# 6.4 Mud Report

### Phases

36" hole, 30" csg.: The 36" hole was drilled with sea water with returns to the sea bed.

A 1.08 rd spud mud with funnel viscosity of 100 + was mixed for spotting on connections and a 1.20 rd, 100 + spud mud was mixed for displacement of the hole before running the casing.

26" hole, 20" csg.: The riser was run before the 17½" pilot hole was drilled. A 1.03 rd sea water mud was used mixed of gel, soda ash, lime, caustic soda and barite.

During opening the hole to 26" prehydrated gel, sea water and caustic soda was added to the system continuously to maintain hole stability.

17% hole, 13-3/8" csg.:Sea water mixed with gel, caustic soda,
lime and barite was used when drilling out of
20" csg. shoe. At 1225 m CMC and Spersene
was added to the system to reduce the fluid
loss down to 15 ml/30 min and control flow
properties.

At 1910 m the mud was gradually changed over to fresh water system by using drill water as treatment water. Due to the gumbo clay and shale being drilled, the fluid loss was reduced from 15 cc to 6 cc/30 min using CMC, Drispac and bentonite. Flow properties were controlled using Spersene and XP-20 (chrome lignosulfonate). Maximum mud density required for this interval was 1.26 rd.

12-1/4" hole, 9-5/8" csg.: When drilling the 12-1/4" hole from 2738 m to 3417 m the mud density was kept constant at 1.26 rd. From here and down to 3511 m the mud density was continuously increased to 1.34 rd. The mud was mixed with Spersene, gel XP-20, Drispac, lime, caustic soda. At 3145 m, Resinex was added to the system to reduce HT-HP fluid loss and stabilize the system for

See Table A.4.

8-3/8" hole, 7" liner:

The mud density was increased to 1.38 rd before the 9-5/8" csg. shoe was drilled out. It was kept constant down to 3593 m where it was increased to 1.45 rd. Final density at 3775 m was 1.46 rd. The fresh water, Spersene, XP-20 system was maintained to total depth utilizing Resinex and CMC for fluid loss control.

higher down hole temperature.

HOLE SIZE (inc)	DEPTH (m)	MUD DENSITY (rd)	FV (sec)	PV (mPa·S)	YP (Pa)	GEL STRENGTH (Pa)	FILTRATE ml/30 min.	CAKE mm	CL (ppm)	CALCIUM (ppm)	рН	
36	194	1.08	100+	10	26	20/80	14	2	3 000	TR	9.5	
17½	251	1.07	50	8	14	4/10	20	2	10 000	40	9.5	
11	468	1.08	50	7	20	6/20	30	2	15 000	40	9.5	
11	712	1.08	50	8	20	6/15	35	2	15 000	40	9.5	
26	196	1.08	45	6	15	3/12	40	2	16 000	40	9.0	
11	714	1.09	40	5	24	5/9	40	2	16 000	40	9.0	
17½	901	1.08	40	7	11	4/10	40	2	16 000	800	9.0	
11	1065	1.12	44	10	25	5/13	38	2	17 000	500	9.5	
***	1177	1.10	43	7	16	4/11	40	2	17 000	600	9.5	
11	1394	1.13	44	7	18	5/14	35	2	17 000	150	9.5	
11	1475	1.12	42	8	11	4/11	15	2	15 000	250	10.0	
í,	1673	1.16	50	10	8	3/15	9	2	14 000	180	10.0	
11	1904	1.18	50	27	6	4/20	6	2	9 000	0	9.5	
**	2128	1.17	50	21	9	2/18	6	2	8 800	140	9.5	
11	2183	1.20	55	20	7	2/21	7	2	8 000	NIL	9.5	
11	2306	1.21	47	18	9	3/25	6	3	8 500	140	9	
11	2495	1.20	45	20	7	3/9	6	2	7 000	100	9.5	
**	2595	1.20	45	. 20	5	2/14	6	2	7 000	120	9.5	
**	2670	1.26	50	23	8	4/15	6	2	7 000	80	9.5	
***	2733	1.26	53	29	9	2/13	6	2	7 500	100	9.5	
12-1/4	2800	1.26	52	30	7	1/14	7	2	8 000	50	11.0	
11	2909	1.27	48	23	5	1/9	6	2	7 400	150	9.5	
11 -	3035	1.27	55	22	6	1/12	6	2	7 500	150	9.5	
11	3142	1.26	52	20	6	1/10	6	2	7 000	100	10.5	
ti	3227	1.25	50	20	6	2/12	6	2	6 500	80	10.5	
11	3353	1.25	45	20	6	1/10	6	2	6 000	50	10.5	
11	3489	1.28	46	17	6	2/13	6	2	6 000	50	10.5	
**	3495	1.32	43.	16	5	1/10	6	2	5 000	50	10.5	
11	3508	1.34	43	16	- 5	1/10	6	2	5 000	50	10.5	
8-3/8	3520	1.38	45	17	5	1/12	5	2	5 000	TR	11.0	
**	3593	1.44	48	20	7	2/11	5	2	5 000	40	10.5	ı
ff .	3609	1.46	50	18	ıi	1/13	Ĺ	2	8 000	80	11.0	
11	3775	1.46	51	34	6	1/14	5	2	8 000	120	10.5	4

## WELL SUMMARY

### RFT RESULTS

Well:

15/5-1

				1			RUN	2			RUN	.3	
	DEPTH	(KB)	FORMATION PR	RESSURE		DEPTH	(KB)	FORMATION F	RESSURE	DEPTH	( KB)	FORMATION	PRESSURE
1	3560	m	6828	PSIG	1	3728	m	7459	PSIG	1 3611	8 m	6874	PSIG
2	3597	m	68.25	PSIG	2	3728	m	7459	PSIG			1	
3	3595	m	6851	PSIG	3	3724	m	7453	PSIG			1	
4	3592	m	TIGHT	- 1	4	3745	m	TIGHT				ŀ	
5	3589	2 m	68 45	PSIG	5	3755 -	5 m	TIGHT					
6	3586	5 m	6 849	PSIG	6	3728	m	7402	PSIG			1	
7	35 84	m	6845	PSIG	7	3724	m	7398	PSIG			İ	
8	3582	m	6846	PSIG	8	3613	m	6848	PSIG			1	
9	3580	m	6845	PSIG	9	3612	m	6842	PSIG				
10	3578	m	6846	PSIG	10	3611	m	6838	PSIG				
11	35 73	m	6840	PSIG	11	36 01	m	6831	PSIG				
12	3568	5 m	6840	PSIG	12	3598	m	6830	PSIG			1	
13	3565	m	l.	PSIG	13	3596	m	1	PSIG				
						-		1	_	•			
					15			1					
	3 4 5 6 7 8 9 10 11 12	2 3597 3 3595 4 3592 5 3589- 6 3586- 7 3584 8 3582 9 3580 10 3578 11 3573 12 3568-	2 3597 m 3 3595 m 4 3592 m 5 3589 2 m 6 3586 5 m 7 3584 m 8 3582 m 9 3580 m 10 3578 m 11 3573 m	2 3597 m 6825 3 3595 m 6851 4 3592 m TIGHT 5 3589 2 m 6845 6 3586 5 m 6849 7 3584 m 6845 8 3582 m 6845 9 3580 m 6845 10 3578 m 6846 11 3573 m 6840 12 3568 5 m 6840	2 3597 m 6825 PSIG 3 3595 m 6851 PSIG 4 3592 m 71GHT 5 3589 2 m 6845 PSIG 6 3586 5 m 6849 PSIG 7 3584 m 6845 PSIG 8 3582 m 6845 PSIG 9 3580 m 6845 PSIG 10 3578 m 6846 PSIG 11 3573 m 6840 PSIG 12 3568 5 m 6840 PSIG	2 3597 m 6825 PSIG 2 3 3595 m 6851 PSIG 3 4 3592 m 11GHT 4 5 3589 2 m 6845 PSIG 5 6 3586 5 m 6849 PSIG 6 7 3584 m 6845 PSIG 7 8 3582 m 6845 PSIG 7 8 3582 m 6846 PSIG 8 9 3580 m 6845 PSIG 9 10 3578 m 6846 PSIG 9 11 3573 m 6840 PSIG 11 12 3568 5 m 6840 PSIG 12 13 3565 m 6840 PSIG 13	2 3597 m 6825 PSIG 2 3728 3 3595 m 6851 PSIG 3 3724 4 3592 m TIGHT 4 3745 5 3589 2 m 6845 PSIG 5 3755 1 6 3586 5 m 6849 PSIG 6 3728 7 3584 m 6845 PSIG 7 3724 8 3582 m 6846 PSIG 8 3613 9 3580 m 6845 PSIG 9 3612 10 3578 m 6846 PSIG 9 3612 11 3573 m 6840 PSIG 10 3611 11 3573 m 6840 PSIG 11 3601 12 3568 5 m 6840 PSIG 12 3598 13 3565 m 6836 PSIG 13 3596	2 3597 m 6825 PSIG 2 3728 m 6851 PSIG 3 3724 m 6851 PSIG 4 3745 m 6845 PSIG 5 3755 5 m 6845 PSIG 5 3755 5 m 6845 PSIG 6 3728 m 7 3584 m 6845 PSIG 7 3724 m 6845 PSIG 7 3724 m 6845 PSIG 8 3613 m 6846 PSIG 8 3613 m 6845 PSIG 9 3612 m 6846 PSIG 10 3611 m 11 3573 m 6840 PSIG 10 3611 m 12 3568 5 m 6840 PSIG 11 3601 m 12 3568 5 m 6840 PSIG 12 3598 m 13 3565 m 6836 PSIG 13 3596 m 14 3612 m	2 3597 m 6825 PSIG 2 3728 m 7459 3 3595 m 6851 PSIG 3 3724 m 7453 4 3592 m TIGHT 4 3745 m TIGHT 5 3589 2 m 6845 PSIG 5 3755 5 m TIGHT 6 3586 5 m 6849 PSIG 6 3728 m 7402 7 3584 m 6845 PSIG 7 3724 m 7398 8 3582 m 6846 PSIG 8 3613 m 6848 9 3580 m 6845 PSIG 9 3612 m 6848 10 3578 m 6846 PSIG 10 3611 m 6838 11 3573 m 6840 PSIG 11 3601 m 6831 12 3568 5 m 6840 PSIG 12 3598 m 6830 13 3565 m 6836 PSIG 13 3596 m 6826 14 3612 m 6842	2 3597 m 6825 PSIG 2 3728 m 7459 PSIG 3 3595 m 6851 PSIG 3 3724 m 7453 PSIG 7453 PSIG 4 3592 m 71GHT 4 3745 m 7453 PSIG 71GHT 5 3589 2 m 6845 PSIG 5 3755 5 m 71GHT 7402 PSIG 6 3586 5 m 6849 PSIG 6 3728 m 7402 PSIG 7 3584 m 6845 PSIG 7 3724 m 7398 PSIG 8 3582 m 6846 PSIG 8 3613 m 6848 PSIG 9 3580 m 6845 PSIG 9 3612 m 6848 PSIG 6846 PSIG 9 3612 m 6842 PSIG 10 3578 m 6846 PSIG 10 3611 m 6838 PSIG 11 3573 m 6840 PSIG 11 3601 m 6831 PSIG 12 3568 5 m 6840 PSIG 12 3598 m 6830 PSIG 13 3565 m 6836 PSIG 14 3612 m 6826 PSIG 14 3612 m 6842 PSIG	2 3597 m 6825 PSIG 2 3728 m 7459 PSIG 3 3595 m 6851 PSIG 3 3724 m 7453 PSIG 4 3592 m TIGHT 4 3745 m TIGHT 5 3589 2 m 6845 PSIG 5 3755 5 m TIGHT 6 3586 5 m 6849 PSIG 6 3728 m 7402 PSIG 7 3784 m 6845 PSIG 7 3724 m 7398 PSIG 8 3582 m 6846 PSIG 8 3613 m 6848 PSIG 9 3580 m 6846 PSIG 9 3612 m 6848 PSIG 9 3612 m 6848 PSIG 10 3578 m 6846 PSIG 10 3611 m 6838 PSIG 11 3573 m 6840 PSIG 11 3601 m 6831 PSIG 12 3568 5 m 6840 PSIG 12 3598 m 6830 PSIG 13 3596 m 6826 PSIG 14 3612 m 6842 PSIG	2 3597 m 6825 PSIG 2 3728 m 7459 PSIG 4 3592 m 7453 PSIG 5 3755 5 m 7467 PSIG 7453 PSIG 7452 PSI	2 3597 m 6825 PSIG 2 3728 m 7459 PSIG 4 3592 m 7453 PSIG 7454 PSIG 7453 PSIG 7454 PSIG

FORMATION FLUID SAMPLES WERE TAKEN AT 3560 m AND 3611.8 m. CONTENTS OF SAMPLE CYLINDERS FOUND NOT TO BE REPRESENTATIVE OF TRUE FORMATION HYDROCARBON COMPOSITION. THE SEPARATOR SAMPLES FROM THE PRODUCTION TEST WILL BE USED AS REFERENCE DATA.

#### DST SUMMARY

TEST NUMBER AND PERFOR. INTERVAL	EVENT	TIME	CH OKE SIZE INCHES	RECORDED BOTTOM HOLE PRESSURE BAR	BOTTOM HOLE	FLOWING WELLHEAD PRESSURE BAR	TEMP	GAS FLOW RATE 10 <sup>3</sup> Nm <sup>3</sup> /d	GAS GRAVITY (SP.GR)	OIL FLOW RATE ST m <sup>3</sup> /d	OIL GRAVITY	WATER FLOWRATE m3/d	GAS-OIL RATIO Nm3/STm3
DST no 1	Initial shut in			478.2									
	Flow no. 1	4.3	20/64	352.9		77.9	3.3	63.3	0.804	15.7	43.0	0	4024
3610 - 3614 m	Flow no. 2	4.8	12/64	411.4	125.6	120.8	8.3	33.7	**	18.1	.,	,,	1861
	Final shut in	8.9		469.0									
DST no.2	Initial shut in			474.5				·					
1	Flowno.1	7.8	22/64	461.6	125.6	298.4	53.9	363.6	0.761	232.1	46.1	0	1321
3561- 3584 m	Flow no.2	6.9	32.5/64	451.2	126.2	247.1	73.9	499.8	0.7 <i>7</i> 5	377.9	46.0	41	1322 .
	Flow no. 3	6.5	48/64	445.2	126.7	192.3	73.3	622.9	0.778	474.0	43.4	"	1320
	Flowho.4	1.0	-	449.4	126.7	-		± 500	-	-	-		-
	Final shut in	15.2		472.7	122.8	-							

NOTE: FLOWS IN DST 1 NOT STABILIZED

1 Nm<sup>3</sup> = 37.326 SCF 1 Nm<sup>3</sup>/STm<sup>3</sup>=5.934 SCF/STB

Checked: S.I. Leivestad Date: 25, 9.78