

Pressure listing and permeability estimates

FORMATION PRESSURE,
SELECTIVE FORMATION TESTER, HP-GAUGE

RUN #/ TEST #	DEPTH (mRKB)	INITIAL HYDROSTATIC PRESSURE (psia)	FORMATION PRESSURE (psia)	FINAL HYDROSTATIC PRESSURE (psia)	PERMEABILITY ESTIMATE/ REMARKS
2A/1	2075.2	3626.9	-9999.0	3626.9	Tight
2	2075.5	3627.8	-9999.0	3628.3	No seal
3	2082.2	3638.9	-9999.0	-9999.0	No seal
4	2082.5	3639.0	-9999.0	3640.0	No seal
5	2087.5	3647.9	3141.1	3647.1	Fair
6	2089.0	3650.0	3133.9	3650.0	Fair
7	2223.5	3882.9	3292.0	3882.1	Good-fair
8	2227.0	3887.6	3296.3	3887.0	Good-fair
9	2232.9	3896.9	3308.6	3896.9	Good
10	2235.0	3901.1	-9999.0	3902.2	Seal failure
11	2240.0	3910.0	3319.5	3909.4	Good
12	2346.4	4091.9	3508.6	4091.0	Good
13	2349.9	4097.9	3511.8	4098.4	Very good
14	2354.5	4105.7	3515.9	4104.9	Very good
15	2360.5	4115.7	3523.1	4115.2	Very good
16	2363.5	4120.8	3526.5	4120.6	Good
17	2370.0	4132.5	3533.2	4131.7	Good
18	2375.5	4142.0	3538.9	4141.1	Good
19	2379.0	4147.5	3539.5	4146.9	Good
20	2383.9	4156.7	3547.8	4155.0	Very good
21	2392.4	4171.4	3558.0	4169.5	Very good
22	2396.5	4178.1	3560.9	4175.4	Good
23	2398.4	4179.5	3563.8	4179.9	Good
24	2404.4	4193.4	-9999.0	4190.2	Tight
25	2406.5				Tool failure
2C/1	2406.5	4193.9	-9999.0	-9999.0	Low
2	2407.6	4193.5	3573.4	4192.4	Very good
3	2409.9	4196.8	3576.2	4195.8	Very good
4	2415.5	4206.0	3587.0	4205.5	Poor-fair
5	2423.0	4218.7	3595.3	4218.3	Very good
6	2430.5	4231.7	3606.0	4231.4	Very good
7	2436.0	4241.1	3614.0	4240.8	Very good
8	2450.0	4265.4	3629.3	4264.7	Very good
9	2468.6	4299.2	3664.4	4297.0	Very good
10	2468.8	4297.5	3663.1	-9999.0	Very good
11	2496.2	4345.4	3684.3	4346.0	Very good
12	2513.1	4377.2	-9999.0	4376.1	Tight
13	2529.0	4401.6	3723.0	4398.7	Very good
14	2552.0	4445.7	3762.2	4443.6	Very good

NOTE: Values of -9999.0 indicates missing data
(tight formation or tool failure).

2.9 psi must be added to compensate for
hydrostatic head in flowline.

ANALYSIS OF THE SFT - SAMPLE FROM 2350.1 mRKB

RECOVERY FROM 'BLEED DOWN'

Volumes recovered at 1 Bar and 15 C.

Gas	Approximately	47 liters
Oil		1.20 liters
Water/Mud filtrate		0.37 liters

SINGLE FLASH OF RESERVOIR FLUID TO STOCK TANK CONDITIONS

Stock Tank Density at 15 C	0.834 c/cc
Formation Volume Factor	1.278

CALCULATED RESERVOIR FLUID

Carbon Dioxide	0.29	Mol	Percent
Nitrogen	1.47	"	"
Methane	18.57	"	"
Ethane	3.27	"	"
Propane	5.88	"	"
iso-Butane	1.42	"	"
n-Butane	4.46	"	"
iso-Pentane	1.82	"	"
n-Pentane	2.76	"	"
Hexane	4.73	"	"
Heptane	5.44	"	"
Octane	6.27	"	"
Nonane	4.27	"	"
Decanes Plus	39.35	"	"

Density of reservoir fluid at 242.0 BAR and 104 °C = 726.9 kg/CM

SFT - sample analysis

DST RESULTS31/4-8

DST 1 (oil test)

Perforated interval:	2349.1 - 2397.6 m (RKB)
Choke size :	32/64"
Oil flow rate :	502.7 Sm ³ /D
Oil gravity :	0.83 g/cm ³
Gas flow rate :	19900 Sm ³ /D
Gas gravity :	0.82 (air = 1)
GOR :	39.6 (Sm ³ /Sm ³)
Co ₂ :	2 %
H ₂ S :	0 %
BSW :	0 %
Wellhead pressure :	66 bar

DST 2 (water test)

Perforated intercal:	2421.7 - 2437.4 m (RKB)
Choksize :	128/64" (2")
Water flow rate :	1023.6 Sm ³ /D
Water gravity :	1.033 g/cm ³
Co ₂ :	0 %
H ₂ S :	0 %
BSW :	0 %
Wellhead pressure :	11.5 bar

Daily mud properties

((
(ooo)

System : Boredata Sandnes
Well: 31/4-8
Mud Contractor: Promud

Norsk
Hydro

Date	Mid depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph (m)	100 psi (cc)	HP/HT (cc)	Cl-inn/out mg/l	Alkalinity			Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115WF						Mud type		
											Pf	Pm	Mf					600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm			
860319	0	0	0	0													100								Spud	
860320	0	0	0	0													100								Spud	
860321	236	1.03	0	0													100								Spud	
860322	240	1.10	0	0													100								Spud	
860323	240	1.03	0	0													100								Spud	
860324	242	1.03	0	0													100								Spud	
860325	242	1.03	0	0													100								Spud	
860326	609	1.03	0	0													100								Spud	
860327	900	1.03	0	0													100								Spud	
860328	900	1.03	0	0													100								Spud	
860329	900	1.03	0	0													100								Spud	
860330	900	1.03	0	0													100								Spud	
860331	900	1.03	0	0													100								Spud	
860401	900	1.20	0	0													100								Spud	
860402	903	1.20	18	10	1	1	9.9	7.0		64000/	0.4	0.6	0.7	120/	6	94	56	38	28	17	2	1			KCl	
860403	1231	1.26	21	11	2	4	10.2	6.8		64000/	0.4	0.7	0.8	140/	8	92	64	43	27	21	3	2			KCl	
860404	1506	1.35	25	14	3	5	9.5	6.5		65000/	0.3	0.5	0.6	420/	12	88	78	52	45	28	6	3			KCl	
860405	1828	1.35	24	13	3	5	9.5	6.5		64000/	0.3	0.5	0.6	550/	12	88	74	50	42	26	6	3			KCl	
860406	2015	1.35	24	12	2	5	9.0	6.7		65000/	0.1	0.4	0.4	550/	12	88	72	48	40	25	6	2			KCl	
860407	2015	1.35	24	12	2	5	9.0			62000/				550/	12	88										KCl
860408	2030	1.40	20	13	4	11	8.8			66000/				520/	14	86										KCl
860409	2030	1.40	16	9	2	10	8.5			65000/				560/	14	86										KCl
860410	2030	1.40	16	10	2	9	8.5			65000/				480/	14	86										KCl
860411	2044	1.21	11	8	2	4	10.9	6.4		61000/	0.3	3.9	0.6	600/	7	93	37	26	18	13	3	2			KCl	
860412	2222	1.21	11	7	4	12	10.4	5.0		57000/	0.2	2.2	0.5	460/	7	93	58	40	32	22	5	2			KCl	
860413	2347	1.20	13	8	2	8	10.2	4.6		57000/	0.1	1.9	0.3	560/	7	93	42	29	22	14	4	2			KCl	
860414	2359	1.20	13	8	2	8	10.2	5.5		57000/	0.1	0.8	0.4	620/	7	93	40	28	21	15	4	2			KCl	
860415	2391	1.20	13	8	2	8	10.2	5.4		57500/	0.2	0.8	0.6	580/	6	94	42	29	20	15	4	2			KCl	
860416	2414	1.21	14	10	2	8	10.2	4.8		58000/	0.2	0.8	0.6	580/	7	93	58	34	24	19	6	3			KCl	
860417	2444	1.20	13	9	2	7	9.9	4.5		58000/	0.1	0.6	0.4	580/	6	94	43	30	23	16	5	2			KCl	
860418	2487	1.20	13	7	2	6	10	5.3	17.4	58000/	0.1	0.7	0.5	600/	6	94	40	27	20	14	4	2			KCl	
860419	2570	1.20	16	7	2	7	10	5.6	17.4	58000/	0.2	0.7	0.6	580/	6	94	46	30	22	16	4	3			KCl	
860420	2570	1.20	17	7	2	7	9.9	5.4	17.4	58000/	0.1	0.6	0.5	580/	6	94	48	31	22	17	4	2			KCl	
860421	2570	1.20	12	7	2	6	9.5	5.3	17.6	58000/	0.1	0.5	0.4	600/	6	94	38	26	20	14	4	3			KCl	
860422	2570	1.20	12	7			9.5	5.3	17.4	58000/	0.1	0.5	0.4	600/	6	94										KCl
860423	2572	1.20	12	7	2	6	9.4	5.4		58000/	0.1	0.5	0.4	600/	6	94	38	26	20	14	4	3			KCl	
860424	2611	1.20	13	6	2	6	9.5	5.3	17.4	58000/	0.1	0.5	0.4	600/	6	94	38	25	21	15	4	3			KCl	
860425	2556	1.20	13	6	2	6	9.5	5.3	17.3	58000/	0.1	0.5	0.4	600/	6	94	38	25	21	15	4	3			KCl	
860426	2553	1.20	14	10	4	8	9.5			58000/				600/	6	94										KCl
860427	2553	1.20	14	10	4	8	9.5	5.3	17.3	58000/	0.1	0.5	0.4	600/	6	94	48	34	26	17	6	4			KCl	

Daily mud properties

((
(ooo)
Norsk
Hydro

System : Boredata Sandnes
Well: 31/4-8
Mud Contractor: Promud

Date	Mid depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL		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 115WF						Mud type	
					0 mPa	10 mPa					Pf	Pm	Mf					600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm		
860428	2553	1.20	14	10	4	8	9.5	5.3	17.3	58000/	0.1	0.5	0.4	600/		6	94							KCl	
860429	2553	1.20	14	10	4	8	9.5	5.3	17.3	58000/	0.1	0.5	0.4	600/		6	94								KCl
860430	2553	1.20	14	10	4	8	9.5	5.3	17.3	58000/	0.1	0.5	0.4	600/		6	94								KCl
860501	2553	1.20	14	10	4	8	9.4	5.3	17.3	58000/	0.1	0.5	0.4	600/		6	94								KCl
860502	2553	1.21	14	10	4	8	9.3	5.3	17.3	58000/	0.1	0.4	0.4	600/		6	94								KCl
860503	2553	1.21	14	10	4	8	9.3	5.3	17.3	58000/	0.1	0.4	0.4	600/		6	94								KCl
860504	2553	1.21	14	10	11	19	9.3	5.3	17.3	58000/	0.1	0.4	0.4	600/		6	94								KCl
860505	2553	1.21	14	10	4	8	9.3	5.3	17.3	58000/	0.1	0.4	0.4	600/		6	94								KCl
860506	2553	1.21	13	10	3	7	9.0	5.5	17.8	53000/	0.1	0.3	0.3	640/		6	94								KCl
860507	2553	1.21	13	09	3	7	9.0	5.5	17.6	56000/	0.1	0.3	0.3	600/		6	94								KCl
860508	2340	1.21	14	10													100								KCl
860509	190	1.03	0	0													100								Water
860510	190	1.03	0	0													100								Water
860511	0	1.03	0	0													100								Water
860512	0	1.03	0	0													100								Water

M u d c o n s u m p t i o n

..Date.. :
19860924

(((:
(ooo) :
-----: Well: 31/4-8
: Norsk : Mud company: PROMUD
: Hydro :

System : Boredata Sandnes

13:

Hole size: 36

BARITE (Mt) 123
BENTONITE (Mt) 56
LIME (Kg) 400
SODA ASH (Kg) 760
PAC POLYMER SUPER (Kg) 22.7

Others:

CAUSTIC SODA (LTR.) 3170
MILPOLYMER 302 (KG) 45

Hole size: 26

BARITE (Mt) 77
BENTONITE (Mt) 55
LIME (Kg) 360
SODA ASH (Kg) 960
STARCH (Kg) 2240
PAC POLYMER REG (Kg) 1120
CALSIUM CHLORIDE BRINE (m3) 130

Others:

CAUSTIC SODA (LTR.) 990
MILPOLYMER 302 (KG) 530

Hole size: 17.5

BARITE (Mt) 196
SODIUM BICARBONATE (Kg) 470
STARCH (Kg) 1440
PAC POLYMER REG (Kg) 1857
PAC POLYMER SUPER (Kg) 1342
XANTAN POLYMER (Kg) 25
LIQUID DEFOAMER (l) 25
CALSIUM CHLORIDE (kg) 37458

Others:

CAUSTIC SODA (LTR.) 790
MILPOLYMER 302 (KG) 3218

Hole size: 12.25

BARITE (Mt) 98
BENTONITE (Mt) 4
POTASSIUM CL. (KCl) (Kg) 14400
SODIUM BICARBONATE (Kg) 1600
STARCH (Kg) 3550
PAC POLYMER REG (Kg) 505
PAC POLYMER SUPER (Kg) 300
XANTAN POLYMER (Kg) 100
LUBRICANT (l) 2706
CALSIUM CHLORIDE BRINE (m3) 75
CALSIUM CHLORIDE (kg) 6300

Others:

M u d c o n s u m p t i o n

..Date.. :
19860924 :

(((:
: (ooo) :
:-----: Well: 31/4-8
: Norsk : Mud company: PROMUD
: Hydro :

System : Boredata Sandnes

:
:
:
13:

CAUSTIC SODA	(LTR.)	1100
MILPOLYMER 302	(KG)	2298
IMCO SPOT	(KG)	100
PIPE LAX	(LTR.)	5
