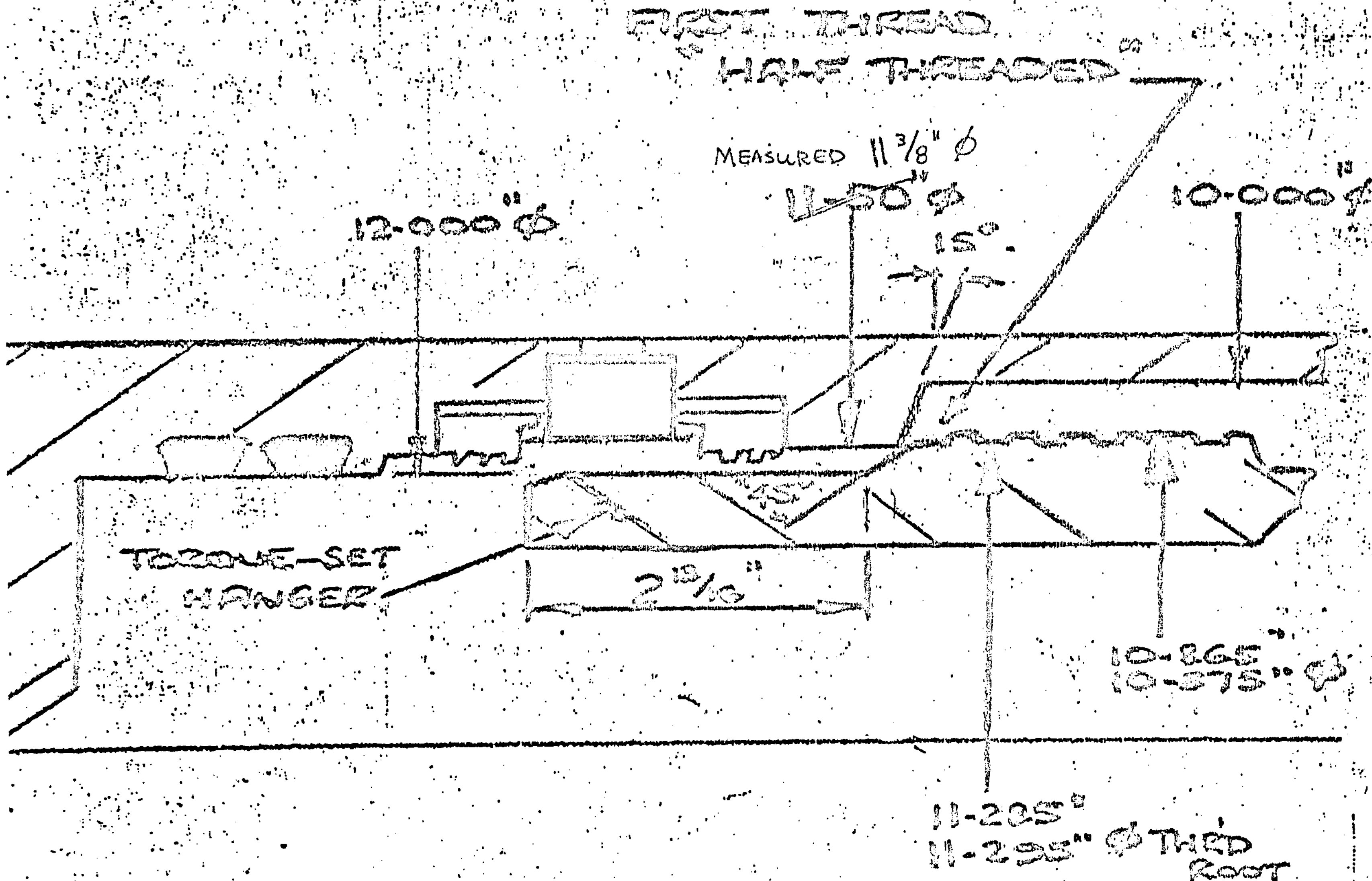
NOTE:
CAP SCREW FOR SHIPPING PURPOSES ONLY.
REMOVE AFTER RUNNING TOOL IS ATTACHED

— MODIFIED —
18 3/4" X 9 5/8" SEAL ASSEMBLY WEIGHT SET

FIGURE 3

C S A

SD-1042-5



REV.	DATE

FIGURE 4

OIL TOOL PRODUCTS
LEEDS ENGLAND

MATERIAL & HEAT TREAT

SUPERSEDES DATED

CONCLUSIONS AND RECOMMENDATIONS

15/6-4

1. Rig positioning on this well was by Decca Survey using a pre-set pattern of three sea floor recoverable Aqua Fix acoustic transponders, combined with SatNav and Decca Main Chain aboard the rig.

   Normally, a pattern of five transponders would be preferable as insurance against malfunction and fishing trawls.

   The approach was made in daytime and proceeded smoothly with only 0.50 hours elapsing from the time of arrival on location - over the No.5 anchor position where this anchor was dropped - until the rig had been positioned to acceptable operational accuracy.

   All transponders were recovered.

   It is recommended that future rig positioning in this area be made using SatNav combined with Decca Main Chain - preferably integrated - aboard the rig, combined with a preset pattern of 5 Decca Aqua Fix recoverable acoustic transponders.

   For improved accuracy, the transponder locations may be determined using Decca Hi-Fix aboard the vessel. Consideration should be given to using the Decca Pulse/8 system for this purpose as well, to achieve day and night, all weather capability. However, the cost, development and serviceability of this system, new to the North Sea, ought to be watched for some time yet.

2. The importance of thorough equipment inspection prior to acceptance and installation of downhole and subsea components was sharply underlined on this well, when an incorrect type casing hanger was installed, resulting in the loss of 87.75 hours of rig time.

   The need to check in very way possible all equipment as it arrives at the rig or before it is run into the hole, must be reemphasized to all rig personnel.

3. Rig transit speed to the location was raised from about 4 to 8 knots by using the accompanying supply vessel as a tug to assist the rig's own propulsion system.

   As long as a workboat accompanies the rig during moves, it is recommended that the workboat be used to assist transit by towing. Typically, for this area, savings in rig time would run between 5 and 12 hours.

4. Whenever a chalk section exceeding about 600 - 800 ft is expected, it is recommended that the use of a turbine be considered.

   The time rquired to drill the chalk section may be reduced by as much as 50% compared to alternative methods, depending on the thickness of the sections.

   For stabilization, a turbine assembly should preferably be run immediately below a casing shoe or after a bit run with a stiff BHA.

   It is recommended that a full gauge diamond bit be used, eg. 8 1/2 in.

   For best results Piggyback stabilizers should be 1/64 in undergauge. Total length of these stabilizers, including the bit,should be about 20 in in the North Sea chalk sections.

Stavanger, 21.September, 1976.

LØ/thd

WELL DATA RECORD

15/6-4

Area	:	North Sea, Norwegian sector
Latitude	:	58^{o} 37' 34.394" N
Longitude	:	01^{o} 48' 19.943" E
Seismic line	:	570 - 188
Shotpoint	:	350
Water depth	:	365 ft.
Drilling vessel	:	"Norjarl", Aker H-3 semisubmersible
RKB - MSL	:	82 ft.
RKB - ML	:	447 ft.
Drilling draft	:	70 ft.
Air gap	:	50 ft.
Objective	:	Middle Jurassic sand
Deepest formation penetrated	:	Triassic
Total depth	:	11 500 ft. RKB

WELL SUMMARY CHART

15/6-4

Tops ft RKB	Age	Lithology
445	Recent to Miocene	Sand to 800 and 900 - 1000 Clay, soft
2444	Miocene	Sands 2444 - 3300, 3800 - 3900. Siltstone.
4248	Oligocene	Claystone
5002	Eocene	Shale, sand and shale 5600 - 6200, sands 6200 - 6400.
7134	Paleocene	Shale, Tuff 7200, sands 7600 - 8450, claystone 8450 - 8650, sands 8650 - 8833.
8833	Upper Cretaceous	Chalk and marl
10355	Jurassic - Malm	Black shale
10565	Jurassic - Dogger	Sand
10722	Triassic	Sand

Total Depth 11 500 ft.

Stavanger September 20, 1976.

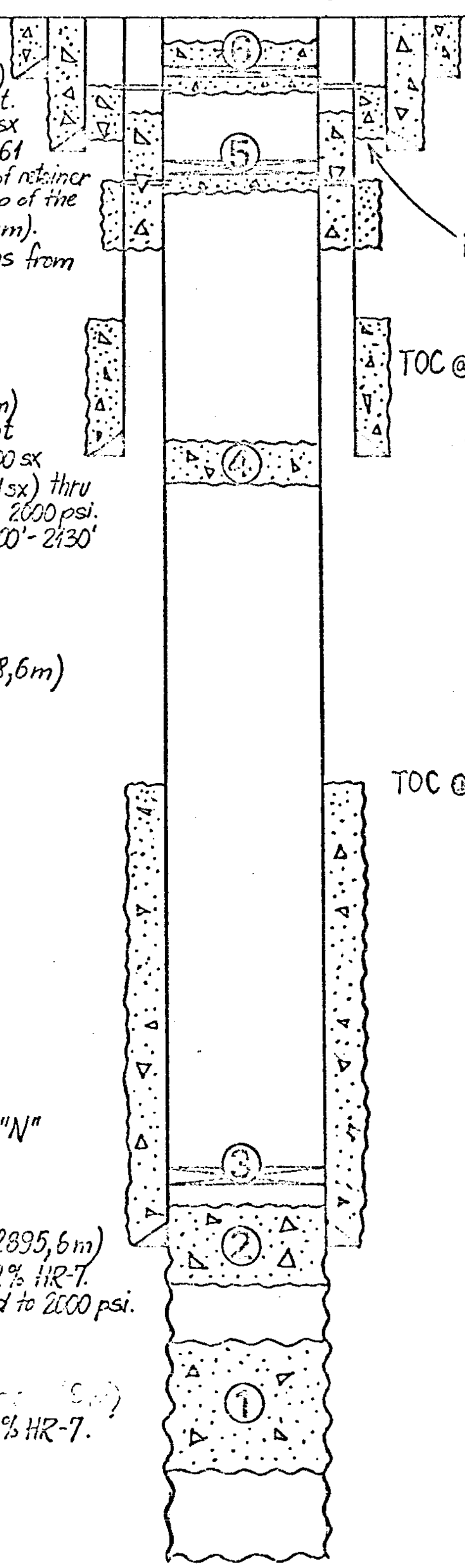
LØ/thd

ESSO EXPLORATION & PRODUCTION NORWAY

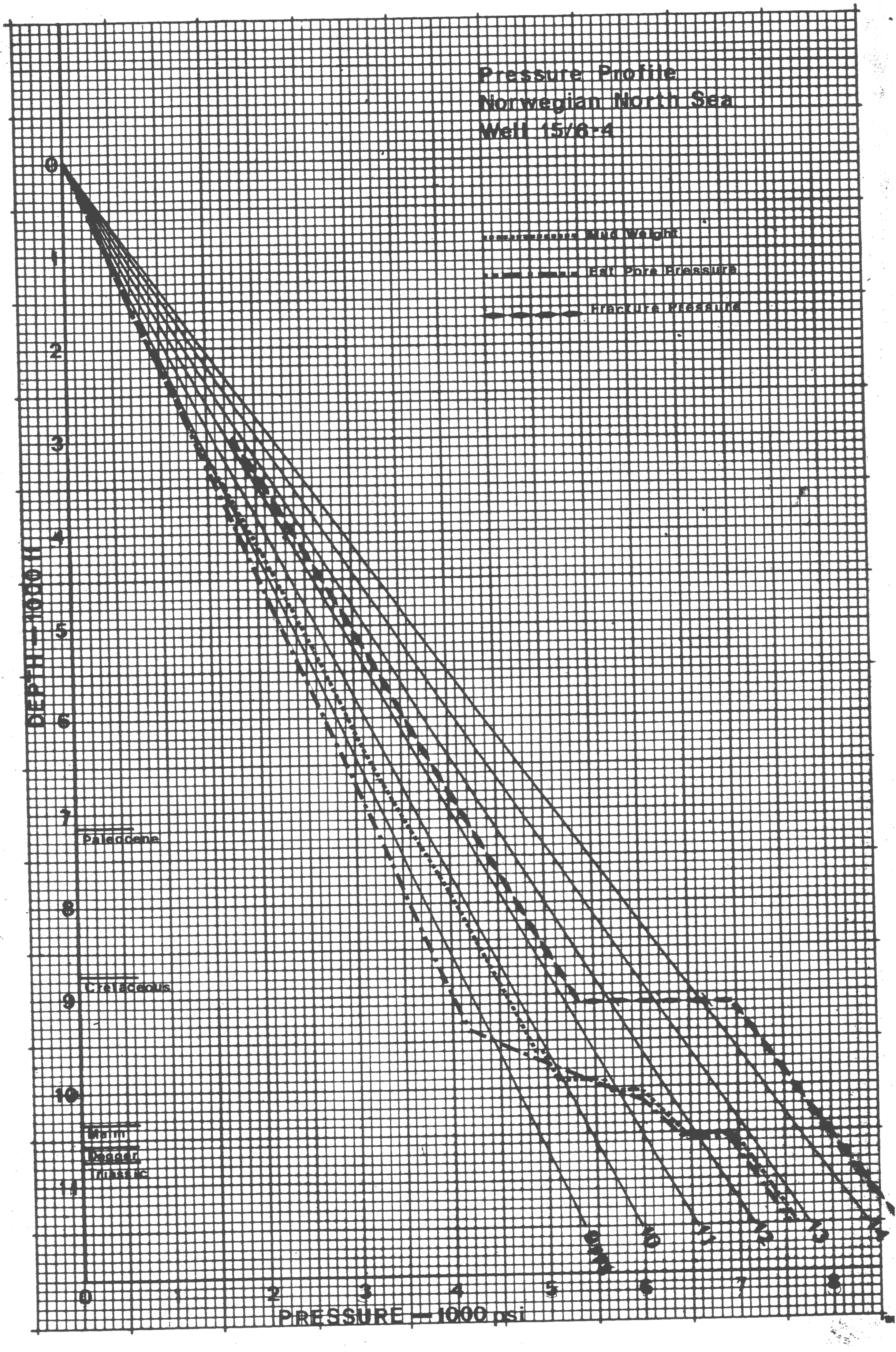
WELL 15/6-4

WELLBORE SCHEMATIC

RKB-SEA LEVEL : 80 Ft (24,4 m)
WATER DEPTH : 365 Ft (111,3 m)
RKB-MUDLINE : 445 Ft (135,6 m)
CSG CUT 15 ft BELOW SEA FLOOR (4,6 m)



ALL DEPTHS REFER TO NORJARL RKB



Pressure Profile
Norwegian North Sea
Well 15/6-4
Mud Weight
Est Pore Pressure
Fracture Pressure
DEPTH — 1000 ft
PRESSURE — 1000 psi
Paleocene
Cretaceous
Malm
Dogger
Triassic
0
1
2
3
4
5
6
7
8
9
10
11
9
10
11
12
13
14

119-0112

PRESSURE INTEGRITY TEST

NO 1 DATE 05 JUL 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6 – 4	NORTH SEA	

STATE	RIG NAME	TYPE RIG
NORWAY	NORJARL	AKER H – 3 SEMI

ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	20 in	94	X – 52	1243 FT	1243 FT

MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	8.8	42	7	11	20	10/14	BBLS/STROKE @ BPM	HOWCO	0.5 BPM

TEST TYPE: ☐ CSG ☒ CSG SHOE ☐ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A

TD OF TEST	MUD PUMPED	MUD FLOWBACK
1301 TVD	2 BBLS	1 BBLS

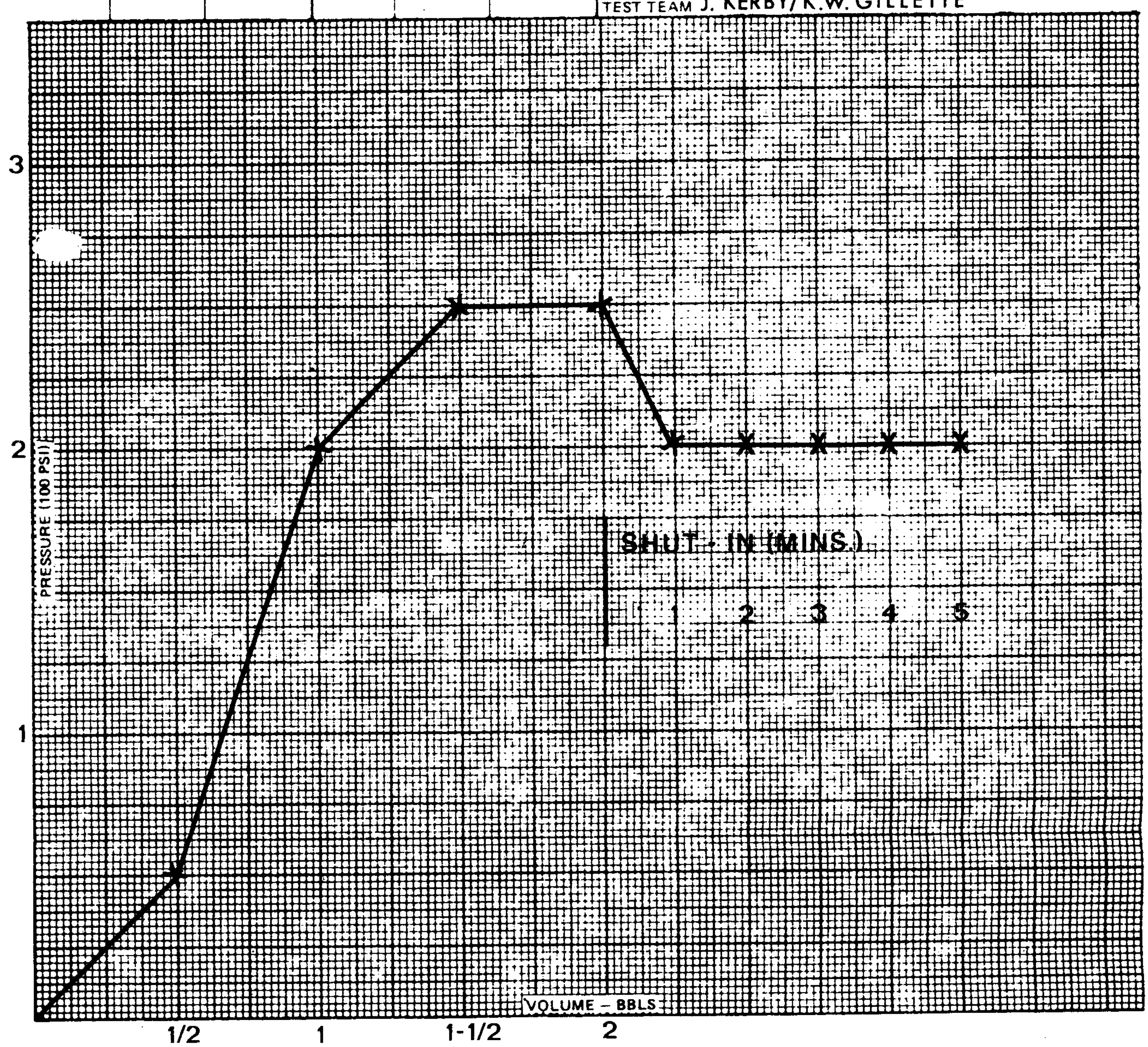
PRED. FRAC GRADE	TESTED GRADE @ SHOE	DEPTH 1ST SAND BELOW CSG	ELEC. LOG	MAX. PRES. OBSVD	PIT LIMIT
(EMS) 13.0 PPG	(EMS) 11.9 PPG	(DRLR (TVD) FT	SONIC – GR (TVD) 1295 FT	250 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE
	0.5	50			
	1	200			
	1.5	250			
	2	250			
1		200			
2		200			
		200			
4		200			
5		200			

DISCUSSION

PRESSURE READINGS FROM MARTIN – DECKER CHART RECORDER DUE TO TEST GAUGES NOT AVAILABLE.

TEST TEAM J. KERBY/K.W. GILLETTE



119-0112

PRESSURE INTEGRITY TEST

NO 2 DATE 08 JUL 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6-4	NORTH SEA	

STATE	RIG NAME	TYPE RIG
NORWAY	NORJARL	AKER H-3 SEMI

ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	13-3/8"	61	J-55	3552 FT	3552 FT

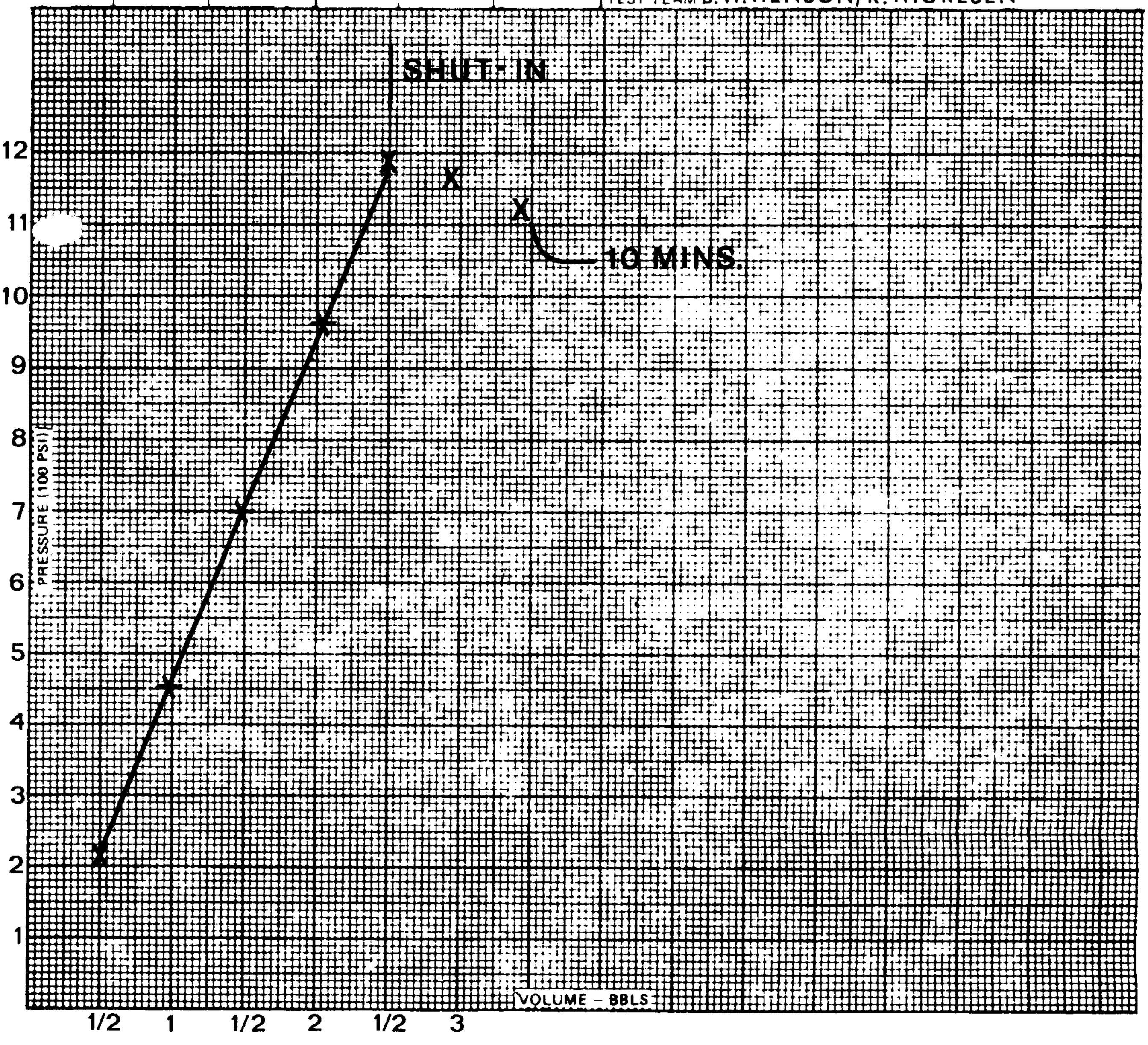
MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	9.3		10	20	16	9/19	BBLS/STROKE @ BPM	HOWCO	1/2 BPM

TEST TYPE	TD OF TEST	MUD PUMPED	MUD FLOWBACK
☐ CSG X CSG SHOE ☐ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A	3600 TVD	2-1/2 BBLS	1-1/2 BBLS

PRED. FRAC GRADE	TESTED GRADE @ SHOE	DEPTH 1ST SAND BELOW CSG	ELEC. LOG	MAX. PRES. OBSVD	PIT LIMIT
(EMS) 15.0 PPG	(EMS) 15.8+ PPG	(DRLR (TVD) FT	ISF-SONIC-GR (TVD) 3330 FT	1200 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE	DISCUSSION
	1/2	225				TEST STOPPED BEFORE
	1	450				LEAK-OFF.
	1-1/2	700				
	2	975				
	2-1/2	1200				

TEST TEAM B.W. HENSON/R. THORESEN



119-0112

PRESSURE INTEGRITY TEST

NO 3 DATE 23 JUL 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6 – 4	NORTH SEA	
STATE	RIG NAME	TYPE RIG	
NORWAY	NORJARL	AKER H–3 SEMISUBMERSIBLE	

ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	13 - 3/8	61	J – 55	3552 FT	3552 FT

MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	9.5						BBLS/STROKE @ BPM	HOWCO	1 BPM

TEST	TYPE	TD OF TEST	MUD PUMPED	MUD FLOWBACK
	☐ CSG ☒ CSG SHOE ☐ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A	TVD	3 BBLS	1-1/2 BBLS

PRED. FRAC GRADE	TESTED GRADE @ SHOE	DEPTH 1ST SAND BELOW CSG	ELEC. LOG	MAX. PRES. OBSVD	PIT LIMIT
(EMS) 15.8+ PPG	(EMS) NA PPG	(DRLR (TVD) FT	(TVD) 3330 FT	325 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE
	1	210			
	2	300			
	3	325			
1 MIN		300			
2		280			
3		275			

DISCUSSION

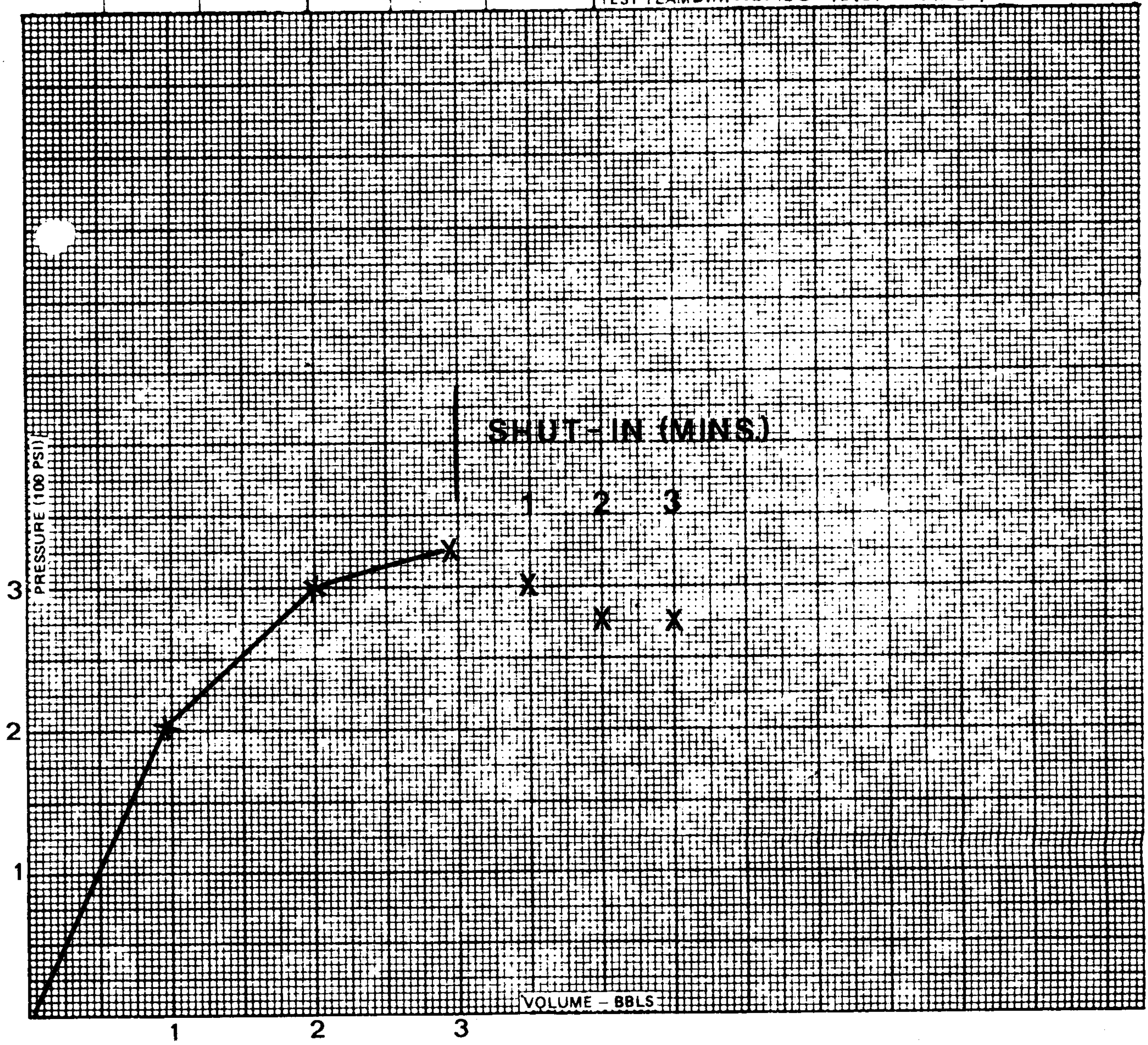
CHECKING INTEGRITY OF 13-3/8" CASING SHOE AND 17-1/2" HOLE WHEN 9-5/8 SEAL ASSEMBLY NOT HOLDING PRESSURE.

TESTED WITH S/A REMOVED.

ATTEMPTS TO PUMP WITH 1/4 BPM AND 1/2 BPM UNSUCCESSFUL AS PRESSURE DID NOT BUILD UP.

THIS TEST REPEATED AS TEST NO. 4.

TEST TEAM B.W. HENSON/D.G. GRINDLE/R. THORESEN



119-0112

PRESSURE INTEGRITY TEST

NO 4 DATE 23 JUL 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6-4	NORTH SEA	

STATE	RIG NAME	TYPE RIG
NORWAY	NORJARL	AKER H-3 SEMISUBMERSIBLE

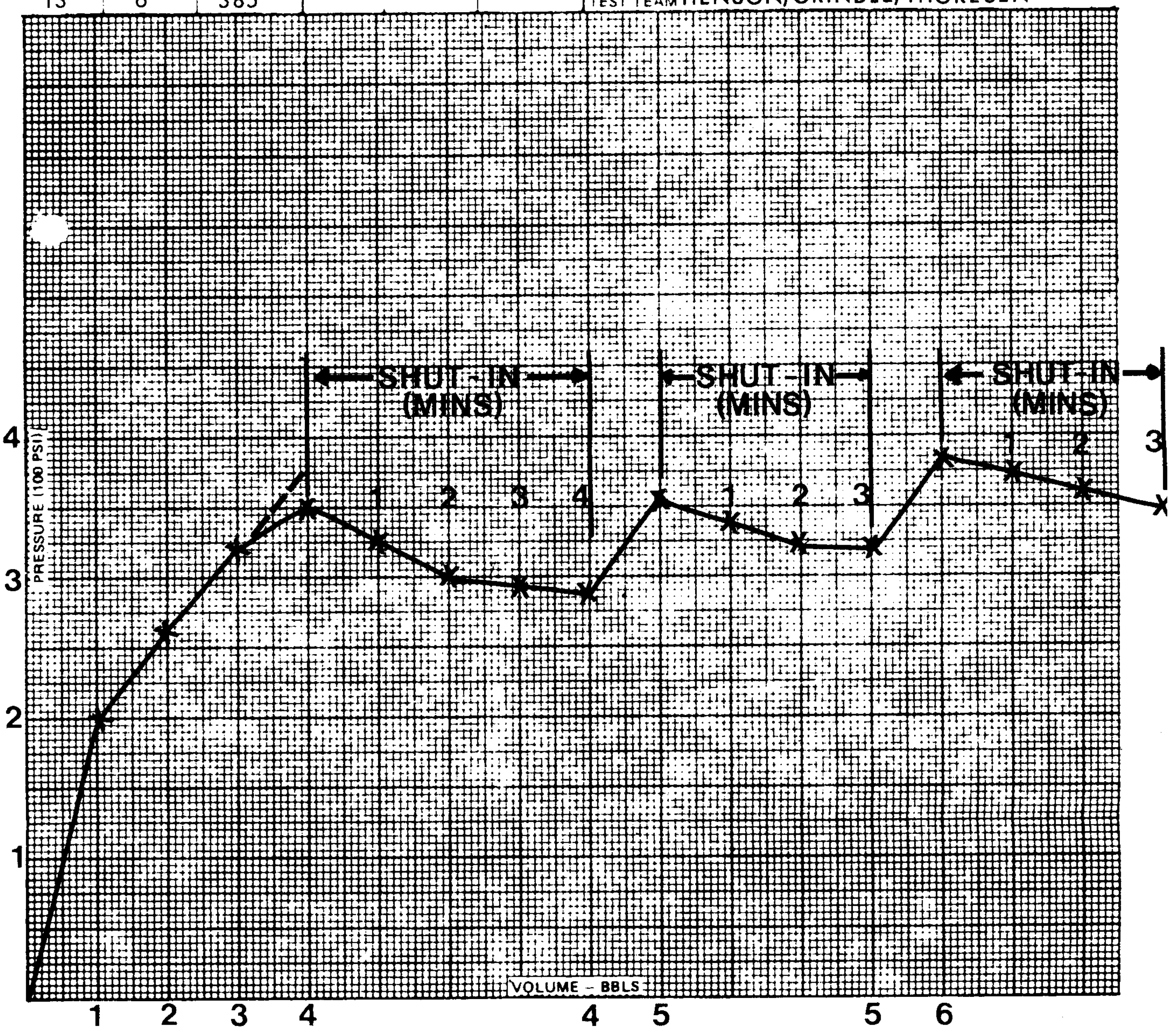
ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	13-3/8	61	J-55	3552 FT	3552 FT

MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	9.5						BBLS/STROKE @ SPM	HOWCO	1 BPM

TEST TYPE	TD OF TEST	MUD PUMPED	MUD FLOWBACK
☐ CSG ☐ CSG SHOE ☒ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A	TVD	6 BBLS	3 BBLS

PRED. FRAC GRADE	TESTED GRADE @ SHOE	DEPTH 1ST SAND BELOW CSG	ELEC. LOG	MAX. PRES. OBSVD	PIT LIMIT
(EMS) 15.8+ PPG	(EMS) PPG	(DRLR (TVD) FT	(TVD) 3330 FT	375 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE	DISCUSSION
1	1	200	14	-	375	TEST DOWN 9-5/8 x 13-3 CASING
2	2	260	15	-	360	ANNULUS.
3	3	320	16	-	350	9-5/8 S/A REMOVED.
4	4	350				
5	-	325				TEST INCONCLUSIVE; PROBABLY
6	-	300				PUMPING INTO SANDS BETWEEN
	-	295				13-3/8 CASING SHOE AND 9-5/8
8	-	290				CEMENT TOP.
9	5	360				
10	-	340				9-5/8 x 13-3/8 ANNULUS THEN
11	-	320				SQUEEZED WITH CEMENT.
12	-	320				
13	6	385				TEST TEAM HENSON/GRINDLE/THORESEN



119-0112

PRESSURE INTEGRITY TEST

NO 5 DATE 24 JUL 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6-4	NORTH SEA	
STATE	RIG NAME	TYPE RIG	
NORWAY	NORJARL	SEMI	

ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	9-5/8	47.00	N-80	9103 FT	9103 FT

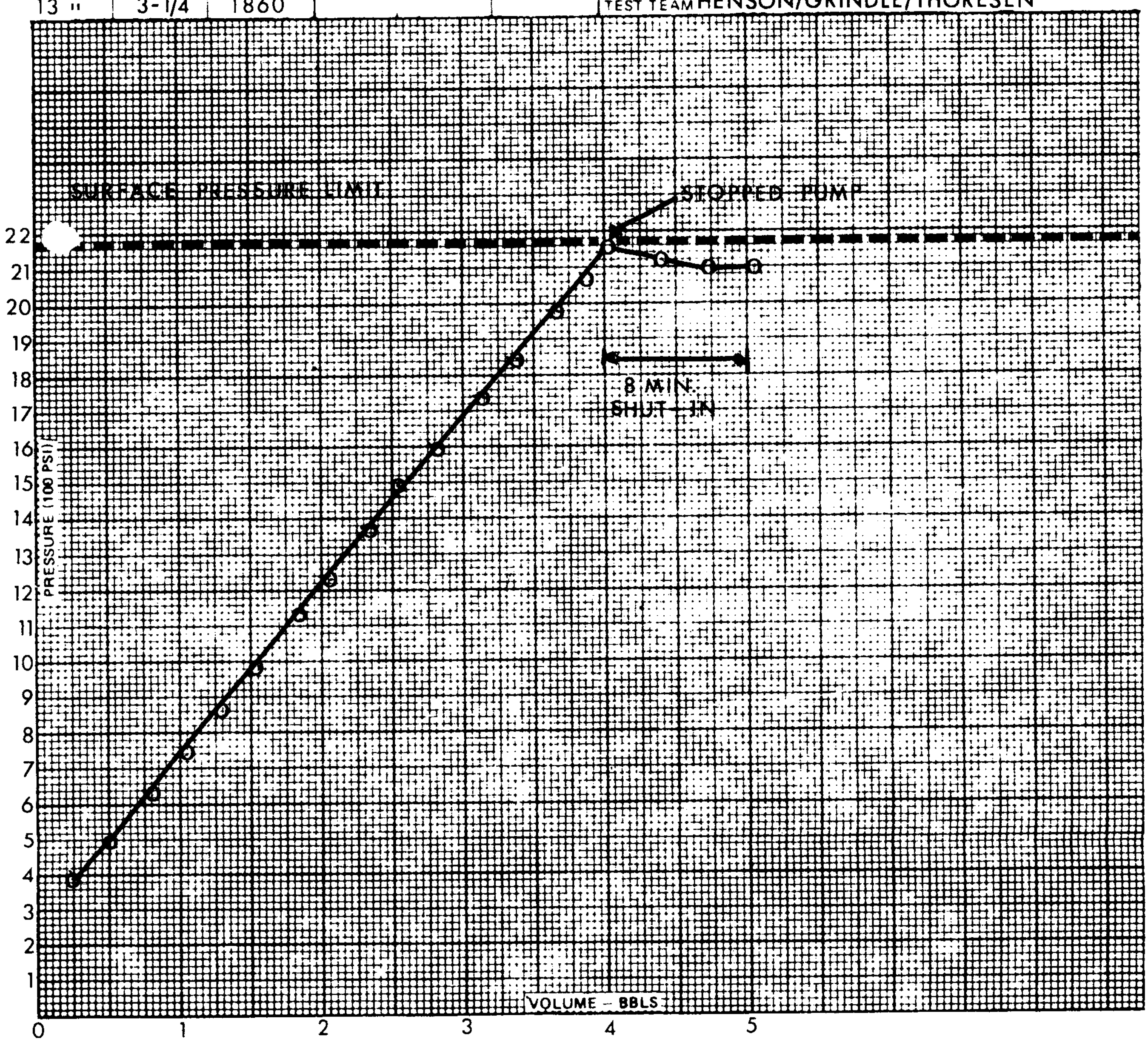
MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	9.5	50	12	12	14.5	11/54	BBLS/STROKE @ BPM	HOWCO	1/4 BPM

TEST TYPE: ☐ CSG ☒ CSG SHOE ☐ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A

TD OF TEST	MUD PUMPED	MUD FLOWBACK
9160 TVD	4 BBLS	3-1/2 BBLS

PRED. FRAC GRADE	TESTED GRADE @ SHOE	DEPTH 1ST SAND BELOW CSG	ELEC. LOG	MAX. PRES. OBSVD	PIT LIMIT
(EMS) 15.0+ PPG	(EMS) 14.1 PPG	(DRLR (TVD) FT	ISF-SONIC-GR (TVD) 9021 FT	2150 PSI	2150 PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE	DISCUSSION
1 MIN	1/4	400	14 MIN	3-1/2	1975	SHUT DOWN PUMP AFTER 16 MIN. AND
2 "	1/2	500	15 "	3-3/4	2075	HELD PRESSURE FOR 8 MINS.
3 "	3/4	650	16 "	4	2150	AFTER 2 MIN. = 2125 PSI
4 "	1	750				AFTER 8 MIN. = 2100 PSI
5 "	1-1/4	870				
6 "	1-1/2	1000				SHOE SET IN CHALK.
"	1-3/4	1150				9-5/8 x 13-3/8 ANNULUS SQUEEZE
8 "	2	1250				CEMENTED.
9 "	2-1/4	1375				TEST PRESSURE LIMITED BY EXPOSED
10 "	2-1/2	1510				13-3/8 61 LB/FT J-55 CASING AT
11 "	2-3/4	1640				MUDLINE.
12 "	3	1750				
13 "	3-1/4	1860				TEST TEAM HENSON/GRINDLE/THORESEN



119-0112

PRESSURE INTEGRITY TEST

NO 6 DATE 31 JULY 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6-4	NORTH SEA	

STATE	RIG NAME	TYPE RIG
NORWAY	NORJARL	AKER H-3 SEMISUBMERSIBLE

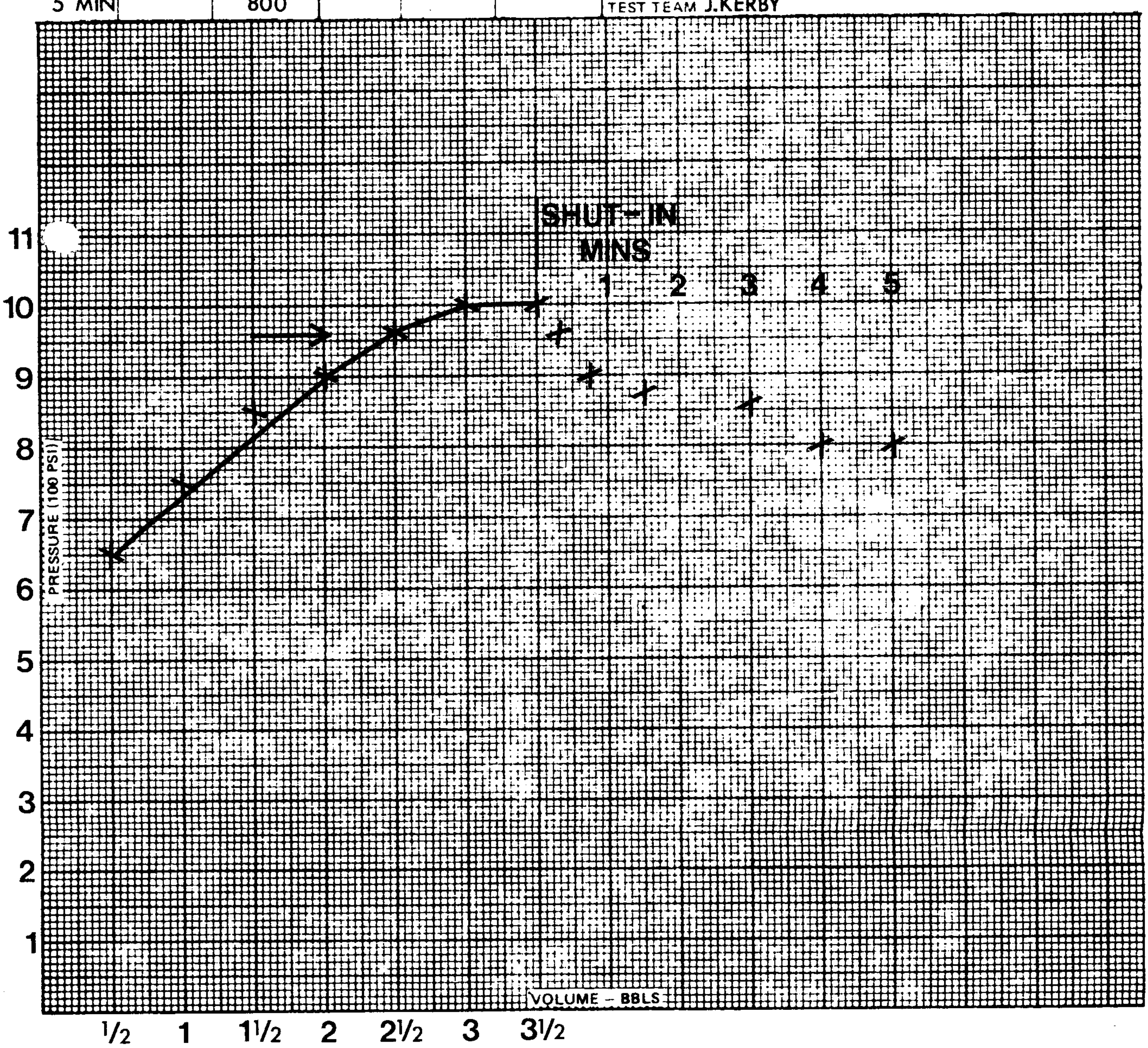
ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	9 5/8	47	N-80	9103 FT	9103 FT

MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION	TYPE PUMP	TEST RATE
	12.6	51	17	11		11/46	BBLS/STROKE @ BPM	HOWCO	1/2 BPM

TEST	TYPE	TD OF TEST	MUD PUMPED	MUD FLOWBACK
	☐ CSG ☐ CSG SHOE ☒ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A	10549 TVD	3 1/2 BBLS	2 BBLS

PRED. FRAC GRADE (EMS)	TESTED GRADE @ SHOE (EMS)	DEPTH 1ST SAND BELOW CSG (DRLR (TVD)	ELEC. LOG (TVD)	MAX. PRES. OBSVD	PIT LIMIT
15.0 + PPG	PPG	FT	FT	1000 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE	DISCUSSION
	1/2	650				
	1	750				EQUIVALENT AT TD : 14.4 PPG
	1 1/2	850				EQUIVALENT AT SHOE : 14.6 PPG
	2	900				
	2 1/2	960				LEAK-OF MOST LIKELY
	3	1000				NEAR TD WHERE
	3 1/2	1000				DRILLING BREAK OCCURRED.
15 SEC		960				
45 SEC		900				TEST REPEATED AS NO.7.
90 SEC		875				
3 MIN		860				
4 MIN		800				
5 MIN		800				TEST TEAM J.KERBY



119-0112

PRESSURE INTEGRITY TEST

NO 7 DATE 31 JULY 76

OPERATOR	WELL NAME & NO.	AREA	COUNTY
ESSO EXPLORATION	15/6-4	NORTH SEA	

STATE	RIG NAME	TYPE RIG
NORWAY	NORJARL	AKER H-3 SEMISUBMERSIBLE

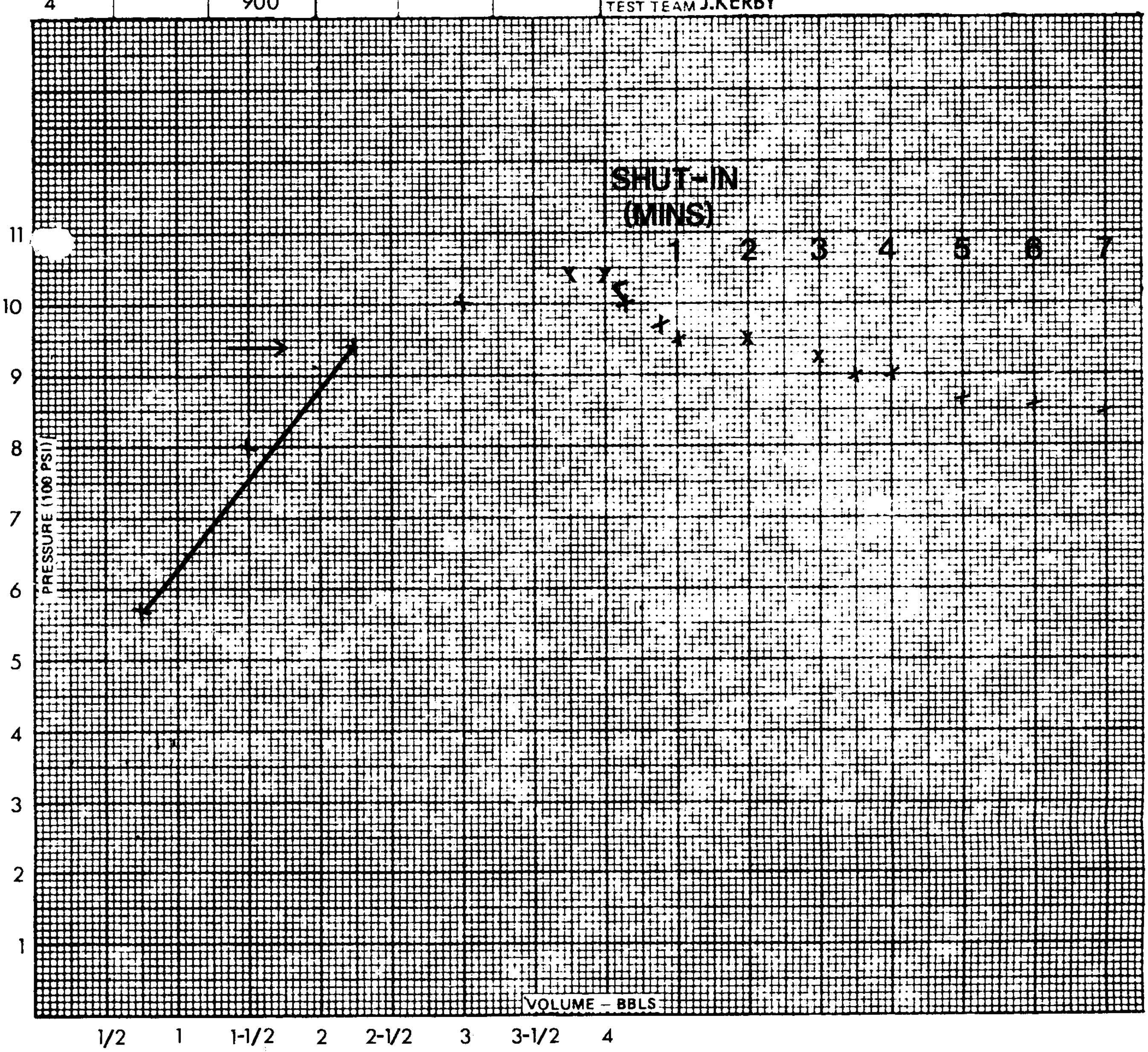
ELEV. RKB	ABOVE MSL	ABOVE CHF	ABOVE MUDLINE	CSG SIZE	WT.	GRADE	SHOE DEPTH (MEAS.)	TOTAL VER. DEPTH
	82 FT	FT	445 FT	9-5/8	47	N-80	9103 FT	9103 FT

MUD PROP.	WT	VIS	PV	YP	API WL	GELS 0/10	PUMP CALIBRATION BBLS/STROKE @ BPM	TYPE PUMP	TEST RATE
	12,6	51	17	11	11/46				3/4 BPM

TEST	TYPE	TD OF TEST	MUD PUMPED	MUD FLOWBACK
	☐ CSG ☐ CSG SHOE ☒ 1ST OPEN HOLE ☐ 2ND OPEN HOLE ☐ P & A	10549 TVD	4 BBLS	2 BBLS

PRED. FRAC GRADE (EMS)	TESTED GRADE @ SHOE (EMS)	DEPTH 1ST SAND BELOW CSG (DRLR (TVD))	ELEC. LOG (TVD)	MAX. PRES. OBSVD	PIT LIMIT
15,0 + PPG	PPG	FT	FT	1040 PSI	PSI

TIME	VOLUME	PRESSURE	TIME	VOLUME	PRESSURE	DISCUSSION
	3/4	575	5		870	
	1-1/2	800	6		860	EQUIVALENT AT TD : 14.3 PPG
	2-1/4	940	7		850	EQUIVALENT AT SHOE: 14.6 PPG
	3	1000				
	3-3/4	1040				LEAK-OFF MOST LIKELY
	4	1040				NEAR TD WHERE DRILLING
MIN		1000				BREAK OCCURRED
3/4		970				
1		950				INCREASINE PUMPING RATE
2		950				FROM 1/2 BPM TO 3/4 BPM
3		925				FROM TEST NO.6 DID NOT
3-1/2		900				AFFECT RESULT SIGNIFICANTLY.
4		900				TEST TEAM J.KERBY



ESSO EXPLORATION INC.

BIT RECORD

WELL: 15/6-4 (Norway)

Run No.	Bit No.	Size In	Type	Jets 32nds	W.O.B. 10^3 lbs	RPM	Pump Pressure	Pump GPM	Depth Out	Ft.	Hrs.	Cum. Hrs.	Ft/Hr.	Cond T	Cond B	Cond C	Remarks
1	1	26 x 36	HTC x HO SEC	6-24 5-20	0 - 15	10 - 50	1200	180	561	115	12.25	12.25	9.4	1	1	I	FIRST HOLE
2	1 RR	-	-	-	8 - 10	30-55	1600	238	561	115	7.5	19.75	15.3	1	1	I	SECOND HOLE
3	2	17½	S 35						1293	732	7.0	26.75	104.6				PILOT HOLE
4	2 RR	17½ x 26	S 35	3 - 18	10	110	2000		1293	802	5.5	32.25	146.0				OPENING HOLE
5	3	17½	S 35 J	3 - 18	10 - 25	160	3000	188	3600	2307	19.75	52.00	116.8				
6	3 RR	17½	S 35 J	3 - 18					3600								COND TRIP
7	4	12¼	X 3 A	3 - 14	20	175	3100		6607	3007	31	83.00	97	3	5	0	
8	5	12¼	X 3	3 - 14	20	165	3000		7962	1355	25.25	108.25	53.7	7	4	$\frac{1}{8}$	
9	6	12¼	S 44 J	3 - 14	40	115	3000		8340	378	10.5	118.75	36	7	4	$\frac{1}{4}$	
10	7	12¼	X3	3 - 14	40	115	3000		8537	197	8	126.75	24.4				
11	8	12¼	XV	3 - 14	45	110	2900		8639	102	8.25	135.00	12.4	7	4	I	
12	9	12¼	J - 22	2 - 14 1 - 13	50	60 - 65	3050	116	9050	411	43.75	178.75	9.4	3	4	I	POOH FOR $9\frac{5}{8}$ CSG, 6 BR. INS.
13	10	12¼	XDV	2 - 14 1 - 13	48 - 5	90 - 95	3200	160	9150	100	9.0	187.75	11.1	4	2	I	POOH FOR $9\frac{5}{8}$ CSG.
14	11	8½	XV	3 - 14	30	50	2500		9180	30	2.50	190.25	12.0				
15	12	8½	MT501PP	-		50-800	3600		9347	167	8.0	198.25	20.9				NEYRPIC TURBODRILL
16	12	8½	MT501PP	-	30 - 35	50-800	4200		10318	971	41.25	239.50	23.5				—— " —— 50% REC.
17	13	8½	XV	3 - 12	30 - 40	110	3300	120	10491	173	14.0	253.50	12.4	6	4	I	
18	14	8½	XC	2 - 13 1 - 11	30 - 40	110	3200	110	10585	94	5.25	258.75	17.9	3	3	I	
19	-	$8\frac{15}{32}$	C - 22	-	12 - 15	110	600	62	10607	22	3.75	262.50	5.9	-	-	-	CORE NO.1. REC 19' (86%)
20	-	$8\frac{15}{32}$	C - 22	-	15	96	750	62	10655	48	6.0	268.50	8.0	-	-	-	CORE NO.2. REC 44' (92%)
21	15	8½	SVH	3 - 12	30	110	3300	110	10734	79	2.0	270.50	39.5	2	2	I	
22	-	$8\frac{15}{32}$	C - 22	-	15	96	750		10794	60	3.5	274.00	17.1	-	-	-	CORE NO.3. REC 60' (100%)
23	-	$8\frac{15}{32}$	C - 22	-	14	90	980	67	10854	60	4.5	278.50	13.3	90% SALV.			CORE NO.4. REC 60' (100%)
24	16	8½	J - 22	3 - 12	25	75	3200	110	11500	646	40.25	318.75	16.0				
25	15 RR	8½	SVH	OPEN													CLEAN OUT TRIP
26	11 RR	8½	XV	3 - 12													CONDITIONING TRIP

Stavanger August 17, 1976.

To: Norman Newsome

From: D.B. Stickle

Re: Turbine Run Well 15/6-4.

In reference to the recent use of the Neyrfor turbine on Norwegian North Sea well 15/6-4, attached are a summary of operating conditions, a performance comparison, and a graphical presentation of the turbo-drilling parameters vs depth. The turbine with a Christensen Diamond Products MT 501 P bit drilled 1138 feet of Cretaceous Chalk in 48 3/4 hours for a 23.3 fph average. If one includes the trip to check for a washout during the turbine run, the cost was $ 190 per foot; excluding the trip it was $ 167 per foot. The best previous performance in this area and formation was 8.1 fph at a cost of $ 345/foot. Thus the use of the turbine resulted in nearly a threefold increase in penetration rate and an estimated savings of $ 175,000 to drill the 1138 feet of chalk. Details of the BHA and the operating conditions are presented in the attached Tables.

Figure 1 presents the details of the turbine performance as obtained from the turbine operator on the job. The ROP shown in Figure 1 are actual on bottom times and exclude connection times. These data were obtained from the computerized bit records supplied by the mud logging unit. As indicated by this figure turbine performance is directly related to the GPM pumped through the turbine. The only other variable affecting its performance is the mud weight and this is related only to the horsepower output and pressure drop. Except for some changes in lithology and some effects due to increases in mud weight the ROP was found to be a function of GPM (or RPM). At the peak operating conditions attempted on this well, 595 GPM were pumped, generating a RPM at the bit of 982. The pressure drop through the turbine was 2812 psi under these conditions.

Problems were experienced during the first few hours with the of the pumps which was caused by the contractor installing used liners just prior to the turbine run. This resulted in the drill string being pulled to check for a wash out when there was a loss of 400 - 500 psi. After no washout was found, it was discovered that the leak was in the pumps. New liners were subsequently installed and no further pump problems occurred.

WWE/thd

cc: LØ

File 45.4016

" 42.2025

TURBO - DRILLING

SUMMARY OF OPERATING CONDITIONS

Turbine Type:	Neyfor 7 1/4" TFAI consisting of an upper blade section, a middle blade section, and a bearing section (240 stages)
BHA:	8 1/2" Bit,2-8 31/64" piggyback stab,8 31/64" stab, bearing section,8 31/64"stab, blade section, 8 31/64"stab, blade section, XO, 8 7/16" stab, XO, Totco ring, 6 1/2" Monel DC,XO., 8 7/16" stab, 3 - 6 1/2" DC, 8 7/16" stab, 15 - 6 1/2" DC,XO, 5" DP to surface.
WOB:	30/35 kips
Rotary RPM:	50
Bit RPM:	740 - 980
Mud Weight:	9.5 - 11.7 ppg
GPM:	450 - 600
Pump Pressure:	3600 - 4250
Pump Type:	National 12 - P - 160 T Triplex
Liners:	6" x 12"
Ratings with Liners:	4670 psi max; 529 GPM at 120 SPM
Est. Total cost of Turbine, support equipment, and Engineering:	$ 20,000
Bit Type:	Christensen Diamond MT 501 P-8 1/2"
Cost of Bit:	$ 13,000 w/o salvage.

TURBO - DRILLING
PERFORMANCE COMPARISON

Area:	Norwegian North Sea
Well:	15/6-4
Formation:	Cretaceous Chalk
Lithology:	Chalk, Limestone, Dolomite, Marl with some shale stringers
Depth of Turbine Run:	9180 - 10318 ft RKB (9100 - 10233 ft ss)
Feet:	1138
Hours:	48 3/4
Feet/hour:	23.3
Cost - $/ft:	190 including round trip to check for washout
	167 excluding round trip

Bit Run Prior to Turbine

Formation:	Cretaceous Chalk
Bit:	Hughes XDV - 12 1/4"
Feet:	100
Hours:	9
Grade:	T4 B2 I
Feet/hour:	11.1
$/ft:	472

Bit Run following Turbine Run

Formation:	Cretaceous Chalk and Jurassic shale
Bit:	Hughes XV - 8 1/2"
Feet:	173
Hours:	14
Grade:	T6 B4 I
Feet/hour:	12.4 in Chalk (12.8 fph in shale)
$/ft:	360

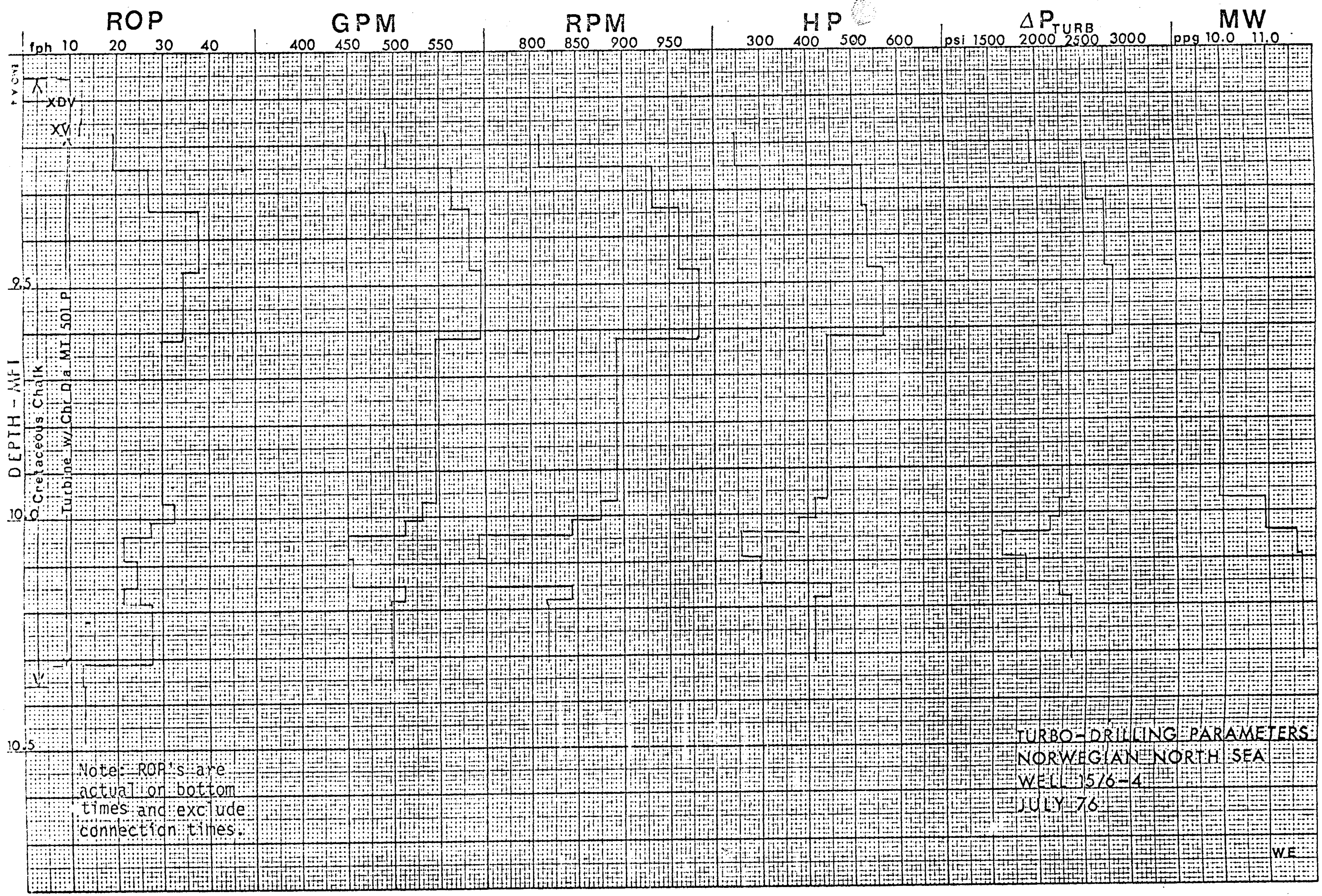
Offsets in Cretaceous Chalk

Well:	15/6-2 RE
Bit Type:	Insert (J-33 & J-44)
Ave fph:	6.1
Ave $/ft:	463

Well:	15/6-3
Bit Type:	Rotary Diamond (Christ. MD-311)
Ave fph:	8.1
Ave $/ft:	345

Turbine Savings over Best Other Bit Performance: $ 175,000

Breakeven ROP (including extra trip) - 9.8 fph.


ROP
GPM
RPM
HP
ΔP_{TURB}
MW
fph 10 20 30 40
400 450 500 550
800 850 900 950
300 400 500 600
psi 1500 2000 2500 3000
ppg 10.0 11.0
XDV
XV
9.5
10.0
10.5
DEPTH - MFT
Cretaceous Chalk
Turbine w/ Chr Dia MI 501 P
Note: ROP's are actual on bottom times and exclude connection times.
TURBO-DRILLING PARAMETERS
NORWEGIAN NORTH SEA
WELL 15/6-4
JULY 76
W.E.

ESSO EXPLORATION INC.

FLUID PROPERTIES

Well 15/6-4

Date 1976	Depth FT.	Mud Wt.	Vis	W.L.	Hi-Temp F.L.	P.V.	YP	Gels 0/10	F.C.	PH	Alk Pf/Mf	Cl x 1000	Ca	Volume - % Oil	Sand	Solids	C.E.C.	Remarks
28 JUNE	515	8.8				11	63											
29	552	8.9				14	76											
30	580	8.9				7	26	19/32		11.0								
01 JULY	580																	CEMENTIN
02	1293																	CMTING; DRL W/ SEAWATE
03	1293																	OPENING HOL W/ SEAWATE
04	PIT	8.8		30		7	11	10/14	3	11.0	.25/.3	3	100			4		CMT. 20" CS
05	1680	8.9		50		3	14	12/12	4	10.8	TR/.12	14	1400		TR	5		
06	3600	9.2		19		5	11	6/6	3	10.8	.08/1.6	20	1100		0.5	7		
07	3600	9.2		19		5	11	6/6	3	10.8	.08/1.6	20	1100		0.5	7		LOG; RUN 13 3/8" CS
08	3600	9.6		16		10	20	9/9	3	11.4	.9/.3	18	1560		0.4	8		DRLG. 12 1/4"
09	5260	9.4		9		8	18	10/18	3	11.6	.8/.3	19	280		TR	8.5		
10	6798	9.4		8		8	16	14/26	3	11.1	.7/.3	20	700		0.4	9		
11	7732	9.7		6.8		7	24	20/38	3	11.5	.9/.25	20	700		0.3	11		
12	8212	9.6		11.6		6	18	5/21	3	10.8	.6/.15	18	240		0.25	9		
13	8535	9.6		22		7	16	9/40	3	11.0	.6/.2	21	280		0.4	9		
14	8666	9.5		24		8	22	15/31	3	10.6	.08/.25	19	210		0.25	8.5	30	
15	8880	9.6		20		8	18	25/40	3	11.0	1.2/2.1	18	110		TR	8.5	27	
16	9050	9.6		22		7	18	24/37	3	11.1	1.1/1.9	17	70		TR	6.5	24	
17	9050	9.6		11		10	18	8/16	2	11.0	1.0/1.8	18	70		TR	8	25	LOG
18	9150	9.7		11	26	9	21	15/50	1	11.0	.65/1.6	17	60		TR	6.5	27	
19	9150	9.7		11.6	26	10	18	13/50	5	11.3	.8/1.9	17	60		TR	7	27	CIRC. & COND
20	9150	9.7		11.8	28	9	13	8/21	1	11.0	.6/1.43	17	70		0.25	6.5	24	RUN 9 5/8" CS
21	9150	OUT	OF	HOLE														SEAL ASSY PROBLEM

ESSO EXPLORATION INC.

FLUID PROPERTIES

Well 15/6-4

Date 1976	Depth FT.	Mud Wt.	Vis	W.L.	Hi-Temp F.L.	P.V.	YP	Gels 0/10	F.C.	PH	Alk	Cl x 1000	Ca	Volume - % Oil	Sand	Solids	C.E.C.	Remarks
22 JULY	9150	OUT	OF	HOLE														UNABLE TO T 9⅝" SEAL AS
23	9150	OUT	OF	HOLE														"
24	9160	9.5		14.5		12	12	11/54	2	11.6	1.1/.2	18	320		TR	7		
25	9330	9.6		14.6	27	10	11	8/31	2	11.3	.8/.16	17	100		TR	7	26	TURBODRIL
26	9674	9.9			28	12	11	7/47	3	11.1	.7/.18	17	80		0.5	9		"
27	10022	10.9			31	18	12	7/51	5	10.8	.6/.14	16.5	92		0.5	14		"
27	10042	11.5			29	20	14	12/56	5-8	10.9	.6/.5	14	420		0.5	12		"
28	10317	11.7			20	18	11	13/46	7	11.2	.8/1.4	15	420		TR	12		"
29	10435	11.7			23	19	10	15/66	3	11.0	.15/.2	11	80		TR	18	25	
30	10506	12.1			22	16	12	16/72	3	11.2	.15/.2	11	40		TR	16	25	
31	10507	12.5			24	13	11	6/41	3	11.4	1.2/1.7	10	80		TR	23	25	
31	10585	12.8			20.2	16	16	10/42	3	11.2	1.8/2.2	10	40		TR	21	20	
01 AUG.	10585	12.8			21	11	11	4/30	3	11.3	1.8/2.3	10	TR		TR	21	20	CIRC. SAMPL START TO COR
02	10655	12.8			22	12	12	4/29	3	11.2	1.1/1.4	10	TR		TR	17		
03	10734	12.8		11	22	18	12	6/36	3	11.2	1.0/1.4	11	TR		TR	22	25	GARRET GAS TRAIN NEGAT
04	10812	12.8		12	26	25	37	17/43	3	11.3	.7/.8	11	TR		0.5	23	25	CORING
05	10896	12.8			27	24	26	12/37	3	11.4	.9/.4	10	60		0.5	21	23	
06	11200	12.8			26	25	34	10/36	3	11.0	.7/.5	9	40		0.25	21	30	
07	11500	12.5		11	22.5	21	27	9/38	3	11.6	1.4/2.0	8	60		0.25	18	18	REDUCE MUD HOLE NOT TAKIN MUD.
08	11500		— LOGGING —															RAISE MUD LOG.
09	11500	12.8		13.5	24.5	18	20	11/41	3	11.2	1.0/.4	10	60		0.25	19		CLEAN OUT TR
10	11500	12.8		13.2		24	21	11/39	3	11.3	1.0/.3	9	40-60		0.25	20		CLEAN OUT TR
11	11500	12.8			27	25	20	10/34	3	11.3	1.0/1.5	9	60		—	20		CONDITION FOR
12	11500	12.8		12	26	16	18	16/35	4	11.3	.78/1.02	11	50		—	19		CONDITION FOR L

ESSO EXPLORATION NORWAY INC.

Well 15/6-4 MUD ADDITIONS

METRIC TONS

Mud Company: MDS/IDF

Date	Depth	BARITE	BENTONITE	LIGNO	CAUSTIC	CMC									$ Cost	Remarks
Jun76	—														0	
27																
28																
29																
30																
31JUL																
02																
04																
05					0.125										7613	
06	3600		1.9		1.1	2.15									11.265	
07	3600		0.94												14.345	
08	3640	5.64		0.2	0.05										14.893	
09	5417		3.2	0.5	0.425										16.318	
10	6705														16.318	
11	7830	30.7			1.05										18.426	
12	8262			0.125	0.1										20.332	
13	8537				0.35										23.436	
14	8666			.05	0.45											
15	8880				0.3											
16	9050			1.0	0.1										28.353	
17	9050			1.75	0.3										30.508	
18	9150	5.0		0.75	0.5										31.419	
19	9150	2.85													31.730	
20	9150	7.8													32.580	
21	9150	10.1	30.5		0.05										40.203	OUT OF HOLE
	9150														40.203	— " —
23	9150														33.903 ?	— " —

ESSO EXPLORATION NORWAY INC.

Well 15/6-4

MUD ADDITIONS

METRIC TONS

Mud Company: MDS/IDF

Date	Depth	BARITE	BENTONITE	LIGNO-SULFATE	CAUSTIC	CMC	LIGNITE								$ Cost	Remarks
24JUL	9160	4.0	0.8												34.522	
25	9347	10.0													35.661	
26	9723	17.5	3.75		0.2										38.467	
27	10055	75.0			0.2	0.5									45.927	
28	10318	20.0		1.0		1.0									50.957	
29	10444			0.5	0.25										51.167	
30	10506	27.5	7.55	2.15	0.45										55.874	
31	10585	54.7		1.45			0.75								62.412	
1AUG	10607				0.2		0.70								62.646	
02	10655	4.45			0.2										63.211	
03	10734	13.40		0.45	0.3										64.841	
04	10812														64.841	
05	10900	4.5		1.5	0.25										65.890	
06	11225			1.0	0.25		0.5								66,753	
07	11500 TD	4.5	1.62	0.5	.48										68,526	
08	11500 TD	31.3													71,938	
09	11500 TD	4.5		0.4											72,604	
10	11500 TD	4.5	.72		.05										73,440	
12	11500 TD	15.2		.55											75,482	
13	11500 TD	51.8														Inventory Adjustment
	Totals	388	82	14	14	7	1								75,358	Per Mud Company Report.

DEVIATION SURVEYS

15/6-4

(1) SEA BED THROUGH 4853 FT. FROM TOTCO MEASUREMENTS.

RKB Depth ft	Drilled Interval ft	Deviation degrees	Deviation Factor	Deviation of Interval ft	Cumulative Apparent Deviation ft
558	113	1.00	0.01745	1.97	1.97
1293	735	0.50	0.00873	6.42	8.39
2309	1016	0.75	0.01309	13.30	21.69
3600	1291	0.50	0.00873	11.27	32.96
3914	314	0.50	0.00873	2.74	35.7
4194	280	0.25	0.00436	1.22	36.92
4507	313	0.25	0.00436	1.36	38.28
4853	346	0.25	0.00436	1.51	39.79

ie. Max. deviation of surface casing shoe
at 3552 ft.: 33 ft.

(2) INTERVAL 4853 FT THROUGH TOTAL DEPTH FROM SPERRY-SUN SINGLE SHOT SURVEYS.

Computations by DIRECT computer program using great circle method.

RKB Depth ft	Drilled Interval ft	Direction degrees	Deviation degrees	Closure ft	Coordinates		Dogleg	
					+N -S ft	+E -W ft	Total Angle degrees	Degrees per 100 ft
5698	845	343	1.0	7	7	- 2	1.0	0.1
6011	313	355	1.0	13	12	- 3	0.2	0.1
6294	283	300	1.0	17	16	- 6	0.9	0.3
6607	313	345	1.2	23	21	- 9	0.9	0.3
6920	313	318	1.7	30	28	- 13	0.9	0.3
7203	283	322	1.2	38	33	- 18	0.5	0.2
7515	312	316	1.2	44	38	- 22	0.1	0.0
7830	315	298	1.0	50	42	- 27	0.4	0.1
7962	132	302	1.0	52	43	- 29	0.1	0.1
8276	314	340	1.0	57	47	- 32	0.7	0.2
8592	316	332	0.2	61	51	- 33	0.8	0.2
9050	458	301	1.5	67	54	- 39	1.3	0.3
9150	100	308	1.2	69	56	- 41	0.3	0.3
9475	325	305	1.5	77	60	- 47	0.3	0.1

RKB Depth ft	Drilled Interval ft	Direction degrees	Deviation degrees	Closure ft	Coordinates +N -S ft	Coordinates +E -W ft	Dogleg Total Angle degrees	Dogleg Degrees per 100 ft
9785	310	305	2.0	86	66	- 55	0.5	0.2
10094	309	285	2.2	96	71	- 65	0.8	0.3
10318	224	277	3.0	105	72	- 75	0.8	0.4
10491	173	249	3.2	110	71	- 85	1.5	0.9
10585	94	247	2.7	113	69	- 89	0.5	0.5
10734	149	247	2.5	116	67	- 95	0.3	0.2
11027	293	249	2.7	124	62	-108	0.3	0.1
11244	217	247	3.5	132	57	-119	0.8	0.3

ie. Max. deviation from surface casing shoe: 139 ft.

Max. deviation from seafloor location: 172 ft.

LOGGING SUMMARY

15/6-4

Bit Size	Log	Interval ft	BHT deg F	FSIP psig
17 1/2	BHC-SONIC	1289 - ML	80	
17 1/2	ISF-SONIC	3332 - 1243	95	
-	CBL	13 3/8 casing	-	
12 1/4	IES	9030 - 3539	166	
12 1/4	BHC-SONIC	9030 - 3539	174	
-	CST-I	-	-	
-	CBL	9 5/5 casing	-	
8 1/2	ISF-SONIC	10 844 - 8692	190	
8 1/2	ISF-SONIC	11 496 - 10496	218	
8 1/2	FDC-CNL	11 516 - 9105	-	
8 1/2	MSFL-DLL	11 516 - 9105	232	
8 1/2	HDT	11 496 - 9105	221	
-	CST-2	-	-	
-	CST-3	-	-	
8 1/2	FIT-1	-	-	-
8 1/2	FIT-2	-	-	-
8 1/2	FIT-3	10 863	-	7116
8 1/2	FIT-4	10 570	-	6967
8 1/2	FIT-5	-	-	-
8 1/2	Velocity survey			

Stavanger 14 September 1976.

LØ/thd

DIVING RECORD

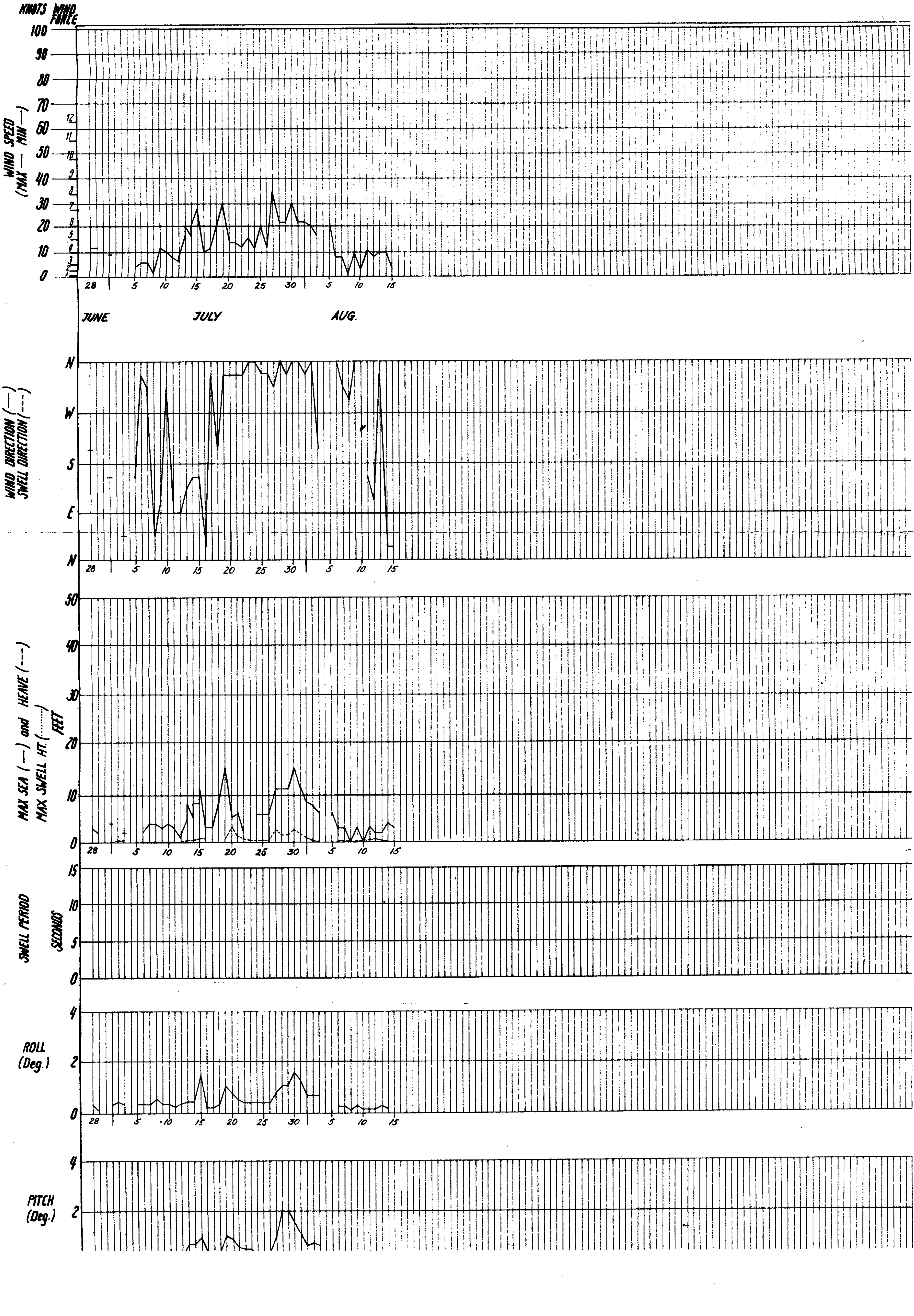
15/6-4.

Diving contractor: Oceaneering International Inc.

Dive No.	Date	Description	Depth	Bottom Time
1	27 Jun	Surface dive. Shackled recovery wire to No.1 anchor pendant.	35 ft	4 mins.
2	27 Jun	Surface dive. Shackled recovery wire to No.6 anchor pendant.	30 ft	3 mins.
3	28 Jun	Observation dive. Checked seabed.	357 ft	
4	29 Jun	Observation dive. Assisting in stabbing of 30 in. casing.	355 ft	
5	30 Jun	Observation dive. Checking guide base level. Poor visibility - unsuccessful.	357 ft	
6	30 Jun	Observation dive Checked bull's eye on guide base.	356 ft	
7	30 Jun	Observation dive. Observe returns around wellhead.	350 ft	31 mins.
8	01 Jul	Lockout dive Inspected guide base and surrounding sea bed.	365 ft	29 mins.
9	01 Jul	Observation dive. Observed cementing stinger enter crater of first 36 in. hole.	365 ft	10 mins.
10	01 Jul	Observation dive. Observed unsuccessful attempt to stab cementing stinger into first hole.	354 ft	25 mins.

Dive No.	Date	Description	Depth	Bottom Time
11	02 Jul	Lock out dive. Cleared and checked bull's eye: Guided drill pipe into first hole. Removed all ropes and shackles.	365 ft	46 mins.
12	03 Jul	Observation dive. Inspect stabbing of 20 in. casing due to poor TV visibility.	365 ft	32 mins.
13	04 Jul	Lock out dive. Cleaned 20 in. well-head hub. Recovered cement sample.	365 ft	23 mins.
14	24 Jul	Observation dive. Checked BOP stack for leaks.	357 ft	11 mins.
15	04 Aug	Lock out dive. Checked all external bolts on ball joint. Checked riser indicator, hole position beacon and bottom of BOP clear of cement.	367 ft	21 mins.
16	05 Aug	Lock out dive. Attempted to chip away cement holding hole position indicator to sea bed. Unsuccessful due to hard cement.	365 ft	30 mins.
17	13 Aug	Lock out dive. Checked bolts on ball joint.	315 ft	9 mins.
18	15 Aug	Lock out dive. Recovered 18 3/4 x 9 5/8 in. seal assembly from wellhead.	357	16 mins.
19	15 Aug	Observation dive. Visual assistance when stabbing retrieving tool for 18 3/4 in. wellhead housing.	357 ft	35 mins.

ESSO EXPLORATION AND PROD.
NORWEGIAN NORTH SEA
WELL 15/6-4
RIG



AIR TRANSPORTATION

15/6-4

Helicopter contractor : Helikopter Service A/S

Month	Category	A/S	Sorties	Psgrs.in	Psgrs.out	Flight time hours:mins.
June	Scheduled	S-61	1	15	12	2:10
June	Non-scheduled	S-61	4	7	14	8:00
July	Scheduled	S-61	14	168	164	30:40
July	Non-scheduled	S-61	6	17	24	9:55
August	Scheduled	S-61	10	96	99	18:35
August	Non-scheduled	B 212	2	0	2	2:35
	Totals		37	303	315	71:55

Several flights during July and August landed at the ROSS RIG as well as at the NORJARL.

Stavanger 14 September 1976.

LØ/thd

MARINE TRANSPORTATION

15/6-4

Anchorhandling supply vessel	SIDDIS MARINER	GRUNO ANNE	
Standby vessel			ROCKFISH/CLOVER
On hire	25 June 1976;0000 hours	26 June 1976; 1245 hours	27 June 1976;0000 hours
Off hire	18 Aug. 1976;2400 hours	29 June 1976; 1440 hours	16 Aug. 1976;1045 hours
Trips to Stavanger/ Aberdeen	18/1	-	-
Fuel consumed, metric tons	486	-	-
Downtime	None claimed	Nil	Nil

CARGO CARRIED TO RIG

Potable water	500 tons
Drill water	4000 "
Mud, barite, cement	1060 "
Casing, tubulars, wellhead equipment	738 "
Rig fuel	445 "
Miscellaneous	330 "
Total	7073 tons

SUPPLY VESSEL INCIDENT

A marine incident occurred on August 8, 1976 while the SIDDIS MARINER was tying up to rig. The vessel hit rig columns three times, lost a mooring rope and nearly ran over the rig's pickup boat.

The vessel proceeded to Stavanger, where another master took command.

An extract of the rig's log book follows on the next page.

D/B "Norjarl"

Trondheim.

EXTRACT OF LOGBOOK.

August 8th. 1976.

At 0615 hrs.:	Wind NW 6-8 knots, waves 1-3 ft. During operations of tieing up to the Port side of the Rig the "Siddis Mariner" hit No. 2 column about 5 ft. above waterline at approximately 10 o'clock. The approximate extend of the damage is a 5 x 5 ft. dent 4 inches deep in the shellplate.
" 0620 "	"Siddis Mariner" lost the mooring rope.
" 0630 "	Lowered the Pick Up boat and towed the mooring rope towards the "Siddis Mariner". During this operation "Siddis Mariner" nearly ran over the Pick Up boat, continued towards the Rig and hit the bumper at No. 2 column and deformed it.
" 0640 "	"Siddis Mariner" drifted into anchor chain No. 7 and No. 1 column without making any visible damage.
" 0650 "	Started discharging deck cargo.
" 0658 "	"Siddis Mariner" drifted into bumper at No. 2 column without making any visible damage.
" 0700 "	The deck cargo offloaded and "Siddis Mariner" departed the Rig for Stavanger.

D/B "Norjarl" Block 15/6-4, August 8th. 76.

B.W. Henson	T. Fish	P. Dekkvik
Esso Operations Supervisor	Rig Superintendent	Captain.

FORM A

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH
ESSO SUPR Gillette
ESSO ENGR
ESSO TECH
RIG SUPR FISH

RIG NOR.JARL

PAGE 1 OF 1
REPORT NO. 0
24 HRS ENDING 26/6/7
WELL DEPTH —
PROGRESS —

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
			Accepted Rig From CONOCO At
			1245 HOURS 26 JUNE 1976
	1600		UNDERWAY to 15/6-4 at 2 to 3
			knots due to FOG
	2400	8	UNDERWAY to LOCATION with BOAT
			GRUND ANNE Towing AVG SPEED
			8 Knots. WORKing on BOP
			STACK while UNDERWAY

TIME SUMMARY			TOTAL
	CODE	1	
	HOURS	11¼	11¼

W
ELTY
P
TRA

FORM A

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH
ESSO SUPR. Gillette
ESSO ENGR
ESSO TECH
RIG SUPR. FISH

RIG NORJARL

PAGE 1 OF 1
REPORT NO. 1
24 HRS ENDING 22/6/7
WELL DEPTH —
PROGRESS

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0830	8½	UNDERWAY to 15/6-4 LOCATION AVG SPEED 8 KNOTS. WORKING ON B.O.P. STACK
	1115	2¾	APPROACH to LOCATION DROPPED NO 5 ANCHOR AT 1045 HOURS. NO. 5 ANCHOR BUOY FAILED TO SURFACE
	2215	11	RUNNING ANCHORS with SIDDIS MARINER. GRUND ANN HOLDING RIG ON LOCATION
	2115		BALLAST RIG TO DRILLING DRAFT.
			NOTE. OPENED ALL BOP RAM BONNETS. REPLACED RAM PACKERS AND SEALS. CHECKED TENSIONERS. INSPECTED DIVERTER VALVES

TIME SUMMARY				TOTAL
CODE	1	2		
HOURS	10¼	13¾		24

4W
ECTY
-P
ITPA

WELL 15/6-4

DAILY DRILLING REPORT

FORM A

PAGE 1 OF 2

WATER DEPTH

ESSO SUPR Kirby, Gillette

ESSO ENGR

ESSO TECH

RIG SUPR FISH

RIG NORJARL

REPORT NO. 2

24 HRS ENDING 28/6/76

WELL DEPTH

PROGRESS

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0415	4 1/4	Pick up BHA. Remove DECCA Equipt. from moonpool while tensioning and testing anchors
	1130	7 1/4	made up 30" csg with drill pipe stinger inside and. Hung 30" csg. and 4 Post Guide structure in moon pool. Run BHA to within 40 ft. of Bottom. made observation dive while testing anchors.
	1400	2 1/2	Continued testing anchors. All Anchors tested to 300 to 325 kips slacked anchors to working tensions.
	1430	1/2	RIH to tag bottom. 445 ft. RKB water depth 365 ft.
	2400	9 1/2	Spud well at 1430 hours. Drilled 36" hole to 515 ft. Bottom very firm

TIME SUMMARY	CODE	2	6	3										TOTAL
	HOURS	14	1/2	9 1/2										

SIZE/DEPTH LAST CSG. ____________

ANN TOC LAST CSG. ____________

REPORT NO. 9

24 HRS. ENDING 28-6-76

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	480						
TIME	0200						
WT	8.8						
PV@ °F	11						
YP@ °F	63						
GELS (0/10)							
API F.L.							
HTHP F.L.@ °F PSI							
CAKE THK							
CAKE DESC							
pH							
Pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)		-	3293
BARITE (SX)			
BENTONITE		851	880
LIG.SULFONATE			
LIGNITE			70
CAUSTIC		10	161
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			2800
$CaCl_2$		8	2
RETARDER (LR)		-	
RETARDER ( )			
DRL WATER	LT	200	617
WASH WATER			
POT WATER	LT		44
RIG FUEL	LT	5	403
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 30, 20

DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
1	1	26	HTC	ST734	6-24	-	70	9.5	7.3	5/15	20/50	600	180	20/			
		36	SEC		5-20												

DRILLING ASSEMBLY

COMPONENT	FT
26" BIT	
36" HO	
FS	
6X9 DC	
XO	
3X8 DC	
XO	
287'	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG 1

HELI FLTS/PAX FR RIG 1

WORKBOATS

BOAT	SM	GA	RF
LOCATION	RIG	RIG	RIG
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	7
HOWCO	2
MDS	1
DIVERS	6
EXLOG	2
DECCA	3
ROWAN	46
TOTAL	67

WEATHER (RANGE/DAY)

SEA 2-3' 6SEC

SWELL

WIND 9-12 KTS SSW

TIDE

RIG DATA (RANGE/DAY)

HEADING 312

ROLL .3

PITCH .3

HEAVE —

% OFFSET —

ANCHOR TENS.

MAX 325

MIN 120

FORM A

WELL 15/6-4
WATER DEPTH
ESSO SUPR KIRBY-GILLETTE
ESSO ENGR
ESSO TECH
RIG SUPR FISH

DAILY DRILLING REPORT

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 3
24 HRS ENDING 29-1-76
WELL DEPTH
PROGRESS

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0315	3¼	DRILL TO 561'
	0330	¼	CIRC + DISPLACE HOLE W/ 350 BBL MUD
	0400	½	DROPPED TOTCO - SURVEY 2°
	0430	½	MADE WIPER TRIP - 15' FILL - WASHED TO BOTTOM
			DISPLACED HOLE W/ 400 BBL GEL MUD
	0530	1	POOH
	0630	1	MOVE 30" OVER MOONPOOL + MAKE UP RUNNING TOOL
	0745	1¼	RUN 30" CSG - UNABLE TO STAB INTO HOLE
	1045	3	JUMP DIVERS TO ASSIST STAB IN - POOR BOTTOM VISABILITY -
			SHIFT RIG BUT UNABLE TO STAB IN - ABANDON HOLE
	1115		RECOVER DIVERS
	1230		PULL 30" + HANG IN MOONPOOL
	1345		PICK UP BHA WHILE TENSIONING ANCHORS TO 250,000
	2115		TAG BOTTOM AT 445' - SPUD NEW 36" HOLE + DRILL TO 558' RKB
	2215		CIRC W/ SEAWATER + REAM AT 490'
	2230		DISPLACE HOLE W/ 200 BBL MUD + DROP TOTCO
	2245		PULL UP TO 476' + RECOVER SURVEY 1°
	2300		RUN TV + OBSERVE SEA-FLOOR
	2330		RIH TO 552' - WASH FILL TO BOTTOM
	2400		FLUSH HOLE W/ 400 BBL MUD + POOH

TIME SUMMARY								TOTAL
CODE	3	10	12	6	7	33		
HOURS	3¾	¼	½	1	1	18		24

WELL 15/6-4

SIZE/DEPTH LAST CSG.

ANN TOC LAST CSG.

REPORT NO. 3

24 HRS. ENDING 24-6-76

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME	2300						
WT	8.9						
PV@ °F	14						
YP@ °F	76						
GELS (0/10)							
API F.L.							
HTHP F.L.@ °F PSI							
CAKE THK							
CAKE DESC							
pH							
Pf							
Mf							
Rf@ °F							
Cl⁻							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			3234
BARITE (SX)			
BENTONITE			810
LIG.SULFONATE			
LIGNITE			
CAUSTIC			166
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CEMENT (G)		700	2120
$CaCl_2$			
RETARDER ( )			11
RETARDER ( )			
DRL WATER		709	3234
WASH WATER			
POT WATER			
RIG FUEL	LT	10	393
HELIFUEL	gals		2347

MUD: MAKE UP WATER: Cl⁻ ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 20, 30

DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST ____, CUM MUD COST 6751, MUD PUMP TYPE/LINERS 7X12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
1	1	26/36	HTC	84734	4/24	561	115	12¼	9.4	0/15	10/50	1200	180		1	1	1
2	1	–	–	–		561	115	7.5	15.3	8/10	35/55	1600	238		1	1	1

DRILLING ASSEMBLY

COMPONENT	FT
26" BIT	
36" HO	
FLOAT	
6x9 DC	
XO	
3x8 DC	
XO	
289.97	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG 4

HELI FLTS/PAX FR RIG 0

WORKBOATS				
BOAT	SM	RF		
LOCATION	RIG	RIG		
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	9
ROWAN	47
MDS	1
HOWCO	2
DIVERS	6
EXLOG	3
DECCA	1
TOTAL	69

WEATHER (RANGE/DAY)

SEA 1-2 FT

SWELL –

WIND 10-12 KTS

TIDE 4'

RIG DATA (RANGE/DAY)

HEADING 312°

ROLL .1°

PITCH .1°

HEAVE –

% OFFSET

ANCHOR TENS.

MAX 300

MIN 160

DAILY DRILLING REPORT

FORM A

WELL 15/6-4
WATER DEPTH
ESSO SUPR
ESSO ENGR
ESSO TECH
RIG SUPR

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 4
24 HRS ENDING 30-6-76
WELL DEPTH
PROGRESS

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0015	1/4	POOH TO RUN 30"
	0115	1	MOVE 30" OVER MOONPOOL + INSTALL BEACON
	0230	1 1/4	RUN 30" + TV - STAB IN HOLE W/VISUAL ASSIST
			AT 0155
			RUN 30" - SHOE @ 558' RKB
	0315	3/4	CIRC SEAWATER
	0400	3/4	CMT 30" w/ 600 SX CLASS G + 2% CACL
			DISP W/8 BBL WATER AVG WT 15.8 PPG - FLOAT Holding
	0430	1/2	BACK OUT RT + E? CIRC WHILE PULLING T.V.
	0500	1/2	POOH - LAYDOWN STINGER + RUNNING TOOL.
	0730	2 1/2	RIG + RUN JET SUB TO WASH WELLHEAD
	1330		RUN RISER and PIN CONNECTOR LATCHED
			SAME and Pull tested 68 Kips overpull
	1430	1	Layed down 36" H.O. + 26" Bit
	1615	1 3/4	Pick up 17 1/2" Bit R.I.H. TAG Cement
			At 546'
	1645	1/2	DRILLED Cement and Shoe at 556'
	1715	1/2	DRILLED to 580'. Complete Loss
			OF Returns.
	1900	1 3/4	Checked RISER with TV. OK.
			POOH
	1930	1/2	RIH OPEN Ended D.P. to 563'
	2000	1/2	mixed and Spotted 250 SX Class G
			Cement neat with 2% CACL. NO Rise
			in annulus Fluid level while Cementing
	2245		WOC. POOH
	2300		Pumped 50 bbls into Riser. Fluid level
			standing at Sea level. RIH to 563'
	2400	1/2	mixed and Pumped 300 SX class G Neat with
			2% CACL. NO Rise in Annulus Level. POOH

TIME SUMMARY								
CODE	23	7	15	6	3	25		TOTAL
HOURS	1 1/4	6 1/4	6	2 3/4	1	6 3/4		24

WELL 15/6 / ——

SIZE/DEPTH LAST CSG. 30" @ 554

ANN TOC LAST CSG. ——

REPORT NO. 4

24 HRS. ENDING 30/6/76

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	550						
TIME	1200						
WT	8.9						
PV@ °F	7						
YP@ °F	26						
GELS (0/10)	14/32						
API F.L.							
HTHP F.L.@ °F PSI							
CAKE THK							
CAKE DESC							
pH	11.0						
Pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			3234
BARITE (SX)			
BENTONITE			1310
LIG.SULFONATE			
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL			
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____ , ____

DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT				
LOCATION				
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	6
ROWAN	46
MDS	1
HOWCO	1
DIVERS	6
X-Log	4
SCH	2
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	
SWELL	
WIND	
TIDE	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	
PITCH	
HEAVE	
% OFFSET	
ANCHOR TENS.	
MAX	
MIN	

FORM A

WELL 15/6-4

DAILY DRILLING REPORT

PAGE 1 OF 2

WATER DEPTH

ESSO SUPR Kirby - Gillette

ESSO ENGR

ESSO TECH

RIG SUPR

RIG NORJARL

REPORT NO. 5

24 HRS ENDING 1/7/2

WELL DEPTH 561

PROGRESS —

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0300	3	WOC
	0430	1½	PUMPED 35 bbl water into RISER while WOC, FLUID Level Remained At SEA Level
	0715	2½	Jumped Divers to CHECK SEA FLOOR OBSERVED Approx 4 ft. DIAMETER Hole by No 4 Guide Post. Fluid Coming FRom this hole when Pumping into RISER.
	0900	1¾	MIXED and Spotted 400 SX CLASS G NEAT PLUS 2% CACl. Fluid Level in RISER REMAINED AT SEA Level.
	0915	¼	POOH
	1530	6¼	PREPARE FOR NEXT CEMENT Job while WOC. RIH to 500 ft.
	1645	1¼	MIXED and pumped 1200 SX CLASS G cement plus 8% Bentonite with 2% CACl. Fluid Level in RISER Rose 50 ft. while pumping Cement. then gradually Fell to SEA Level.
	1700	¼	POOH
	2400	5	WOC while PREPARING for Next Cement Job. Ran and STABBED 5" D.P. into old HOLE at CORNER of Guide BASE by No 4 Guide Post.

TIME SUMMARY														
CODE	25													TOTAL
HOURS	24													24

WELL NORJARL

REPORT NO. 5

24 HRS. ENDING 1/7/76

SIZE/DEPTH LAST CSG.

ANN TOC LAST CSG.

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.							
HTHP F.L. @ °F PSI							
CAKE THK							
CAKE DESC							
pH							
Pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	50kg		4562
BARITE (SX)			
BENTONITE	50kg		
LIG.SULFONATE	25kg		190
LIGNITE			
CAUSTIC			152
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER	Bbls	1306	3654
WASH WATER			
POT WATER	Bbls		313
RIG FUEL	Tons	5	478
HELIFUEL	Gals		4347

MUD: MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____, DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____ DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT				
LOCATION				
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	6
ROWAN	46
MDS	1
X-LOG	4
SCH	2
DIVERS	6
HOWCO	1
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	SSE 2-4
SWELL	Nil
WIND	9 SSE
TIDE	+ 4 ft
Ris Tens 168	
B.T. Pres 1600	

RIG DATA (RANGE/DAY)	
HEADING	315
ROLL	.3
PITCH	.3
HEAVE	Nil
% OFFSET	
ANCHOR TENS. MAX	230
MIN	150

FORM A

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR KIRBY - Gillette
ESSO ENGR
ESSO TECH
RIG SUPR

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 6
24 HRS ENDING 2/7/7
WELL DEPTH 1293
PROGRESS 713

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0200	2	WOC
	0315	1¼	Stabbed D.P. into old Hole by NO.
			4 Guidepost with DIVER ASSIST.
			worked down to 500' RKB
	0445	1½	Set Plug NO 5 with 1700 SX class
			G cement with 8% Bentonite plus
			2% CACl
	0545	1	POOH layed Down 6 Jts Bent D.P.
	0630	¾	Pick up BHA. RIH Tag cement at 499'
	0800	1½	CIRC. WOC to set in old Hole.
	0830	½	DRILLED HARD cement to 519 ft.
	1015	1¾	Unlatched pin connector, Picked up
			RISER 2 ft. washed AREA Around
			30" Housing to Flush Cement From AREA
	1045	½	DRILL cement to 551 ft.
	1200	1¼	WOC
	1245	¾	DRilled Soft cement to 580'
	1945	7	DRilled 17½" Hole to 1293 ft.
	2015	½	CIRC
	2100	¾	made wiper trip into 30" csg
			Observed well for flow
	2145	¾	CIRC Hi vis Gel mud
	2300	1¼	DRopped totco POOH
	2400		Rig up SCH start Running Sonic
			G.R. Log

TIME SUMMARY																
	CODE	25	3	10	12	6	18	16								TOTAL
	HOURS	12¾	7	1¼	½	¾	1	¾								24

WELL [illegible] NORJARL

REPORT NO. 6

SIZE/DEPTH LAST CSG 30" — 556'

24 HRS. ENDING 2/7/76

ANN TOC LAST CSG.

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.							
HTHP F.L.@ °F PSI							
CAKE THK							
CAKE DESC							
pH							
Pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	LT		204
BARITE (SX)			
BENTONITE			
LIG.SULFONATE	25 kg		198
LIGNITE			
CAUSTIC	50 kg		152
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)	94# SX		260
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL	bbls		3262
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____ ,

DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

[illegible] FW FLTS/PAX [illegible] ; TO FR [illegible]

FW FLTS/PAX ; FR TO

2 HELI FLTS/PAX TO RIG 24

HELI FLTS/PAX FR RIG 27

WORKBOATS

BOAT	MAK	FISH		
LOCATION	RIG	RIG		
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
Rowan	45
Sch	3
MDS	1
Howco	1
DIVERS	6
X-Log	5
TOTAL	63

WEATHER (RANGE/DAY)	
SEA	
SWELL	
WIND	
TIDE	
Ris Tens	1108
B.J. Pres	1000

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	.4
PITCH	.3
HEAVE	.5
% OFFSET	
ANCHOR TENS. MAX	275
MIN	180

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR KERBY / GILLESPIE
ESSO ENGR
ESSO TECH
RIG SUPR DAVIS

RIG NORJARL

REPORT NO. 7
24 HRS ENDING 3/7/76
WELL DEPTH 1293
PROGRESS —

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
18	0145	1 3/4	RUN SONIC - GR TO 1295 FT.
7	0200	1/4	MADE UP 18 3/4" RUNNING TOOL.
6	0345	1 3/4	LAYED DOWN 4 JTS DP AND 3 JTS HEAVY WEIGHT
8	0645	3	UNLATCHED PIN CONNECTOR. PULLED RISER
6	1030	3 3/4	MADE UP BHA. RIH, STABBED INTO 30"
			W/H HOUSING
4	1600	5 1/2	OPENED 17 1/2" HOLE TO 26"
10 TO 12	1700	1	CIRC. DROPPED TOTCO.
16	1800	1	WIPER TRIP TO 30" SHOE. 30 KIP
			DRAG FROM 1290' TO 1150'.
10	1845	3/4	CIRC. DISPLACE HOLE WITH HI VISC MUD
6	2030	1 3/4	POOH
7	2100	1/2	RIG TO RUN 20" CSNG.
7	2245	1 3/4	RUN 20" CSG.
7	2330	3/4	RUN 20" GUIDE AND TV. POOR BOTTOM
			VISIBILITY SO USE DIVERS AS VISUAL ASSIST
			TO STAB INTO WELLHEAD
7	2400	1/2	RUN 20" CSG.

DAILY WELL COST : $ 73.284
TOTAL " " : $ 627.522

TIME SUMMARY													
CODE	18	7	6	8	4	10	12	16					TOTAL
HOURS	1 3/4	3 3/4	7 1/4	3	5 1/2	1 1/4	1/2	1					24

WELL [illegible] NORJARL

SIZE/DEPTH LAST CSG. ______

ANN TOC LAST CSG. ______

REPORT NO. 7

24 HRS. ENDING 3/7/76

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.							
HTHP F.L.@ °F PSI							
CAKE THK							
CAKE DESC							
pH							
Pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			4570
BARITE (SX)			
BENTONITE			
LIG. SULFONATE			
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			2200
WASH WATER			
POT WATER			
RIG FUEL	Bbls	36	3625
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____, ____

DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
	2	17½	S3S	494312	3-13	1293											
	H.O	26					812	5½	146	10	110	2000					

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH	1275			
ANGLE	½°			
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS			
BOAT	S.M.	R.F.	
LOCATION	RIG	RIG	
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
MDS	1
ROWAN	45
HOWCO	1
DIVERS	6
X-Log	5
SCH	3
TOTAL	63

WEATHER (RANGE/DAY)	
SEA	2 NE
SWELL	Nil
WIND	6-10 NE
TIDE	41
B.J.	
R.S. Tens	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	.3
PITCH	.3
HEAVE	.5
% OFFSET	
ANCHOR TENS. MAX	250
MIN	140

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Kirby + Gillette
ESSO ENGR
ESSO TECH
RIG SUPR DAVIS

RIG NORJARL

REPORT NO. 8
24 HRS ENDING 4/7/2
WELL DEPTH 1361
PROGRESS —

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
7	0215	2 1/4	Running 20" csg. Shoe at 1243 ft. Top of wellhead at 440 ft.
7	0300	3/4	Circ.
7	0430	1 1/2	Cemented with 980 sx Class G with 8 % Bentonite. Tailed in with 300 sx Neat mixed with Sea water
7	0445	1/4	Backed out Running tool and flushed wellhead
7	0730	2 3/4	Rig down Halliburton. RIH with Jetting tool and washed wellhead. POOH
7	0845	1 1/4	Jumped Divers inspect wellhead Recover Sample of cement.
15	2300	14 1/4	moved BOP STACK into moonpool. SEPERATED STACK, CHECKED HYDRIL RUBBER, BOLTS ON MANDREL, CHANGED AX Ring CHECKED BALL JOINT
15	2400	1	STARTED RUNNING BOP STACK AND RISER

TIME SUMMARY														
CODE														TOTAL
HOURS														

WELL ~~15/~~ NORJARL

SIZE/DEPTH LAST CSG. 1243 FT RKB

ANN TOC LAST CSG. SEA FLOOR

REPORT NO. 8

24 HRS. ENDING 4/7/74

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME	1500						
WT	8.6						
PV@ °F	7						
YP@ °F	11						
GELS (0/10)	10/14						
API F.L.	30						
HTHP F.L.@ °F PSI							
CAKE THK	3						
CAKE DESC							
pH	11.0						
Pf	.25						
Mf	.3						
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS %	4						
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	LT		204
BARITE (SX)	"		
BENTONITE	100# SX		1115
LIG.SULFONATE	25 Kg		190
LIGNITE			
CAUSTIC	50 Kg		144
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)	94# SX		855
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER	Bbls		632
WASH WATER			
POT WATER			
RIG FUEL	Bbls		4290
HELIFUEL			

MUD: MAKE UP WATER: Cl^-____, Ca^{++}____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 20/30, 20/30

DESANDER HRS.____, DESILTER HRS.____, CENTRIFUGE HRS.____

DAILY MUD COST $ 996, CUM MUD COST $ 7513, MUD PUMP TYPE/LINERS 7x12" NAT 12P 160

BITS:

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

1 HELI FLTS/PAX TO RIG 1

1 HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	S.M	R.F	
LOCATION	RIG	RIG	
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
ROWAN	45
MDS	1
X-Log	5
Sch	3
DIVERS	6
HOWCO	1
TOTAL	64

WEATHER (RANGE/DAY)

SEA	
SWELL	
WIND	
TIDE	

RIG DATA (RANGE/DAY)

HEADING	
ROLL	
PITCH	
HEAVE	
% OFFSET	
ANCHOR TENS. MAX	
MIN	

DAILY COST $ 178,510

TOTAL COST $ 806,032

FORM A

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365 ft
ESSO SUPR. KERBY
ESSO ENGR.
ESSO TECH. GILLETTE
RIG SUPR.

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 9
24 HRS ENDING 05 JUL
WELL DEPTH 1741 ft
PROGRESS 440 ft

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
15	0245	2 3/4	run bop + riser - pick up 2 jts heavyweight d.p.
15	0500	2 1/4	connect kill and choke lines, ruckerring
15	0530	1/2	run t.v. - adjust guideline and riser tensions
24	0600	1/2	move rig over hole
15	0615	1/4	land stack at 0603 am - pull test connector to 100 kips over hookload.
15	0730	1 1/4	stroke out slip joint and install diverter - pressure test csng to 800 psi - bled back to 650 psi and held pressure test c + k connections to 6,000 psi - held ok
15	0800	1/2	rig down riser handling tools
15	0900	1	rih and set wear bushing
24	1030	1 1/2	pick up bha and rih to 1100 ft
24	1200	1 1/2	hang off on pipe rams to pressure test bop's could not get good test
24	1300	1	p.o.h.
24	1330	1/2	run wear bushing running and retrieving tool and retrieve same
24	1345	1/4	break down wear bushing and make up test tool
15	1400	1/4	rih and land test plug
	1530	1 1/2	pressure test bops to 200 and 800 psi as per esso test proceedures.
15	1545	1/4	p.o.h. break out test tool
24	1630	3/4	pick up wear bushing running and retrieving tool and rih + set wear bushing
6	1730	1	rih with drlg assy and tag cement at 1209 ft.
3	1915	1 3/4	drill cement to 1301 ft. confirm 20'' shoe at 1243 ft.
10	1945	1/2	circulate and change over to mud at 1310 fi.

TIME SUMMARY								TOTAL
CODE	6	15	24	3	10	7		
HOURS	1	10 1/2	6	5 3/4	1/2	1/4		24

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 265 ft
ESSO SUPR KERBY
ESSO ENGR
ESSO TECH GILLETTE
RIG SUPR

RIG NORJARL

REPORT NO. 9
24 HRS ENDING 05JUL
WELL DEPTH 1741
PROGRESS 440

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
7	2000	1/4	pressure integrity test on 20'' csng shoe
			pumping rate 1/2 bpm
			mud weight: 8.8 lbs/gal
			bbls pressure time (min)
			1/2 50 psi 1
			1 200 2
			1 1/2 250 3
			2 250 4
			- 200 5
			200 6
			200 7
			200 8
			200 9
			eq.viv. mud wt. at csng shoe: 11.88 lbs/gal
3	2400	4	drlg 17 1/2 '' hole to 1741 ft. - average background
			gas - 50 units (1 0/0) - holding fairly constant
			daily well cost: dollar 87,551
			cum.well cost: dollar 893,583
			note:
			-----
			1)choke manifold completely pressure tested
			2)pumped through diverter lines prior to drlg out of 20'' csng shoe
			3)chief officers on vessel schooled roustabouts on use of foam spray equipment.
			need for wed. -crew change - 1)updated cost book
			2)adding amchine
			jim kerby requires confirmation of london flight - 1600

TIME SUMMARY	CODE												TOTAL
	HOURS												

WELL 15/6-4

DAILY DRILLING REPORT

REPORT NO. 9

24 HRS. ENDING 05JUL

SIZE/DEPTH LAST CSG 20/1243

ANN TOC LAST CSG

DAILY WELL COST $ 87.551

CUM. WELL COST $ 893.583

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	1680						
TIME	2330						
WT	8.9						
PV@ °F	3						
YP@ °F	14						
GELS (0/10)	12/12						
API F.L.	50						
HTHP F.L @ °F PSI							
CAKE THK	4						
CAKE DESC							
pH	10.8						
Pf	TR						
Mf	0.12						
Rf@ °F							
Cl^-	14000						
Ca^{++}	1400						
SOLIDS %	5						
SAND %	TR						
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			204
BARITE (SX)			
BENTONITE			1115
LIG. SULFONATE			190
LIGNITE			
CAUSTIC		5	141
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			855
$CaCl_2$			
RETARDER (R20)			11
RETARDER ( )			
DRL WATER		43	415
WASH WATER			
POT WATER			
RIG FUEL		4.5	[illegible]
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 20/30, 20/30

DESANDER HRS. 5, DESILTER HRS. 5, CENTRIFUGE HRS. ____ 12P160

DAILY MUD COST $ 100, CUM MUD COST 7613, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
6	3	17½	S3SJ	[illegible]	3-18	INC	440	4	110	10-15	170	2800	160	117			

DRILLING ASSEMBLY

COMPONENT	FT
BIT	
FLOAT	
DC 2x9"	
STAB	
DC 7x9"	
XO	
DC 6x8"	
XO	
HWP x 6	
Σ	555

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	11.88			
DEPTH	1243			
DATE	05JUL			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	RF		
LOCATION	RIG		
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	5
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	
SWELL	
WIND	2-4 SSE
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.2
HEAVE	NIL
% OFFSET	
ANCHOR TENS	
MAX.	290
MIN	150

FORM A

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR KERBY
ESSO ENGR
ESSO TECH GILLETTE
RIG SUPR

DAILY DRILLING REPORT

RIG NORJARL

REPORT NO. 10
24 HRS ENDING 062076
WELL DEPTH 3600'
PROGRESS 1859'

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0515	5 1/4	drlg to 2309 - flow check connections
10	0530	1/4	circ. to survey
26	0630	1	drop totco - p.o.h. - after pulling 8 stands trip tank volume increased by 3 bbls due to swabbing - also had 50000 lbs drag
26	0645	1/4	rih.
26	0745	1	circ bottoms up - work pipe - gas units prior to trip - 50-70 units - over bottoms up gas units increased to 400 then fell off to 40 after 10 minutes
12	0800	1/4	retrieve totco (3/4 deg)
26	0845	3/4	circ. viscuous pill around to flush hole
16	0915	1/2	short trip to 1560 - pipe swabbing.
26	0945	1/2	pick-up kelly and circulate
16	1015	1/2	finish trip to shoe - hole tight going to bottom 1300 - 1600
3	2045	10 1/2	drlg 17 1/2'' hole to 3600 ft.
10	2145	1	circulate - condition hole and mud.
12	2200	1/4	drop totco
16	2300	1	short trip to 20'' shoe
12	2315	3/4	retrieve totco - 1/2 deg
16	2400	3/4	r.i.h. - 2 ft. fill-

TIME SUMMARY							TOTAL
CODE	3	10	12	16	26		
HOURS	15 3/4	1 1/4	1 1/4	2 1/4	3 1/2		24

DAILY DRILLING REPORT

WELL 15/6-4

SIZE/DEPTH LAST CSG 20" / 1243'
ANN TOC LAST CSG SEA BED
DAILY WELL COST $ 66,969

REPORT NO. 10
24 HRS. ENDING 06JUL76
CUM. WELL COST $ 960,552

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	2403	3600					
TIME	1200						
WT	9.0	9.2					
PV@ °F	5	5					
YP@ °F	10	11					
GELS(0/10)	6/7	6/6					
API F.L.	50	19					
HTHP F.L @ °F PSI							
CAKE THK	4	3					
CAKE DESC							
pH	10.6	10.8					
pf	0.06	0.08					
Mf	0.13	1.6					
Rf@ °F							
Cl^- x 1000	20	20					
Ca^{++}	1040	1100					
SOLIDS %	6	7					
SAND %	1/8	1/2					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	LT		240
BARITE (SX)			
BENTONITE		45	1070
LIG. SULFONATE			
LIGNITE			
CAUSTIC		44	97
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC (LV)		19	0
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
CMC (HV)		67	33
DRL WATER	LT	7	342
WASH WATER			
POT WATER	LT		40
RIG FUEL	LT	4.33	546
HELIFUEL	GAL		2041

MUD
MAKE UP WATER: Cl^- 2200, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 20/30, 20/30
DESANDER HRS 20, DESILTER HRS 20, CENTRIFUGE HRS ____
DAILY MUD COST $ 5652, CUM MUD COST $ 11 265, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
6	3	17 1/2	S3SJ	498456	3-18	3600	2307	19 3/4	116.8	10-25	160	3000	188				

DRILLING ASSEMBLY

COMPONENT	FT
AS #9	

DEVIATION AND LEAKOFF DATA				
DEPTH	2290	3600		
ANGLE	3/4	1/2		
LEAKOFF PPG EQUIV	11.9			
DEPTH	1243			
DATE	06JUL76			

FIXED WING AND HELICOPTERS
FW FLTS/PAX ;TO FR
FW FLTS/PAX ;FR TO
HELI FLTS/PAX TO RIG
HELI FLTS/PAX FR RIG

WORKBOATS				
BOAT	RF			
LOCATION	RIG			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	5
MUD	1
CEMENT	1
DIVERS	6
E. LOG	3
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	1-2'
SWELL	
WIND	4-6 NNW
TIDE	1' +
BALL JT	1100
RISER TEN	180

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.2
HEAVE	0
% OFFSET	
ANCHOR TENS	
MAX.	225
MIN	120

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365 ft
ESSO SUPR HENSON
ESSO ENGR
ESSO TECH THORESEN
RIG SUPR

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 11
24 HRS ENDING 07JUL76
WELL DEPTH 3600 ft
PROGRESS 0

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
21	0100	1	circ. + condition hole
6	0330	2 1/2	strap out of hole
18	0345	1/4	rig up schlumberger
18	0715	3 1/2	r.i.h. + log from 3330'
18	0745	1/2	rig down schlumberger
7	0815	1/2	make up cmt. head
7	1015	2	make up hangar, running tool, plug + stand back
7	1200	1 3/4	pick up b.h.a. + rih drag 3300s a eypps
7	1300	1	break circ + circ hole
7	1345	3/4	short trip to shoe o.k.
7	1430	3/4	rih 3' fill
7	1600	1 1/2	circ to clean hole
7	1730	1 1/2	p.o.h.
7	1800	1/2	make up wear bushing retriving tool r.i.h. w/same
7	1845	3/4	p.o.h.
7	1930	3/4	rig up to run c.s.g.
7	2400	4 1/2	run 63 jnt 13-3/8'' csg

TIME SUMMARY						TOTAL
	CODE	6	7	21	18	
	HOURS	2 1/2	16 1/4	1	4 1/4	24

WELL ______

REPORT NO. 11
24 HRS. ENDING 07 JUL 76

SIZE/DEPTH LAST CSG. ______
ANN TOC LAST CSG. ______

DAILY WELL COST: $ 70.013 CUMULATIVE COST: $1.030.565

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	3600	3600					
TIME							
WT	9.2	9.2					
PV@ °F	5	5					
YP@ °F	10	11					
GELS (0/10)	6/7	6/6					
API F.L.	50	19					
HTHP F.L. @ °F PSI							
CAKE THK	4	3					
CAKE DESC							
pH	10.6	10.8					
Pf	0.06	0.08					
Mf	0.13	1.6					
Rf@ °F							
Cl^- x 1000	20	20					
Ca^{++}	1040	1100					
SOLIDS %	6	7					
SAND %	1/8	1/2					
OIL %	-						
CEC	NR	NR					

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			240
BARITE (SX)			
BENTONITE		22	1070
LIG. SULFONATE			
LIGNITE			
CAUSTIC			97
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC			33
CEMENT ( )			
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
DRL WATER		216	226
WASH WATER			
POT WATER			43
RIG FUEL	LT	5.34	540.31
HELIFUEL	GAL		2041

MUD
MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 20/30, 20/30
DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____
DAILY MUD COST $ 3.080, CUM MUD COST $ 14.345, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
7	3	17½		496486	3-18	3600											

DRILLING ASSEMBLY

COMPONENT	FT
As #9	

DEVIATION AND LEAKOFF DATA

DEPTH			
ANGLE			
LEAKOFF PPG EQUIV			
DEPTH			
DATE			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR
FW FLTS/PAX ; FR TO
HELI FLTS/PAX TO RIG 19
HELI FLTS/PAX FR RIG 15

WORKBOATS

BOAT	RF		
LOCATION	R16		
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
STATOIL	2
MDS	1
EX LOG	5
CEMENT	1
DIVERS	6
SCHL.	3
W. FORD	2
ROWAN	46
TOTAL	68

WEATHER (RANGE/DAY)

SEA	2-4 ft
SWELL	
WIND	4-6 NW
TIDE	

RIG DATA (RANGE/DAY)

HEADING	312
ROLL	0.3
PITCH	0.2
HEAVE	0
% OFFSET	
ANCHOR TENS. MAX	270
MIN	175

BALL JT: 1100 psi
RISER TENSION: 180

FORM A[illegible]

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR.
ESSO TECH. THORESEN
RIG SUPR.

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 12
24 HRS ENDING 02JUL76
WELL DEPTH 3640'
PROGRESS 40'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
7	0100	1	finished running 13 3/8'' csg. - ran total of 77 jts 13 3/8, 61 lbs j-55 butt. csg. length 3107.57
7	0145	3/4	ran landing string and landed csg. w/shoe at 3552'.
7	0315	1 1/2	circulated b.u. before cementing
7	0515	2	cemented w/695 sx. cl. g w/8 0/0 gel. followed w/300 sx. cl. g neat - pre - flushed w/30 bbls. fresh water - bumped plug w/2500 psi - float held ok. complete returns throughout operation.
			released r.t. - pumped down choke and kill lines
7	0630	1 1/4	p.o.h. w/r.t.
7	0715	3/4	r.i.h. w/wash sub
7	0730	1/4	wash stack + seal ass
7	0745	1/4	p.o.o.h. lay down
7	0830	3/4	make up running tool seal ass
7	0900	1/2	r.i.h. set seal ass.
15	1115	2 1/4	test bop + choke + kill lines 2500 psi o.k.
15	1200	3/4	p.o.o.h. w/cuptester + make up 13 3/8 wear bushing
7	1230	1/2	run 13 3/8 wear bushing set same
7	1515	2 3/4	rig up schl + run c.b. log TOC 2500 ft RKB
7	1545	1/2	rig down schl.
[illegible]	1930	3 3/4	change b.h.a. + r.i.h. tag plug 3370'
3	2130	2	drill plug, shoe at 3532'
3	2200	1/2	drill 12 1/4'' hole 3600' to 3610'
10	2245	3/4	circ.
16	2315	1/2	rig up + leakoff test in 9.3 ppg 1200 psi no leakoff.
3	2400	3/4	drill 12 1/4'' hole to 3640'
			hang off drill held.

TIME SUMMARY								
CODE	3	6	7	10	15	16		TOTAL
HOURS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		24

SIZE/DEPTH LAST CSG. 13 3/8 / 3552'
ANN TOC LAST CSG. 2500 ft RKB

NORJARL

REPORT NO. 12
24 HRS. ENDING 09JUL76

DAILY WELL COST: $ 145.837   CUM. COST $ 1.176.402

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	3600						
TIME	2400						
WT	9.6						
PV@ °F	16						
YP@ °F	20						
GELS (0/10)	9/9						
API F.L.	16						
HTHP F.L. @ °F PSI							
CAKE THK	3						
CAKE DESC							
pH	11.4						
Pf	0.9						
Mf	0.3						
Rf@ °F							
Cl⁻ x 1000	18						
Ca^{++}	1560						
SOLIDS %	8						
SAND %	0.4						
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	SX		253
BARITE (SX)		60	690
BENTONITE			
LIG.SULFONATE		8	182
LIGNITE			
CAUSTIC		2	95
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			33
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER		141	518
WASH WATER			
POT WATER	LT		45
RIG FUEL	LT	5.81	584.51
HELIFUEL	US GAL		2591

MUD
MAKE UP WATER: Cl⁻ ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 80, 60
DESANDER HRS. 2, DESILTER HRS. 2, CENTRIFUGE HRS. ____
DAILY MUD COST $ 548, CUM MUD COST $ 14.893, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
8	4	12 1/4	X3A	71105	3-14												

DRILLING ASSEMBLY

COMPONENT	FT
BIT X3A	
BS	
DC 9" x 2	
STAB 12 1/4"	
DC 9" x 1	
XO	
MONEL DC 8"	
DC 8" x 11	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR
FW FLTS/PAX ; FR TO
HELI FLTS/PAX TO RIG /0
HELI FLTS/PAX FR RIG /3

WORKBOATS

BOAT	SM	RF	
LOCATION	Rowan Rig	RIG	
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
STATOIL	2
EX LOG	5
CEMENT	1
DIVERS	6
SCHL	3
MUD	1
ROWAN	45
TOTAL	65

WEATHER (RANGE/DAY)

SEA	2-4 NE
SWELL	
WIND	1-2
TIDE	

RIG DATA (RANGE/DAY)

HEADING	312
ROLL	0.5
PITCH	0.3
HEAVE	0.2
% OFFSET	
ANCHOR TENS. MAX	305
MIN	175

FORM A

WELL 15/6-4

WATER DEPTH 365'

ESSO SUPR HENSON

ESSO ENGR

ESSO TECH THORESEN

RIG SUPR

DAILY DRILLING REPORT

RIG NORJARL

PAGE 1 OF 2

REPORT NO. 13

24 HRS ENDING 03JUL75

WELL DEPTH 5417'

PROGRESS 1777'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0230	2 1/2	drilling
12	0300	1/2	survey at 3914 - 1/2 deg.
3	0500	2	drilling
12	0530	1/2	survey at 4194'- 1/4 deg.
			drilling (4256)
3	0830	3	drill 12 1/4'' hole to 4507'
12	0900	1/2	circ + run totco 1/4 deg.
3	1030	1 1/2	drill 12 1/4'' hole to 4633'
10	1100	1/2	circ + check for flow ok.
3	1300	2	drill 12 1/4'' to 4790'
16	1345	3/4	change packing on swivel + rig up howco + circ.
3	1430	3/4	drill 12 1/4'' hole to 4853'
12	1515	3/4	circ + run totco 1/4 deg.
3	1845	3 1/2	drill 12 1/4'' hole to 5135'
12	1915	1/2	circ + survey 3 3/4 deg. n7w ?
3	2045	1 1/2	drill 12 1/4'' hole to 5261' conn gas 67 units
27	2115	1/2	circ. + work pipe 70000 overpull
3	2245	1 1/2	drill 12 1/4'' hole 5417'
10	2330	3/4	circ + flow check before make short trip o.k.
12	2400	1/2	survey 3 3/4 deg. s40e. depth 5417' ?

TIME SUMMARY							TOTAL
CODE	3	10	12	27	16		
HOURS	18 1/4	1 1/4	3 1/4	1/2	3/4		24

WELL ____

SIZE/DEPTH LAST CSG. 13 3/8 / 3552

ANN TOC LAST CSG. 2500

REPORT NO. 13

24 HRS. ENDING 08JUL76

DAILY WELL COST: $ 63.960 CUM. WELL COST: 1.240.362

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	4855	5260					
TIME	1200	2000					
WT	9.6	9.4					
PV@ °F	8	8					
YP@ °F	12	18					
GELS (0/10)	12/21	10/18					
API F.L.	9.5	9.0					
HTHP F.L.@ °F PSI							
CAKE THK	3	3					
CAKE DESC							
pH	10.9	11.6					
Pf	0.7	0.8					
Mf	0.2	0.3					
Rf@ °F							
Cl^- × 1000	19	19					
Ca^{++}	600	280					
SOLIDS %	12	8.5					
SAND %	TR	TR					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	LT		294
BARITE (SX)			
BENTONITE	SX	75	615
LIG.SULFONATE		20	
LIGNITE			
CAUSTIC		17	204
BICARB			
SAPP			19
SODA ASH			
PIPE FREEING			
CMC			133
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER	L/T	162	356
WASH WATER			
POT WATER	L/T		50
RIG FUEL	L/T	12.5	521
HELIFUEL	US GAL		2591

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 30, 60

DESANDER HRS. 24, DESILTER HRS. 24, CENTRIFUGE HRS. ____

DAILY MUD COST $ 1425, CUM MUD COST $ 16.318, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
8	4	12 1/4	X3A	71105	3-14												

DRILLING ASSEMBLY

COMPONENT	FT
As Rep # 12	

DEVIATION AND LEAKOFF DATA

DEPTH	~~3600~~	3914	4194	4507
ANGLE		0.5	0.25	0.25
LEAKOFF PPG EQUIV	~~3600~~	3 15.7+		
DEPTH		3600		
DATE		08JUL		

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	/20
HELI FLTS/PAX FR RIG	/23

WORKBOATS

BOAT	RF	SM	
LOCATION	R14		
ENROUTE TO		ER	
ETA		1100	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
STATOIL	2
MUD	1
EX LOG	5
CEMENT	1
DIVERS	6
ROWAN	45
TOTAL	62

WEATHER (RANGE/DAY)	
SEA	2-3' 160°
SWELL	–
WIND	10-12 ESE
TIDE	-
RISER TENS	175
BALL JT.	1300

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.3
HEAVE	0.1'
% OFFSET	
ANCHOR TENS.	
MAX	235
MIN	170

DEV.

DEPTH 4853

ANGLE 0.25

WELL 15/6-4

WATER DEPTH 365'

ESSO SUPR. HENSON

ESSO ENGR.

ESSO TECH. THORESEN

RIG SUPR.

DAILY DRILLING REPORT

RIG NORJARL

REPORT NO. 14

24 HRS ENDING 16JUL76

WELL DEPTH 6705'

PROGRESS 1283'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
16	0100	1	10 std. wiper trip - tight hole - went to btm. - ok.
3	0315	2-1/4	drilled to 5668 -(drlg. bk at 5542) 100 units gas
10	0400	3/4	circ. bttm. up - 25 units gas.
3	0415	1/4	drill to 5698
12	0445	1/2	survey at 5698 1 deg. n17w
3	0700	2-1/4	drilling 12-1/4'' hole to 6011'
12 / 16	0745	3/4	circ and survey 6011' 1 deg. n5w.
3	1000	2-1/4	drill 12-1/4'' hole to 6294'
12 / 16	1045	3/4	circ and survey 6294'. 1 deg. n60w
3	1345	3	drill 12-1/4'' hole to 6607'
10	1430	3/4	circ. bttm. up
6	1930	5	drop survey and p.o.o.h. and lay down 7 jnt. tight hole 5977' - 5257' survey 1-1/4 deg. n15w
15 / 6	2230	3	function test bop on blue pod - o.k. run in hole w/new bit.
3	2400	1-1/2	drill 12-1/4'' hole 6705' max gas from bttm. up 168 units.

TIME SUMMARY								TOTAL
CODE	3	6	10	12	15	16		
HOURS	11 1/2	7 3/4	2 1/2	1	[illegible]	1		24

WELL ________

SIZE/DEPTH LAST CSG. 13⅜ / 3552'

ANN TOC LAST CSG. 2500'

REPORT NO. 14

24 HRS. ENDING 10 JUL 76

DAILY WELL COST: $ 61 442   CUM. WELL COST: $ 1 301 804

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	6670	6793					
TIME	13⁰⁰	01⁰⁰					
WT	9.3	9.4					
PV@ °F	6	8					
YP@ °F	14	16					
GELS (0/10)	12/22	14/26					
API F.L.	7.8	8					
HTHP F.L.@ °F PSI							
CAKE THK	3	3					
CAKE DESC							
pH	10.8	11.1					
Pf	0.5	0.7					
Mf	0.2	0.3					
Rt@ °F							
Cl^- x1000	19	20					
Ca^{++}	740	700					
SOLIDS %	9	9					
SAND %	0.3	0.4					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	4/T		294
BARITE (SX)			
BENTONITE	SK		615
LIG.SULFONATE			
LIGNITE			
CAUSTIC			204
BICARB			
SAPP			19
SODA ASH			
PIPE FREEING			
CMC			133
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER	4/T		121
WASH WATER			
POT WATER	4/T		114
RIG FUEL	4/T	8.71	513.22
HELIFUEL	US GAL		2591

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 40, 60

DESANDER HRS. 13, DESILTER HRS. 13, CENTRIFUGE HRS. ____

DAILY MUD COST 0, CUM MUD COST $ 16 318, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
8	4	12¼	X3A	7H05	3-14	6607	3007	31	97	25	175	3100			3	5	0
9	5	12¼	X3		3-14												

DRILLING ASSEMBLY

COMPONENT	FT
BIT 12¼	
BS	
DC 9" x 2	
STAB 12¼	
DC 9" x 1	
XO	
MONEL 8"	
XO	
DC STAB	
Σ 329.66	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	15.0+			
DEPTH	3552			
DATE	03 JUL			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	RF	KB	
LOCATION	RIG		
ENROUTE TO		RF	
ETA		0600 10JUL	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
STATOIL	2
MDS	1
ROWAN	45
EX LOG	5
CEMENT	1
DIVERS	6
TOTAL	62

WEATHER (RANGE/DAY)

SEA 2-4 NW

SWELL

WIND 8-10 NW

TIDE

BALLAST 1100

RISER TENS 175

RIG DATA (RANGE/DAY)

HEADING 312

ROLL 0.3

PITCH 0.3

HEAVE 0.1

% OFFSET

ANCHOR TENS.

MAX 230

MIN 175

RISER ANGLE 0.5° NE

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR.
ESSO TECH. THORESEN
RIG SUPR.

RIG NORJARL

REPORT NO. 15
24 HRS ENDING 11 JUL
WELL DEPTH 7830'
PROGRESS 1125'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0230	2-1/2	drilling to 6920'
	0315	3/4	circ. and survey 1-3/4 deg. n42w
	0800	4-3/4	drilling 12-1/4'' hole to 7203
	0845	3/4	circ + survey 1-1/4 deg. n38w
3	1015	1-1/2	drill 12-1/4'' hole to 7290'
19	1145	1-1/2	circ bttm up for geologist
3	1545	4	drill 12-1/4'' hole to 7515'
	1630	3/4	circ + survey 1-1/4 deg. n44w
3	1745	1-1/4	drill 12-1/4'' hole to 7577'
26	1915	1-1/2	circ + rise mud to 9,7 ppg. background gas 30 on bttm up
3	2400	4-3/4	drill 12-1/4'' hole to 7830'
			flow check at 7650 ok.

TIME SUMMARY							TOTAL
CODE	3	6	12	19	26		
HOURS	[illegible]	$1\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$		24

DAILY DRILLING REPORT

WELL 15/6-4

PAGE 2 OF 2

REPORT NO. 15

SIZE/DEPTH LAST CSG 13 3/8 / 3552'

24 HRS. ENDING 11 JUL 76

ANN TOC LAST CSG 2500

DAILY WELL COST $ 62.715

CUM. WELL COST $ 1.364.519

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	7459	7732					
TIME	1400	2200					
WT	9.5	9.7					
PV@ °F	4	7					
YP@ °F	25	24					
GELS (0/10)	25/48	20/38					
API F.L.	7.7	6.8					
HTHP F.L @ °F PSI							
CAKE THK	4	3					
CAKE DESC							
pH	11.4	11.5					
Pf	0.8	0.9					
Mf	0.2	0.25					
Rf@ °F							
Cl⁻ x1000	19.5	20					
Ca^{++}	760	700					
SOLIDS %	10	11					
SAND %	0.25	0.30					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		720	5866
BARITE (SX)			
BENTONITE		+300	915
LIG. SULFONATE		42	112
LIGNITE			
CAUSTIC			
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			133
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER	M/T	102	504
WASH WATER			
POT WATER	M/T	[illegible]	141
RIG FUEL	M/T	10.62	502.6
HELIFUEL	US GAL		2591

MUD

MAKE UP WATER: Cl⁻ ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 40, 60

DESANDER HRS 24, DESILTER HRS 24, CENTRIFUGE HRS ___

DAILY MUD COST $ 5034, CUM MUD COST $ 18.426, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
9	5	12 1/4	X3	50966	3-14	INC	-	20	56	20	165	3000					

DRILLING ASSEMBLY

COMPONENT	FT
AS #14	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	15.7+			
DEPTH	3552			
DATE	08 JUL			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	RF	SM	
LOCATION	R14		
ENROUTE To		STVL	
ETA		0400	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
DRLG CONT	45
MUD LOGGER	5
MUD	1
CEMENT	1
DIVERS	6
E. LOG	-
STATOIL	2
TOTAL	62

WEATHER (RANGE/DAY)

SEA	2-3' E
SWELL	
WIND	6-8 E
TIDE	
BALL JT	1350
RISER TEN	175

RIG DATA (RANGE/DAY)

HEADING	312
ROLL	0.2
PITCH	0.2
HEAVE	0.1
% OFFSET	
ANCHOR TENS MAX.	220
MIN	160

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR.
ESSO TECH. THORESEN
RIG SUPR.

DAILY DRILLING REPORT

RIG NORJARL

REPORT NO. 16
24 HRS ENDING 12JUL76
WELL DEPTH 8262'
PROGRESS 432'

CCT, LIC, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
2	0045	3/4	circ and survey at 7830 1deg. n62w
3	0600	5-1/4	drilled to 7962'
12	0615	1/4	dropped survey - pumped slug
6	1000	3-3/4	p.o.o.h. slight swabbing at 5850 - 5600
			survey 1 deg. n58w
6	1145	1-3/4	make up bit + r.i.h. + found pin-box washed
			out on h.w.d.p. lay down 3 jnts.
16	1300	1-1/4	slip + cut drill line
6	1430	1-1/2	pick up 5 jnt d.p. + r.i.h.
27	1445	1/4	rim tight hole 5880' - 5940'
6	1515	1/2	r.i.h.
27	1630	1-1/4	rim tight hole 7700 - to bttm
3	2400	7-1/2	drill 12-1/4 hole to 8262' bug 200 bttm up

held fire and abandon ship and man overboard drill

lost time accident:
rostabout helge tårnes crushed right foot
between h.w.d.p. on catwalk.
sent in by helicopter.

TIME SUMMARY							
CODE	3	6	10	12	16	27	TOTAL
HOURS	12-3/4	7-1/2	1/2	1/2	1-1/4	1-1/2	24

FORM B

DAILY DRILLING REPORT

WELL 15/6-4

PAGE 2 OF 2

SIZE/DEPTH LAST CSG 13 3/8 / 3552'

ANN TOC LAST CSG 2500'

DAILY WELL COST $ 64.329

REPORT NO. 16

24 HRS. ENDING 12JUL76

CUM. WELL COST $ 1.428.846

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	8212						
TIME	2200						
WT	9.6						
PV@ °F	6						
YP@ °F	18						
GELS(0/10)	5/21						
API F.L.	11.6						
HTHP F.L @ °F PSI							
CAKE THK	3						
CAKE DESC							
pH	10.8						
Pf	0.6						
Mf	0.15						
Rf@ °F							
Cl^- x1000	18						
Ca^{++}	240						
SOLIDS %	9						
SAND %	0.25						
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		280	7131
BARITE (SX)			
BENTONITE		75	840
LIG. SULFONATE		25	89
LIGNITE			
CAUSTIC		4	172
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			133
CEMENT ( )			
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
DRL WATER	L/T	128	376
WASH WATER			
POT WATER	L/T		155
RIG FUEL	L/T	10.64	491.96
HELIFUEL	US GAL		2591

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 40, 60

DESANDER HRS 13, DESILTER HRS 6, CENTRIFUGE HRS ____

DAILY MUD COST $ 2.406, CUM MUD COST $ 20.832, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
9	5	12 1/4	X3	50961	3-14	7962	1855	25 1/4	54	20	165	3000			7	4	1/8
10	6	12 1/4	S44J		3-14	INC											

DRILLING ASSEMBLY

COMPONENT	FT
AS #14	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	15.7+			
DEPTH	3552			
DATE	08JUL			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	1

WORKBOATS

BOAT	RF			
LOCATION	RIG			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
DRLG CONT	44
MUD LOGGER	5
MUD	1
CEMENT	1
DIVERS	6
E.LOG	-
STATOIL	2
TOTAL	61

WEATHER (RANGE/DAY)	
SEA	1-2' E
SWELL	
WIND	6-8' E
TIDE	
BALL JT	1350
RISER TEN	175
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.2
HEAVE	0
% OFFSET	
ANCHOR TENS	
MAX.	270
MIN	150

FORM A

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH
ESSO SUPR HENSON
ESSO ENGR THORESEN
ESSO TECH
RIG SUPR DAVIS

RIG NORJARL

PAGE 1 OF 2
REPORT NO. 17
24 HRS ENDING 13/7
WELL DEPTH 8537
PROGRESS 225

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0045	3/4	drilling to 8276
12	0130	3/4	circ. and survey at 8276 - 1deg. n20w
3	0345	2-1/4	drilling to 8340'
6	0730	3-3/4	pump slug - poh f/bit change
6	1030	3	r.i.h. w/bit no.7
10	1100	1/2	circ.
3	2000	9	drill 12-1/4'' hole to 8537'
12	2015	1/4	drop survey and pump slug
24	2045	1/2	p.o.o.h. seven std. - slug no good
27	2100	1/4	mix and pump slug no.2
26	2130	1/2	p.o.o.h. - swabbing -run back to bttm.
26	2245	1-1/4	circ bttm up max gas 30 units
4	2400	1-1/4	p.o.o.h. 50000 overpull at 8400'

TIME SUMMARY								TOTAL
CODE	3	6	10	12	27	26		
HOURS	[illegible]	[illegible]	1/2	1	[illegible]	[illegible]		

WELL 12/10

SIZE/DEPTH LAST CSG. 13 3/8" – 3600'

ANN TOC LAST CSG.

REPORT NO. 17

24 HRS. ENDING 13/7

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	8465	8535					
TIME	1330	2130					
WT	9.6	9.6					
PV@ °F	8	7					
YP@ °F	14	16					
GELS (0/10)	6/38	9/40					
API F.L.	16.5	22					
HTHP F.L.@ °F PSI							
CAKE THK	3	3					
CAKE DESC							
pH	11.1	11.0					
Pf	0.7	0.6					
Mf	0.2	0.2					
Rf@ °F							
Cl^-	18,000	21,000					
Ca^{++}	200	280					
SOLIDS %	9	9					
SAND %	0.5	0.4					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)		340	6791
BARITE (SX)			
BENTONITE		55	785
LIG.SULFONATE			89
LIGNITE			
CAUSTIC		14	158
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			133
CEMENT ( )			
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
DRL WATER	L/T	135	595
WASH WATER			
POT WATER	L/T		164
RIG FUEL	L/T	6.77	485.19
HELIFUEL	U.S. Gal		2538

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 40, 40

DESANDER HRS. 11, DESILTER HRS. 11, CENTRIFUGE HRS. ____

DAILY MUD COST $2654, CUM MUD COST $23486, MUD PUMP TYPE/LINERS 7X12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
10	6	12 1/4	S44J	505420	3X14	8340	378	10 1/2	36	40	115	3000			7	4	1/4
11	7	12 1/4	X3		3X14	8535	197	8	25	40	115	3000					

DRILLING ASSEMBLY

COMPONENT	FT
As #14	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	15.7			
DEPTH	3600			
DATE	8/7			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR		
FW FLTS/PAX ; FR TO		
HELI FLTS/PAX TO RIG	/3	
HELI FLTS/PAX FR RIG	/1	

WORKBOATS

BOAT	RF	SM
LOCATION	RIG	
ENROUTE TO		2665 RIG
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
DRLG. CONT.	44
MUD LOGGER	5
MUD	1
CEMENT	1
DIVERS	6
E. LOG	—
STATOIL	2
W/FORD	2
TOTAL	63

WEATHER (RANGE/DAY)	
SEA	5-8
SWELL	
WIND	16-20
TIDE	
BALL JT	1200
RISER TEN.	78

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.4 deg - 6 sec
PITCH	0.7 deg - 7 sec
HEAVE	0.4 ft - 12 sec
% OFFSET	
ANCHOR TENS.	
MAX	235
MIN	170

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Kerby
ESSO ENGR
ESSO TECH Gillette
RIG SUPR Fish

DAILY DRILLING REPORT

Esso Ex Norway

RIG Norjarl

REPORT NO. 18
24 HRS ENDING 14 July
WELL DEPTH 8666
PROGRESS 129

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
6	0215	2-1/4	p.o.h.
2	0230	1/4	make up bit no.8
6	0515	2-3/4	rih to 5,000 ft. fill pipe. run to bottom - no fill
3	0930	4-1/4	drlg to 8592 ft. bottoms up gas after trip 180 units
12	1015	3/4	circulate and survey 1/4 deg. - n-28-w
3	1415	4	drlg to 8639
12	1445	1/2	drop survey and pump slug
6	1800	3-1/4	p.o.h. - survey no good
6	1815	1/4	pick up bit no.9
6	2000	2-3/4	add 1 stabilizer at 90 ft and rih to 5550
35	2015	1/4	-hold hang off drill instruction for new crew on tour- circ. and fill pipe
6	2130	1-1/4	r.i.h. - no fill - bottoms up after trip - 48 units
3	2330	2	drlg to 8666 - drlg break at 8655 - rop increased from 12 - 140 ft. per hour - flow check - ok.
19	2400	1/2	circ bottoms up.

8537 trip

(1) annular velocity - 9''dc. - 227 ft/min
8''dc. - 182 ft/min
5''dp 125 ft/min

(2) function tested bop as per general procedures

TIME SUMMARY							TOTAL
CODE	3	6	12	19	35		
HOURS	[illegible]	[illegible]	1 1/4	1/2	1/4		

Esso Ex Norway

SIZE/DEPTH LAST CSG. 13 3/8" / 3552'
ANN TOC LAST CSG.

REPORT NO. 18
24 HRS. ENDING 14 July

Daily Well Cost # 72,436 Cum Well 1,565,378

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	8661						
TIME	2430						
WT	9.5						
PV@ °F	8						
YP@ °F	22						
GELS (0/10)	15/31						
API F.L.	24						
HTHP F.L. @ °F PSI	-						
CAKE THK	3/32						
CAKE DESC							
pH	10.6						
Pf	.08						
Mf	.25						
Rf@ °F							
Cl^-	19K						
Ca^{++}	210						
SOLIDS %	8.5						
SAND %	1/4						
OIL %							
CEC	30						

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			6921
BARITE (SX)			785
BENTONITE			
LIG. SULFONATE		2	60
LIGNITE			
CAUSTIC		18	140
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC			133
CEMENT (G)			3998
$CaCl_2$			
RETARDER (HR-7)			11
RETARDER ( )			
DRL WATER		135 LT	595 LT
WASH WATER			
POT WATER			164 LT
RIG FUEL		67 LT	485 LT
HELIFUEL			2558

MUD
MAKE UP WATER: Cl^- 2500 Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 40 , 40
DESANDER HRS. 15 , DESILTER HRS. 14 , CENTRIFUGE HRS. ____
DAILY MUD COST 657 , CUM MUD COST 26,762 , MUD PUMP TYPE/LINERS 7 X 12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
12	8	12 1/4	XV	dx 548	14s	8639	102	8 1/4	12.4	45	110	2900	110		7	4	I
13	9	12 1/4	J-22	VC 311	14s	in											

DRILLING ASSEMBLY COMPONENT	FT
Bit	
Bit Sub	
2-9" DC	
Stab	
1-9" DC	
Stab	
XO	
monel	
XO	
11-8" DC	
XO	

DEVIATION AND LEAKOFF DATA

DEPTH	8592	8639
ANGLE	1/4	1/2 Good
LEAKOFF PPG EQUIV		
DEPTH		
DATE		

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	2/15
HELI FLTS/PAX FR RIG	2/17

WORKBOATS

BOAT	Fish	Mar
LOCATION	Rig	Base
ENROUTE TO		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
Rowan	43
Mud Log	5
Mud	1
Cement	1
Divers	5
E Log	0
Stat Drl	1
W. ford	2
TOTAL	61

WEATHER (RANGE/DAY)

SEA	5-8
SWELL	
WIND	SSE 16-20
TIDE	
BT	1200

RIG DATA (RANGE/DAY)

HEADING	32
ROLL	0.4 Deg
PITCH	0.7 Deg
HEAVE	0.4 Deg
% OFFSET	.55 3 %
ANCHOR TENS. MAX	235
MIN	170

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Kerby
ESSO ENGR
ESSO TECH Gillette
RIG SUPR Fish/Lord

DAILY DRILLING REPORT

Esso Ex Norway

RIG Norjarl

REPORT NO. 19
24 HRS ENDING 15 JU
WELL DEPTH 8890
PROGRESS 224

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0045	3/4	circ bottoms up
	2400	23-1/4	drlg to 8890
			back ground gas - 3.5 units

need:
----- (1) information about wednesday crew change as to helicopter time, will aberdeen charter fly etc. so people leaving rig can co-ordinate travel arrangements.

TIME SUMMARY														TOTAL
	CODE	15	3											
	HOURS	3/4	23¼											

Esso Ex Norway

SIZE/DEPTH LAST CSG. 13 3/8" 3552'

ANN TOC LAST CSG. ______

REPORT NO. 19

24 HRS. ENDING 15 July

Daily Well Cost 58,970 Cum Cost 1624,348

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	8880						
TIME	-						
WT	9.6						
PV@ °F	8						
YP@ °F	18						
GELS (0/10)	24/40						
API F.L.	20						
HTHP F.L. @ °F PSI	-						
CAKE THK	3/32						
CAKE DESC							
pH	11.0						
Pf	1.2						
Mf	2.1						
Rf@ °F	4						
Cl^-	18M						
Ca^{++}	110						
SOLIDS %	8½						
SAND %	Tr						
OIL %	-						
CEC	27						

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)	SX	94	6647
BARITE (SX)			
BENTONITE		60	725
LIG.SULFONATE			
LIGNITE			
CAUSTIC		12	128
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			3998
$CaCl_2$			
RETARDER (H/187)	25 kg		11
RETARDER ( )			
DRL WATER	LT	131	400
WASH WATER			
POT WATER			173
RIG FUEL		11.6	466
HELIFUEL			2538

MUD

MAKE UP WATER: Cl^- 2400 Ca^{++} 40, Rw ___ @ ___ °F; SHAKER SCREEN MESH 40,

DESANDER HRS. ___, DESILTER HRS. 24, CENTRIFUGE HRS. ___

DAILY MUD COST 1382, CUM MUD COST 28053, MUD PUMP TYPE/LINERS 7"x12"

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
13	9	12¼	J-22	VC81	2-14	INC	251	25¼	9.9	50	65	3000	112				
					1-13												

DRILLING ASSEMBLY

COMPONENT	FT
Same #18	
as	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	RF	M		
LOCATION	Rig			
ENROUTE TO		Rig		
ETA		0400		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
Rowan	43
Mud Log	5
Mud	1
Cement	1
Divers	5
E Log	0
W/ford	2
TOTAL	61

WEATHER (RANGE/DAY)	
SEA	8-12
SWELL	-
WIND	27 SSE
TIDE	
BJ	1200
RT	150 K

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	1.4°
PITCH	0.9°
HEAVE	1'
% OFFSET	2.4 ft
ANCHOR TENS.	
MAX	290 K
MIN	160 K

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Kerby
ESSO ENGR
ESSO TECH Gillette
RIG SUPR fish/Lord

Esso Ex Norway

RIG Norjarl

REPORT NO. 20
24 HRS ENDING 16 JL
WELL DEPTH 9050
PROGRESS 160

CCT, LIL, ALW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	1345	13 3/4	drlg to 9034 - drlg break to 70 ft/hr at 9025 ft
19	1500	1 1/4	circ bottoms up
3	1545	3/4	drlg to 9050 - 9 5/8'' csng point
19	1700	1 1/4	circl bottoms up
12	1730	1/2	drop survey - pump slug
16	2015	2 3/4	wiper trip to 13 3/8 snoe - retrieve survey - no picture
16	2115	1	trip in hole took weight from 6890-6950
27	2130	1/4	attempt to circulate - hole packed off - no returns
27	2400	2 1/2	work through tignt spot and restore circulation wash and ream bridge until hole free

need:

---- (1) turbo drillequipment plus service man

Daily Well Cost 67,471

Cum Cost 1,691,819

TIME SUMMARY						
CODE	3	12	16	19	27	TOT
HOURS	14 1/2	1/2	3 3/4	2 1/2	2 3/4	24

DAILY DRILLING REPORT

WELL 15/6-4 — Esso Ex Norway

SIZE/DEPTH LAST CSG 13⅜" @ 3552

ANN TOC LAST CSG. ____

REPORT NO. 20

24 HRS. ENDING 16 July

MUD CHECKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9050						
TIME	2100						
WT	9.6						
PV@ °F	7						
YP@ °F	18						
GELS (0/10)	24/37						
API F.L.	22						
HTHP F.L.@ °F PSI							
CAKE THK	2/32						
CAKE DESC							
pH	11.1						
Pf	1.9						
Mf	1.9						
Rf@ °F							
Cl^-	17M						
Ca^{++}	70						
SOLIDS %	6.5						
SAND %	Tr						
OIL %							
CEC	24						

STOCKS	UNITS	USED	REMAIN. STOCK
BARITE (BULK)			6697
BARITE (SX)			
BENTONITE			725
LIG.SULFONATE		20	410
LIGNITE			
CAUSTIC		4	124
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			3998
$CaCl_2$			
RETARDER (HR-7)			21
RETARDER ( )			
DRL WATER	LT	44	833
WASH WATER			
POT WATER			173
RIG FUEL	LT	14.2	517
HELIFUEL	gal		2838

MUD

MAKE UP WATER: Cl^- 2300 Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 40, ____

DESANDER HRS. 6, DESILTER HRS. 12, CENTRIFUGE HRS. ____ Nat 12p160

DAILY MUD COST 300, CUM MUD COST 28353, MUD PUMP TYPE/LINERS 7x12

BITS

RUN NO.	BIT NUMBER	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	COND B	COND G
13	9	12¼	22	1/2811	2-14 1-13	9050	411	43¾	9.4	50	60/65	3000	116				

DRILLING ASSEMBLY

COMPONENT	FT
Same as #18	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	2/21
HELI FLTS/PAX FR RIG	2/19

WORKBOATS

BOAT	RF
LOCATION	Rig
ENROUTE TO	
ETA	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	5
Rowan	42
Mud Log	4
Mud	1
Cement	1
Divers	5
E Log	3
W/Ford	2
TOTAL	63

WEATHER (RANGE/DAY)

SEA	2-3
SWELL	-
WIND	6-10 Kts NNE
TIDE	-
BJ	1200
RT	180

RIG DATA (RANGE/DAY)

HEADING	312
ROLL	0.2°
PITCH	0.3°
HEAVE	1
% OFFSET	5 1 Ft
ANCHOR TENS.	
MAX	270
MIN	170

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365 ft
ESSO SUPR. KERBY
ESSO ENGR. [illegible]
ESSO TECH. [illegible]
RIG SUPR. FISH / [illegible]

RIG NORWAKE

PAGE 1 OF 2
REPORT NO. 2[illegible]
24 HRS ENDING [illegible]
WELL DEPTH [illegible]
PROGRESS —

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
16	0045	3/4	trip in hole - no fill on bottom
21	0430	3 3/4	circ - condition hole and mud for schlumberger
			raise yield point to aid in cleaning hole
12	0500	1/2	drop survey - pump slug
6	0700	2	p.o.h. - chain out - strap for tally
12	0715	1/4	retrieve survey at shoe - n 59 deg w - 1 1/2 deg.
6	0900	1 3/4	finish strapping out of hole - 3 ft difference in
			strap vs drillers depth
18	0930	1/2	rig schlumberger
28	1630	7	run isf-sonic-gamma ray - log stopped at 9021 -
			log up from that point - sonic function not working
18	1815	1 3/4	pick-up and calibrate sonic-gamma ray tool
18	2200	3 3/4	sonic gamma ray - run no. 2
18	2230	1/2	rig up side wall core gun
18	2400	1 1/2	run side wall core gun with 30 shots:
			(1) bottom hole temp - run no. 1 166 deg f.
			no. 2 174 deg f.
			(2) hole took 2 1/2 bbls mud per hour while logging
		note:	(1) changed liners in rig pumps to 6'' as per program
			(2) does bell 212 helicopter carrying 3 rowan pers.
			to rig come on our costs or those of the ross ri[illegible]
			(3) can stav. office pass on s-61 heli hours for
			costing purposes.

TIME SUMMARY	CODE	6	12	18	21	28	16	TOTAL
	HOURS	3 3/4	3/4	8	3 3/4	7	3/4	24

DAILY DRILLING REPORT

FORM B
PAGE 2 OF 2

WELL 15/6-4

SIZE/DEPTH LAST CSG 13 3/8 / 3552 ft
ANN TOC LAST CSG 2500 ft
DAILY WELL COST $ 61.897

REPORT NO. 21
24 HRS. ENDING 17 JUL 76
CUM. WELL COST $ 1.753.716

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9050	9050					
TIME	0100	0400	0600				
WT	9.6	9.7	9.6				
PV @ °F	7	10	10				
YP @ °F	18	40	18				
GELS (0/10)	24/35	29/48	8/16				
API F.L.	22	12.9	11.0				
HTHP F.L @ °F PSI							
CAKE THK	3	2	2				
CAKE DESC	MUSHY	SLICK	THIN				
pH	11.0	11.2	11.0				
Pf	1.1	1.13	1.0				
Mf	1.9	1.85	1.8				
Rf @ °F							
Cl^- x1000	16	18	18				
Ca^{++}	60	100	70				
SOLIDS %	6.5	9.0	8.0				
SAND %	TR	TR	TR				
OIL %							
CEC	25	26	25				

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			6697
BARITE (SX)			
BENTONITE			725
LIG. SULFONATE		35	405
LIGNITE			
CAUSTIC		6	118
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC		33	100
CEMENT (G)			3998
$CaCl_2$			
RETARDER (HR7)			21
RETARDER ( )			
DRL WATER	M/T	67	766
WASH WATER			
POT WATER			
RIG FUEL	M/T	8	539
HELIFUEL	USGAL		2538

MUD
MAKE UP WATER: Cl 2100, Ca^{++} 40, Rw ___ @ ___ °F; SHAKER SCREEN MESH 40/40, 40/40
DESANDER HRS 4.5, DESILTER HRS ___, CENTRIFUGE HRS ___
DAILY MUD COST $ 2155, CUM MUD COST $ 30.508, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
13	9	12 1/4		VC811	2-14 1-13	9050	411	43 3/4	9.39	50	60/65	3050	116	-	3	4	I
										6 BROKEN INSERTS							

DRILLING ASSEMBLY

COMPONENT	FT
As # 18	

DEVIATION AND LEAKOFF DATA			
DEPTH	9050		
ANGLE	1 1/2 DEG N59W		
LEAKOFF PPG EQUIV			
DEPTH			
DATE			

FIXED WING AND HELICOPTERS
FW FLTS/PAX ; TO FR
FW FLTS/PAX ; FR TO
HELI FLTS/PAX TO RIG 2
HELI FLTS/PAX FR RIG -

WORKBOATS		
BOAT	P.F	
LOCATION	RIG	
ENROUTE TO		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	5
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	3
W. FORD	2
TOTAL	66

WEATHER (RANGE/DAY)	
SEA	2-3
SWELL	-
WIND	8-12 NW
TIDE	-
BALL JT	1200
RISER TEN	180

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.2
PITCH	0.2
HEAVE	-
% OFFSET	1%
ANCHOR TENS	
MAX.	250
MIN	170

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365 ft
ESSO SUPR. KERBY
ESSO ENGR. GRINDLE
ESSO TECH. GILLETTE
RIG SUPR. FISH / LORD

RIG NORJARL

REPORT NO. 22
24 HRS ENDING 18 JUL 76
WELL DEPTH 9150
PROGRESS 100

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
18	0245	2 3/4	schlumberger run no. 3. side wall cores
			30 shots - recovered 28
18	0315	1/2	rig down schlumberger
7	0345	1/2	make up howco s.s. plugs on 9 5/8'' running tool.
			couple to hanger joint and lay out same
6	0400	1/4	make up bit no. 10 with junk sub
6	0600	2	strap in hole to shoe
6	0630	1/2	fill pipe and break circulation
6	0745	1 1/4	r i h to 7000 ft
6	0800	1/4	break circulation
6	0900	1	r i h to 8973 - 77 ft. fill
27	1000	1	wash and ream to bottom - work junk sub
3	1900	9	drlg to 9150 ft
19	2030	1 1/2	circ bottom sample - condition hole and mud
12	2100	1/2	drop survey - pump slug
16	2400	3	wiper trip to shoe - chain out

note: (1) hang off drill at 13 3/8'' shoe - did not close hydrill - went through proceedure only

(2) ht-hp recorded at 180 deg f - psi differential

(3) on daily costs: when should we discontinue adding 1500 for fixed wing charges. also day rate on ibis one

(4) fuel and lube report from ibis one prior to departure for aberdeen

(a) 102 m3 fuel

(b) 5,875 liters - lube oil

(c) 26 tons potable water

(5) nedd rental charges on sperry sun equip and effective date to initiate charges

TIME SUMMARY													
CODE	6	7	12	18	19	27	3	16					TOTAL
HOURS	5 1/4	1/2	1/2	3 1/4	1 1/2	1	9	3					24

DAILY DRILLING REPORT

FORM B

WELL 15/6-4

SIZE/DEPTH LAST CSG 13 3/8 - 3552

ANN TOC LAST CSG 2500

DAILY WELL COST $ 81.511

REPORT NO. 122

24 HRS. ENDING 18 JUL 76

CUM. WELL COST $ 1.835.227

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9050	9130	9068	9150			
TIME	0600	1730	1130	2000			
WT	9.6	9.7	9.6	9.7			
PV@ °F	13	13	14	9			
YP@ °F	15	17	17	21			
GELS (0/10)	7/35	16/45	-	15/50			
API F.L.	11.7	10.4	10.6	11			
HTHP F.L @ °F PSI				26			
CAKE THK	2	2	1	1			
CAKE DESC	THIN	TOUGH		THIN			
pH	10.7	11.2	10.8	11.0			
Pf	0.25	0.35	0.08	0.65			
Mf	0.7	0.35	0.14	1.6			
Rf @ °F							
Cl^- x 1000	15	17	16	17			
Ca^{++}	140	80	60	60			
SOLIDS %	6.5	6.5	6.5	6.5			
SAND %	TR	TR	TR	TR			
OIL %							
CEC	26	30	-	27			

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		100	6597
BARITE (SX)			
BENTONITE			
LIG. SULFONATE		15	390
LIGNITE			
CAUSTIC		10	108
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			3398
$CaCl_2$			
RETARDER ( )			21
RETARDER ( )			
DRL WATER	L/T	71	695
WASH WATER			
POT WATER	L/T		184
RIG FUEL	L/T	9	529
HELIFUEL	US GAL		2538

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____ , ____

DESANDER HRS. 7, DESILTER HRS. ____, CENTRIFUGE HRS. ____

DAILY MUD COST $ 910, CUM MUD COST $ 31.419, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
14	10	12 1/4	XDV	HE-450	2-14 1-13	9150	100	9	11.1	48/50	90/95	3200	160				

DRILLING ASSEMBLY

COMPONENT	FT
BIT	
JS	
BS	
DC 9" x 2	
STAB	
DC 9" x 1	
STAB	
XO	
DC MONEL	
XO	
DC 8" x 11	
XO	
2 478.6 ft	

DEVIATION AND LEAKOFF DATA				
DEPTH	9150			
ANGLE	1 1/4 N52W			
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS			
BOAT	CUNA	IO	
LOCATION	RIG		
ENROUTE TO		ABD	
ETA		1700	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	5
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	3
W.FORD	2
TOTAL	66

WEATHER (RANGE/DAY)	
SEA	7-8'
SWELL	
WIND	16-20 SSW
TIDE	
BALL JT	1200
RISER TEN	180
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.3
HEAVE	-
% OFFSET	1%
ANCHOR TENS	
MAX.	250
MIN	170

DAILY DRILLING REPORT

WELL 1/6-7
WATER DEPTH 365 ft
ESSO SUPR KERBY
ESSO ENGR GRINDLE
ESSO TECH GILLETTE
RIG SUPR FISH / LORD

RIG NORJARL

REPORT NO. 23
24 HRS ENDING 19 JUL 76
WELL DEPTH 9150 ft
PROGRESS 0

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
12	0015	1/4	recover survey - 1 1/4 deg n 52 w
V 15 ½	0115	1	slip and cut 90 ft drlg line - function b o p's
16	0230	1 1/4	r i h - 6 ft fill
10	0500	2 1/2	circ - condition hole and mud
10	0515	1/4	pump slug
6	0815	3	p o h - chain out to shoe
6	0830	1/4	break out bit and junk sub: recover assorted bits of iron and pyrite
7	0930	1	retrieve wear bushing
7	1100	1 1/2	rig to run 9 5/8'' csng
7	2400	13	running 9 5/8'' csng - 156 jts ran at mid-nite

(1) we plan to hold weatherford tong unit on board for 7'' if you approve

TIME SUMMARY								TOTAL
	CODE	6	7	10	12	15	16	
	HOURS	3 1/4	15 1/2	2 3/4	1/4	1/2	1 3/4	24

FORM B

WELL 15/6-4

DAILY DRILLING REPORT

PAGE 2 OF 2

REPORT NO. 23

24 HRS. ENDING 19 JUL 76

SIZE/DEPTH LAST CSG 13 3/8 - 3552'

ANN TOC LAST CSG.

DAILY WELL COST $ 340.507

CUM. WELL COST $ 2.175.734

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	STOCKS	UNITS	USED	REMAIN STOCK
DEPTH	9150							BARITE (BULK)	Sx	57	6540
TIME	0920							BARITE (SX)			
WT	9.7							BENTONITE			725
PV@ °F	10							LIG. SULFONATE			390
YP@ °F	18							LIGNITE			
GELS (0/10)	13/50							CAUSTIC			108
API F.L.	11.6							BICARB			
HTHP F.L @ °F PSI	26							SAPP			
CAKE THK	5							SODA ASH			
CAKE DESC	GOOD, HIGH DENSITY, LOW SOLIDS, COMPRESSIBLE							PIPE FREEING			
pH	11.3										
Pf	0.8							CEMENT ( )			3398
Mf	1.9							$CaCl_2$			
Rf@ °F								RETARDER (HR-7)		10	11
Cl^- x 1000	17							RETARDER ( )			
Ca^{++}	60										
SOLIDS %	7							DRL WATER	L/T		548
SAND %	TR							WASH WATER			
OIL %	-							POT WATER			194
CEC	27							RIG FUEL	L/T	6.4	523
								HELIFUEL	US GAL		2538

MUD

MAKE UP WATER: Cl^- ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ___, DESILTER HRS ___, CENTRIFUGE HRS ___

DAILY MUD COST $ 311, CUM MUD COST $ 31.730, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
14	10	12 1/4	XDV	HE450	2-14 1-13	9150	100	9	11.1	48/50	90/95	3200	160	-	4	2	I

DRILLING ASSEMBLY

COMPONENT	FT
# 21	

DEVIATION AND LEAKOFF DATA				
DEPTH	9150			
ANGLE	1 1/4 N52W			
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS			
BOAT	CLOVA	IO	
LOCATION	RIG	ABDN	
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	5
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E. LOG	3
W. FORD	2
TOTAL	

WEATHER (RANGE/DAY)	
SEA	10-15 NNW
SWELL	
WIND	30 NNW
TIDE	
BALL JT	1200
RISER TEN	180
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	1
PITCH	1
HEAVE	1
% OFFSET	
ANCHOR TENS	
MAX.	270
MIN	160

WELL 10/6-1
WATER DEPTH 365'
ESSO SUPR. KERBY
ESSO ENGR. GRINDLE
ESSO TECH. GILLETTE
RIG SUPR. FISH / LORD

DAILY DRILLING REPORT

RIG NORJARL

PAGE 1 OF 1
REPORT NO. 24
24 HRS ENDING 20JUL76
WELL DEPTH 9150'
PROGRESS 0

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0345	3 3/4	run 9 5/8'' csg
	0500	1 1/4	picp up hanger, landing stg, cmt head, land csg.
	0630	1 1/2	break circ. and circulate csg.
	0645	1/4	drop ball - wiper plug released w/ 800 psi, change out chicksan line on floor and test cmt lines to 3000 psi
	0715	1/2	mix 924 sx class g neat cmt. w/ 0.4 0/0 hr-7 and 110 bbls mix water, total 190 bbls, avg wt = 15.8 ppg
	0830	1 1/4	drop dart, dart sheared w/ 1200 psi, displace cmt w/ 628 bbls mud, bumped plug w/ 2000 psi, bleed back 4 bbls, plug held.
	0900	1/2	back out rt, flush choke and kill lines and displace riser w/ sea water.
	0945	3/4	pooh and lay down landing tools and cmt head.
	1030	3/4	rih w/ wash tool, wash stack and wellhead, poh
7	1130	1	rih, set seal assembly, could not pressure up on seal, re-set seal assembly
33	1215	3/4	re-test seal assembly, no test, poh w/ seal assembly
33	1300	3/4	pick up wash tool, rih to wellhead, wash wellhead and stack w/ sea water, poh, lay down wash tool
33	1345	3/4	rih w/ seal assy, attempt to set seal assy., seal assy. will not make up, poh , seal missing.
33	1630	2 3/4	rih open ended, washing w/ sea water from 450' attempting to flush out seal, change over to mud and try to flush out seal
33	1730	1	weighting up slug to 15.5 ppg, 125 visc

TIME SUMMARY													TOTAL
	CODE												
	HOURS												

WELL 15/6-4

DAILY DRILLING REPORT

WATER DEPTH

ESSO SUPR

ESSO ENGR

ESSO TECH

RIG SUPR

RIG NORJARL

REPORT NO. 24

24 HRS ENDING 20JUL76

WELL DEPTH

PROGRESS

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	1800	1/2	pumped 30 bbl slug and circ. for 15 min through drill pipe, choke and kill lines, attempting to retrieve missing seal, poh
	1845	3/4	rih w/ grapple attempting to catch seal, poh, seal not retrieved.
	2015	1 1/2	picking up 6 1/2'' d.c., servicing new seal assy.
	2200	1 3/4	rih w/ seal assy, at 2050 hrs. dropped d.c. clamp wrench in hole, poh
	2230	1/2	rih w/ 8'' o.d. rabbit checking for debris, poh
	2400	1 1/2	rih w/ seal assy, set seal assy and prepare to test.

need: (1) morning report forms page 3 and 4 - old forms

(2) bentonite: 400 sx

(3) 3000 psi marsh gauge

also: will otis man be out to check test equipment?

no fishing tools or magnets aboard

TIME SUMMARY	CODE	7	33	TOTAL
	HOURS	11 1/2	12 1/2	

DAILY DRILLING REPORT

FORM B

WELL 15/6-4

SIZE/DEPTH LAST CSG 9 5/8 - 9103

ANN TOC LAST CSG -

DAILY WELL COST $ 92.516

REPORT NO. 24

24 HRS. ENDING 20 JUL?

CUM. WELL COST $2.268.25

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9150						
TIME	0600						
WT	9.7						
PV @ °F	9						
YP @ °F	13						
GELS (0/10)	8/21						
API F.L.	11.8						
HTHP F.L @ °F PSI	28						
CAKE THK	1						
CAKE DESC	1						
pH	11.0						
pf	0.6						
Mf	1.43						
Rf @ °F							
Cl⁻ x1000	17						
Ca++	70						
SOLIDS %	6.5						
SAND %	0.25						
OIL %							
CEC	24						

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		156	6384
BARITE (SX)			
BENTONITE			125
LIG. SULFONATE			290
LIGNITE			
CAUSTIC			108
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )	SX	100	2998
$CaCl_2$			
RETARDER (HR5?)	SX		11
RETARDER ( )			
DRL WATER	?/T	94	1209
WASH WATER			
POT WATER			194
RIG FUEL		10	513
HELIFUEL			

MUD: MAKE UP WATER: Cl⁻ ____, Ca++ ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60
DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____
DAILY MUD COST $ 850, CUM MUD COST $ 32.580, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	1
HELI FLTS/PAX FR RIG	

WORKBOATS

BOAT	ED	CLOVA
LOCATION	RR	RIG.
ENROUTE To		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	5
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E. LOG	3
CAMERON	1
HUNTING	1
TOTAL	66

WEATHER (RANGE/DA	
SEA	2-5 NNW
SWELL	
WIND	10-14 NNW
TIDE	
BALL JT	1200
RISER TEN	180
RIG DATA (RANGE/DA	
HEADING	312
ROLL	0.7
PITCH	0.8
HEAVE	3
% OFFSET	1
ANCHOR TENS	
MAX.	
MIN	

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR. GRINDLE
ESSO TECH. THORESEN
RIG SUPR.

RIG NORJARL

REPORT NO. 25
24 HRS ENDING 21 JUL 7
WELL DEPTH 9150'
PROGRESS 0

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0215	2 1/4	attempt to set seal assy - could not set
	0300	3/4	p o h lay out seal assy
	0730	4 1/2	lay down 12 1/4'' b h a
	0745	1/4	rig up schlumberger
	0800	1/4	rig down schlumberger
	1200	4	picking up and check 8 1/2 b h a
	1800	6	pressure test std pipe manifold, hydril valve
			+ lower kelly cock. refitting emsco valve.
			5000 psi for 5 min
	2400	6	pressure test choke manifold + refitting valves

TIME SUMMARY														
	CODE	33												TOT
	HOURS	24												

FORM B

DAILY DRILLING REPORT

WELL 15/6-4

PAGE 2 OF 2

SIZE/DEPTH LAST CSG 9 5/8 - 9150'

REPORT NO. 25

ANN TOC LAST CSG

24 HRS. ENDING 21 JUL 7[illegible]

DAILY WELL COST $ 75.694

CUM. WELL COST $ 2.343.944

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.							
HTHP F.L @ °F PSI		OUT OF HOLE					
CAKE THK							
CAKE DESC							
pH							
pf							
Mf							
Rf@ °F							
Cl⁻							
Ca⁺⁺							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		202	7100
BARITE (SX)			
BENTONITE		610	125
LIG. SULFONATE			390
LIGNITE			
CAUSTIC		2	106
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			100
CEMENT ( )	L/T		134
$CaCl_2$			21
RETARDER (HR-7)			11
RETARDER ( )			
DRL WATER	L/T		1174
WASH WATER			194
POT WATER			
RIG FUEL			507
HELIFUEL	US GAL		2437

MUD: MAKE UP WATER: Cl⁻ ____, Ca⁺⁺ ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $ 9.148, CUM MUD COST $ 40.203, MUD PUMP TYPE/LINERS 6x12

BITS: RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	B	G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS

BOAT	CLOVA			
LOCATION	RIG.			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E. LOG	
STATOIL	2
OTHER	5
TOTAL	66

WEATHER (RANGE/DA	
SEA	4-6 NNW
SWELL	
WIND	14 NNW
TIDE	
BALL JT	1200
RISER TEN	180
RIG DATA (RANGE/DA	
HEADING	312
ROLL	0.4
PITCH	0.5
HEAVE	1.5
% OFFSET	
ANCHOR TENS	
MAX.	260
MIN	180

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR.
ESSO TECH. THORESEN
RIG SUPR.

RIG NORJARL

REPORT NO. 26
24 HRS ENDING 22 JUL
WELL DEPTH 9150
PROGRESS 0

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0230	2 1/2	made up torque set ea urn to right-torque built up to 8000 ft/pds. and fell off - turned s. assy. 2 1/2 rounds and torque built up again.
	0400	1/12	tryed to test seal - no good - turned s. assy two more rounds - torque dropped off again - tryed to test - no good - turned seal until torque dropped again
	0500	1	p o o h - left seal assy. in hole - two dogs on r.t. had ends sheared off.
	0600	1	installed new dogs in running tool r i h w/ r.t. and 6 1/2'' dc's
	0700	1	attempt to back out of seal assy and retrieve
	0800	1	p o o h seal assy not retrieved
	0930	1 1/2	redress r.t. dogs + r i h + attempt to back out seal assy and retrieve.
	1030	1	p o o h seal assy recovered
	1200	1 1/2	testing anw working on chokemanifold
	1245	3/4	testing upper kelly cock valve to 5000 psi ok.
	1345	1	picking up wash-tool r i h + washed wellhead and stack w/ mud for 20 min + p o o h lay down washtool.
	1545	2	rig up schlumberger working on tool hanging in elevator rig down schl.
	2400	8 1/4	waiting on midified seal assy from stavanger
			testing on 5000 psi valves on chokemanifold to 4000 psi and 10000 psi valves to 7000 psi. found one 5000 psi valve washed out

TIME SUMMARY														TO
CODE	33													
HOURS	24													

FORM B

DAILY DRILLING REPORT

WELL 15/6-4

PAGE 2 OF 2

SIZE/DEPTH LAST CSG 9 5/8 - 9103'

ANN TOC LAST CSG

REPORT NO. 26

24 HRS. ENDING 22JUL

DAILY WELL COST $86.404

CUM. WELL COST $2.400.346

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS(0/10)							
API F.L.							
HTHP F.L @ °F PSI							
CAKE THK							
CAKE DESC							
pH							
pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS%							
SAND%							
OIL%							
CEC							

OUT OF HOLE

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			7100
BARITE (SX)			
BENTONITE			125
LIG. SULFONATE			390
LIGNITE			
CAUSTIC			106
BICARB			
SAPP			19
SODA ASH			
PIPE FREEING			
CMC			13
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER	L/T		1383
WASH WATER			
POT WATER	L/T		201
RIG FUEL	L/T		502.9
HELIFUEL	US GAL		2402

MUD: MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST ____, CUM MUD COST $40.203, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS

BOAT	CLOVA			
LOCATION	RIG			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	
MUD	1
CEMENT	1
DIVERS	5
E.LOG	4
STATOIL	3
OTHER	6
TOTAL	67

WEATHER (RANGE/DAY)	
SEA	2 NW
SWELL	
WIND	12 NW
TIDE	
BALL JT	1200
RISER TEN	180

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.4
HEAVE	0.7
% OFFSET	
ANCHOR TENS	
MAX.	240
MIN	150

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR HENSON
ESSO ENGR GRINDLE
ESSO TECH THORESEN
RIG SUPR

RIG NORJARL

REPORT NO. 27
24 HRS ENDING 23JUL7
WELL DEPTH 9150'
PROGRESS 0

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

0130	1-1/2	waiting on modified wt.set seal assy.
0245	1-1/4	dressed seal assy.
0330	3/4	rih w/seal assy
0430	1	setting seal assy-turned seal 18 turns to right to build up torque.turned 1/4 turn to left and energized seal.
0530	1	testing seal-took pressure up slowly in stages to 3500 psi-started leaking-bled press.off-double checked lines rams,cut tester for leaks-pressured up to 2800 psi-started leaking-bled pressure off and re-pressured to 2400 psi-where it started leaking again.
0615	3/4	released cup tester and poh-lead plug indicator showed that seal was energized.
0715	1	rin w/bumper sub and jarred down on seal assy.
0800	3/4	attempt to test seal-pressured up in stages to 3000 psi-press.bled back to 2500 psi-bled pressure off and jarred on seal-attemped to test again-pressured up to 2500 psi and it started leaking-bled pressure off and attemped to test again.started leaking again at 2500 psi-left pressure on for 10 min.and pressure still bleeding off slowly.
0900	1	pooh w/seal assy
1100	2	stripped down seal assy + inspecting same
1230	1-1/2	working on seal assy
1330	1	dressing seal assy running tool
1400	1/2	run leak off test w/9-5/8 sea assy removed.leak off at 320 psi.
1700	3	working on seal assy
1815	1-1/4	rih w/seal assy and set same
1945	1-1/2	test seal assy.not holding pressure above 2500 psi.
2045	1	pooh w/seal assy
2100	1/4	rih
2230	1-1/2	rig up howco +circ+established injection rate.pumped 10 bbls water at 5 bpm-700 psi.closed lpr + mixed 300 sx neat class g cement with sea water.displaced with 35 bbl mud.max squeeze press 1000 psi-held pressure 20 min.bled back 9 bbl.
2300	1/2	flush riser and choke and kill thru dp.
2330	1/2	pooh and rih w/wash sub
2400	1/2	wash stack and seal assy area.

TC

FORM B

DAILY DRILLING REPORT

WELL 15/6-4

PAGE 2 OF 2

SIZE/DEPTH LAST CSG 9 5/8 - 9103

ANN TOC LAST CSG

DAILY WELL COST $ 87.221

REPORT NO. 27

24 HRS. ENDING 23JUL76

CUM. WELL COST $ 2.509.808

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.			OUT OF HOLE				
HTHP F.L @ °F PSI							
CAKE THK							
CAKE DESC							
pH							
pf							
Mf							
Rf@ °F							
Cl⁻							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			7100
BARITE (SX)			
BENTONITE			125
LIG. SULFONATE			390
LIGNITE			
CAUSTIC			106
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			100
CEMENT ( )			
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
DRL WATER			1351
WASH WATER			
POT WATER			203
RIG FUEL			497.8
HELIFUEL	US GAL		2402

MUD: MAKE UP WATER: Cl⁻ ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST ____, CUM MUD COST $ 38.903, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
NIL																	

DRILLING ASSEMBLY

COMPONENT	FT
NIL	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	2/23
HELI FLTS/PAX FR RIG	2/22

WORKBOATS				
BOAT	CLOVA			
LOCATION	RIG.			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	
MUD	1
CEMENT	1
DIVERS	5
E. LOG	4
STATOIL	2
OTHER	6
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	
SWELL	
WIND	16 N
TIDE	
BALL JT	1150
RISER TEN	180
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.4
HEAVE	0.5
% OFFSET	0
ANCHOR TENS	
MAX.	260
MIN	160

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR Grindle
ESSO TECH Thoresen
RIG SUPR

RIG Norfjord

REPORT NO. 28
24 HRS ENDING 24 h
WELL DEPTH 9160
PROGRESS 10'

CCT, LIC, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
33	0045	3/4	pooh - washed out diverter housing
33	0230	1-3/4	rih and set seal assy.pooh-lay dn.r.t.
33	0315	3/4	rih and set wear bushing
33	0430	1-1/4	rig up schlm to run cbl-could'nt get past well head.
33	0530	1	rih w/8-1/2''bit to 600'-did not touch anything
33	0615	3/4	pooh
7	1030	4-1/4	rig up and running cbl log.tool not passing through well head-pooh.modifying centerlizers rih-log from 8465'-est cement top 5807'
7	1200	1-1/2	rih w/test tool and test csg and shear rams to 2150 psi.ok.
15	1500	3	test rams+choke and kill valves to 2100 psi ok.
15	1515	1/4	pooh and lay down tool
6	1530	1/4	moved hwdp in the derrick
6	1930	4	rih w/bit no 11 tag top of cement at 9014'
7	2145	2-1/4	drill cement at 9014' shoe at 9103'
3	2215	1/2	drill 8-1/2''hole to 9160'
10	2300	3/4	work junk sub + circ bttm up.
16	2315	1/4	pull up in csg
16	2400	3/4	leak-off test.pumped 4 bbl mud to 2150 psi held press for 10 min-bled back 3,5 bbl.test equivalent 14.1ppg

TIME SUMMARY									
CODE	7	6	3	10	15	16	33		
HOURS	8	4 1/4	1/2	3/4	3 1/4	1	6 1/4		

FORM B

DAILY DRILLING REPORT

WELL 15/6-4 — Norjarl

PAGE 2 OF 2

SIZE/DEPTH LAST CSG 9 5/8 @ 9103'

ANN TOC LAST CSG 5807'

REPORT NO. 28

24 HRS. ENDING 240

DAILY WELL COST 59,317

CUM. WELL COST 2,537,000

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH		9160					
TIME		2300					
WT		9.5					
PV@ °F		12					
YP@ °F		12					
GELS(0/10)		11/54					
API F.L.		14.5					
HTHP F.L @ °F PSI							
CAKE THK		2					
CAKE DESC							
pH		11.6					
Pf		1.1					
Mf		0.2					
Rf@ °F							
Cl⁻		18 M					
Ca^{++}		320					
SOLIDS %		7.0					
SAND %		tr					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAI STOC
BARITE (BULK)		80	7020
BARITE (SX)			115
BENTONITE		16	334
LIG. SULFONATE			
LIGNITE			
CAUSTIC			106
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			100
CEMENT (G)			123
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
DRL WATER			1238
WASH WATER			208
POT WATER			
RIG FUEL			491.
HELIFUEL			2402

MUD

MAKE UP WATER: Cl⁻ ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS 3, DESILTER HRS 3, CENTRIFUGE HRS ____

DAILY MUD COST 619, CUM MUD COST 34522, MUD PUMP TYPE/LINERS 6X12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B
15	11	8½	XV	K5920	3X14					10	50	3000				

DRILLING ASSEMBLY

COMPONENT	FT
bit	.75
J.S.	2.87
bit sub	3.02
19-6½"	565
XO	.93

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV	14.1	(did not go to LO)		
DEPTH	9160	(2150 psi only)		
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	Lara		
LOCATION	Rig		
ENROUTE To			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	
Statoil	2
other	6
TOTAL	68

WEATHER (RANGE/D

SEA	N 4/6
SWELL	
WIND	N 12
TIDE	
BALL JT	1150
RISER TEN	180

RIG DATA (RANGE/D

HEADING	312
ROLL	0.3
PITCH	0.2
HEAVE	0.5
% OFFSET	0
ANCHOR TENS	
MAX.	260
MIN	160

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR Grindle
ESSO TECH Thoresen
RIG SUPR Fish

Esso Ex Norway

RIG Norjarl

REPORT NO. 29
24 HRS ENDING 25.0
WELL DEPTH 9347
PROGRESS 188

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
16	0015	1/4	leak off test-pumped 4 bbls in 16 min.pressure 2150. holding for 10 min-bleeding back 3-1/2 bbls.
3	0245	2-1/2	drlg 8-1/2''hole from 9 0 to 9180
6	0600	3-1/4	pon.flow check well for 5 min at 9086' and 8992'
6	1030	4-1/2	pick up ,dress and function test bit.and tur odril assembly
6	1400	3-1/2	rih with turbodrill assy
3	1415	1/4	break circ.with 500 psi
3	1900	4-3/4	drill 8-15/32 hole to 9255'.drill with one pump from 1415-1800 hrs. gas increase from 3 to 240 units-flow check ok.bgs 5 units.
3	2215	3-1/4	drill 8-15/32 hole to 9347' gas went down to 15 units at 9285'-from 2100 hrs drill with no 1 pump 3600 psi. repair no 2 pump.
22	2315	1	repair pump no 1 and no 2.-started pumping with no 2 pump 2700 psi max.-switch to no 1 3250 psi max.pressure-test surface equip 2000 psi at 5 min ok.
22	2400	3/4	pooh check for washout in drill string.

TIME SUMMARY															TOT
CODE	3	6	16	22											
HOURS	10 3/4	11 1/4	1/4	1 3/4											24

FORM B

DAILY DRILLING REPORT

WELL 15/6-4 — Esso Ex Norway

PAGE 2 OF 2

REPORT NO. 29

24 HRS. ENDING 25.07.

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 74273

CUM. WELL COST 2611273

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9230						
TIME	2000						
WT	9.6						
PV@ °F	10						
YP@ °F	11						
GELS (0/10)	8/31						
API F.L.	14.6						
HTHP F.L @ °F PSI	27						
CAKE THK	2/32						
CAKE DESC	Firm						
pH	11.3						
pf	0.8						
Mf	0.16						
Rf@ °F							
Cl^-	17M						
Ca^{++}	100						
SOLIDS %	7						
SAND %	Tr						
OIL %							
CEC	26						

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		200	6820
BARITE (SX)			
BENTONITE			115
LIG. SULFONATE			374
LIGNITE			
CAUSTIC			106
BICARB			13
SAPP			19
SODA ASH			
PIPE FREEING			
CMC			100
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR-7)			11
RETARDER ( )			
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL			
HELIFUEL			

MUD

MAKE UP WATER: Cl^-____, Ca^{++}____, Rw____@____°F; SHAKER SCREEN MESH________ ,

DESANDER HRS.______, DESILTER HRS.________, CENTRIFUGE HRS.________

DAILY MUD COST 1138, CUM MUD COST 35661, MUD PUMP TYPE/LINERS 12"x6"

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32'	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
15	11	8½	XV	-	3-14	9180	—			30	80	95	2500				
16	12	8½	MTS01P		—	—	—										

DRILLING ASSEMBLY COMPONENT	FT
Bit	2.2
Turbodrill	53.1
XO	1.0
Stab	5.4
X-O	1.6
Monel DC	30.1
XO	1.1
Stab	4.3
3 DC	93.2
Stab	4.0
15 DC	440.2
XO	0.9

DEVIATION AND LEAKOFF DATA				
DEPTH	9140			
ANGLE				
LEAKOFF PPG EQUIV	14.1			
DEPTH				
DATE	24/7			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT			
LOCATION			
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	3
Statoil	2
Cameron	1
Sukco	1
TOTAL	68

WEATHER (RANGE/DA	
SEA	N-NW 4
SWELL	
WIND	NW 14-2
TIDE	
BALL JT	1150
RISER TEN	1802

RIG DATA (RANGE/DA	
HEADING	312
ROLL	0.3
PITCH	0.3
HEAVE	0.3
% OFFSET	
ANCHOR TENS	
MAX.	300
MIN	160

FORM A?

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR Grindle
ESSO TECH Thoresen
RIG SUPR Fish

Esso Ex Norway

RIG Norjarl

PAGE 1 OF 2

REPORT NO. 30
24 HRS ENDING 26.07.
WELL DEPTH 9723
PROGRESS 376

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
16	0345	3-3/4	finished pooh w/wet string-string ok
16	0430	3/4	checked turbine ok
16	0845	4-1/4	rih w/turbine
16	0900	1/4	break circ and washed bttm
3	1400	5	drilling 8-15/32 hole to 9475'
12	1445	3/4	survey at 9475' - 1-1/2 deg - n55w
3	1930	4-3/4	drilling 8-15/32 hole to 9614'
9	1945	1/4	gas increase to 976 units,bgg 450,flow check start weight up mud to 9.9
3	2400	4-1/4	drilling 8-15/32 hole to 9723'
			note : held fire-abandon ship and man over board drill.

TIME SUMMARY						TOTAL
CODE	3	9	12	16		
HOURS	14	1/4	3/4	9		24

DAILY DRILLING REPORT

Esso Ex Norway

FORM B

PAGE 2 OF 2

WELL 15/6-4

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

REPORT NO. 30

24 HRS. ENDING 26.07.7

DAILY WELL COST 97756

CUM. WELL COST 2209029

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	9511	9674					
TIME	1500	2130					
WT	9.6	9.9					
PV@ °F	9	12					
YP@ °F	15	11					
GELS (0/10)	7/36	7/47					
API F.L.	29	28					
HTHP F.L @ °F PSI							
CAKE THK	3	3					
CAKE DESC							
pH	11						
pf	0.7						
Mf	0.16						
Rf @ °F							
Cl^-	17.5	17M					
Ca^{++}	80	80					
SOLIDS %	8	9					
SAND %	0.4	0.5					
OIL %	nil	nil					
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		350	6420
BARITE (SX)			
BENTONITE		75	640
LIG. SULFONATE			374
LIGNITE			
CAUSTIC		4	102
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC			106
CEMENT ( )			
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
Al ster			9
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL			
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST 2806, CUM MUD COST 38467, MUD PUMP TYPE/LINERS 6 x 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
16	12	8 15/32	MT SO1		-	9347	167	8	21	25	50	3600					
17	12 RR	"	"		-	-	376	14	27	35	50	4200					

DRILLING ASSEMBLY

COMPONENT	FT
Same as #28	

DEVIATION AND LEAKOFF DATA				
DEPTH	9475			
ANGLE	14°			
LEAKOFF PPG EQUIV	14.1			
DEPTH	9103			
DATE	24/7			

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS

BOAT				
LOCATION				
ENROUTE To				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	4
Statoil	2
Other	1
TOTAL	67

WEATHER (RANGE/DAY)	
SEA	330° 4/6
SWELL	
WIND	330° 12
TIDE	
BALL JT	1150
RISER TEN	180
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.3
PITCH	0.3
HEAVE	0.5
% OFFSET	
ANCHOR TENS	
MAX.	280
MIN	160

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR. HENSON
ESSO ENGR. GRINDLE/ECKERT
ESSO TECH. THORESEN
RIG SUPR.

RIG NORJARL

REPORT NO. 81
24 HRS ENDING 27 JULY
WELL DEPTH 10,055'
PROGRESS 332'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0245	2-3/4	drilling to 9785'
9	0300	1/4	flow check-gas units increased to 2000 units
12	0345	3/4	survey at 9785' - 2 deg n55w
3	0745	4	drilling 8-15/32 hole from 9785'to 9882'
9	0845	1	circ bttm up max gas 40 unit
3	1200	3-1/4	drilling 8-15/32 hole to 9970'
9	1415	2-1/4	circ+build mwt to 10.9 ppg
3	1715	3	drilling 8-15/32 hole to 10042'-got 1500 gas units from 9908'
9	1745	1/2	circ for short trip.max gas 280 units
9	1830	3/4	pull 6 std short trip.at 10042'-9500' + rih
9	2015	1-3/4	circ.bttm up max gas 880 units
9	2200	1-3/4	circ+build mwt to 11.5 ppg
9	2245	3/4	pull 6 std short trip at 10042'-9500'+rih
9	2300	1/4	circ 15 min - max gas on bttm up 55 units
3	2400	1	drilling 8-15/32 hole to 10055'

TIME SUMMARY					TOT.
CODE	3	9	12		
HOURS	14	9 1/4	3/4		

FORM B

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DAILY DRILLING REPORT

WELL 15/6-4

SIZE/DEPTH LAST CSG 9 5/8 - 9103'

ANN TOC LAST CSG

DAILY WELL COST $ 71.993

REPORT NO. 31

24 HRS. ENDING 27 JUL 76

CUM. WELL COST $ 2.781.022

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10022	10042					
TIME	1520	1930					
WT	10.9	11.5					
PV@ °F	18	20					
YP@ °F	12	14					
GELS (0/10)	7/51	12/56					
API F.L.							
HTHP F.L @ °F PSI	31	29					
CAKE THK	5	5.8					
CAKE DESC							
pH	10.8	10.9					
pf	0.6	0.6					
Mf	0.14	0.5					
Rf@ °F							
Cl^- x1000	16.5	14					
Ca^{++}	92	420					
SOLIDS %	14	12					
SAND %	0.5	0.5					
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		1500	4570
BARITE (SX)			
BENTONITE			640
LIG. SULFONATE			374
LIGNITE			
CAUSTIC		4	98
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CMC		10	90
CEMENT (G)	4/T		134
$CaCl_2$			21
RETARDER ( )			11
RETARDER ( )			
AL. STEAR			9
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL			
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $ 7.460, CUM MUD COST $ 45.927, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
17	12.	8 1/2	MT SDIPP	10336		INC	332	14	24	35	50	4100					
											DP						

DRILLING ASSEMBLY

COMPONENT	FT
AS BEFORE	

DEVIATION AND LEAKOFF DATA				
DEPTH	9785			
ANGLE	2			
LEAKOFF PPG EQUIV	14.5			
DEPTH	9103			
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT				
LOCATION				
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E. LOG	4
STATOIL	2
OTHER	1
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	8-12 NW
SWELL	
WIND	20-35 NW
TIDE	
BALL JT	1350
RISER TEN	192

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.7
PITCH	1.0
HEAVE	2.5
% OFFSET	
ANCHOR TENS	
MAX.	275
MIN	175

WATER DEPTH
ESSO SUPR. KERBY
ESSO ENGR. ECKERT
ESSO TECH. GILLETTE
RIG SUPR.

RIG NORJARL

REPORT NO. 32
24 HRS ENDING 2400
WELL DEPTH 10318
PROGRESS 263

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0200	2	drlg to 10,094
12	0245	3/4	survey - 2-1/4 deg n75w
3	0800	5-1/4	drlg to 10,187. flow check at 10086
22	0915	1-1/4	replace swivel packing-pull up to 10,015 and perform hang off drill while repairing swivel.
3	1230	3-1/4	drlg to 10,258 - bottoms up after repairing swivel 240 units
9	1245	1/4	flow check + work pipe
9	1330	3/4	6 stand wiper trip
9	1345	1/4	circulate
3	1630	2-3/4	drlg to 10,318-bottoms up after wiper trip 400 units
9	1815	1-3/4	circulate drlg break at 10,318-max gas units 480 falling back to 30
9	1900	3/4	6 stand short trip
9	2030	1-1/2	circ bottoms up-50 units max gas falling to 30 units drop survey
6	2315	2-3/4	pump slug-pooh
12	2330	1/4	recover survey - n83w - 3 deg
6	2400	1/2	pooh

need
1. drill string float with 3/16 orifice for 6-1/2''drill string also floats for slim hole drill string when applicable
2. security bit nozzles 12/32 13/32
3. smith bit nozzles 12/32 13/32
4. blank cardex cards

TIME SUMMARY	CODE	3	9	12	22	6	TOT
	HOURS	13-1/4	5-1/4	1	1-1/4	3-1/4	24

SIZE/DEPTH LAST CSG 9 5/8 - 9103 FT

ANN TOC LAST CSG

DAILY WELL COST $ 72.561

REPORT NO. 32

24 HRS. ENDING 28 JUL 76

CUM. WELL COST $ 2.853.583

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10317						
TIME	2100						
WT	11.7						
PV@ °F	18						
YP@ °F	11						
GELS (0/10)	13/46						
API F.L.							
HTHP F.L @ 250 °F PSI	20						
CAKE THK	7						
CAKE DESC							
pH	11.2						
Pf	0.8						
Mf	1.4						
Rf@ °F							
Cl^- × 1000	15						
Ca^{++}	420						
SOLIDS %	12						
SAND %	TR						
OIL %	0						
CEC	20						

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	.	400	6360
BARITE (SX)			
BENTONITE			640
LIG. SULFONATE		20	354
LIGNITE			
CAUSTIC		10	88
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC	.	20	70
CEMENT ( )			1344
$CaCl_2$			
RETARDER (HR7)			11
RETARDER ( )			
DRL WATER	M^3	67	1408
WASH WATER			
POT WATER			226
RIG FUEL		11.35	452
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60 , 60

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $ 3600 , CUM MUD COST $ 50.957 , MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL GPM	D.PIPE AV	COND T	COND B	COND G
17	12	8 1/2	HT SDITT	10336	-	10318	1138	48 3/4	23.34	30/35	50/80	4200	118		5	D 9/16	

DRILLING ASSEMBLY

COMPONENT	FT
DS	
BEFORE	

DEVIATION AND LEAKOFF DATA				
DEPTH	10318			
ANGLE	3° N	83W		
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	1/14
HELI FLTS/PAX FR RIG	1/15

WORKBOATS				
BOAT	CLOVA			
LOCATION	RIG			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
DRLG CONT	47
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	5
E.LOG	3
STATOIL	1
TOTAL	66

WEATHER (RANGE/DAY)	
SEA	8-12 N
SWELL	
WIND	18-22 N
TIDE	
BALL JT	1350
RISER TEN	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	1
PITCH	2
HEAVE	2
% OFFSET	0
ANCHOR TENS	
MAX.	250
MIN	160

DAILY DRILLING REPORT

PAGE 1 OF 1

WELL	15/9-1
WATER DEPTH	365'
ESSO SUPR	KERBY
ESSO ENGR	ECKERT
ESSO TECH	GILLETTE
RIG SUPR	DAVIS
RIG	NORJARL
REPORT NO.	23
24 HRS ENDING	2400
WELL DEPTH	10444
PROGRESS	126'

CCT, LK, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
6	0030	1/2	trip for bit no 13
6	0145	1-1/4	service and lay down turbodrill
15	0230	3/4	rig and run howco rtts and set same at 502 ft
15	0415	1-3/4	pressure test 13 3/8x9-5/8''annulus seal to 2100 psi. by closing upper rams and pumping down kill line pressure bled to 1950 and held.: close hydril and repeat test pumping down choke line-pressure bled from 2200-2100 and held steady- function tested annular and ram preventers and fail safe valves as per general proceedures
6	0800	3-3/4	rih bit no 13
16	0815	1/4	hang off drill-ready to pump in 3 minutes-full pipe.
6	0915	1	rih to csng shoe
16	1015	1	slip and cut 90' drlg line
6	1100	3/4	trip to bottom - no fill
9	1245	1-3/4	circulate bottoms up-maximum gas units 270 re-circulate active system through gas detector- 4 units
3	1930	6-3/4	drlg to 10,401-drlg break at 10398-10401. gas units 100-270 units on peaks initially backing gradually to a steady 35 units
9	2030	1	circulate sample - maximum gas increasing to 50 units falling to 30 and holding
3	2400	3-1/2	drlg to 10444
			background gas - 30-35 units

remarks :
=========
pit drill each tour - checked all pit alarms for proper functioning

TIME SUMMARY															TOTAL
CODE	3	6	9	15	16										
HOURS	10 1/4	7 1/4	2 3/4	2 1/2	1 1/4										[illegible]

DAILY DRILLING REPORT

WELL 15/6-4

REPORT NO. 33

SIZE/DEPTH LAST CSG 9 5/8" - 9103'

24 HRS. ENDING 25 JUL 76

ANN TOC LAST CSG 5807'

DAILY WELL COST $60.939

CUM. WELL COST $2.914.522

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10435	10435	10442				
TIME	1430	1630	2330				
WT	11.7	11.6					
PV @ °F	19	17	17				
YP @ °F	10	12	11				
GELS (0/10)	15/26	16/25	14/23				
API F.L.							
HTHP F.L @ °F PSI	23	23	22				
CAKE THK	3	3					
CAKE DESC							
pH	11.6	11.2	11.5				
pf	0.15	0.18	0.21				
Mf							
Rf @ °F							
Cl⁻ x 1000	11	11	11				
Ca^{++}	18	18	18				
SOLIDS %							
SAND %	TR	TR	TR				
OIL %							
CEC	25	25	25				

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	.		7490
BARITE (SX)			
BENTONITE			640
LIG. SULFONATE		10	344
LIGNITE			
CAUSTIC		5	83
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CMC			70
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			11
RETARDER ( )			
DRL WATER	L/T	67	1611
WASH WATER			
POT WATER			226
RIG FUEL		9.3	443
HELIFUEL	US GAL		2200

MUD: MAKE UP WATER: Cl⁻ ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 60, 60
DESANDER HRS. –, DESILTER HRS. ___, CENTRIFUGE HRS. ___
DAILY MUD COST $210, CUM MUD COST $51.167, MUD PUMP TYPE/LINERS 6x12

BITS: RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D. PIPE AV	COND T	B	G
18	13	8 1/2	XV	HT661	3-12	INC	126		12.3								

DRILLING ASSEMBLY: COMPONENT	FT
BIT	
BS	
XO	
MONEL DC	
6 1/2 DC	
STAB	
6 1/2 DC	
STAB	
16 DC	
XO	
Σ	612.12

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS
FW FLTS/PAX ;TO FR
FW FLTS/PAX ;FR TO
HELI FLTS/PAX TO RIG
HELI FLTS/PAX FR RIG

WORKBOATS			
BOAT	CLWA	SH1	
LOCATION	RIG		
ENROUTE TO		STVGR	
ETA		2400	

PERSONNEL ON BOARD: COMPANY	NO.
ESSO	4
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
HOMING	1
STATOIL	1
TOTAL	66

WEATHER (RANGE/DA	
SEA	8-12 NNW
SWELL	
WIND	16-22 NNW
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DA	
HEADING	312
ROLL	1
PITCH	2
HEAVE	2
% OFFSET	0
ANCHOR TENS	
MAX.	275
MIN	160

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365'
ESSO SUPR KERBY
ESSO ENGR ECKERT
ESSO TECH GILLETTE
RIG SUPR DAVIS

RIG NORJARL

REPORT NO. 34
24 HRS ENDING 30107
WELL DEPTH 10.506
PROGRESS 62

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0345	3-3/4	drlg from 10,444 - 10491
19	0445	1	circulate bottom sample
12	0515	1/2	survey at 10491 - slug pipe
6	0830	3-1/4	p.o.o.h.
12	0845	1/4	retrieve servey - 3-1/4 deg. s 69 deg . w
6	0930	3/4	p.o.o.h.
6	1045	1-1/4	make-up bit no 14
6	1430	3-3/4	trip in hole - break circulation -
3	1515	3/4	drlg from 10491 - 10506 ft.- drlg break
			from 10.500-10.506 - well not flowing
			bottoms up after trip - 480 gas units fell to
			80 units
9	1615	1	circulate sample :
			bottoms up gas 2000 units saturation on
			chro- matograph
			mud density cut from 11.5 no/gal to 10.8 no/gal
9	2300	6 3/4	circulate and increase mud a to 12.0 no/gal
			after mud wt.leveled throughout system gas
			units decreased to 6 background
9	2330	1/2	6 stand wiper trip. no sign of swabbing
9	2400	1/2	circ. bottoms up
			note : rowan has 1 set of 3-1/2'' pipe rams for
			their bop stack:

TIME SUMMARY														
CODE	3	6	9	12	19									TOT.
HOURS	4 1/2	9	8 3/4	3/4	1									24

DAILY DRILLING REPORT

WELL 15/6-4

SIZE/DEPTH LAST CSG 9 5/8" - 9103'

ANN TOC LAST CSG 5807'

REPORT NO. 34

24 HRS. ENDING 30JUL71

DAILY WELL COST $ 74.360

CUM. WELL COST $ 2,988,882

MUD CHEKS	IN OR OUT (IN)	IN OR OUT (OUT)	IN OR OUT (IN)	IN OR OUT (OUT)	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10449	10491	10506	10506			
TIME	2330	0400	2100	2300			
WT	11.6	11.6	12.1	12.2			
PV@ °F	17	18	16	17			
YP@ °F	11	12	12	11			
GELS (0/10)	14/63	15/62	16/72	11/42			
API F.L.							
HTHP F.L @ °F 500 PSI	22	23	22	22			
CAKE THK	3	3	3	3			
CAKE DESC	TOUGH	-	-	THIN TOUGH			
pH	11.5	11.5	11.2	11.2			
Pf	0.12	0.15	0.15	1.2			
Mf	0.21		0.2	1.6			
Rf@ °F							
Cl^- × 1000	11	11	11	11			
Ca^{++}	40	TR	40	80			
SOLIDS %	18	18	16	16			
SAND %	TR	TR	TR	TR			
OIL %							
CEC	25	25	25	25			

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	SX	550	6940
BARITE (SX)			
BENTONITE		151	489
LIG. SULFONATE		43	301
LIGNITE			
CAUSTIC		9	74
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			0
CMC			70
CEMENT (G)			2927
$CaCl_2$			
RETARDER ( )			11
RETARDER ( )			
DRL WATER	L/T	133	1437
WASH WATER			
POT WATER			227
RIG FUEL		6.12	437
HELIFUEL	US GAL		2300

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $ 4708, CUM MUD COST $ 55.874, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
18	13	8 1/2	XV	47661	3-12	10491	173	14	12.4	30-40	110	3300	120	453	6	4	I
19	14	8 1/2	XV	54917	2-13 1-11	INC											

DRILLING ASSEMBLY

COMPONENT	FT
A S	
# 33	
612.12	14.

DEVIATION AND LEAKOFF DATA				
DEPTH		10491		
ANGLE		3 1/4 S60W		
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS				
BOAT	CLOVA			
LOCATION	RIG			
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
DRLG CONT	44
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E. LOG	3
STATOIL	1
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	12-15 N
SWELL	
WIND	25-30 N
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	1.6
PITCH	1.5
HEAVE	2.5
% OFFSET	0
ANCHOR TENS	
MAX.	260
MIN	160

WELL 10/6-1
WATER DEPTH 365'
ESSO SUPR KERBY
ESSO ENGR ECKERT
ESSO TECH GILLETTE
RIG SUPR DAVIS

DAILY DRILLING REPORT

RIG NORJARL

REPORT NO. 35
24 HRS ENDING 31 JUL
WELL DEPTH 10 585'
PROGRESS 79'

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
9	0145	1-3/4	circ bottoms up after short trip - bu gas 450 units falling to 10 units
9	0330	1-3/4	circ and baise mud to 12,5 no/gal plus background gas 6-9 units
3	0445	1-1/4	drlg from 10506 - 10530. gas units from 1rst new formation drilled increased to 85 units falling to a steady 40-45 units
19	0615	1-1/2	circulate samples - drilled gas reading of 45 units falling to background of 8-10 units
3	0730	1-1/4	drlg to 10545 ft. flow check drlg break - no flow drill to 10550 - rop increased from 7 ft/hr to 75 ft per hour
9	1100	3-1/2	circulate samples. drilled gas increased from 70 units to 1400 units from fast drlg. mud cut from 12.6 to 11.6. circulate to background of 15-20 units
16	1200	1	short trip to csng shoe
16	1300		rig up howco circulating head, hang off on upper pipe rams and perform pressure integrity test: leak off equal to 14.3 no/gsl re do test and leak off equal to 14.4 no/gsl
16	1345	3/4	rih to bottom
9	1630	2-3/4	circ bottoms up - gas units over bottoms up were situation of 2000 units falling to 70 units after 30 minutes and backing to 20 units
9	1730	1	short trip to csng shoe
9	1800	1/2	observe anoulus at shoe
9	1845	3/4	trip to bottom
9	2000	1-1/4	circ bottoms up - gas units over bottoms up 700 units falling to background of 15 units

TIME SUMMARY															TO
	CODE														
	HOURS														

WELL ________
WATER DEPTH 365'
ESSO SUPR KERBY
ESSO ENGR ECKERT
ESSO TECH GILLETTE
RIG SUPR DAVIS

RIG NORJARL

REPORT NO. 35
24 HRS ENDING ________
WELL DEPTH ________
PROGRESS ________

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	2200	2	drlg from 10550 - 10575. background gas of 15 units initially- drilled gas becoming 650 units falling steady 400 units .
			drlg break at 10568-10570 to 72 ft/hr. flow check. no flow- drill to 10575 for samples
19	2315	1-1/4	circ samples -
			drilled gas of 400 units increasing to maximum of 720 units falling to background of 20 units after samples up
3	2330	1/4	drill 10 ft to 10585 -
19	2400	1/2	circulate bottoms up - background 15-25 units
	note		rop in ft/hr from 10568-10585 interval -68 - 27
			70-52
			72-67
			74-72
			76-64
			78-69
			80-82
			82-76
			84-74
			gas units from drlg break increased to 1200 units falling to background of 14 units.

TIME SUMMARY	CODE	3	9	16	19	TOT
	HOURS	4 3/4	13 1/4	2 3/4	3 1/4	24

DAILY DRILLING REPORT

WELL 15/6-4

SIZE/DEPTH LAST CSG 9 5/8" - 9108'

ANN TOC LAST CSG 5807'

DAILY WELL COST $ 66.540

REPORT NO. 35

24 HRS. ENDING 21JUL76

CUM. WELL COST $ 3.054.431

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10507	10548	10555		10585	10585	
TIME	0330	0930	2330		0300	0415	
WT	12.5	12.4	12.8		12.8	12.7	
PV @ °F	13	18	16		11	12	
YP @ °F	11	13	16		11	12	
GELS (0/10)	6/41	10/42	10/42		4/30	6/33	
API F.L.							
HTHP F.L @ °F PSI	24	22	20.2		21	-	
CAKE THK			3				
CAKE DESC	THIN POST.	OUT DECR.	NOT BY	TOUGH TEMP	OF TH	INNER	!
pH	.				11.3	11.2	
pf	1.2	1.2	1.8		1.8	1.8	
Mf	1.7	1.6	2.2		2.3	2.3	
Rf @ °F							
Cl^- x 1000	10	10	10		10	10	
Ca^{++}	80	80	40		TR	TR	
SOLIDS %	23	23	21		20		
SAND %	TR	TR	TR				
OIL %							
CEC	25	25	25		20		

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	SX	1094	5846
BARITE (SX)			
BENTONITE			
LIG. SULFONATE		29	276
LIGNITE			
CAUSTIC		15	59
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			2927
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER	L/T	82	
WASH WATER			
POT WATER			
RIG FUEL	L/T	11.6	
HELIFUEL	US GAL		2300

MUD

MAKE UP WATER: Cl^- ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 60/80 , 60/80

DESANDER HRS. ___, DESILTER HRS. ___, CENTRIFUGE HRS. 3

DAILY MUD COST $ 6.538 , CUM MUD COST $ 62.412 , MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
19	14	8 1/2	XC	54917	2-13	10585	94	5 1/4	17.9	30-40	116	3200	110				
					1-11												

DRILLING ASSEMBLY

COMPONENT	FT
AS # 33	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ; TO FR	
FW FLTS/PAX ; FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS			
BOAT	SM	CLOVA	
LOCATION	RIG	RIG	
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
DRLG CONT	44
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
STATOIL	1
TOTAL	64

WEATHER (RANGE/DAY)	
SEA	10-12N
SWELL	
WIND	16-22N
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	1.2
PITCH	1.0
HEAVE	1.5
% OFFSET	
ANCHOR TENS	
MAX.	250
MIN	150

WELL ___
WATER DEPTH 365'
ESSO SUPR KERBY
ESSO ENGR
ESSO TECH GILLETTE
RIG SUPR DAVIS

RIG NORJARL

REPORT NO. 36
24 HRS ENDING 0100
WELL DEPTH 10.607
PROGRESS 22'

CCT. LIL. AW KE D R 1 K

CODE	Time	Hrs	Operation
19	0145	1¼	circ samples from 10575 - 10585
			background gas 20-25 units increasing to 1200 units
			over bottoms up time(mud returns cut to 12.4 n/gal
			background after samples up fell to 14 units
9	0215	½	10 std wiper trip
9	0400	1¾	circulate bottoms up then to background
			bu gas units 120 falling to background of 12 units
12	0415	¼	drop survey - pump slug
6	0730	3¼	trip for core bbl
12	0745	¼	recover survey 2-3/4 deg. s67w
6	0845	1	finish p.o.o.h. - lay down monel collar
17	1000	1¼	pick up 30 ft core bbl and c-22 core head
17	1400	4	rih
11	1430	½	wash and ream 10575-10585
9	1545	1¼	circulate bottoms up - 220 units trip gas
17	1600	¼	drop ball and pump down
17	1945	3¾	coring run no 1 - 10585 - 10607
			gas background - 20 units prior to coring

interval	rop ft/hr	gas units from interval
10588	15	30
90	54	250
92	20	
94	29	
96	44	
98	28	120
600	5	20-25
02	5	20-25
04	4	20
06	4	20

background fell to 15 units

CODE	Time	Hrs	Operation
9	2115	1¼	circ bottoms up background gas 15 units
17	2400	2¾	pump slug and chain out of hole.

need : garbage container.
abnormal pressure data sheets.

Time SUMMARY	CODE	9	6	12	11	17	19	TOTAL
	HOURS	5	4¼	½	½	12	1¾	24

WELL 15/6-4 DAILY DRILLING REPORT

SIZE/DEPTH LAST CSG 9 5/8" - 9103'

ANN TOC LAST CSG 5807'

DAILY WELL COST $75,903

REPORT NO. 36

24 HRS. ENDING 01 AUG 7[illegible]

CUM. WELL COST $8,130,33[illegible]

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR CUT	IN OR OUT	IN OR OUT	IN OR CUT	IN OR CUT
DEPTH	10585						
TIME	0300	0415					
WT	12.8	12.7					
PV @ 120 °F	11	12					
YP @ 120 °F	11	12					
GELS (0/10)	7/30	6/23					
API FL.							
HTHP FL @ °F PSI	21	-					
CAKE THK							
CAKE DESC	THIN	NOT TOUGH					
pH	11.3	11.2					
pf	1.8	1.8					
Mf	2.3	2.3					
Rf @ °F							
Cl^- x1000	10	10					
Ca^{++}	TR	TR					
SOLIDS %	21	21					
SAND %	TR	TR					
OIL %							
CEC	20	20					

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	.		815
BARITE (SX)			
BENTONITE			429
LIG. SULFONATE			
LIGNITE		14	262
CAUSTIC		4	55
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			2927
$CaCl_2$			
RETARDER ( )			11
RETARDER ( )			.
DRL WATER	M/T	51	1575
WASH WATER			
POT WATER			228
RIG FUEL		7.74	417
HELIFUEL	US GAL		2300

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $234, CUM MUD COST $62,646, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B
19	14	8 1/2	XC	54916	X-12	10585	94	5 1/4	17.9	30/40	110	3200	110		3	3
20	C#1	8 15/32	C-22	P8329		10607	22	3 3/4	5.86	12/15	110	600	62	245		

DRILLING ASSEMBLY

COMPONENT	FT
CORE HEAD	
CORE BBL	
XO	
DC	
STAB	
DC	
STAB	
DC x16	
XO	
Σ 613.93 ft	

DEVIATION AND LEAKOFF DATA				
DEPTH	10585			
ANGLE	2 3/4	S67W		
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	1/1
HELI FLTS/PAX FR RIG	1/1

WORKBOATS

BOAT	SM	CLOVA
LOCATION		RIG
ENROUTE TO	STAV	
ETA	0430	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	44
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
STATOIL	1
CHRIST.	1
TOTAL	64

WEATHER (RANGE/D[illegible])	
SEA	6-8 [illegible]
SWELL	
WIND	18-22 [illegible]
TIDE	
BALL JT	1350
RISER TEN	210
RIG DATA (RANGE/D[illegible])	
HEADING	312
ROLL	0.6
PITCH	0.6
HEAVE	1
% OFFSET	1
ANCHOR TENS	
MAX.	280
MIN	160

WELL ____
WATER DEPTH 345'
ESSO SUPR. KERBY
ESSO ENGR. ____
ESSO TECH. GILLETTE
RIG SUPR. ____

RIG NORJARL

REPORT NO. 37
24 HRS ENDING ____
WELL DEPTH 10.65
PROGRESS ____

CCT, LIC, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
17	0130	1-1/2	p.o.o.h. - core nr.1
17	0215	3/4	recover 19 ft core(22 ft cut -86 0/0 recovery)
17	0245	1/2	service core bbl
15	0315	1/2	rig /run howco rtts tool and set at rkc
15	0500	1 3/4	pressure test bop stack 200/2000 psi on yellow pod - function all functions on blue pod from drillers panel
15	0530	1/2	retreve and lay down rtts tool
17	0730	2	make-up 60 ft core bbl - core bit no 1 rr
17	1100	3 1/2	r i h break circulation
9	1245	1 3/4	circulate bottoms up - trip gas 520 units falling to background of 20 units.
17	1845	6	cutting core no 2 from 10607 - 10655

interval	rop ft/hr	gas units from interval
608	10	20-30
10	6	
12	5	
14	6	
16	6	
18	8	
20	8	
22	9	
24	11	
26	13	
28	11	
30	7	
32	8	
34	12	
36	14	20-30
38	21	
40	13	20-30

TIME SUMMARY	CODE												
	HOURS												

WELL ... 1/9 ... 1
WATER DEPTH
ESSO SUPR
ESSO ENGR
ESSO TECH
RIG SUPR

REPORT NO. 37
24 HRS ENDING
WELL DEPTH
PROGRESS

RIG NORSARL

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
			42 8
			44 9
			46 7
			48 6
			50 8
			52 20 80 units
			54 48 80 units
			55 bbl sammed 23 units
9	2030	1 3/4	circulate bottoms - up background falling to a constant 20 units after bottom sample up:-
17	2400	3 1/2	trip to recover core no 2 - flow check at shoe have hang off drill - 2 minutes ready to pump.
		(1)	note: believe solids reading of 17-0/0 is inaccurate for a mud weighing 12.8 ro/gal - we will recheck this measurement.
		(2)	note to hugh white : on 12-1/4'' stabilizers - will conoco also accept the near bit stabilizer.

TIME SUMMARY				
CODE	9	15	17	TO
HOURS	3 1/2	2 3/4	17 3/4	2

WELL [illegible] PAGE [illegible] OF [illegible]

SIZE/DEPTH LAST CSG. 9 5/8" - 9103'

ANN TOC LAST CSG. 5807'

REPORT NO. 37

24 HRS. ENDING 021996

DAILY WELL COST $60,271

CUM. WELL COST $3,190,605

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10619	[illegible]	10655				
TIME	1430	[illegible]	1900				
WT	12.8	12.8	12.8				
PV @ °F	11	13	12				
YP @ °F	11	12	12				
GELS (0/10)	3/28	3/29	4/29				
API F.L.							
HTHP F.L @ °F PSI							
CAKE THK	3		3				
CAKE DESC	THIN						
pH	11.2	11.2	11.2				
Pf	1.2	1.2	1.1				
Mf	1.6	1.6	1.4				
Rf @ °F							
Cl^- x1000	10	10	10				
Ca^{++}	40	TR	TR				
SOLIDS %	17	17	17				
SAND %	TR	TR	TR				
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		89	8242
BARITE (SX)			
BENTONITE			
LIG. SULFONATE			262
LIGNITE			
CAUSTIC		4	51
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			2927
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER	M/T	90	1485
WASH WATER			
POT WATER			235
RIG FUEL	M/T	7.54	410
HELIFUEL	GAL		2300

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST $565, CUM MUD COST $63,211, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
20	CORE #2	8 1/2	C-22	P8320		10655	48	6	8	15	96	750	62				

DRILLING ASSEMBLY

COMPONENT	FT
CORE BIT	
CORE BBL	
XO	
DC	
STAB	
DC	
STAB	
DC x 16	
XO	
Σ 644.36 FT	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	CLEVA	KB		
LOCATION	RIG	RR		
ENROUTE TO		NJ		
ETA		0530		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	44
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
STATOIL	1
CHRIST	1
TOTAL	64

WEATHER (RANGE/DA

SEA	4-7 N
SWELL	
WIND	16-20 N
TIDE	
BALL JT	
RISER TEN	210

RIG DATA (RANGE/DA

HEADING	312
ROLL	0.6
PITCH	0.7
HEAVE	0.5
% OFFSET	1
ANCHOR TENS	
MAX.	250
MIN	175

WELL [illegible]
WATER DEPTH 265'
ESSO SUPR. KERBY
ESSO ENGR. ECKERT
ESSO TECH. GILLETTE
RIG SUPR. DAVIS

DAILY DRILLING REPORT

RIG NORJARL

REPORT NO. 38
24 HRS. ENDING 03AU
WELL DEPTH 10,734
PROGRESS 79'

CCT, LTL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
17	0100	1	pull core no 2
17	0130	1/2	recover core (44 ft - 92 0/0)
17	0145	1/4	service core bbl and stand in derrick
6	0215	1/2	pick up monel collar and bit no 15
6	0630	4-1/4	rih: - hang off drill - ready to pump in 3 minutes
			fill pipe at cshg shoe
6	0700	1/2	ream core hole 10,588 - 10655
10	0815	1-1/4	circulate bottoms up - trip gas 240 units falling to
			15 units
3	0900	3/4	drlg to 10683 ft - flow check drlg break
9	1000	1	circulaté sample - bottoms up gas 122 units
			falling off to background
3	1115	1-1/4	drill to 10734
19	~~1545~~ 1230	~~4-1/2~~ 1 1/4	circulate sample - gas off bottom 200 units falling
			to background of 15
37	1545	3 1/4	circulateing waiting on orders from 12:30 - 1545 hrs:
9	1630	3/4	6 stand wiper trip - no drag
9	1745	1-1/4	circulate bottoms up - maximum gas 45 units falling
			to background of 15 units
12	1800	1/4	drop survey - pump slug
6	2130	3-1/2	p.o.o.h. - survey 2-1/2 deg. s67deg.w
17	2215	3/4	pick-up core bbl
17	2400	1/3/4	r.i.h.

need: (1) 2-7/8'' tubing
(2) 9-5/8'' cmt. retainer

TIME SUMMARY	CODE	3	6	9	10	12	37	17	19				TO
	HOURS	2	8 3/4	3	1 1/4	1/4	3 1/4	4 3/4	1 1/4				24

DAILY DRILLING REPORT

WELL 15/6-4 PAGE 2 OF 2

SIZE/DEPTH LAST CSG 9 5/8" - 9103' REPORT NO. 38

ANN TOC LAST CSG 5807' 24 HRS. ENDING 03 AUG 7[illegible]

DAILY WELL COST $ 66.097 CUM. WELL COST $ 3.256.702

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10670	10734					
TIME	1000	1530					
WT	12.8	12.8					
PV @ 120 °F	14	12					
YP @ 120 °F	11	12					
GELS (0/10)	7/38	6/36					
API F.L.	11	11					
HTHP F.L @ °F PSI	22	22					
CAKE THK	3	3					
CAKE DESC	ELASTIC	TIGHT ?					
pH	11.2	11.2					
pf	0.9	1.0					
Mf	1.2	1.4					
Rf @ °F							
Cl⁻ x1000	11	11					
Ca++	TR	TR					
SOLIDS %	22	22					
SAND %							
OIL %							
CEC	25	25					
GARRETT GAS	TRAIN	CHECKS	NEGATIVE				

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)	.	268	7974
BARITE (SX)			
BENTONITE			489
LIG. SULFONATE		9	252
LIGNITE			
CAUSTIC		6	45
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			2927
$CaCl_2$			
RETARDER ( )			11
RETARDER ( )			
DRL WATER	M³	83	1402
WASH WATER			
POT WATER			233
RIG FUEL		9.67	400
HELIFUEL	GAL	48	2259

MUD
MAKE UP WATER: Cl⁻ ____, Ca++ ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80
DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____
DAILY MUD COST $ 1680, CUM MUD COST $ 64.841, MUD PUMP TYPE/LINERS 6x12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
21	15	8 1/2	SVH	199AS	3-12	10734	79	2	39.5	30	110	3200	110		2	2	I
22	CORE #3	8 15/32	C-22	PS329		INC											

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH	10734			
ANGLE	2 1/2 S67W			
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS
FW FLTS/PAX ; TO FR
FW FLTS/PAX ; FR TO
HELI FLTS/PAX TO RIG 1/2
HELI FLTS/PAX FR RIG 1/1

WORKBOATS				
BOAT	SM	CLEVA		
LOCATION	STVGR	RIG		
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	4
DRLG CONT	44
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E. LOG	3
STATOIL	1
CHEUTENIEN	1
TOTAL	65

WEATHER (RANGE/DAY)	
SEA	4-6 SSW
SWELL	
WIND	14-16 SSW
TIDE	
BALL JT	1350
RISER TEN	210
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.6
PITCH	0.6
HEAVE	0.2
% OFFSET	0
ANCHOR TENS	
MAX.	255
MIN	165

DAILY DRILLING REPORT

WELL 15/6-4

Esso Ex Norway

REPORT NO. 39

24 HRS. ENDING 4 Au[illegible]

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 61,446

CUM. WELL COST 3,318,148

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	-	10812					
TIME	0800	2300					
WT	12.8	12.8					
PV @ °F	20	25					
YP @ °F	12	37					
GELS (0/10)	7/42	17/43					
API F.L.	11	12					
HTHP F.L @ °F PSI	23	26					
CAKE THK	3/32	3/32					
CAKE DESC							
pH	11.2	11.3					
Pf	0.8	0.7					
Mf	1.0	0.8					
Rf @ °F							
Cl^-	11M	11M					
Ca^{++}	Tr	Tr					
SOLIDS %	22	23					
SAND %	0.5	0.5					
OIL %	–	–					
CEC	25	25					

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			7974
BARITE (SX)			
BENTONITE			489
LIG. SULFONATE			353
LIGNITE			
CAUSTIC			165
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CEMENT ( )			2927
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			8455
WASH WATER			
POT WATER			1495
RIG FUEL			3006
HELIFUEL			2168

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST ____, CUM MUD COST 64,841, MUD PUMP TYPE/LINERS 6X12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL GPM	D.PIPE AV	COND T	COND B	COND G
23	CORE #4	8 15/32	C-22	P8329	-	10794	60	3½	17.1	15	96	750	60	2.4			

DRILLING ASSEMBLY

COMPONENT	FT
core bit	
cb	
stab	
dc	
stab	
16 dc	
XO	
644.36	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

1 HELI FLTS/PAX TO RIG 13

1 HELI FLTS/PAX FR RIG 15

WORKBOATS

BOAT				
LOCATION				
ENROUTE TO				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	2
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	3
Christen	1
TOTAL	64

WEATHER (RANGE/DAY)

SEA	2-6 NNW
SWELL	-
WIND	5-25 NNW
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DAY)

HEADING	315
ROLL	0.5
PITCH	0.5
HEAVE	0.5
% OFFSET	
ANCHOR TENS	
MAX.	275
MIN	165

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Henson
ESSO ENGR.
ESSO TECH.
RIG SUPR.

DAILY DRILLING REPORT

Esso Ex Norway

RIG Norjarl

REPORT NO. 29
24 HRS ENDING [illegible]
WELL DEPTH 1081[illegible]
PROGRESS 78

CCT, LIC, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
17	0100	1	rih to csg ,shoe
16	0200	1	slip and cut 90 ft drilling line
17	0230	1/2	finished trip in hole
9	0415	1-3/4	circ. b.u. dropped ball
17	0745	3-1/2	cutting core no 3 from 10734 to 10794'
9	0945	2	circ. b.u.
17	1030	3/4	p o o h to csg. shoe
9	1045	1/4	flow check - o.k.
17	1345	3	p o o h w/core no 3 - 100 0/0 rec.
17	1500	1-1/4	recovered core and serviced c.b.
37	1700	2	w.o.o.
17	2045	3-3/4	r i h w/c/.b. to cut core no 4
9	2230	1-3/4	circ. b.u. and drop ball - bu gas 100 units
17	2400	1-1/2	cutting core no 4 from 10794 to 10812'
			held man overboard drill
			Jumped divers and checked BOP bolts All tight. Checked guidebase - 8 inches cement on one end and 12 inches on other end. Riser position indicator ~~covered~~ imbedded with 12 inches cement

TIME SUMMARY					
CODE	9	16	17	37	TO[illegible]
HOURS	5-3/4	1	15-1/4	2	

WELL [illegible]
WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR
ESSO TECH Smith
RIG SUPR Fish/Lord

Esso Ex Norway

RIG

REPORT NO. 294
24 HRS ENDING 5 Au
WELL DEPTH 10900
PROGRESS 88

CCT, LH, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
17	0300	3	cutting core no 4 to 10.854
9	0445	1-3/4	circ. b.u. - bu gas 15 units bgg- 40-60 u.
17	0815	3-1/2	p o h w/core no 4
17	0900	3/4	empty core bbl. and service same - 100-0/0 recovery
18	1315	4-1/4	rig up schlm and ran isf-sonic log
18	1345	1/2	rig down schlm
15	1445	1	function test bop - flush choke + kill lines
6	1915	4-1/2	r i h , w/bit
11	2200	2-3/4	ream from 10734 to 10854
3	2400	2	drill 8-1/2 hole to 10.900' bu-30

TIME SUMMARY									TOTAL
CODE	3	6	9	11	15	17	18		
HOURS	2	4 1/2	1 3/4	2 3/4	1	7 1/4	4 3/4		24

DAILY DRILLING REPORT

WELL 15/6-4

Esso Ex Norway

PAGE 2 OF 2

REPORT NO. 40

24 HRS. ENDING 5 Aug

SIZE/DEPTH LAST CSG 9 5/8" @ 9103

ANN TOC LAST CSG

DAILY WELL COST 62,752

CUM. WELL COST 3,380,900

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	10896						
TIME	2200						
WT	12.8						
PV @ °F	24						
YP @ °F	26						
GELS (0/10)	12/37						
API F.L.							
HTHP F.L 250 500 PSI	27						
CAKE THK	3/32						
CAKE DESC	–						
pH	11.4						
Pf	0.9						
Mf	0.4						
Rf @ °F							
Cl^-	10M						
Ca^{++}	60						
SOLIDS %	21						
SAND %	0.5						
OIL %							
CEC	23						

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		90	7884
BARITE (SX)			
BENTONITE			489
LIG. SULFONATE		30	323
LIGNITE			
CAUSTIC		5	160
BICARB			
SAPP			19
SODA ASH			13
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			21
RETARDER (HR-7			11
RETARDER ( )			
DRL WATER			
WASH WATER			
POT WATER			
RIG FUEL			
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 60 , 80

DESANDER HRS ___, DESILTER HRS ___, CENTRIFUGE HRS ___

DAILY MUD COST 921 , CUM MUD COST 65890 , MUD PUMP TYPE/LINERS 6 X 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL GPM	D.PIPE AV	COND T	COND B	COND G
23	CB-1	8 1/2	C-22	P8329		10854	60	4 1/2	13.3	14	90	980	67		90% Sa		
24	16	8 1/2	J-22		3-12	-	46	2	23	30	70	3200	110				

DRILLING ASSEMBLY

COMPONENT	FT
BIT	
NB Stab	
XO	
monel	
XO	
stab	
2 DC	
stab	
16 DC	
XO	
565	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

1 HELI FLTS/PAX TO RIG 1

1 HELI FLTS/PAX FR RIG 0

WORKBOATS

BOAT			
LOCATION			
ENROUTE TO			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E. LOG	3
Statoil	1
& Ch. D/a	1
TOTAL	65

WEATHER (RANGE/DA

SEA	4-6
SWELL	---
WIND	18-22
TIDE	---
BALL JT	1350
RISER TEN	210

RIG DATA (RANGE/DA

HEADING	312
ROLL	1/2°
PITCH	
HEAVE	1/2°
% OFFSET	
ANCHOR TENS	
MAX.	295
MIN	160

WELL 15/12 I

WATER DEPTH 365

ESSO SUPR. [illegible] Henson

ESSO ENGR.

ESSO TECH. Smith

RIG SUPR. [illegible]

DAILY DRILLING REPORT

Esso Ex Norway

RIG Norjarl

REPORT NO. 41

24 HRS ENDING 6 AM

WELL DEPTH 11225

PROGRESS 325

CCT, LIC, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0630	6-1/2	drilling to 11,027'
12	0745	1-1/4	survey - 2-3/4 deg. s69w
3	2400	16-1/4	drilling to 11225' bg - 30 - 50u

note:

made look-out dive to try to free hole position indicator of cement. was unable to do so as cement was too hard to chip away.

TIME	CODE												TOTAL
SUMMARY	HOURS												

WELL 15/6-4

DAILY DRILLING REPORT

Esso Ex Norway

REPORT NO. 41

SIZE/DEPTH LAST CSG

24 HRS. ENDING 6 Aug

ANN TOC LAST CSG

DAILY WELL COST 82,033

CUM. WELL COST 3,462,933

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11128		11200				
TIME	1430		2100				
WT	12.8		12.8				
PV@ °F	22		25				
YP@ °F	42		34				
GELS (0/10)	16/48		10/36				
API F.L.	12.2		-				
HTHP F.L @ °F PSI	28.5		26				
CAKE THK	3/32		3/32				
CAKE DESC							
pH	10.7		11.0				
pf	0.6		0.7				
Mf	0.5		0.5				
Rf@ °F							
Cl^-	9 M		9 M				
Ca^{++}	40		40				
SOLIDS %	21		21				
SAND %	1/4		1/4				
OIL %							
CEC	32½		30				

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			
BARITE (SX)			
BENTONITE			
LIG. SULFONATE		40	283
LIGNITE		20	50
CAUSTIC		10	150
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			1388
WASH WATER			
POT WATER			235
RIG FUEL			373
HELIFUEL			2129

MUD

MAKE UP WATER: Cl^- ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH 60, 80

DESANDER HRS 22, DESILTER HRS ___, CENTRIFUGE HRS ___

DAILY MUD COST 943, CUM MUD COST 66,753, MUD PUMP TYPE/LINERS 6 x 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
24	16	8½	J-22		3-12	·	371	24¾	15	30	60	3200	110				

DRILLING ASSEMBLY

COMPONENT	FT
Same	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX	;TO	FR
FW FLTS/PAX	;FR	TO
2 HELI FLTS/PAX TO RIG		
2 HELI FLTS/PAX FR RIG		

WORKBOATS

BOAT	Clara
LOCATION	Rig
ENROUTE To	
ETA	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	49
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E. LOG	4
BMV	1
Statoil	1
TOTAL	

WEATHER (RANGE/DAY)	
SEA	2-3 N
SWELL	-
WIND	4-8 N
TIDE	
BALL JT	1300
RISER TEN	210
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.2°
PITCH	0.2°
HEAVE	0.5'
% OFFSET	
ANCHOR TENS	
MAX.	280
MIN	185

WELL 15/6-4 | DAILY DRILLING REPORT | PAGE 2 OF 2

Esso Ex Norway

WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR
ESSO TECH Smith
RIG SUPR Fish

RIG Norjarl

REPORT NO. 42
24 HRS ENDING 2 AUG
WELL DEPTH 11500
PROGRESS 275

CCT, LM, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
3	0045	3/4	drill to 11244'
12	0130	3/4	circ - drop survey
18	0200	1/2	short trip - 11 std no drag
12	0300	1	retrieve survey - 3-1/2 deg. s67w
18	0330	1/2	rih - no fill tg-70u
3	1900	15-1/2	drill to 11500' t.d. bg-5-40u.
19	2000	1	circ sample
26	2045	3/4	pooh 10 stds - hole not taking mud properly
26	2100	1/4	rih
26	2230	1-1/2	circ gas out - 1200u max
26	2300	1/2	pooh 3 stds - hole not taking mud
26	2400	1	rih - circ out 200u and inc wt to 12.8 ppg

TIME SUMMARY	CODE													TOT
	HOURS													

DAILY DRILLING REPORT

WELL 15/6-4

Esso Ex Norway

REPORT NO. 112

24 HRS. ENDING Aug 7

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 64,723

CUM. WELL COST 3,527,636

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11458		11500				
TIME	1430		1930				
WT	12.5		12.5				
PV@ °F	19		21				
YP@ °F	31		27				
GELS (0/10)	14/32		9/38				
API F.L.	11.5		11.0				
HTHP F.L @ °F PSI	26		22.5				
CAKE THK	3/32		3/32				
CAKE DESC							
pH	11.7		11.6				
pf	1.5		1.4				
Mf	2.0		2.0				
Rf@ °F							
Cl^-	8M		8M				
Ca^{++}	60		60				
SOLIDS %							
SAND %	.25		.25				
OIL %							
CEC	17.5		18				

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		90	7794
BARITE (SX)			
BENTONITE		65	404
LIG. SULFONATE		20	263
LIGNITE			
CAUSTIC		19	131
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			1333
WASH WATER			
POT WATER			239
RIG FUEL			366
HELIFUEL		97	2032

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60 , 80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST 1773, CUM MUD COST 68,526, MUD PUMP TYPE/LINERS 6 x 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
24	16	8½	J-22		3-13	11500	646	40¼	16	25	75	3200	110				

DRILLING ASSEMBLY

COMPONENT	FT
Same	

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

- FW FLTS/PAX ;TO FR
- FW FLTS/PAX ;FR TO
- /HELI FLTS/PAX TO RIG
- /HELI FLTS/PAX FR RIG

WORKBOATS

BOAT				
LOCATION				
ENROUTE To				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	4
Statoil	1
SSL	2
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	1-3 NW
SWELL	
WIND	6-8 NW
TIDE	
BALL JT	1300
RISER TEN	210

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.2°
PITCH	0.3°
HEAVE	0.3'
% OFFSET	0.2'
ANCHOR TENS	
MAX.	280
MIN	185

WELL ~~1/9~~
WATER DEPTH 365
ESSO SUPR Henson
ESSO ENGR
ESSO TECH Smith
RIG SUPR

Esso Ex Norway

RIG Norjarl

PAGE 1 OF 2
REPORT NO. 43
24 HRS ENDING 8 A
WELL DEPTH 11 50C
PROGRESS 0

CCT, LH, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
26	0100	1	circ + inc mud wt to 12.8 ppg
6	0515	4-1/4	pooh
18	0545	1/2	rig up schlb.
28	1015	4-1/2	run isf-sonic-gr - tool malfunctioned
18	1215	2	re run isf-sonic-gr ISF malfunctioned Sonic-GR ok
18	1730	5-1/4	run cnl-fdc
28	1900	1-1/2	schlb. working on tools
28	2400	5	run msfl-dll Replaces ISF

note:
-----
held man overboard drill
abandon ship drill
fire drill
launched all capsules.

TIME SUMMARY	CODE													TOT
	HOURS													

DAILY DRILLING REPORT

Esso Ex Norway

WELL 15/6-4

REPORT NO. 43

24 HRS. ENDING 3 Aug

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 81,705

CUM. WELL COST 3,609,361

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS(0/10)							
API F.L.							
HTHP F.L @ °F PSI							
CAKE THK							
CAKE DESC							
pH		None					
pf							
Mf							
Rf@ °F							
Cl^-							
Ca^{++}							
SOLIDS%							
SAND%							
OIL%							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		626	7168
BARITE (SX)			
BENTONITE			
LIG. SULFONATE			
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			1278
WASH WATER			
POT WATER			241
RIG FUEL			359
HELIFUEL			2032

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60, 80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST 3412, CUM MUD COST 71938, MUD PUMP TYPE/LINERS 6 x 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32'	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
HELI FLTS/PAX TO RIG	
HELI FLTS/PAX FR RIG	

WORKBOATS

BOAT	Clova		
LOCATION	Rig		
ENROUTE To			
ETA			

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	4
Statoil	1
SSL	2
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	Nil
SWELL	2-3
WIND	1 WNW
TIDE	
BALL JT	1300
RISER TEN	210

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.1°
PITCH	0.2°
HEAVE	1'
% OFFSET	2'
ANCHOR TENS	
MAX.	225
MIN	180

WELL 15/6-7	DAILY DRILLING REPORT	PAGE 1 OF 2
WATER DEPTH 365	Esso Ex Inc	REPORT NO. 44
ESSO SUPR Henson		24 HRS ENDING 2 AM
ESSO ENGR	RIG Norjarl	WELL DEPTH TD
ESSO TECH Smith		PROGRESS
RIG SUPR	

CCT, LIL, AW, KF, DB, LØ

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
28	0100	1	prep schlb tools - working on connector
28	0345	2-3/4	run hdt- unable to get below 10781' (719' of bottom)
28	0415	1/2	rig down schlb
28	0800	3-3/4	rih w/bit - no tight hole - no fill - tg - 100u
28	1015	2-1/4	circ + cond.
28 6	1515	5 4 1	pooh - lay down monel collar and nb stab + 1 stab 1 hour to lay down monel & stab.
28	1545	1/2	rig up schlb
28	1815	2-1/2	run hdt log - unable to get below 10,509'
28	1830	1/4	rig down schlb
28	2130	3	rih to 10495'
28	2400	2-1/2	reaming shale bridges

note: had drills for fire fighting team at helideck, shaker room, mud room and engine room.

TIME SUMMARY		
CODE		TOT
HOURS		

DAILY DRILLING REPORT

WELL 15/6-4

Esso Ex Norway

PAGE 2 OF 2

REPORT NO. 44

24 HRS. ENDING 9 Aug

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 63,312

CUM. WELL COST 3,672,673

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11500		11500				
TIME	1000		0200				
WT	12.7		12.8				
PV @ °F	17		18				
YP @ °F	21		20				
GELS (0/10)	9/30		11/41				
API F.L.	12.7		13.5				
HTHP F.L @ °F PSI			24.5				
CAKE THK	3/32		3/32				
CAKE DESC							
pH	11.3		11.2				
pf	1.0		1.0				
Mf	0.4		0.4				
Rf @ °F							
Cl^-	8.5M		8.5M				
Ca^{++}	60		60				
SOLIDS %	18		19				
SAND %	1/4		1/4				
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		90	7078
BARITE (SX)			
BENTONITE			
LIG. SULFONATE		16	247
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			1467
WASH WATER			2
POT WATER			245
RIG FUEL			575
HELIFUEL			2032

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____ ,

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST 667, CUM MUD COST 77604, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
25	RR	8 1/2	SVH				CLEAN		OUT	TRIP							

DRILLING ASSEMBLY

COMPONENT	FT
BIT	
BS	
18 x 6 1/2 DC	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	CLOVA	SM	
LOCATION	RIG		
ENROUTE TO		STV	
ETA		0830	

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E.LOG	4
SSL	2
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	1-3
SWELL	
WIND	6-10 N
TIDE	
BALL JT	1300
RISER TEN	210

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.2°
PITCH	0.2°
HEAVE	0.5'
% OFFSET	0-2'
ANCHOR TENS	
MAX.	230
MIN	180

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Henson
ESSO ENGR.
ESSO TECH. Smith
RIG SUPR.

DAILY DRILLING REPORT

Esso Ex Norway

RIG Norjarl

PAGE ___ OF ___
REPORT NO. 45
24 HRS ENDING 10 AUG
WELL DEPTH TD
PROGRESS

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0330	3-1/2	ream to 10736' - very hard reaming - shale heaving
	0400	1/2	pull up to 10,480' laying down 7 singles
	0700	3	rih - hit tight spot at 10,545' - had to ream again through same section - 10,776' at 0700
	0915	2-1/4	ream to 10,953'
	0930	1/4	rih to 11,345'
	1030	1	wash to bottom - 10,500'
	1315	2-3/4	circ hole clean
	1445	1-1/2	wiper trip - 20 std - no drag - no fill
	1545	1	circ + cond hole for logs
	2000	4-1/4	pooh
	2030	1/2	rig up schlb
	2400	3-1/2	run vel survey

TIME SUMMARY	CODE													TOTAL
	HOURS													

DAILY DRILLING REPORT

Esso Ex Norway

WELL 15/6-4

REPORT NO. 45

24 HRS. ENDING 10 Aug

SIZE/DEPTH LAST CSG.

ANN TOC LAST CSG.

DAILY WELL COST 58,658

CUM. WELL COST 3731,331

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11300						
TIME	1445						
WT	12.8						
PV @ °F	24						
YP @ °F	21						
GELS (0/10)	11/33						
API F.L.	13.2						
HTHP F.L @ °F PSI							
CAKE THK	3/32						
CAKE DESC	?						
pH	11.3						
pf	1.0						
Mf	0.3						
Rf @ °F							
Cl^-	9M						
Ca^{++}	40						
SOLIDS %	20						
SAND %	1/4						
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		90	6998
BARITE (SX)			
BENTONITE		29	375
LIG. SULFONATE			
LIGNITE			
CAUSTIC		2	129
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )			
$CaCl_2$			
RETARDER ( )			
RETARDER ( )			
DRL WATER			1394
WASH WATER			
POT WATER			246
RIG FUEL			570
HELIFUEL			2032

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____,

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST 835, CUM MUD COST 73,440, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
25	RR	SVH	8½							Clean out trip							

DRILLING ASSEMBLY

COMPONENT	FT
Bit	
B S	
18-6½"	DC

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS		
BOAT	Nois	SM
LOCATION	Rig	Svg
ENROUTE To		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	46
MUD LOGGER	4
MUD	1
CEMENT	1
DIVERS	6
E. LOG	4
SSL	2
TOTAL	68

WEATHER (RANGE/DAY)	
SEA	Nil
SWELL	
WIND	1-3 var
TIDE	
BALL JT	1300
RISER TEN	210

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.1°
PITCH	0.2°
HEAVE	0.4'
% OFFSET	1-3'
ANCHOR TENS	
MAX.	230
MIN	180

WELL ...[illegible]

WATER DEPTH 365

ESSO SUPR Henson, Powell

ESSO ENGR

ESSO TECH Smith, Gillette

RIG SUPR

Esso Ex Norway

RIG Norjarl

REPORT NO. 74

24 HRS ENDING 11 A

WELL DEPTH TD

PROGRESS 0

CCT, LH, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0315	3-1/4	velocity survey
	0630	3-1/4	running hdt log
	0700	1/2	rig side wall core gun no.1
	0915	2-1/4	run side wall gun no.1 - 30 shots-26 recovered
	1000	3/4	rig side wall gun no.2
	1300	3	side wall gun no.2 - 30 shots - 27 recovered
	1415	1-1/4	rig to run fit's
	1715	3	run fit no.1 - improper seal
	1830	1-1/4	prepare fit no.2
	2200	3-1/2	run fit no.2 - no seal
	2245	3/4	rig down schlumberger
	2400	1-1/4	rih to condition hole and mud.

TIME SUMMARY	CODE												TOT
	HOURS												

WELL 15/6-4 DAILY DRILLING REPORT

Esso Ex Norway

REPORT NO. 47/46

24 HRS. ENDING 11 Aug

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 73,006

CUM. WELL COST 3,804,337

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11500						
TIME	1830						
WT	12.8						
PV @ °F	25						
YP @ °F	20						
GELS (0/10)	19/34						
API F.L.							
HTHP F.L @ °F PSI	27						
CAKE THK	3/32						
CAKE DESC							
pH	11.3						
pf	1.0						
Mf	1.5						
Rf @ °F							
Cl^-	9M						
Ca^{++}	60						
SOLIDS %	20						
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			6975
BARITE (SX)			
BENTONITE			375
LIG. SULFONATE			247
LIGNITE			
CAUSTIC			129
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT (G)			2927
$CaCl_2$			
RETARDER (HR-7)			11
RETARDER ( )			
DRL WATER	LT	112	1322
WASH WATER			
POT WATER	LT		245
RIG FUEL	LT	4.83	560
HELIFUEL	l		2032

MUD: MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80
DESANDER HRS. ____, DESILTER HRS. ____, CENTRIFUGE HRS. ____
DAILY MUD COST ____, CUM MUD COST 73,439, MUD PUMP TYPE/LINERS 6 x 12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
27	11RR	8½	XV	K5920	3-12			Conditioning Trip									

DRILLING ASSEMBLY

COMPONENT	FT
Bit	
Sub	
13-6¼ DC	
XO	
581 ft	

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT				
LOCATION				
ENROUTE To				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	1
MUD	1
CEMENT	1
DIVERS	6
E.LOG	4
Flopetrol	1
TOTAL	62

WEATHER (RANGE/DAY)	
SEA	
SWELL	3'
WIND	SSE 11
TIDE	
BALL JT	1350
RISER TEN	210
RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.1
PITCH	0.2
HEAVE	0.5'
% OFFSET	
ANCHOR TENS	
MAX.	250
MIN	170

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Powell
ESSO ENGR.
ESSO TECH Gillette
RIG SUPR.

Esso Ex Norway

RIG Norjarl

REPORT NO. 47
24 HRS ENDING 12 Aug
WELL DEPTH 11500
PROGRESS TD

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0100	1	trip in hole to shoe
	0200	1	slip and cut 103 ft. drlg line
	0245	3/4	cont. trip in hole - 10 ft. fill
	0530	2-3/4	circulate - cond hole
	0615	3/4	20 std. short trip - hole tight at 10,720
	0630	1/4	wash through tight spot
	0800	1-1/2	con't short trip - 5 ft. fill
	0900	1	circ bottoms up
	1300	4	p.o.o.h. for logs
	1400	1	rig up schlum equip. and fit no.3 tool
	1700	3	run f.i.t. no.3
	1815	1-1/4	recover sample and rig no.4 fit
	2100	2-3/4	fit no.4
	2215	1-1/4	recover sample and rig no.5 fit tool
	2400	1-3/4	fit no.5:

note: (1) for materials and trans dept. 2 pieces of ssl equipment that missed the boat should arrive on the second helicopter at forus today.

(2) 2000,oo overcharge on yesterdays well costs reflected today:

TIME SUMMARY	CODE												TOTAL
	HOURS												

FORM B

DAILY DRILLING REPORT

WELL 15/6-4 — Esso Ex Norway

PAGE 2 OF 2

REPORT NO. 47

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

24 HRS. ENDING 12 Aug

DAILY WELL COST 70,938

CUM. WELL COST 3,873,275

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH	11500						
TIME	0515						
WT	12.8						
PV @ °F	16						
YP @ °F	18						
GELS (0/10)	16/35						
API F.L.	12						
HTHP F.L @ °F PSI	26						
CAKE THK	4/32						
CAKE DESC							
pH	11.3						
pf	0.8						
Mf	1.0						
Rf @ °F							
Cl^-	11M						
Ca^{++}	50						
SOLIDS %	19						
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)		303	6675
BARITE (SX)			
BENTONITE			
LIG. SULFONATE		22	242
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
Unical			150
CEMENT ( )			2927
$CaCl_2$			
RETARDER (HR?)	SX		11
RETARDER ( )			
DRL WATER	LT	96	1418
WASH WATER			
POT WATER			
RIG FUEL	LT	58	560
HELIFUEL			

MUD

MAKE UP WATER: Cl^- ___, Ca^{++} ___, Rw ___ @ ___ °F; SHAKER SCREEN MESH ___, ___

DESANDER HRS ___, DESILTER HRS ___, CENTRIFUGE HRS ___

DAILY MUD COST 2043, CUM MUD COST 75,482, MUD PUMP TYPE/LINERS 6/12

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G
26	11RR	8½	XV		3/12			Conditioning trip									
27																	

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	Clare	SM
LOCATION	Rig	SVG
ENROUTE TO		Rig
ETA		2300

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	45
MUD LOGGER	1
MUD	1
CEMENT	1
DIVERS	6
E. LOG	4
Flopetrol	1
TOTAL	62

WEATHER (RANGE/DAY)	
SEA	1-2' ESE
SWELL	
WIND	4-8 ESE
TIDE	
BALL JT	1350
RISER TEN	210

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.1°
PITCH	0.2°
HEAVE	0.9'
% OFFSET	SSE 1'
ANCHOR TENS	
MAX.	250 K
MIN	175 K

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Powell
ESSO ENGR. Grindle
ESSO TECH. Gillette
RIG SUPR. Davis/Lord

Esso Ex Nor

RIG Norjarl

REPORT NO. 48
24 HRS ENDING 13 Aug
WELL DEPTH 11500
PROGRESS TD

CCT, LIL, NW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
20	0130	1 1/2	schlumberger f.i.t. no 5
20	0200	1/2	recover sample
20	0230	1/2	rig down schlumberger
6	0330	1	lay down 60 ft. core bbl
13	0745	4 1/4	pick up 20 jts of 2 7/8'' tubing and rih to 10.800 ft.
13	0900	1 1/4	rig up howco cmt. line and circulate
13	0945	3/4	mix and spot cmt plug no 1 as follows - pre flush 20 bbls h2o 2) 300 sx class ''g'' neat cmt. mixed with 3/10 of 1 0/0 hr7 and 35.6 bbls mix water - average density 15.8 lbs/gal 3) displace with 2 bbl h2o and 178 bbls mud
13	1015	1/2	pull up to 9500 ft.
13	1100	3/4	cmt. plug no 2 as follows 1) 20 bbl preflush 2) 240 sx ''g'' neat plus 2/10 of 1 0/0 hr7 mixed in 26.8 bbls fresh water - average density 15.8 lbs/gal 3)displace with 2 bbls water and 154 bbls mud.
13	1115	1/4	pull 10 stds
13	1400	2 3/4	flush c+k lines and reverse out. lay down 6 1/2'' collars and 7 stds grade ''g'' pipe
6	1715	3 1/4	p.o.h. laying down d.p. lay down 15 jts ''g'' and 44 jts ''e''
13	1745	1/2	rih - tag plug at 8885 ft. pressure test plug to 2000 psi for 10 minutes - held okay
13	2145	4	p.o.o.h.
13	2215	1/2	pick up bit + csng scraper
13	2400	1 3/4	r.i.h. for scraper run.

note: dumped divers for lockout inspection of ball joint studs: found every thing secure and orderly

TIME	CODE													TOTAL
SUMMARY	HOURS													

DAILY DRILLING REPORT

Esso Ex Norway

WELL 15/6-4

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

REPORT NO.

24 HRS. ENDING

DAILY WELL COST 124,046

CUM. WELL COST 3,997,321

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT
DEPTH							
TIME							
WT							
PV@ °F							
YP@ °F							
GELS (0/10)							
API F.L.							
HTHP F.L @ °F PSI							
CAKE THK							
CAKE DESC		NONE					
pH							
pf							
Mf							
Rf@ °F							
Cl⁻							
Ca^{++}							
SOLIDS %							
SAND %							
OIL %							
CEC							

STOCKS	UNITS	USED	REMAIN STOCK
BARITE (BULK)			
BARITE (SX)			
BENTONITE			
LIG. SULFONATE			
LIGNITE			
CAUSTIC			
BICARB			
SAPP			
SODA ASH			
PIPE FREEING			
CEMENT ( )		550	2377
$CaCl_2$			
RETARDER ( )		5	6
RETARDER ( )			
DRL WATER		116	1302
WASH WATER			
POT WATER			251
RIG FUEL	LT	9.19	550
HELIFUEL			2032

MUD

MAKE UP WATER: Cl⁻ ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH 60/80, 60/80

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS 2

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32"	DEPTH OUT	FT	HRS	FT/HR	W/OB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA				
DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS	
FW FLTS/PAX ;TO FR	
FW FLTS/PAX ;FR TO	
2 HELI FLTS/PAX TO RIG	26
2 HELI FLTS/PAX FR RIG	29

WORKBOATS		
BOAT	Clova	SM
LOCATION	Rig	Stay
ENROUTE TO		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	43
MUD LOGGER	1
MUD	0
CEMENT	1
DIVERS	6
E. LOG	3
Jet Res.	1
Vetco	1
TOTAL	59

WEATHER (RANGE/DAY)	
SEA	NNW 1-2
SWELL	
WIND	NNW 10
TIDE	
BALL JT	
RISER TEN	

RIG DATA (RANGE/DAY)	
HEADING	312
ROLL	0.2°
PITCH	0.2°
HEAVE	0.2'
% OFFSET	
ANCHOR TENS	
MAX.	230
MIN	150

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Powell
ESSO ENGR. Grindle
ESSO TECH. Gillette
RIG SUPR.

Esso Ex Norway

RIG Norjarl

PAGE 1 OF 2
REPORT NO. 49
24 HRS ENDING 14 Aug
WELL DEPTH 1410 PB
PROGRESS

CCT, LIL, ALW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
13	0045	3/4	rih with csng scraper
13	0130	3/4	circ. bottom up
6	0500	3 1/2	p.o.h. - laying down 66 jts grade e d.p.
13	0530	1/2	rig schlumberger
13	0745	2 1/4	run gauge ring junk basket
13	0815	1/2	make up wire line bridge plug
13	1030	2 1/4	rih with bridge plug + set same at 8700 ft
13	1045	1/4	rig down schlumberger
13	1230	1 3/4	pick up tubing and rih to 3670 ft.
13	1300	1/2	spot cmt. plug - 1) mix 90 sx class ''g'' neat with 10.63 bbls water and displace same with 61 bbls mud average density 15.6 lbs/gal.
6	1400	1	p.o.h. laying down pipe to 1550 ft.
13	1430	1/2	displace hole with 10 lbs/gal mud
6	1630	2	lay down 33 jts grade ''e'' and 20 jts. tubing
13	1700	1/2	rig schlumberger
13	1830	1 1/2	rih and perforate interval 1500 - 1505 (4 shots/ft.)
13	1845	1/4	rig down schlum.
13	1900	1/4	run howco rtts to 565 ft and set same
13	1915	1/4	establish injection rate of 4 1/2 bpm at 700 psi
13	2000	3/4	p.o.h. - rtts + service same.
13	2230	w qxw	cmt job no 4 1)run + set howco cmt. retainer at 1410 ft. 2)mix 400 sx class ''g'' with 47.6 bbls water 3) squeeze 78 bbls away 4)pull above plug - and reverse out 5)pressure test retainer to 2000 psi - okay 6) displace hole with 9 lbs/gal mud
13	2400	1 1/2	1)rig + run schlumberger perf.gun to 850 ft. w)close lower annular preventer and pressure up to 10000 psi 3)perforate interval 850 - 855 ft with 4 shots/ft. pressure fell to 150 psi + held 4)open preventer and p.o.h. 5)rig down schlumberger 6)establish injection rate of 1000 psi at 4 bpm

DAILY DRILLING REPORT

FORM B

WELL 15/6-4 — Esso Ex Norway

PAGE 2 OF 2

REPORT NO. 49

24 HRS. ENDING 14 AUG

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG

DAILY WELL COST 64,807

CUM. WELL COST 4,062,128

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	STOCKS	UNITS	USED	REMAIN STOCK
DEPTH								BARITE (BULK)		1037	6870
TIME								BARITE (SX)			
WT								BENTONITE			
PV @ °F								LIG. SULFONATE			
YP @ °F								LIGNITE			
GELS (0/10)								CAUSTIC			
API F.L.								BICARB			
HTHP F.L @ °F PSI								SAPP			
CAKE THK								SODA ASH			
CAKE DESC								PIPE FREEING			
pH		None									
pf								CEMENT ( )		2927	0
Mf								$CaCl_2$		15	6
Rf @ °F								RETARDER ( )			
Cl^-								RETARDER ( )			
Ca^{++}											
SOLIDS %								DRL WATER	LT	106	1196
SAND %								WASH WATER	LT		
OIL %								POT WATER	LT		253
CEC								RIG FUEL	LT	6.64	543
								HELIFUEL	Gal		2032

MUD: MAKE UP WATER: Cl^-___, Ca^{++}___, Rw___@___°F; SHAKER SCREEN MESH___,
DESANDER HRS___, DESILTER HRS___, CENTRIFUGE HRS___
DAILY MUD COST___, CUM MUD COST___, MUD PUMP TYPE/LINERS___

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32'	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ; TO FR

FW FLTS/PAX ; FR TO

HELI FLTS/PAX TO RIG

HELI FLTS/PAX FR RIG

WORKBOATS

BOAT	Clam	SM
LOCATION	Rig	Rig
ENROUTE TO		
ETA		

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	43
MUD LOGGER	1
MUD	0
CEMENT	1
DIVERS	6
E.LOG	3
Vetco	1
Jet Res	1
TOTAL	59

WEATHER (RANGE/DA	
SEA	NNE 3-4'
SWELL	
WIND	8-10 NNE
TIDE	
BALL JT	
RISER TEN	
RIG DATA (RANGE/DA	
HEADING	312
ROLL	0.1°
PITCH	0.3°
HEAVE	0.2'
% OFFSET	
ANCHOR TENS	
MAX.	230
MIN	120

DAILY DRILLING REPORT

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR. Powell
ESSO ENGR. Grindle
ESSO TECH. Gillette
RIG SUPR.

Esso Ex Norway

RIG Norjarl

REPORT NO. 50
24 HRS ENDING 15 Aug
WELL DEPTH —
PROGRESS —

CCT, LIL, AW, KF, DB, LB

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
13	0045	3/4	run + set howco e.z drill retainer at 815 ft
13	0145	1	cmt plugs 6 + 7 as follows
			1)close annular preventer + moniter csng pressure
			2)mix and spot 420 sx class g neat cmt with 50 bbls 2 0/0 cacl2 water
			squeezed 61 bbls into perfs
			3)pull above retainer and spot remaining cmt as balanced plug with top at 500 ft
13	0230	3/4	pull above plug - reverse out with sea water, displace riser, and flush c + k lines , manifold etc.
13	0300	1/2	p.o.h. laying down drillpipe
13	0345	3/4	rih - jet sub + wash wellhead + stack - poh laying down
13	0630	2 3/4	laying down d.p.
13	0715	3/4	tag top plug at 500 ft. - poh - laying down pipe
13	0815	1	recover wear bushing - p.o.h.
13	0900	3/4	finish laying down d.p.
15	1200	3	flush diverter lines, nipple down moon pool, uncouple c + k lines, stroke out slip jt + unlatch bop
15	1430	2 1/2	pull stack + riser
15	1600	1 1/2	land stack on elevator, skid back after removing angle indicator beacon - lay down last 2 jts riser
14	1730	1 1/2	rig + run explosive charge into wellhead, stab with tv assist - fire charge at 1720 -
	2315	5 3/4	ran 18 3/4'' yunning tool and tv: found 9 5/8'' seal assy laying across wellhead
24		2	1)jumped divers at 1930 hrs to connect assy to tugger -
24		1	2)divers + seal assy recovered by 2030 hrs
14		1	3)jumped divers at 2130 to observe stabbing into well head due to poor visibility
14		3/4	4)made up running tool + recovered divers at 2215 hrs
14		1	5)pull and recover 18 3/4 wellhead, 13 3/8 + 9 5/8 csng with 25,000 lbs overpull
14	2400	3/4	rig + run explosive charge no 2 into 30'' wellhead

TIME SUMMARY	CODE													TOTAL
	HOURS													

DAILY DRILLING REPORT

WELL 15/6-4

Esso Ex Norway

REPORT NO. 50

24 HRS. ENDING 15 Aug

SIZE/DEPTH LAST CSG

ANN TOC LAST CSG.

DAILY WELL COST 99,508

CUM. WELL COST 4,161,636

MUD CHEKS	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	IN OR OUT	STOCKS	UNITS	USED	REMAIN STOCK
DEPTH								BARITE (BULK)			
TIME								BARITE (SX)			
WT								BENTONITE			
PV@ °F								LIG. SULFONATE			
YP@ °F								LIGNITE			
GELS (0/10)								CAUSTIC			
API F.L.								BICARB			
HTHP F.L @ °F PSI								SAPP			
CAKE THK								SODA ASH			
CAKE DESC		NONE						PIPE FREEING			
pH											
pf								CEMENT (G)		2732	0
Mf								$CaCl_2$			
Rf@ °F								RETARDER ( )			
Cl^-								RETARDER ( )			
Ca^{++}											
SOLIDS %								DRL WATER			
SAND %								WASH WATER			
OIL %								POT WATER			
CEC								RIG FUEL			
								HELIFUEL			

MUD

MAKE UP WATER: Cl^- ____, Ca^{++} ____, Rw ____ @ ____ °F; SHAKER SCREEN MESH ____ , ____

DESANDER HRS ____, DESILTER HRS ____, CENTRIFUGE HRS ____

DAILY MUD COST ____, CUM MUD COST ____, MUD PUMP TYPE/LINERS ____

BITS

RUN NO.	BIT NO.	BIT SIZE	BIT TYPE	BIT SERIAL	JETS 32'	DEPTH OUT	FT	HRS	FT/HR	WOB	RPM	PRESS	TOTAL SPM	D.PIPE AV	COND T	COND B	COND G

DRILLING ASSEMBLY

COMPONENT	FT

DEVIATION AND LEAKOFF DATA

DEPTH				
ANGLE				
LEAKOFF PPG EQUIV				
DEPTH				
DATE				

FIXED WING AND HELICOPTERS

FW FLTS/PAX ;TO FR

FW FLTS/PAX ;FR TO

1 HELI FLTS/PAX TO RIG 3

1 HELI FLTS/PAX FR RIG 5

WORKBOATS

BOAT				
LOCATION				
ENROUTE To				
ETA				

PERSONNEL ON BOARD

COMPANY	NO.
ESSO	3
DRLG CONT	43
MUD LOGGER	1
MUD	
CEMENT	
DIVERS	6
E. LOG	
Conoco	2
Jet Res	1
Noble Dent	1
TOTAL	57

WEATHER (RANGE/DAY)	
SEA	1-3' NNE
SWELL	
WIND	1-3 NNE
TIDE	
BALL JT	
RISER TEN	
RIG DATA (RANGE/DAY)	
HEADING	316
ROLL	
PITCH	
HEAVE	
% OFFSET	
ANCHOR TENS	
MAX.	
MIN	

WELL 15/6-4
WATER DEPTH 365
ESSO SUPR Powell
ESSO ENGR Grindle
ESSO TECH Gillette
RIG SUPR

DAILY DRILLING REPORT

Esso Ex Norway

RIG Nogard

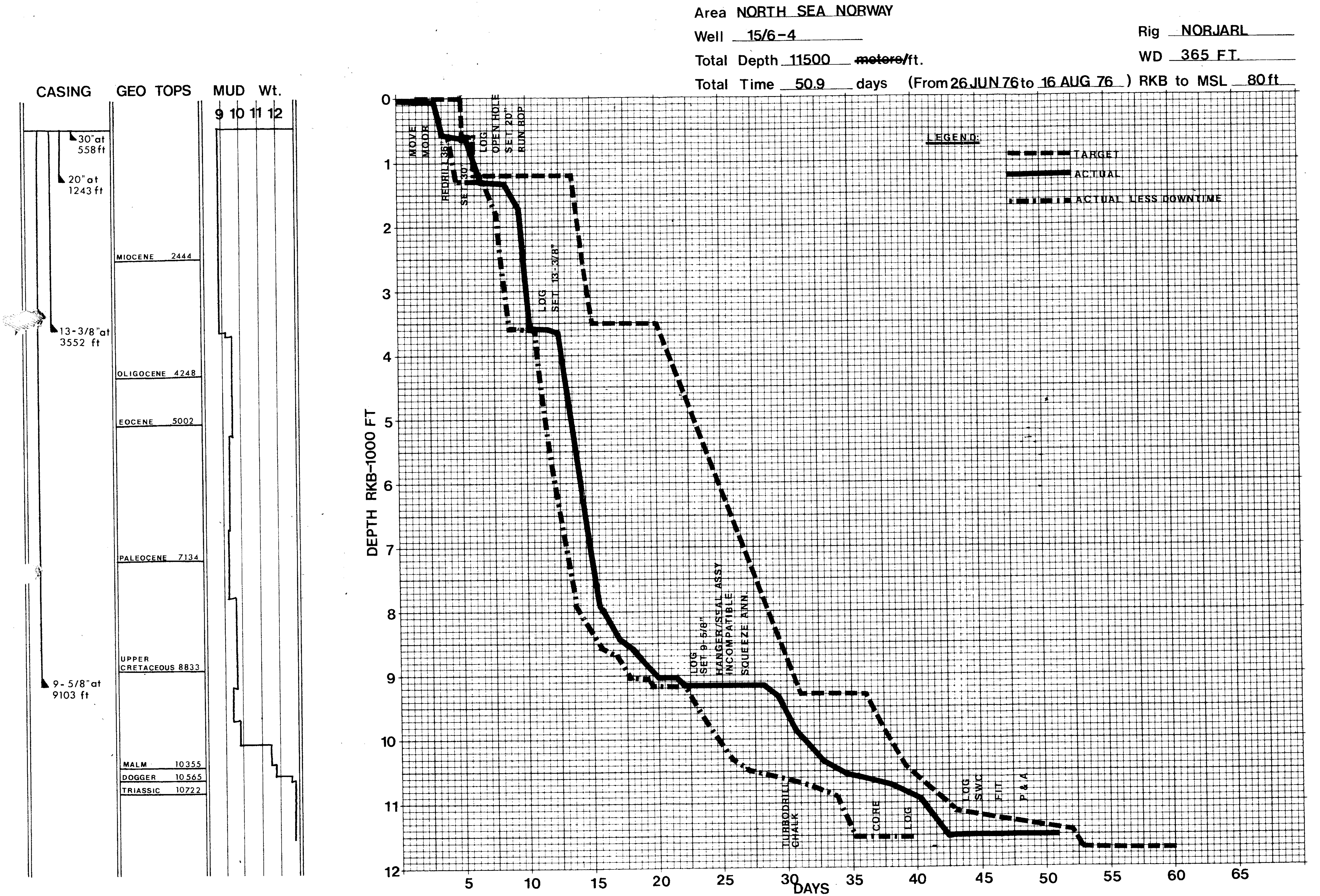
FORM A
PAGE 1 OF 1

REPORT NO. 51
24 HRS ENDING 16 Aug
WELL DEPTH
PROGRESS

24 HOUR SUMMARY

CODE	TIME TO	HOURS	OPERATION
	0100	1	Run Explosive Canister #2 and detonate
	0130	1/2	RIH with 30" Running Tool & TV
	0145	1/4	Make up Tool. Recover Guide Base and 30" casing
	0200	1/4	Pull TV - DP Guide and 30" Casing
			Deballast and prepare to pull anchors
	0700	5	Seperate 30" from Guide Base - Chip Cement while pulling anchors.
			Initiate deballasting at 0145 hours
			Halted deballasting at 0540 hours
			Anchor #6 secured at 0330 Gruno Anne
			#3 " " 0527 #1 Siddis Mariner
			#2 " " 0345 " "
			#8 " " 0510 Gruno Anne
			#1 " " 0715 " "
			#4 " " 0703 Siddis Mariner
			#7 " " 0930 Gruno Anne
			#5 " " 1130 Siddis Mariner
			Attached Tow line to Gruno Anne
			Passed rig to Conoco 11:30 hours 16 Aug

TIME SUMMARY	CODE		TOTAL
	HOURS		



Area NORTH SEA NORWAY
Well 15/6-4
Total Depth 11500 ~~metere~~/ft.
Total Time 50.9 days (From 26 JUN 76 to 16 AUG 76) RKB to MSL 80 ft
Rig NORJARL
WD 365 FT.
CASING
GEO TOPS
MUD Wt.
9 10 11 12
30"at 558 ft
20"at 1243 ft
13-3/8"at 3552 ft
9-5/8"at 9103 ft
MIOCENE 2444
OLIGOCENE 4248
EOCENE 5002
PALEOCENE 7134
UPPER CRETACEOUS 8833
MALM 10355
DOGGER 10565
TRIASSIC 10722
LEGEND:
TARGET
ACTUAL
ACTUAL LESS DOWNTIME
MOVE
MOOR
REDRILL 36"
SE 30"
LOG
OPEN HOLE
SET 20"
RUN BOP
LOG
SET 13-3/8"
LOG
SET 9-5/8"
HANGER/SEAL ASSY
INCOMPATIBLE
SQUEEZE ANN.
TURBODRILL
CHALK
CORE
LOG
LOG
SWC
FIT
P & A
DEPTH RKB-1000 FT
DAYS

Esso Exploration and Production Norway Inc.

15/6-4 COMPLETION LOG

COUNTRY: NORWAY CONCESSION: PL - 029 COORDINATES:
Long.: 58°37'34.394"N
Lat.: 01°48'19.943"E

Well Classification: WILDCAT STATUS: P + A - DRY HOLE

Elev. KB: 24.4m Water Depth: 111.3m Total Depth: 3505m Deepest Form. Penetrated: TRIASSIC

Date Spudded: 29.6.76 Date Compl.: 16.8.76 RIG: NORJARL Contractor: ROWAN

MUD-Logging: Exploration Electric Logging: Schlumberger Remarks:

RUN Nº	DATE	MEAS. INTERVAL	BIT SIZE	BHT °F	REMARKS	MUD Type	Grad psi 1000	API Wtr L	Resistivity in Ohm m/temp °F SCN surf	SCN BHT	MUD FILTR. Resistivity in Ohm m/temp °F SCN surf

ELEVATION (not to scale)

Rotary Table

Mean Sea Level

Sea Floor

LITHOLOGIC SYMBOLS
(PROVISIONALLY APPROVED FOR FIELD TESTING)

- CLAY (NONFISSILE) - CLAYSTONE < 03mm
- CLAY (FISSILE) OR SHALE < 03mm
- MUDSTONE
- SILT, COARSE (03-06mm) AND SILSTONE
- SAND (06-2mm) AND SANDSTONE
- GRANULE BOULDER (> 2mm) AND CONGLOMERATE
- QUARTZ
- FELDSPAR
- LITHIC OR ROCK FRAGMENTS
- PYRITE
- SIDERITE
- CHERT
- COAL
- CARBONACEOUS MATTER
- GLAUCONITE
- PHOSPHATE
- VOLCANIC ASH OR BENTONITE
- MICA
- GYPSUM
- ANHYDRITE
- HALITE
- POTASSIUM OR MAGNESIUM SALTS
- LIMESTONE
- DOLOMITIC LIMESTONE VERY DOLOMITIC
- CALCAREOUS DOLOMITE VERY CALCAREOUS
- DOLOMITE
- MARL
- SHELL FRAGMENTS

SPECIFY TYPE OF CARBONATE BY ADDING TO BASIC LIMESTONE OR DOLOMITE SYMBOL THE APPROPRIATE ABBREVIATION AS SHOWN BELOW

- M = MICRITIC LIMESTONE
- G = GRAIN LIMESTONE (FOR GENERAL USE)
- S = SKELETAL LIMESTONE (FRAGMENTED AND NONFRAGMENTED)
- P = PELLETAL LIMESTONE
- F = FRAMEBUILDER LIMESTONE
- O = OOLITIC LIMESTONE
- K = CHALK
- D = DETRITAL LIMESTONE
- L = LUMP LIMESTONE
- m = MICROCRYSTALLINE OR MICROGRAINED < 03mm

IGNEOUS ROCKS

- IGNEOUS ROCKS IN GENERAL (WRITE OUT THE NAME WHERE THE SPECIFIC TYPE IS KNOWN)

METAMORPHIC ROCKS

- METAMORPHIC ROCKS IN GENERAL (WRITE OUT THE NAME WHERE THE SPECIFIC TYPE IS KNOWN)

AGE / GROUP

CEMENT PLUG
SEA LEVEL 350'
13 3/8" 1000' 7000 SX
TOP OF CEMENT 2000'
NUMBER OF CORE C-1 50'
DIP ON CORE 12°
NO CORE RECOVERY 80'
STAGE COLLAR 3000'
PRODUCTION PACKER
TUBING DEPTH 2 7/8" 3550'
OPEN PERFORATIONS 4200'-4300' 2 SPF
TROUGH PERFORATION DST
SWAB OR FLOW TEST
CEMENT RETAINER 4600'
PERFORATIONS SQUEEZED 4200'-4300' 2 JPF 4 1/2" 4900'
CASING DEPTH 9 5/8" 5000' 300SX
SLOTTED LINER
LINER
FORMATION
FORMATION 5250 (-5000) 260'
6000' 125 SX
UNCONFORMITY

- SHOW OR STAIN
- HYDROCARBON CUT
- FLUORESCENCE
- GAS SHOW
- ABOVE SYMBOLS MAY BE COMBINED
- DEVIATED OR SIDETRACKED HOLE
- OPEN HOLE DST
- MISRUN
- OPEN HOLE SWAB OR FLOW TEST
- WIRE LINE TEST
- SWC w/ RECOVERY
- SWC w/ NO RECOVERY SO = SHOT OFF MF = MISFIRE PO = PULLED OFF DB DAMAGED BULLET
- SWC WITH SHOW
- BLOWOUT OF OIL
- BLOWOUT OF GAS
- WATER FLOW
- LOSS OF DRILLING FLUID AND PERCENTAGE
- LOST CIRCULATION COMPLETELY
- OEM 9,2-8% MUD TYPE WEIGHT & OIL CONTENT
- DEVIATION SURVEY
- DIRECTIONAL SURVEY 3° N 50°E
- NORMAL FAULT WITH DISPLACEMENT 300'
- REVERSE FAULT WITH DISPLACEMENT 300'
- DIPMETER SURVEY WITH DIP DIRECTION AND ANGLE 10° Az 225°
- LOG RUNS WITH SCALES 10 mV R-1 20 OHMS 1000 MMHOS; 15 mV R-2 50 OHMS 2000 MMHOS
- OIL PRODUCTION
- GAS PRODUCTION
- CONDENSATE PRODUCTION
- WATER PRODUCTION
- INTERPRETED OIL PRODUCTIVE
- INTERPRETED GAS PRODUCTIVE
- INTERPRETED WATER BEARING
- INTERPRETED CONDENSATE PRODUCTION

Schlumberger ISF/SONIC

COMPANY: ESSO EXPLORATION AND PRODUCTION NORWAY INC.
WELL: 15/6-4
FIELD: WILDCAT
COUNTY: NORWAY
LOCATION: 58° 37' 34.394" N, 01° 48' 19.943" E

The well name, location and borehole reference data were furnished by the customer.