

<b>RFT RESULTS — PRESSURES</b>	<b>WELL: 30/9-9</b>
All pressures from HP gauge.	

Run no/ Test no	Depth m RKB MD	IHP Bar	FP Bar	FHP Bar	Mobility mD/cp	Comment
2A/1	2257.0	257.54	—	257.50	—	Tight
2A/2	2260.4	257.90	—	257.86	—	Tight
2A/3	2295.4	261.90	238.16	261.79	250.7	
2A/4	2296.2	261.92	238.31	261.81	5.9	
2A/5	2301.4	262.56	238.52	262.45	674.5	
2A/6	2303.0	262.65	238.54	262.54	336.7	
2A/7	2306.6	263.15	238.81	263.07	89.4	
2A/8	2310.0	263.40	238.97	263.40	28.9	
2A/9	2310.2	263.38	238.93	263.42	134.1	
2A/10	2324.5	265.20	239.01	265.20	39.2	
2A/11	2325.4	265.13	239.02	265.16	84.1	
2A/12	2346.0	267.65	241.58	267.44	203.4	Sample
2A/13	2347.0	267.40	241.62	267.43	113.2	
2A/14	2348.0	267.50	241.64	267.54	9.6	
2A/15	2369.4	270.20	242.87	270.00	122.0	
2A/16	2395.0	273.00	247.74	272.73	654.8	
2A/17	2397.6	273.20	247.90	273.06	268.0	
2A/18	2400.5	273.50	248.12	273.40	214.5	
2A/19	2404.5	273.91	248.37	273.90	30.9	
2A/20	2406.5	274.20	248.52	274.14	287.9	
2A/21	2640.5	300.14	279.84	300.08	52.8	
2A/22	2642.4	300.32	280.02	300.30	45.2	
2A/23	2645.0	300.68	280.24	300.56	57.7	
2A/24	2763.5	313.80	289.03	313.80	22.0	
2A/25	2767.9	314.30	289.37	314.25	—	
2A/26	2769.9	314.47	289.63	314.50	358.7	
2A/27	2784.1	316.16	291.06	316.14	506.3	
2B/1	2295.5	261.80	238.15	261.80	—	Sample
2B/2	2303.0	262.70	238.61	262.60	26.4	

Run	: 2A	2A	2B	2B
Sampling depth (m)	: 2346	2346	2295.5	2295.5
Chamber vol. (Gal)	: 2 3/4	1	2 3/4	1
Filling time (min)	: 22	20	50	Sent ashore
Shut in pressure, Bar/°C	: 241.22/90.5	241.22/90.1	238.17/72.7	sealed.
Chamber pressure surface, Bar/T	: 0/10	0/10	110/10	
Gas volume (SCM)	: 0	0	12.21	
Oil volume (litres)	: 0	0	2.0	
Oil gravity (API)	: —	—	45	
Water/filtrate (litres)	: 9.8	3.4	7.1	

# WELL TEST RESULT

WELL: 30/9-9

TEST No.	1	2	
PERFORATED INTERVAL (m)	2394.4- 2409.4	2294.6- 2310.6	
CHOKE SIZE (mm)	19.05	19.05	
OIL/COND. FLOW RATE (Sm <sup>3</sup> /D)	946	966	
GAS FLOW RATE (Sm <sup>3</sup> /D)	158x10 <sup>3</sup>	158x10 <sup>3</sup>	
GOR (Sm <sup>3</sup> /Sm <sup>3</sup> )	166	164	
OIL/COND. GRAVITY (g/cc)	0.822	0.820	
GAS GRAVITY (air=1)	0.743	0.745	
FWHP (bar)	96.3	96.5	
SIWHP (bar)	Down hole shut in	Down hole shut in	
WHT (deg C)	60.9	59.4	
BHT (deg C)	100.4	99.8	
BHFP (bar)	240.4	232.2	
BHSIP (bar)	244.98	237.3	
BS&W (%)	0	0	
CO <sub>2</sub> (%)	1.5	1.6	
H <sub>2</sub> S (ppm)	1.3	1.5	
Kh (mDm)	68626	66658	
S	28.4	47.6	
Pi (bar)	245.15	237.5	
DEPTH OF BH MEASUREMENTS	2349.34m	2240.54m	

## 6.1 Mud report

### 36" HOLE SECTION

This section was drilled with sea water and high viscous pills with returns to sea bed. On every connection a 10 m<sup>3</sup> high viscous pill was used to sweep the hole clean. At 211 m, a 15 m<sup>3</sup> high viscous pill was pumped and a wiper trip was performed. Back at TD the hole was displaced to 1.20 rd mud.

### 17 ½" HOLE SECTION

This section was drilled with sea water and high viscous pills with returns to sea bed. At 919 m, TD of the section, a 15 m<sup>3</sup> high viscous pill was used to sweep the hole, before the hole was displaced to 1.20 rd mud and the 13 3/8" casing was run.

### 12 1/4" HOLE SECTION

This hole section was drilled with a KCl Polymer mud system, a 1.15 rd initial mud weight was increased in steps to 1.38 rd at 1877 m.

The formation was predominantly claystone with occasional stringers of limestone.

On a bittrip at 1382 m several tight spots were encountered below the 13 3/8" casing shoe, between 928 m - 967 m, 991 m - 1004 m and 1200 m - 1213 m where it was necessary to wash and ream. On a connection at 1877 m the hole packed off and an overpull of 440 kN was necessary to free the pipe. A five stand wipertrip was performed and the circulation was reestablished. Due to increase in gasreadings the mudweight was increased to 1.38 rd at 1877 m.

The hole was drilled to 2193 m. On bottom a 10 m<sup>3</sup> high viscous pill was circulated around the hole before bit was pulled and logs were run.

Before cementing, 30 m<sup>3</sup> inhibited mud was pumped and displaced behind the casing.

No consumption of KCl for maintenance was necessary. KCl was only used for make up. No problems with sticky clays on the shakers was experienced during this section.

#### 8 ½" HOLE SECTION

This section was drilled with a KCl Polymer mud system with 1.14 rd mud.

The KCl Polymer mud was maintained within specifications and the hole was drilled without problems related to the mud.

#### RECOMMENDATIONS

The mud system used on this well worked well. The good solids control equipment on the rig and dilution rates used allowed this mud system to perform as it should. The reaming in the 12 1/4" section could be reduced or eliminated by raising the density to at least 1.40 rd.

Daily mud properties																		Date							
-----																		7/3-1990							
Well: 30/9-9																									
Mud Contractor: NL-BARIOD																									
Data: "Mid depth" from table 3, otherwise from table 14.																		14.							
-----																		4							
Date	Mid. depth m, MD	Mud Dens. (SG)	PV cp	YP Pa	GEL 0 Pa	GEL 10 Pa	pH	100 psi (cc)	HP/HT (cc)	Cl-inn/out mg/l	Alkalinity			Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115 gr. F						Mud Type	
											Pf	Pm	Mf					600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm		
890926	169	1.05	0	0																				SPUD	
890927	211	1.05	0	0																					SPUD
890928	213	1.05	0	0																					SPUD
890930	919	1.20	0	0																					SPUD
891001	919	1.15	14	8		1	9.0	1.0		42000/42000					6										KCL
891002	919	1.15	14	8		1	8.7	1.5		42000/42000	0.10	0.30	0.40		6										KCL
891003	919	1.05	0	0																					SPUD
891004	946	1.15	13	7		1	8.0	4.5		40000/40000	0.20	1.30	0.70		4										KCL
891005	1382	1.25	14	11		3	8.0	4.4		55000/55000	0.10	1.30	0.50		8		50	36	30	20	6	3			KCL
891006	1773	1.36	20	11		3	8.0	4.8		48000/48000	0.20	1.00	0.60		0	13	87	60	40	31	21	6	3		KCL
891007	2074	1.38	24	15		6	8.0	4.0		49000/49000	0.20	0.70	0.50		0	16	84	78	54	44	31	13	11		KCL
891008	2193	1.38	21	10		3	8.0	4.0		48000/48000	0.20	0.60	0.50		0	16	84	61	40	31	20	6	3		KCL
891009	2193	1.38	21	10		3	8.0	4.0		48000/48000	0.20	0.60	0.50		0	16	84	61	40	31	20	6	3		KCL
891010	2193	1.38	21	10		3	8.0	4.0		48000/48000	0.20	0.60			0	16	84	61	40	31	20	6	3		KCL
891011	2242	1.13	15	11		2	10.5	4.0		49000/49000	0.60	2.40			7			52	37	30	22	8	6		KCL
891012	2306	1.14	18	13		2	10.5	4.0		49000/49000	0.80	1.70			8			61	43	32	22	4	3		KCL
891013	2317	1.13	17	10		1	9.5	3.8		49000/49000	0.20	1.30			7			54	37	29	19	3	2		KCL
891014	2327	1.14	18	10		1	9.5	3.8		49000/49000	0.20	1.20			8			55	37	30	19	3	2		KCL
891015	2357	1.14	18	10		1	9.5	3.8		50000/50000	0.20	0.80			8			56	38	32	21	3	2		KCL
891016	2411	1.14	20	10		1	9.5	3.8		50000/50000	0.20	0.80			8			59	38	28	18	3	2		KCL
891017	2461	1.14	18	11		1	9.5	3.5		50000/50000	0.10	0.60	1.00		0	8	92	58	40	31	20	2	1		KCL
891018	2555	1.14	23	9		0	9.3	4.0				0.60	0.50		8			64	41	31	20	1	0		KCL
891019	2737	1.13	18	8		0	8.8			51000/51000	1.00	0.60	1.00		0	8	92	51	34	24	15	0	0		KCL
891020	2809	1.14	18	7		0	8.4			51000/51000	0.20	0.60	1.00		0	8	92	51	33	24	14	0	0		KCL
891021	2809	1.14	17	7		0	8.6	3.2		50000/50000	0.20	0.60	1.40		0	8	92	48	31	22	15	0	0		KCL
891022	2809	1.14	17	7		0	8.6	3.2		50000/50000	0.20	0.60	1.40		0	8	92	48	31	22	15	0	0		KCL
891023	2536	1.14	19	8		0	8.5	3.1		49000/49000	0.50	0.60	1.50		8			54	35	27	19	2	1		KCL
891024	2469	1.14	12	4			8.4	3.8		39000/39000		0.20			7			32	20	15	8				KCL
891025	2469	1.14	14	8		1	9.0	3.8		39000/39000	0.80	2.60	2.20		8			32	30	25	19	4	2		KCL
891026	2469	1.14	14	8		1	9.0	3.8		35000/35000	0.80	2.60	2.20		8			44	30	25	20	4	2		KCL
891031	2388	1.15	14	8		1	12.0	4.1		39000/39000	0.30	3.00	2.70		0	7	93	43	29	24	15	3	1		KCL
891101	2388	1.15	14	8		1	11.8	4.1		39000/39000	0.30	3.00	2.80		0	7	93	43	29	25	15	3	1		KCL
891102	2388	1.15	14	8		1	11.9	4.1		38000/38000	0.40	3.00	2.90		0	7	93	43	29	24	14	2	1		KCL
891103	2388	1.15	14	8		1	12.0	4.1		38000/38000	0.40	3.00	2.90		0	7	93	43	29	25	15	2	1		KCL
891104	2140	1.15	15	7		1	12.0	4.1		37000/37000	0.40	3.00	2.90		0	7	93	44	29	25	17	3	1		KCL

((( (ooo)	M u d c o n s u m p t i o n	Date
Norsk Hydro	Well: 30/9-9 Mud company: NL-BARIOD	12/2-1990
	System : BORE	13

Actual  
used

Drilling of 36 " hole

BARITE	Kg	1000
BENTONITE	Kg	54000
SODA ASH	Kg	627
CAUSTIC	l	510

Drilling of 17 1/2" hole

BARITE	Kg	81000
BENTONITE	Kg	51000
DEXTRID	Kg	3771
KCL	Kg	130
PAC L	Kg	942
PAC R	Kg	850
SODA ASH	Kg	1125
XCD	Kg	628
CAUSTIC	l	583
KCL-BRINE	l	130000

Drilling of 12 1/4" hole

BARASCAV D	Kg	150
BARITE	Kg	94000
BENTONITE	Kg	14000
DEXTRID	Kg	5154
EZ-MUD	Kg	320
KCL	Kg	3618
PAC L	Kg	2231
PAC R	Kg	1319
SOD BICARBONATE	Kg	663
SODA ASH	Kg	297
XCD	Kg	850
BARACOR 100	l	1120
BARADEF0AM	l	200
CAUSTIC	l	913
KCL-BRINE	l	160000

Drilling of 8 1/2" hole

BARAFILM	Kg	600
BARITE	Kg	28000
DEXTRID	Kg	1173
EZ-MUD	Kg	343
KCL	Kg	6182
PAC L	Kg	1721
PAC R	Kg	1305
BARACOR 100	l	600
BARADEF0AM	l	200
CAUSTIC	l	18
KCL-BRINE	l	38000

((( (ooo)	M u d c o n s u m p t i o n		Date 12/2-1990
Norsk Hydro	Well: 30/9-9 Mud company: NL-BARIOD		13
Actual used			

## Test no. 1

BARASCAV D	Kg	550
BARITE	Kg	2000
PAC R	Kg	156
SOD BICARBONATE	Kg	200
SODA ASH	Kg	852
XCD	Kg	813
BARACOR 100	l	600