

OPERATOR STATOIL

WELL NO. 30/6-3



ANCHOR DRILLING FLUIDS AS

TOTAL CONSUMPTION & COST ANALYSIS

TOTAL DEPTH Meters

TOTAL HOLE DRILLED Meters

TOTAL DAYS

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BARITE	M/T		780		\$ 89.700.00
BENTONITE	M/T		128		34.560.00
BENTONITE	50KG		315		3.937.50
CHROME LIGNOSULFONATE	25KG		779		11.685.00
CHROME LIGNITE	50LBS		132		2.640.00
DESCO	25LBS		48		1.296.00
CAUSTIC SODA	25KG		321		3.370.50
SODA ASH	50KG		74		1.221.00
SODIUM BICARBONATE	50KG		18		297.00
CMC LV	25KG		123		6.150.00
CMC HV	25KG		23		1.219.00
DRISPAC SUPERLO	50LBS		16		2.272.00
FLOSAL	50LBS		4		66.20
MICA	25KG		152		2.014.00
LIME	25KG		33		140.25
SODIUM CHLORIDE	50KG		125		812.50

COST/DAY

TOTAL COST FOR INTERVAL

COST/Mt. or Ft.

PROG. COST FOR INTERVAL

ENGR. COST

COST VARIANCE FOR INTERVAL

Drilling Mud Properties Record

Drilling System PREHYDRATED BENTONITE/SEAWATER

DATE	DEPTH FEET METERS	MUD PROPERTIES																		OPERATION REMARKS					
		DENSITY PPG SG	VISCOSITY				GELS 0	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	PH	Filtrate Analysis			RETORT			BENTONITE #/BBL	POTASH #/BBL		POLYMER #/BBL	"N"	"K"		
			sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.						CG ppm	Ca. ++ ppm	PI	% OIL	% SOLIDS	% SAND								
5 25.12	925	1.08	50	27	6	48	25					9.6	13	840	.10		7	1/4	12.5						Ream to TD. Circ. havis pill.
6 26.12	925	1.08	39	22	4	36	16					9.8	13	900	.30		4	1/4	10.0						Disp. hole with viscous mud.
7 27.12	925	1.07	43	20	4	32	14					9.8	14	700	.30		4		12.5						W.O.W.
3 28.12	925	1.07										10.0	1.5												Run 20" casing.
3 29.12	925	1.07	100 ⁺									1.5													Run 20" casing. Land stack mud riser.
0 30.12	925	1.05	38	14	4	20	2					9.6	15.5	600	.10				11.0						Land stack mud riser.
1 31.12	1113	1.06	32	8	3	10	5					9.0	20	1200	.10		5	TR	9.5						Drl. 17 1/2" hole.
2 1.01	1397	1.08	32	7	2	10	8					9.4	21	1600	.10		5	TR	10.0						Drl. 17 1/2" hole.
3 2.01	1492	1.20	35	17	7	20	12					8.5	19	1600	0.05		9	.30	15.0						POOH for new bit.
4 3.01	1656	1.30	33	13.5	4	19	15					8.4	20	2000	0.05		14	.20	16.0				.58	.28	Drl. 17 1/2" hole.
5 4.01	1656	1.30	33	13.5	4	19	15					8.4	20	2000	0.05		14	.20	16.0				.58	.28	W.O.W.
6 5.01	1656	1.30	36	16	8	16	13					8.4	20	1900	0.04		13	.20	16.0				.42	1.4	W.O.W.
7 6.01	1656	1.30	35	18.5	8	21	15					8.4	20	2000	0.05		12	.25	16.5				.35	3.2	Wash and ream from 1195.
8 7.01	1677	1.30	35	21.5	9	25	19					8.6	18	2400	0.05		13	.25	22.0				.32	4.0	Wash and ream.

REMARKS

Logging Mud Properties Record

DISPERSION SYSTEM CHROME LIGNOSULFONATE/BENTONITE/SEAWATER

WELL NAME 30/6-3 AREA NORTH SEA
 OPERATOR STATOIL RIG. DEEP SEA SAGA
 ENGINEERS B. JENSEN, M. ÅRSETH, M. HOLGATE

DATE	DEPTH FEET METERS	MUD PROPERTIES																				OPERATION REMARKS	
		DENSITY PPG SG	VISCOSITY				GELS 0	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	PH	Filtrate Analysis			RETORT			BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"		"K"
			sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.						10	Cl ppm	Ca. ++ ppm	PT	% OIL	% SOLIDS						
8.01	1757	1.32	38	21.5	12	19	20	24	34	4.5	8.7	20.5	2200	.03	13	.25	23.0			.47	1.65	Drl. 17 1/2".	
9.01	1757	1.32	38	19.5	11	17	21	28	25	4.0	8.7	20.5	2200	.03	13	.25	22.5			.48	1.40	Logging. Trip.	
10.01	1757	1.32	38	17.0	10	14	18	25	27	4.0	8.7	21	2000	.03	13	.25	22.5					Run and cmt. csg.	
11.01	1757	1.38	41	13.5	11	5	9	14	24	3.0	10.0	20	320	.90	15	.25	22.5					Dispersed system.	
12.01	1982	1.53	50	22.5	20	6	4	37	11	3.0	10.5	19	800	.40	20		22.5					Drl. 12 1/4" hole tight on connect.	
13.01	2078	1.54	56	26.5	22	9	3	32	6.0	2.0	10.6	20	200	.70	21		27.5					Drl. POOH for new bit. Ream.	
14.01	2078	1.54	54	24.5	20	9	4	33	5.9	2.0	10.5	19	200	.70	21		27.5					Ream from 2000 T.D. W.O.W.	
15.01	2078	1.54	54	23.5	19	9	3	25	5.5	1.0	10.8	20	180	.80	21		25.0					W.O.W.	
16.01	2142	1.55	50	21	17	8	4	16	4.4	1.0	10.9	20	180	.70	21		22.5					Drl.	
17.01	2274	1.54	52	25.5	19	13	4	35	7.2	2.0	10.4	20	300	.40	21	1/2	22.5					"	
18.01	2325	1.55	60	30	20	20	5	36	7.1	2.0	17.0	10.4	20	280	.35	21	1/2	22.5					"
19.01	2407	1.55	56	27.5	19	17	6	37	7.1	2.0	17.0	10.6	20	280	.50	21	TR	21.0			.61	.80	" 12 1/2" hole.
20.01	2421	1.55	68	30	21	18	5	35	6.0	1.0	16.0	10.5	21	180	.50	21	TR	20.0			.61	.81	" "
21.01	2423	1.55	66	30.5	21	19	6	35	6.5	1.0	16.0	10.5	20.5	160	.35	21	.25	17.5			.61	.90	Coring.

REMARKS

WELL NAME 30/6-3 AREA NORTH SEA
 OPERATOR STATOIL RIG. DEEP SEA SAGA
 ENGINEERS B. JENSEN, M. ÅRSETH, M. HOLGATE

Milling Mud Properties Record

D SYSTEM CHROME LIGNOSULFONATE/BENTONITE/SEAWATER

DATE	DEPTH FEET METERS	MUD PROPERTIES																				OPERATION REMARKS			
		DENSITY PPG & SG		VISCOSITY				GELS		Filtrate Analysis				RETORT		BENTONITE #/BBL			POTASH #/BBL		POLYMER #/BBL		"N"	"K"	
		sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	10	0	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Cl ⁻ ppm	Ca. ++ ppm	PI	% OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL					
22.01	2438	1.55	60	26.5	19	15	5/34	5.8	1	16.0	10.5	21	180	.45	21	TR	17.5			.64	.62	Coring.			
23.01	2445	1.55	60	27	20	14	4/27	5.7	1	17.0	10.4	21	180	.40	21	TR	17.5			.66	.65	"			
24.01	2458	1.55	54	24.5	18	13	3/23	5.6	1	16.0	10.5	21	140	.50	21	TR	17.5			.66	.50	"			
25.01	2522	1.55	51	26	19	14	4/28	5.7	1	15.0	10.5	21	160	.50	21	TR	19.0			.66	.54	Ream w/ 12 1/4" bit from 2421.			
26.01	2567	1.55	52	26	19	13	4/27	5.3	1	15.0	10.4	21	140	.40	21	TR	20.0			.67	.50	Drl. 12 1/4" hole.			
27.01	2582	1.55	52	25.5	19	13	4/22	5.1	1	13.5	10.4	21	160	.40	21	TR	22.5			.67	.50	"			
28.01	2582	1.55	52	26.5	21	11	4/20	5.5	1	15.0	10.6	21	180	.80	22	TR	22.5			.73	.50	Logging.			
29.01	2582	1.55	52	24.5	19	11	4/18	4.9	1	14.0	10.2	21	160	.80	21	1/4	25.0			.71	.53	Circ.			
30.01	2582	1.55	54	26	20	12	4/20	4.8	1		10.4	21	160	.50	21	TR	25.0			.70	.59	Logging, run casing.			
31.01	2582	1.56	56	26	21	10	4/18	4.6	1		9.9	22	160	.55	22	1/4	25.0			.75	.44	Run and cement 9 5/8" casing.			
1.02	2585	1.27	44	15.5	11	9	3/23	7.7	1		10.8	12	180	.40	13	TR	20.0			.73	.50	Drl. 8 1/2" hole.			
2.02	2649	1.25	46	16	12	8	4/25	6.9	1		10.7	12	200	.40	11	TR	20.0			.68	.42	Drl. junk Lost tong-dies.			
3.02	2774	1.25	53	23	16	14	5/34	6.2	1		10.3	11	160	.75	11	1/4	22.5			.62	.87	Drl. 8 1/2" hole.			
4.02	2849	1.25	51	19.5	15	9	3/13	4.8	1		10.8	12	120	.40	12	1/4	22.5			.70	.44	Drl. "			

REMARKS

Drilling Mud Properties Record

MUD SYSTEM CHROME LIGNOSULFONATE/BENTONITE/SEAWATER

WELL NAME 30/6-3

AREA NORTH SEA

OPERATOR STATOIL

RIG. DEEP SEA SAGA

ENGINEERS B. JENSEN, M. ÅRSETH, M. HOLGATE

Day No.	DATE	DEPTH FEET <input type="checkbox"/> METERS <input type="checkbox"/>	MUD PROPERTIES																				OPERATION REMARKS				
			DENSITY PPG <input type="checkbox"/> SG <input type="checkbox"/>	VISCOSITY				GELS 0 10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis			RETORT			BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"		"K"			
				sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.						Ca. ++ ppm	PI	% OIL	% SOLIDS	% SAND										
57	5.02	2940	1.25	49	19.5	15	9	4/12	4.8	1	14.6	10.3	12	120	.40		12	TR	20.0								Drl. to T.D. trip.
58	6.02	2940	1.26	57	22	17	10	4/14	5.0	1	14.5	10.0	12	120	.30		13	1/4	20.0								Logging.
59	7.02	2940	1.25	57	25	18	14	3/27	5.2	1	15.0	10.9	11.8	320	.50		13	1/4	20.0								Logging Plug hole to 2600M.
60	8.02	2540	1.35	56	24	18	12	4/14	4.9	1	14.5	10.0	11.8	240	.30		14	TR	20.0								Drl. cmt. circ. and cond.mud.
61	9.02	2540	1.36	55	22.5	17	11	4/16	5.0	1	14.5	10.0	11.8	240	.30		14	TR	20.0								Testing BOP.
62	10.02	2540	1.36	55	22.5	17	11	4/16	5.0	1	14.0	10.0	11.8	240	.30		14	TR	20.0								Test BOP.
63	11.02	2540	1.36	55	22.5	17	11	4/16	5.0	1	14.0	10.0	11.8	240	.30		14	TR	20.0								Repair BOP.
64	12.02	2540	1.36	55	22.5	17	11	4/16	4.8	1	14.0	10.0	11.8	240	.30		14	TR	20.0								Lay down 5" DP.
65	13.02	2540	1.35	53	21	16	10	4/15	4.8	1	14.0	10.5	11.8	240	.40		14	TR	20.0								Prepare testing circ.
66	14.02	2540	1.35	48	20.5	16	9	4/15	5.0	1	14.0	11.2	11.8	360	.70		14	TR	20.0								Set packer. Pick up 3 1/2" tubing.
67	15.02	2540	1.35	58	19.5	16	7	2/9	8.1	1		11.4	12	540	1.20		14	TR	18.0								Circ.
68	16.02	2540	1.35	54	23.5	18	11	4/27	7.3	2		11.4	11	130	1.30		14	TR	22.5								Circ.
69	17.02	2540	1.35	53	23.0	18	10	4/25	7.3	2		11.4	11	140	1.40		14	TR	22.5								Testing.
70	18.02	2540	1.35	54	23.0	19	8	4/22	7.5	2		11.4	11	240	1.40		14	TR	22.5								Finished dst at 1.

REMARKS

Drilling Mud Properties Record

MUD SYSTEM CHROME LIGNOSULFONATE/BENTONITE/SEAWATER

WELL NAME 30/6-3 AREA NORTH SEA
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 ENGINEERS B. JENSEN, M. ÅRSETH, M. HOLGATE

Day No.	DATE	DEPTH FEET <input type="checkbox"/> METERS <input type="checkbox"/>	MUD PROPERTIES																		OPERATION REMARKS				
			DENSITY PPG <input type="checkbox"/> SG <input type="checkbox"/>	VISCOSITY				GELS 0	FLUID LOSS 30 Min cc's	CAKE 32 rds	H.T.H.P. cc's	PH	Filtrate Analysis			RETORT			BENTONITE #/BBL	POTASH #/BBL		POLYMER #/BBL	"N"	"K"	
				sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.						10	Ca. ++ ppm	PI	% OIL	% SOLIDS	% SAND							
71	19.02	2540	1.35	58	23	19	8	3/22	7.8	2		11.4	11.5	260	1.1		14	TR	22.5						Lay down test tools.
72	20.02	2480	1.35	65	24.5	20	9	3/15	5.9	2		11.1	11.5	300	1.0		14	TR	22.5						Dril. cmt.
73	21.02	2445	1.35	64	23	19	8	3/14	6.2	2		11.1	11.5	320	1.0		14	TR	22.5						Formation interval test.
74	22.02	2445	1.35	73	26	21	10	3/15	5.0	2		11.1	11.5	240	.90		14	TR	22.5						RIH w/bit and casing scraper.
75	23.02	2445	1.35	71	26.5	21	11	3/18	5.0	2		11.1	11.5	240	.80		14	TR	22.5						Test csg.
76	24.02	2445	1.35	70	25.5	20	11	3/19	5.0	2		11.1	11.5	240	.80		14	TR	22.5						Prepare dst. no. 2.
77	25.02	2245	1.35	71	25	20	10	3/18	5.0	2		11.1	11.5	240	.80		14	TR	22.5						Finish dst. no. 2.
78	26.02	2440	1.35	58	24	20	8	3/10	5.0	2		11.0	11	240	.60		14	TR	22.5						Lay down, test tools
79	27.02	2375	1.55	65	29	25	8	3/17	5.2	2		11.2	11	300	.60		21	TR	22.5						Set retainer at 2415 m.
80	28.02	2264	1.54	62	35	28	14	3/13	5.4	2		11.0	11.5	280	.68		19	TR	22.5						Test casing.
81	29.02	860	1.54	62	51	42	18	3/14	5.2	2		11.2	11	360	.78		18	TR	22.5						Set retainer at 860 m.
82	1.03	170	1.54	62	50	40	20	3/14	5.4	2		11.2	11	360	.75		18	TR	22.5						Cut 9 5/8" csg. at 158 m.
83	2.03	144	1.54	59	44	38	18	3/11	5.4	2		10.8	11	300	.66		18	TR	22.5						W.O.W.
84	3.03																								

REMARKS

REPEAT FORMATION TESTS

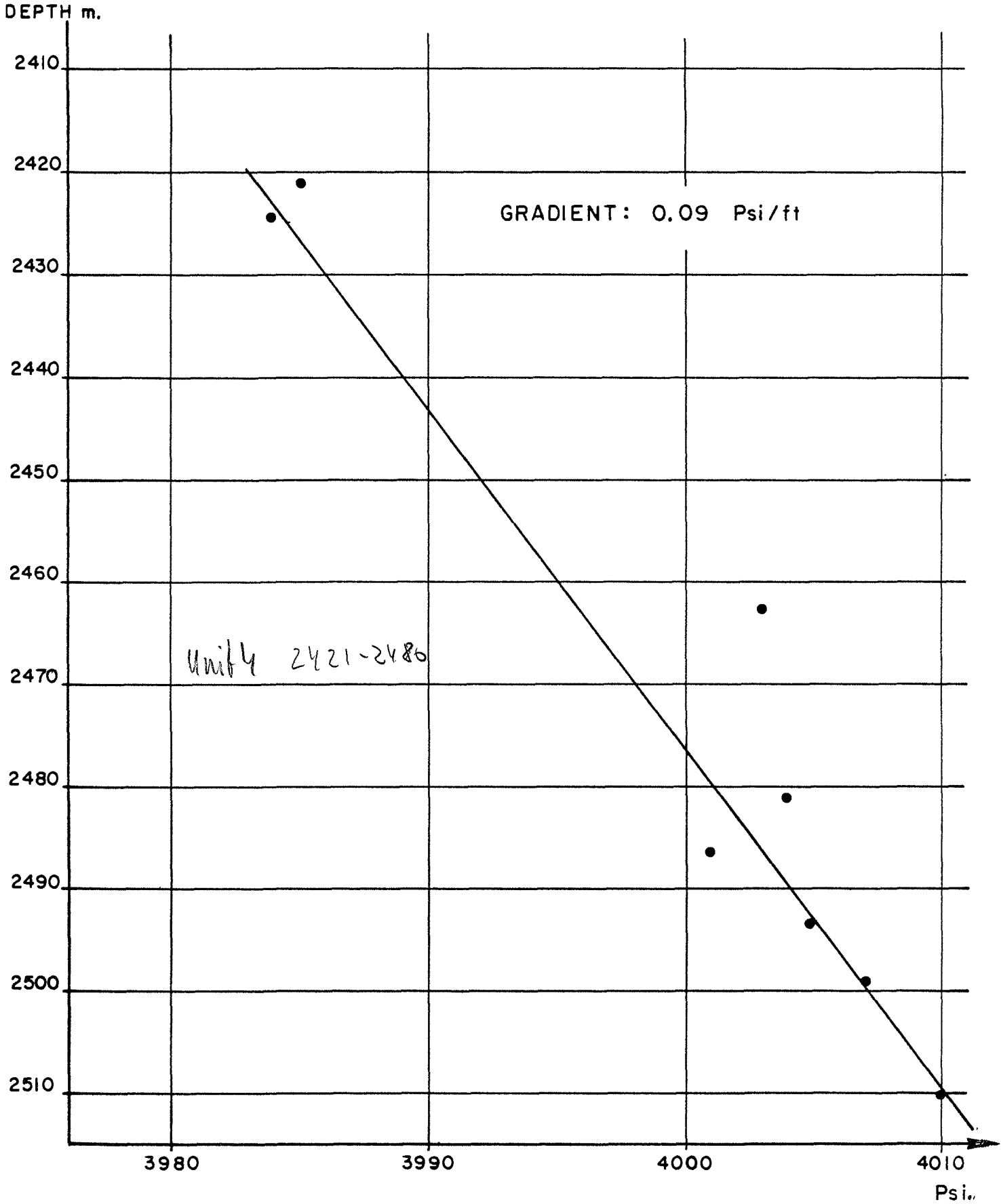
One serie of RFT was performed in the interval from 2421 to 2510 m RKB. The serie consisted of 19 recordings, but only 9 of them were successful. A RFT sample was collected at 2499 m RKB. A reduced PVT program consisted of a Liquid Drop Out check and determination of the Dew Point was performed. At a temperature of 96.6 °C the Dew Point was 265 bar.

REC. NO.	DEPTH (m)	HYDROSTATIC PRESSURE (psi)	FORMATION PRESSURE (psi)	COMMENT
1	2421	5365	3985 P_{cor} 4015	OK
2	2422	5360	-	TIGHT
3	2422.5	5362	-	"
4	2422.5	5371	3984 4013	OK
5	2426.5	5377	-	NO SEAL
6	2426.8	5379	-	"
7	2432.5	5391	-	"
8	2432.7	5393	-	"
9	2441	5410	-	"
10	2444.5	5422	-	"
11	2457	5447	-	"
12	2457.6	5451	-	"
13	2462.5	5456	4003 4032	OK
14	2473.2	5483	-	NO SEAL
15	2481	5503	4004 4034	OK
16	2486.5	5513	4001 4031	"
17	2493.5	5528	4005 4035	"
18	2499	5539	4007 4038	"
19	2510	5566	4010 4040	"

SAMPLE

PLOT OF RFT RUN

30/6-3



DRILL STEM TESTS

Two drill stem test were carried out in the intervals of 2501-2511 mRKB and 2421-2427 m RKB.

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DISCUSSION OF DST No.1

Perforated interval: 2501-2511 m RKB.

Teststring

A standard Halliburton string was run with the packer set at 2472 m RKB.

Four Lynes pressure and temperature gauges and two Amerada RPG 3 pressure gauges were used. And the string was full of water cushion.

Test operation

The test string was pulled after first setting due to leakage in the APR-N tester valve.

After the reset of the string, the test was mechanically successful. The test consisted of an initial flow period for 4 mins. followed by a 61 mins. shut in, then a 424 mins. flow and a 421 mins. final build up.

Fluid production and sampling

During the final flow an average rate of 17.5 MMSCF/D of gas and 985 BBl/D of condensate was measured. The average gravity of gas was measured to 0.66 and condensate gravity to 0.74 (59.3 deg. API).

No traces of sand or H₂S were observed, but small traces of CO₂ was indicated. During the final flow period three complete PVT samples were caught.

Interpretation of DST No. 1

For the short analysis presented in this report, pressure readings from Lynes gauge no. 1209 was used.

The reservoir pressure was estimated to about 4057 psia and the kh product to 41650 md ft.

For maximum sand thickness (30m), the permeability was estimated to 423 md.

A skinfactor of 103 was calculated.

A summary of the results are listed below and all details in Appendix no. 1.

Table No. 1 Summary of DST no. 1

Formation thickness	:	30m, 98.4 ft
kh	:	41650 md ft
k	:	423 md
skin	:	103
ΔP skin	:	118 psi
Flow efficiency	:	0.071
Productivity index	:	137.8 MSCF/D/psi
Pressure *	:	4057 psia
P 1 hr.	:	4056 psia
P well flowing	:	3930 psia

DISCUSSION OF DST No.2

Perforated interval: 2421-2432 m RKB.

Teststring

The test string was practically identical to the previous, with the packer set at 2395 m RKB.

Two Lynes pressure and temperature gauges and three Amerada RPG 3 gauges were run for the test. There was water cushion up to 670m below the drill floor.

Testoperation

The test was mechanically successful and consisted of an initial flow for 3 mins followed by a 66 mins shut in, then a 441 mins flow and a 640 mins final build up.

Fluid production on sampling

During the final flow, an average rate of 9.9 MMSCF/D of gas and 556 bbl/D of condensate was measured. The gas gravity was measured to about 0.65 and condensate to 0.72 (65.0 deg. API)

No traces of sand or H₂S were observed, but small traces of CO₂ was indicated.

During the final flow, three complete PVT samples were caught.

Interpretation of DST No. 2

For the analysis presented in this report, pressure from Lynes gauge no. 1092 is used for initial build up analysis and both 1092 and 1402 for second build up analysis.

The reservoir pressure was estimated to about 3998 psia from the initial build up analysis.

For sand thickness of about 10 m, the permeability was estimated to about 20 md.

The skin factor was calculated to 40 and the ΔP skin to 1518 psi.

A summary of the results are listed below and all details in Appendix no. 2.

Table No. 2 Summary of DST No. 2

Formation thickness	:	10 m, 32.8 ft
kh	:	762 md ft
k	:	22 md
Skin	:	40.3
ΔP skin	:	1518 psi
Flow efficiency	:	0.144
Productivity index	:	5.64 MSCF/D/psi
Pressure *	:	4017 psia
P 1 hr	:	3974 psia
Pwell flowing	:	2230 psia

FLOW DATA
30/6-3 DST no. 2 (2421 - 32)

Date/Time	Bottom hole		Well head		Chokes		Separator data						Liq. and gas analysis at goos neck						
	Press. Psi	Temp. F	Press. Psi	Temp. F	Manifold	Heater 64. inc.	Press. Psi	Temp. °F	Gas rat. mmscf/d	Oil rate stb/d	GOR scf/stb	Oil 60°F	Gas S.G.	Water %	PH	Sedim. %	Oil 60°F	Co2 %	H2S ppm
25.2.80																			
0408	Flowed through separator.																		
0415	2228	182	1438	76	20+48/64		295	32	10.1				.648	0		0.5	.760	0.5	neg.
04.30	2220		1434	76	"		"	"	10.1										
04.45	2220	182	1434	77	"		"	"	10.0	523	19000	.722							
05.00	2248		1473	78	"		"	"	10.0	644	15500			0		0.5	.761	0.6	neg.
05.15	2237	183	1461	78	"		"	"	10.0	652	15300		.648						
05.30	2240		1463	79	"		"	"	10.0	661	15000								
05.45	2237	183	1465	80	"		"	33	10.0	420	23700			0		0.5	.762	0.5	neg.
06.00	2247		1471	81	"		"	34	9.9	515	19300								
06.15	2247	183	1471	81	"		"	"	9.9	520	19100		.648						
06.30	2245		1468	81	"	F A S S E D	"	35	9.9	481	20600	.721		0		0.4	.763	0.5	neg.
06.45	2240	183	1466	82	"		"	36	9.9	558	17800								
07.00	2237		1464	82	"		"	"	9.9	504	19700								
07.30	2235	183	1461	82	"	F A S S E D	"	38	9.9	614	16000	.722	.651	0		0.4	.759	0.5	neg.
08.00	2232	183	1459	83	"		"	"	9.9	540	18300								
08.00	Flowed to tank																		
08.30	2230	183	1458	84	20+48/54	B Y	295	42	9.8	623	15800								
09.00	2230	183	1457	85	"		"	44	9.9	526	18900			0		0.5	.762	0.5	neg.
09.00	Bypassed tank																		
09.05	Bypassed separator																		
09.10	Shut in well at apr-valve and at choke manifold																		

APPENDIX 3

30/6-3

FORMATION INTERVAL TESTS

N/S

FIT NO 1

2463 m RKB

The drawdown was about 100 psi during sampling, and final shut in pressure equal to 3950 psi. Transferred to a gas bottle with a opening pressure of 1840 psi.

N/S

FIT NO 2

2451 m RKB

Transferred part of the sample to an oil bottle. Opening pressure of 860 psi. Small amounts of oil with sp. gravity of 32.6°API. ~ 0.878 g/cc

FIT NO 3

2422 m RKB

The drawdown was about 30 psi during sampling, and final shut in pressure equal to 4030 psi from Amerada gauges. Transferred to a gas bottle with a opening pressure of 2140 psi.

Done

FIT NO 4

2287 m RKB

Unsuccessful, small traces of hydrocarbon observed in the tool.

FIT NO 5

2279 m RKB, traces fo gas.

Transferred to a gas bottle.

All successful FIT Samples will be controlled by our PVT - Laboratory.