3.7.4 RFT/MDT interpretation

The two samples collected at 4594.3 m and 4583.1 m during the MDT run contained weak hydrocarbon shows, a discontinuos film of oil in the sample #1 and gas traces in the sample #2. Because of the failure of the MDT tool's equalization valve, a leakage between the two chambers was considered likely and therefore the location of these hydrocarbon shows is doubtful. However they should more likely be attributed to the top part of the Upper Jurassic SST as confirmed by the sample #3 collected in the following RFT run which contained at 4594.3 m (same depth as sample #1) formation water. Only mud filtrate was finally recovered in the sample #4 taken at 4614 m.

3.1.5 Wireline formation testing

In the 12 1/4" hole section an RFT tool was run to take pressure measurements while in the 8 3/8" section both an MDT and an RFT tools were utilized in order to obtain pressure data and fluid samples (see TAB 3.5). Pressure test results and interpretation and samples description can be found in the Formation evaluation section.
This is a summary of wireline formation testing opeartions in the well 2/5-10 from an operation point of view:

RFT in 12 1/4" hole:	33 tests	attempted
	23 tests	successful (8 dry)
	12 tests	lost seal
MDT in 8 3/8" hole:	19 tests	attempted
	12 tests	successful (2 dry)
	7 tests	lost seal
	3 samples	attempted
	2 samples	recovered
RFT in 8 3/8" hole:	5 tests	attempted
	5 tests	successful
	4 samples	attempted
	2 samples	recovered

RFT - MDT

Op. Nr	Run Nr	Date	Hole Ø	St. Nr	File Nr	Depth	TVD Depth	Tool type	Probe type	Gauge type	Result
3	A - 6	26/7/93	12 1/4" OH	1	67	3264.3	3264.3	RFT-B	conventional	HP/Strain	dry
				2	68	3268.75	3268.75				dry
				3	69	3277.5	3277.5				dry
				4	70	3294.5	3294.5				lost seal
				5	71	3308.05	3308.05				lost seal
				6	72	3334.05	3334.05				dry
				7	73	3347.8	3347.8				limeted drawdown
				8	74	3356.75	3356.75				lost seal
				9	75	3357.5	3357.5				lost seal
				10	76	3363.6	3363.6				limited drawdown
				11	77	3368.4	3368.4				limited drawdown
				12	78	3378.55	3378.55				limited drawdown
				13	79	3375.5	3375.5				limited drawdown
				14	80	3392.35	3392.35				limited drawdown
				15	81	3397.3	3397.3				limited drawdown
				16	82	3410.85	3410.85				limited drawdown
				17	83	3424.45	3424.45				limited drawdown
				18	84	3433.7	3433.7				lost seal
				19	85	3456.85	3456.85				lost seal
				20	86	3499.5	3499.5				lost seal
				21	87	3536.35	3536.35				limited drawdown
				22	88	3578.3	3578.3				dry
				23	89	3626	3626				normal
				24	90	3651.65	3651.65				dry
				25	91	3579.85	3579.85				unrecognizable
				26	92	3812.6	3812.6				lost seal
				27	93	3830.8	3830.8				lost seal
				28	95	4113.8	4113.8				lost seal
				29	96	4127.1	4127.1				lost seal
				30	97	3525.1	3525.1				dry
				31	98	3526.55	3526.55				lost seal
				32	99	3531.85	3531.85				dry
				33	100	3530.8	3530.8				limited drawdown
4	A - 5	20/8/93	8 3/8" OH	1	3	4582.6	4582.6	MDT	conventional	HP/Strain	normal
				2	4	4582.9	4582.9				normal
				3	5	4583.55	4583.55				volumetric
				4	6	4594.4	4594.4				volumetric
				5	7	4600.1	4600.1				volumetric
				6	8	4594.3	4594.3				volumetric
				7	9	4594.3	4594.3				normal
				8	10	4583.15	4583.15				normal
				9	11	4583.15	4583.15				dry
				10	12	4583.3	4583.3				dry
				11	14	4582.9	4582.9				volumetric
				12	15	4583.1	4583.1				volumetric
				13	16	4593.65	4593.65				lost seal
				14	20	4583.25	4583.25				lost seal
				15	21	4583.45	4583.45				lost seal
				16	22	4583.7	4583.7				lost seal
				17	23	4586.05	4586.05				lost seal
				18	24	4582.6	4582.6				lost seal
				19	25	4594.5	4594.5				lost seal
						4594.3	4594.3				sample #1
						4583.1	4583.1				sample #2
4	B - 6	21/8/93	8 3/8" OH	1	8	4590.55	4590.55	RFT -B	conventional	Strain	normal
				2	9	4590.05	4590.05				normal
				3	19	4614.05	4614.05				normal
				4	10	4594.45	4594.45				normal
				5	20	4586.1	4586.1				normal
						4594.3	4594.3				sample #3
						4614	4614				sample #4

WELL : 2/5-10 Mud Properties summary

Date	Drlg Rep No.	Mud Type	Depth at 12 pm	Mud Temp	Mud Wt	Fun Visc	P.V.	Y.P.	Gel 10 sec	Gel 10 min	API W.L.	HPHT W.L.	HPHT Temp	API Cake	HPHT Cake	Solids %	Sand %	Liquids %	M.B.T.	P.H.	Pm	Pf	Mf	Cl-	Ca++	Engineer
21/05/93	1	RIG MOVE	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ANDY MAIN
22/05/93	2	RIG MOVE	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ANDY MAIN
23/05/93	3	SPUD MUD	0	0	1.03	99	10	20	27	63	20	0	0	0	0	3	0.5	97	0	10	0	0	0	0.4	0	ANDY MAIN
24/05/93	4	SPUD MUD	195	0	1.05	89	9	20	27	63	18	0	0	0	0	3	0.5	97	0	10	0	0	0	0.4	0	ANDY MAIN
25/05/93	5	SPUD MUD	530	0	1.05	89	9	20	27	63	16	0	0	0	0	3	0.5	97	0	10	0	0.20	0.40	0	0	MAIN/LAURITZEN
26/05/93	6	SPUD MUD	530	0	1.40	99	25	23	31	80	14	0	0	3	0	14	0.5	86	0	10	0	0.25	0.40	0	0	MAIN/LAURITZEN
27/05/93	7	KILL MUD	815	0	1.40	99	22	32	37	98	15	0	0	3	0	14	0.5	86	0	10	0	0.25	0.40	0	0	MAIN/LAURITZEN
28/05/93	8	KILL MUD	465	0	1.40	99	21	24	32	78	17	0	0	3	0	14	0.5	86	0	10	0	0.20	0.40	0	0	MAIN/LAURITZEN
29/05/93	9	KILL MUD	465	0	1.40	99	21	24	32	78	17	0	0	3	0	14	0.5	86	0	10	0	0.20	0.40	0	0	MAIN/LAURITZEN
30/05/93	10	KILL MUD	223	0	1.40	99	22	25	32	77	16	0	0	3	0	14	0.5	86	0	10	0	0.20	0.30	0	0	MAIN/LAURITZEN
31/05/93	11	KILL MUD	465	0	1.40	99	22	26	32	80	17	0	0	3	0	14	0.5	86	0	10	0	0.25	0.35	0	0	MAIN/LAURITZEN
01/06/93	12	KILL MUD	520	0	1.30	90	20	19	21	26	15	0	0	3	0	10	0.5	90	0	10	0	0	0	0	0	NORDBY/LAURITZEN
02/06/93	13	KCL	520	0	1.30	80	35	14	12	15	15	0	0	3	0	10	0.5	90	0	10	0.10	0.15	0.40	0	0	NORDBY/LAURITZEN
03/06/93	14	GEL	520	0	1.30	80	20	14	12	15	15	0	0	3	0	10	0.5	90	0	10	0.25	0.20	0.40	0	0	NORDBY/LAURITZEN
04/06/93	15	GEL	685	0	1.30	71	9	16	6	8	21	0	0	3	0	11	0.5	89	0	10	0.10	0.10	0.25	0	0	NORDBY/LAURITZEN
05/06/93	16	KCL/POLY	1037	0	1.30	60	18	9	1	2	3	0	0	1	0	14	0.5	86	30	9	0	0	0	0	0	NORDBY/LAURITZEN
06/06/93	17	KCL/POLY	1254	0	1.30	47	20	8	1	1	4.7	0	0	0	0	14	0.5	86	36	9	0	0	0	0	0	NORDBY/LAURITZEN
07/06/93	18	KCL/POLY	1609	0	1.44	55	20	6	1	3	5.8	0	0	1	0	19	0.5	81	50	9	0	0	0	0	0	NORDBY/LAURITZEN
08/06/93	19	KCL/POLY	1609	0	1.50	64	40	14	2	5	3.6	0	0	1	0	21	0.3	79	53	8.3	0	0	0	0	0	NORDBY/ELSEN
09/06/93	20	KCL/POLY	2104	0	1.55	68	52	10	2	5	3.6	0	0	1	0	22	0.3	78	57	8.1	0	0	0	0	0	NORDBY/ELSEN
10/06/93	21	KCL/POLY	2265	0	1.65	64	42	10	2	5	3.3	0	0	1	0	25	0.3	75	57	8.1	0	0	0	0	0	NORDBY/ELSEN
11/06/93	22	KCL/POLY	2265	0	1.65	66	43	11	2	6	2.9	0	0	1	0	25	0.3	75	57	8.1	0	0	0	0	0	NORDBY/ELSEN
12/06/93	23	KCL/POLY	2265	0	1.65	74	48	9	2	5	2.9	0	0	1	0	25	0.3	75	53	8.1	0	0	0	0	0	NORDBY/ELSEN
13/06/93	24	KCL/POLY	2265	0	1.65	74	44	9	2	4	2.9	0	0	1	0	25	0.3	75	50	8.3	0	0	0.5	57	600	NORDBY/ELSEN
14/06/93	25	KCL/POLY	2265	0	1.65	62	54	10	2	4	3	0	0	1	0	25	0.3	75	53	8.2	0	0	0	0	0	MAIN/ELSEN
15/06/93	26	KCL/POLY	2265	0	1.65	68	52	10	2	5	3	0	0	1	0	25	0.3	75	53	8.1	0	0	0	0	0	MAIN/ELSEN
16/06/93	27	KCL/POLY	2369	0	1.65	59	52	9	1	4	3.2	0	0	1	0	25	0.3	75	56	8.4	0	0	0	0	0	MAIN/ELSEN
17/06/93	28	KCL/POLY	2541	0	1.63	56	43	10	4	10	2.8	0	0	1	0	25	0.3	75	56	8.4	0	0	0	0	0	MAIN/ELSEN
18/06/93	29	KCL/POLY	2644	0	1.63	59	42	10	3	7	3	0	0	1	0	24	0.1	76	60	8.1	0	0	0	0	0	MAIN/ELSEN
19/06/93	30	KCL/POLY	2742	0	1.63	52	37	9	4	11	3.4	0	0	1	0	24	0.1	76	57	8.2	0	0	0	0	0	MAIN/ELSEN
20/06/93	31	KCL/POLY	2976	0	1.63	56	49	11	2	9	3	0	0	1	0	24	0.1	76	57	8.3	0	0	0	0	0	MAIN/ELSEN
21/06/93	32	KCL/POLY	3130	58	1.63	56	49	10	2	9	3	0	0	1	0	24	0.1	76	57	8.2	0	0	0	59	480	MAIN/LAURITZEN

WELL : 2/5-10 Mud Properties summary

Date	Drlg Rep No.	Mud Type	Depth at 12 pm	Mud Temp	Mud Wt	Fun Visc	P.V.	Y.P.	Gel 10 sec	Gel 10 min	API W.L.	HPHT W.L.	HPHT Temp	API Cake	HPHT Cake	Solids %	Sand %	Liquids %	M.B.T.	P.H.	Pm	Pf	Mf	Cl-	Ca++	Engineer
22/06/93	33	KCL/POLY	3205	59	1.63	59	42	11	2	9	3	0	0	1	0	24	0.1	76	50	8	0.1	0	0.4	59	600	MAIN/LAURITZEN
23/06/93	34	KCL/POLY	3211	0	1.63	60	51	11	3	9	3.6	0	0	1	0	24	0.1	76	50	8	0	0	0	0	0	MAIN/LAURITZEN
24/06/93	35	KCL/POLY	3252	0	1.63	58	51	9	2	7	3.6	0	0	1	0	24	0.1	76	53	8	0	0	0	0	0	MAIN/LAURITZEN
25/06/93	36	KCL/POLY	3308	58	1.63	59	46	11	2	7	3.7	0	0	1	0	24	0.1	76	57	8	0.1	0	0.3	52	560	MAIN/LAURITZEN
26/06/93	37	KCL/POLY	3362	59	1.63	65	48	12	2	7	2.5	0	0	1	0	24	0.1	76	54	8	0.1	0	0.3	52	560	MAIN/LAURITZEN
27/06/93	38	KCL/POLY	3471	0	1.63	63	49	12	2	7	3.5	0	0	1	0	24	0.1	76	54	8.3	0	0	0	0	0	MAIN/LAURITZEN
28/06/93	39	KCL/POLY	3471	57	1.63	60	44	12	2	8	3.6	0	0	1	0	20	0.1	80	54	8.4	0.1	0.1	0.2	0	0	ELSEN/LAURITZEN
29/06/93	40	KCL/POLY	3494	58	1.61	68	66	12	3	7	2.9	0	0	1	0	23	0.1	77	43	8.5	0.1	0.1	0.2	0	0	ELSEN/LAURITZEN
30/06/93	41	KCL/POLY	3502	58	1.61	59	62	13	2	6	2.4	0	0	1	0	23	0.1	77	43	8.5	0	0	0.3	52	560	ELSEN/LAURITZEN
01/07/93	42	KCL/POLY	3502	48	1.61	64	49	11	2	6	2.6	0	0	1	0	23	0.1	77	43	8.3	0	0	0.3	50	560	ELSEN/LAURITZEN
02/07/93	43	KCL/POLY	3502	38	1.61	80	42	9	2	5	2.4	0	0	1	0	23	0.1	77	39	8	0	0	0.3	50	600	ELSEN/LAURITZEN
03/07/93	44	KCL/POLY	3502	29	1.61	82	48	9	2	5	2.4	12	250	1	0	23	0.1	77	39	8.2	0	0	0.3	52	600	ELSEN/LAURITZEN
04/07/93	45	KCL/POLY	3502	26	1.61	89	49	9	2	5	2.6	12	250	1	0	23	0.1	77	39	8.2	0	0	0.3	51	560	ELSEN/LAURITZEN
05/07/93	46	KCL/POLY	3502	26	1.63	91	48	10	2	6	2.4	11	250	1	0	23	0.1	77	39	8.1	0	0	0.2	49	640	ELSEN/LAURITZEN
06/07/93	47	KCL/POLY	3502	26	1.62	93	49	10	2	6	2.5	11	250	1	0	23	0.1	77	39	8.2	0	0	0.2	49	640	ELSEN/LAURITZEN
07/07/93	48	KCL/POLY	3502	24	1.61	89	48	11	2	6	2.5	11	250	1	0	23	0.1	77	36	8.1	0	0	0.2	48	600	ELSEN/LAURITZEN
08/07/93	49	KCL/POLY	3586	54	1.61	57	42	9	2	3	2.6	12	250	1	0	23	0.1	77	39	8.1	0	0	0.3	50	800	MAIN/ELSEN
09/07/93	50	KCL/POLY	3652	58	1.61	57	40	9	2	3	2.5	12	250	1	0	23	0.1	77	39	8.4	0	0	0.3	50	520	MAIN/ELSEN
10/07/93	51	KCL/POLY	3680	44	1.61	60	46	10	2	5	2.6	12	250	1	0	23	0.1	77	39	8.2	0	0	0.5	50	720	MAIN/ELSEN
11/07/93	52	KCL/POLY	3726	53	1.61	55	44	8	2	4	2.7	11	250	1	0	23	0.1	77	36	8.2	0	0	0.5	50	720	MAIN/ELSEN
12/07/93	53	KCL/POLY	3837	56	1.61	53	41	8	2	4	2.4	10	250	1	0	23	0.1	77	36	8.3	0	0	0.5	49	560	MAIN/ELSEN
13/07/93	54	KCL/POLY	3930	60	1.61	53	42	10	1	3	2.5	14	275	1	0	23	0.1	77	32	8.2	0	0.1	0.6	45	480	MAIN/ELSEN
14/07/93	55	KCL/POLY	3957	48	1.61	66	42	10	1	4	2.5	14	275	1	0	23	0.1	77	36	8	0	0.1	0.6	43	560	MAIN/ELSEN
15/07/93	56	KCL/POLY	3968	58	1.61	56	42	11	2	4	2.8	14	275	1	0	23	0.1	78	36	8	0	0.1	0.5	44	600	MAIN/ELSEN
16/07/93	57	KCL/POLY	3987	64	1.61	55	45	10	2	6	2.8	14	275	1	0	23	0.1	78	33	8.1	0	0	0.6	42	480	MAIN/ELSEN
17/07/93	58	KCL/POLY	4035	67	1.61	56	44	14	2	6	2.8	14	275	1	0	23	0.1	77	32	8.6	0	0	0.6	40	400	MAIN/ELSEN
18/07/93	59	KCL/POLY	4077	70	1.61	56	44	13	3	8	2.8	13	275	1	0	23	0.1	77	32	8.4	0	0	0.7	40	480	MAIN/ELSEN
19/07/93	60	KCL/POLY	4098	67	1.61	53	47	13	2	6	2.8	12	275	1	0	23	0.1	77	32	8.3	0	0	0.7	41	440	MAIN/ELSEN
20/07/93	61	KCL/POLY	4111	27	1.61	60	51	15	3	7	2.7	12	275	1	0	23	0.1	77	32	8	0	0	0.7	39	320	MAIN/LAURITZEN
21/07/93	62	KCL/POLY	4142	66	1.66	67	50	13	3	9	3.5	12	275	1	0	25	0.1	75	32	8	0	0	0.7	38	440	MAIN/LAURITZEN
22/07/93	63	KCL/POLY	4200	67	1.66	62	51	13	3	7	2.7	12	275	1	0	25	0.1	75	32	8	0	0	0.7	34	400	MAIN/LAURITZEN
23/07/93	64	KCL/POLY	4227	27	1.66	58	39	12	3	8	2.8	12	275	1	0	25	0.1	75	38	8	0	0	0.6	38	480	MAIN/LAURITZEN

WELL : 2/5-10 Mud Properties summary

Date	Drlg Rep No.	Mud Type	Depth at 12 pm	Mud Temp	Mud Wt	Fun Visc	P.V.	Y.P.	Gel 10 sec	Gel 10 min	API W.L.	HPHT W.L.	HPHT Temp	API Cake	HPHT Cake	Solids %	Sand %	Liquids %	M.B.T.	P.H.	Pm	Pf	Mf	Cl-	Ca++	Engineer
24/07/93	65	KCL/POLY	4227	18	1.66	65	53	12	3	8	2.4	12	275	1	0	25	0.1	75	32	8.2	0	0.2	1.1	37	440	MAIN/LAURITZEN
25/07/93	66	KCL/POLY	4227	16	1.66	64	43	10	3	8	2.2	12	275	1	0	25	0.1	75	32	8.1	0	0.1	0.7	39	460	MAIN/LAURITZEN
26/07/93	67	KCL/POLY	4227	16	1.66	67	44	10	3	8	2.3	12	275	1	0	25	0.1	75	32	8.1	0	0.1	0.8	40	460	MAIN/LAURITZEN
27/07/93	68	KCL/POLY	4227	19	1.66	64	44	90	3	7	2.2	12	275	1	0	25	0.1	75	32	8.1	0	0.1	0.8	40	440	MAIN/LAURITZEN
28/07/93	69	KCL/POLY	4227	18	1.66	64	44	8	3	6	2.3	12	275	1	0	25	0.1	75	32	8	0	0.1	0.7	40	440	MAIN/LAURITZEN
29/07/93	70	KCL/POLY	4227	60	1.66	57	40	11	3	6	2.8	13	275	1	0	25	0.1	75	32	9.3	0	0.3	0.8	40	520	MAIN/LAURITZEN
30/07/93	71	KCL/POLY	4227	41	1.68	57	41	9	3	7	2.7	13	275	1	0	25	0.1	75	32	9	0	0.3	0.7	39	480	LAURITZEN/ELSEN
31/07/93	72	KCL/POLY	4227	59	1.67	63	37	13	4	8	3.6	14	275	1	0	25	0.1	75	37	9 5	0	0	0.8	39	440	LAURITZEN/ELSEN
01/08/93	73	KCL/POLY	4235	58	1.67	52	35	9	7	20	4	0	275	2	0	25	0.1	75	35	11	0	0.3	0.8	40	800	LAURITZEN/ELSEN
02/08/93	74	HPHT/POLY	4235	58	1.98	58	44	4	1	4	2.2	0	275	2	0	33	0.3	67	22	8.5	0	0.3	0.8	21	160	ELSEN/NORDBY
03/08/93	75	HPHT/POLY	4275	56	1.98	57	44	5	2	5	2.6	12	300	2	0	33	0.3	67	21	8.5	0	0.3	0.8	20	160	ELSEN/NORDBY
04/08/93	76	HPHT/POLY	4298	58	1.99	57	45	6	2	7	2	14	320	2.5	0	33	0.3	67	18	9.3	0	0.2	1.2	20	320	ELSEN/NORDBY
05/08/93	77	HPHT/POLY	4340	53	1.98	58	43	8	3	10	2.4	11	320	2	0	34	0.3	67	20	9.3	0	0.3	1.1	21	480	ELSEN/NORDBY
06/08/93	78	HPHT/POLY	4395	56	1.98	64	42	9	8	15	2.7	13	320	2	0	34	0.3	67	25	9.2	0	0.3	1.4	20	480	ELSEN/NORDBY
07/08/93	79	HPHT/POLY	4429	61	2.03	64	39	10	8	16	3.8	14	320	2	0	35	0.3	65	22	9.4	0	0.2	1.2	19	520	ELSEN/NORDBY
08/08/93	80	HPHT/POLY	4500	60	2.03	60	39	11	7	19	3.3	15	320	2	0	35	0.3	65	21	9.3	0	0.2	1	16	480	ELSEN/NORDBY
09/08/93	81	HPHT/POLY	4547	60	2.03	53	35	11	5	12	2.9	15	320	2	0	35	0.3	65	17	8.5	0	0.1	0.7	12	280	ELSEN/NORDBY
10/08/93	82	HPHT/POLY	4547	0	2.03	53	37	11	6	13	2.8	13	320	2	0	35	0.3	65	24	8.3	0	0.1	1.3	13	400	MAIN/NORDBY
11/08/93	83	HPHT/POLY	4556	0	2.03	51	34	10	4	11	2.9	15	320	2	0	35	0.3	65	22	8.3	0	0.5	0.5	11	280	MAIN/NORDBY
12/08/93	84	HPHT/POLY	4575	56	2.08	48	31	7	4	9	2	15	320	2	0	36	0.3	65	22	8.9	0	0.1	1	10	320	MAIN/NORDBY
13/08/93	85	HPHT/POLY	4584	37	2.08	49	33	8	3	9	2	15	320	2	0	36	0.3	65	22	8.5	0	0.1	0.8	11	440	MAIN/NORDBY
14/08/93	86	HPHT/POLY	4591	45	2.08	49	40	8	4	11	2	15	320	2	0	36	0.3	65	22	8.8	0	0.1	1	11	440	MAIN/NORDBY
15/08/93	87	HPHT/POLY	4649	53	2.08	44	27	8	4	11	3.3	14	320	2	0	36	0.3	65	24	8.5	0	0.1	0.8	10	360	MAIN/NORDBY
16/08/93	88	HPHT/POLY	4701	53	2.08	40	26	7	3	10	3	14	320	2	0	36	0.3	65	21	8.5	0	0.1	0.8	10	400	MAIN/MILNE
17/08/93	89	HPHT/POLY	4701	33	2.08	39	23	5	3	8	3	15	320	2	0	36	0.3	65	21	8.2	0	0.1	1	10	440	MAIN/MILNE
18/08/93	90	HPHT/POLY	4701	36	2.08	41	27	6	3	6	3	12	320	2	0	36	0.3	65	21	9	0	0.1	1.2	10	520	MAIN/MILNE
19/08/93	91	HPHT/POLY	4701	36	2.08	45	29	6	3	8	2.2	12	320	2	0	36	0.3	65	21	9.2	0	0.1	1.2	10	440	MAIN/MILNE
20/08/93	92	HPHT/POLY	4701	30	2.08	44	28	7	3	8	2.6	12	320	2	0	36	0.3	65	23	8.9	0	0.2	1.3	10	400	MILNE/ELSEN
21/08/93	93	HPHT/POLY	4701	56	2.08	52	30	6	3	8	2.6	13	320	2	0	36	0.3	65	23	8.7	0	0.2	1.2	11	400	MILNE/ELSEN
22/08/93	94	HPHT/POLY	4701	30	2.08	44	30	6	3	8	2	12	320	2	0	36	0.3	65	23	8.8	0	0.2	1.2	10	440	MILNE/ELSEN
23/08/93	95	HPHT/POLY	4520	39	2.08	59	43	5	2	4	2.8	12	320	2	0	36	0.3	65	25	11	0	0.7	1.4	10	600	MILNE/ELSEN
24/08/93	96	HPHT/POLY	4520	33	2.08	52	47	11	4	17	3.8	20	320	2	0	36	0.3	65	22	12	0	0.8	1.8	11	680	MILNE/ELSEN

WELL : 2/5-10 Mud Properties summary

Date	Drlg Rep No.	Mud Type	Depth at 12 pm	Mud Temp	Mud Wt	Fun Visc	P.V.	Y.P.	Gel 10 sec	Gel 10 min	API W.L.	HPHT W.L.	HPHT Temp	API Cake	HPHT Cake	Solids %	Sand %	Liquids %	M.B.T.	P.H.	Pm	Pf	Mf	Cl-	Ca++	Engineer
25/08/93	97	HPHT/POLY	4520	27	2.08	60	48	6	4	8	3.4	18	320	2	0	36	0.3	65	22	11	0	0.9	2	11	720	MILNE/ELSEN
26/08/93	98	HPHT/POLY	4592	41	2.03	47	37	3	1	6	2.7	15	320	2	0	34	0.2	67	11	9.5	0	0.9	2	7	400	MILNE/ELSEN
20/09/93	99	HPHT/POLY	4115	44	2.06	52	39	7	2	12	2	18	320	2	0	36	0.3	65	21	10	0	0.4	2.6	11	880	MAIN
21/09/93	100	HPHT/POLY	2102	0	1.68	44	22	9	2	6	2	18	320	2	0	23	0.1	77	18	9	0	25	2.1	9	800	MAIN
22/09/93	101	HPHT/POLY	2082	0	1.67	48	23	9	2	6	2	0	0	2	0	22	0.1	78	18	9.8	0	0.4	2.4	9	960	MAIN
23/09/93	102	HPHT/POLY	110	0	1.66	44	24	8	2	7	4 8	0	0	2	0	22	0.1	78	18	10	0.8	0.4	2.6	8	960	MAIN
24/09/93	103	RIG MOVE	88																							MAIN
25/09/93	104	RIG MOVE	88																							

3.1.5 Wireline formation testing

An MDT run was carried out in the 8 3/8" section in order to obtain pressure data and fluid samples (see TAB 3.5). Pressure test results and interpretation and samples description can be found in the Formation evaluation section.

This is a summary of wireline formation testing opeartions in the well 2/5-10A from an operation point of view:

MDT in 8 3/8" hole:	15 tests	attempted
	12 tests	successful (1 dry)
	3 tests	lost seal
	6 samples	attempted
	4 samples	recovered

RFT - MDT

Op Nr	Run Nr	Date	Hole Ø	St Nr	File Nr	MD Depth	TVD Depth	Tool type	Probe type	Gauge type	Result
1	A - 4	15/9/93	8 3/8" OH	1	43	4620.1	4595.3	MDT	conventional	HP/Strain	abandoned
				2	44	4625.95	4600.4				drawdown
				3	47	4619.05	4594.3				drawdown
				4	48	4624.1	4598.6				drawdown
				5	49	4624.65	4599				abandoned
				6	50	4627.55	4602				lost seal
				7	51	4630.1	4603.6				drawdown
				8	52	4634.05	4607				drawdown
				9	53	4639.05	4611.2				lost seal
				10	54	4639.05	4611.2				lost seal
				11	55	4657.05	4625.7				drawdown
				12	56	4663.3	4631.2				normal
				13	57	4688.05	4651.7				drawdown
				14	59	4616	4591.9				abandoned
				15	60	4617	4592.7				dry
						4619	4594.25				sample #1
						4624.1	4598.6				sample #2
						4630	4603.5				sample #3
						4657	4625.65				sample #4

3.7.4 RFT/MDT interpretation

The pressure measurements achieved in the Jurassic section (see TAB 3.16, FIG 3.9 and 3.10) did not allow to draw any reliable gradient through the points, there were no indications of hydrocarbon was detectable. The pore pressure gradient calculated from the RFT turned out to be around 2.03 g/cc very close to the actual mudweight utilized during this phase. The four samples collected at 4619 m, 4624.1 m, 4630 m and 4657 m contained formation water and mud filtrate with only traces of oil.

WELL : 2/5-10A — Mud Properties summary

Date	Drlg Rep No.	Mud Type	Depth at 12 pm	Mud Temp	Mud Wt	Fun Visc	P.V.	Y.P.	Gel 10 sec	Gel 10 min	API W.L.	HPHT W.L.	HPHT Temp	API Cake	HPHT Cake	Solids %	Sand %	Liquids %	M.B.T.	P.H.	Pm	Pf	Mf	Cl-	Ca++	Engineer
27/08/93	1	HPHT/POLY	4351	56	2.04	53	35	6	2	12	2.6	15	325	2	0	35	0.3	65	18	9.3	0.4	0.2	1.3	8	1040	MILNE/ELSEN
28/08/93	2	HPHT/POLY	4306	50	2.03	46	37	4	2	7	2.5	13	320	2	0	36	0.2	65	16	9.3	0.8	0.3	1.4	8	760	MILNE/ELSEN
29/08/93	3	HPHT/POLY	4310	52	2.04	51	36	5	2	9	2.5	13	320	2	0	36	0.1	64	16	9.3	0.5	0.3	2.2	8	1040	MILNE/ELSEN
30/08/93	4	HPHT/POLY	4318	38	2.04	49	36	4	2	9	2.5	12	320	2	0	36	0.1	64	16	9.3	0.4	0.3	1.8	8	920	MILNE/ELSEN
31/08/93	5	HPHT/POLY	4318	38	2.04	49	36	4	2	9	2.5	12	320	2	0	36	0.1	64	16	9.3	0.5	0.3	1.8	8	920	MILNE/ELSEN
01/09/93	6	HPHT/POLY	4394	50	2.03	54	35	7	5	16	2.8	14	320	2	0	36	0.1	64	21	9.2	0.4	0.2	1.5	8	1040	ELSEN/WARDE
02/09/93	7	HPHT/POLY	4425	60	2.03	55	37	6	4	14	2.6	14	320	2	0	36	0.1	64	18	9.3	0.4	0.2	1.4	8	1200	ELSEN/WARDE
03/09/93	8	HPHT/POLY	4460	59	2.03	55	37	8	5	19	2.5	13	320	2	0	36	0.1	64	20	8.9	0.3	0.1	1.2	8	1280	ELSEN/WARDE
04/09/93	9	HPHT/POLY	4497	62	2.03	59	39	11	7	23	2.6	13	320	2	0	36	0.3	64	24	9.3	0.5	0.3	1.6	9	1280	ELSEN/WARDE
05/09/93	10	HPHT/POLY	4500	53	2.03	62	39	11	7	24	2.6	14	320	2	0	36	0.3	64	24	9.3	0.5	0.3	1.5	9	1280	ELSEN/WARDE
06/09/93	11	HPHT/POLY	4541	54	2.04	54	35	9	5	13	2.7	14	320	2	0	35	0.3	65	20	9.1	0.4	0.2	1.4	7	1000	WARDE/MAIN
07/09/93	12	HPHT/POLY	4596	56	2.03	48	40	9	5	16	2.6	13	320	2	0	35	0.3	65	24	8.9	0.3	0.1	1	6	880	WARDE/MAIN
08/09/93	13	HPHT/POLY	4612	57	2.04	56	39	11	6	17	2.6	13	320	2	0	36	0.3	65	24	9.3	0.4	0.2	1.4	6	880	WARDE
09/09/93	14	HPHT/POLY	4621	45	2.04	65	38	11	6	15	2.5	13	320	2	0	36	0.3	65	21	9.2	0.2	0.2	1.6	8	880	WARDE/MILNE
10/09/93	15	HPHT/POLY	4631	45	2.03	54	35	10	5	14	2	13	320	2	0	36	0.3	64	21	9	0.2	0.2	1.7	8	800	WARDE/MILNE
11/09/93	16	HPHT/POLY	4640	40	2.03	50	36	10	4	11	2	12	320	2	0	36	0.3	65	21	9.5	0.3	0.2	2.1	9	720	WARDE/MILNE
12/09/93	17	HPHT/POLY	4668	49	2.06	46	35	11	4	12	2	13	320	2	0	36	0.3	64	21	9.3	0.4	0.2	1.8	9	600	WARDE/MILNE
13/09/93	18	HPHT/POLY	4715	38	2.06	51	35	10	4	11	2	13	320	2	0	36	0.3	64	24	9.8	0.5	0.4	2.5	9	440	MILNE/ELSEN
14/09/93	19	HPHT/POLY	4715	29	2.07	70	25	14	9	18	2	13	320	2	0	37	0.3	63	21	9.1	0.2	0.1	1.3	9	520	MILNE/ELSEN
15/09/93	20	HPHT/POLY	4715	32	2.06	57	40	4	1	7	2	13	320	2	0	35	0.3	65	18	8.9	0.3	0.2	1.5	5	280	MILNE/ELSEN
16/09/93	21	HPHT/POLY	4715	65	2.06	56	33	11	4	10	2	14	320	2	0	35	0.3	65	18	9.1	0.3	0.3	2.4	9	560	MILNE/ELSEN
17/09/93	22	HPHT/POLY	4715	31	2.06	56	32	11	4	12	1.9	12	320	2	0	36	0.3	65	21	8.5	0.3	0.2	2.3	9	560	MILNE
18/09/93	23	HPHT/POLY	4715	31	2.06	56	39	9	4	19	1.9	12	320	2	0	36	0.3	65	21	8.5	0.6	0.4	2.7	9	560	MILNE
19/09/93	24	HPHT/POLY	4210	44	2.06	52	39	7	2	12	2	16	320	2	0	36	0.3	65	21	10	0.6	0.4	2.6	11	880	MILNE

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2/5-10-A

DETAILED DISCUSSION

8 3/8" HOLE INTERVAL

DRILLING

The previous hole, 2/5-10, was drilled vertically to 4701 metres. it was then plugged back and the cement dressed off to 4292 metres. At this point the mud was diluted with 60 % new mud to control the severe increase in rheology caused by cement contamination and high temperature. This dilution was charged off to the original well and 509 cubic metres of mud recorded as transferred to the new well.

The cement was tagged at 4292 metres and drilling proceeded with a kick off assembly and mud motor. This was run for 36 hours with little sign of it drilling out into the formation. The bit was pulled at 4306 metres.

Another higher angle assembly (2.25 degree bent sub) was run and the hole oriented to 4318 metres. Having kicked off and an angle built of 7.2 degrees, the assembly was then pulled.

A new 1.25 degree bent sub was then run and the angle built to 11.9 degrees at 4394 metres where a wiper trip was made to the shoe by backreaming. Drilling and orienting then continued to 4500 metres with the angle increasing to 24.7 degrees. The bit was then pulled after backreaming to the casing shoe. Penetration rate over this bit run varied between 1.5 and 3 metres per hour.

A new assembly was run without a mud motor and the hole reamed from the kick off point before drilling continued to 4612 metres where there was a drilling break. Bottoms up was circulated and then, after a wiper trip to the shoe, the bit was pulled to run a core barrel. The deviation at this point was 32.4degrees,and TVD 4588 m.

A 10 metre core barrel was run in the hole and bottoms up circulated before the core was cut at 4 - 8 metres/hour to 4621 metres. Bottoms up was again circulated and then the barrel pulled. Core recovery was 92%.

A second core barrel was then run and, after circulating bottoms up, during which the trip gas reached 35% a core was cut to 4631 metres. Bottoms up was circulated and the core pulled out of the hole with 100% being recovered.

A wiper trip was made with a bit and bottoms up gas reached 34.5%; the hole was then logged with a gamma ray and the bit pulled.

DETAILED DISCUSSION

8 3/8" HOLE SECTION (cont.)

DRILLING (cont.)

A third core barrel was run in, and, after circulating bottoms up with trip gas reaching 9%, cut a core to 4640 metres. After circulating bottoms up the core was pulled to surface with 92.6% recoverey..

A new bit was run with DPR MWD tool and the hole logged from 4206 metres to the bottom before drilling resumed.The hole was drilled without problems to 4715m.(4674m TVD). After a short trip and circulating bottom's up with only 0.77% gas,the assembly was pulled for logging.

The mud, on bottom's up showed slightly increased rheology, but remained stable. This confirmed the hot roll pilot tests on the rig, although these tests showed a reduction in the lower end rheology which was not seen in the bottom's up samples. This difference may be due to the mud picking up solids or filter cake off the wellbore while tripping.

Logging was completed in two sessions, with a wiper trip between sessions. Bottom's up mud showed increased rheology and with the HTHP fluid loss of 17 ml/30 minutes.Maximum gas was recorded at 9.9%.

MUD TREATMENTS.

509 cubic metres of mud was transferred from the previous well having already been diluted by 60% to combat cement contamination. The initial concentration of chemicals in the mud was as follows :-

IDF Polytemp	7.7 kg/m3
IDF Hi Temp II	18.3 kg/m3
Idthin 500	5.98 kg/m3
Borrewell	1.83 kg/m3

At the end of drilling , the concentration of chemicals in the mud was as follows:-

IDF Polytemp	8.63 kg/m3
IDF Hitemp II	18.6 kg/m3
Idthin 500	11.1 kg/m3
Borrewell	0.91 kg/m3

DETAILED DISCUSSION

8 3/8" HOLE SECTION (cont.)

MUD TREATMENT (cont.)

The concentration of IDF Hitemp II remained quite constant, but the IDF Polytemp and Idthin were increased. The Polytemp gave improved rheological stability at temperature, and the Idthin 500 gave greater stability and fluid loss control after ageing. This was demonstrated in the laboratory by treating field muds with alternative doses of chemicals, the results of which were sent out to the rig.

Premixes were made with 10-20% old mud as a base to which was added new mud with the following formulation:-

IDF Polytemp	10	kg/m3
IDF Hi Temp II	15	kg/m3
Gluteraldehyde	0.5	kg/m3
Defoamer	0.5	kg/m3
Barite for 2.03 sg.		

Idthin 500 was added directly to the active system when required to reduce rheology,in particular, Gel strengths. IDF Polytemp and IDF Hi Temp II were also added directly to the active to control the Filtrate.

As drilling progressed no further Borrewell was added to the mud and the concentration of IDF Polytemp increased. This had the result of improving the firmness of the filter cake and high temperature stability. In particular, the filtrate remained stable and the gel strengths were reduced in hot roll tests at 325 degrees F.

Few cuttings were observed at the shakers while drilling and small dilutions with unweighted mud were made periodically in order to stop the mud weight from increasing due to solids build up.

When bottoms up mud was checked after trips, all the rheology parameters showed a slight increase due to increased cuttings which were observed at the shakers, although hot roll tests indicated that the Yield Point of the mud would remain stable, Plastic Viscosity would increase, and the gel strengths would be reduced. The bottoms up checks showed very little increase in Filtrate and a reduction in pH which corresponded well with the hot roll test results.

DETAILED DISCUSSION

8 3/8" HOLE SECTION (cont.)

MUD TREATMENT (CONT.)

Whole mud dilutions were made at the following depths while tripping.:-

DEPTH(m)	VOLUME(m3)	DILUTION(%)
4394	40	17
4500	75	31
4612	33	13
4631	33	13
4640	33	12

SOLIDS CONTROL EQUIPMENT

The five shakers were installed with 60 mesh on the top and 150 mesh on bottom back and 180 mesh on bottom front. This configuration was kept throughout the section. The centrifuges were not run during this section for 3 reasons:-
a) in order to maintain accurate volume measurements in the HTHP section.
b) due to the high density of the mud the operation of the centrifuges would process only a very small volume of mud; attempts to run the centrifuges had resulted in them becoming loaded up and stalling.
c) a large amount of barite would be taken out as the cut point was not ideal; (the centrifuges were designed and installed originally for a cuttings wash system).

VOLUMES.

After completing the initial well 2/5-10, 509 m of Hitemp polymer mud were transferred to the sidetrack 2/5-10-A.At the end of drilling on day 18, prior to running logs and the P&A proceedures,the volume analysis was as follows:

Start volume.....	509 m3
Total built	392 m3
Total used	389 m3
Volume lost surface.....	370 m3
Volume lost sub/surface.....	19 m3
Total volume lost.....	389 m3
Final volume.....	512 m3

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2/5-10-A

DETAILED DISCUSSION

SECTION COSTS

For this sidetrack, no estimate was prepared.The initial 509 m3 of mud was charged off the last well 2/5-10.Taken as at the end of the drilling on day 18 and before logging and the P&A proceedures, the costs were as follows:

Section cost.....	966987.08 NOK.
Section lenth	423 M.
Volume used.....	389 M3
Cost / M3	2485.82 NOK.
Cost / M.....	2286.02 NOK.

When compared with the original well 2/5-10, the cost per m3 is greater at 2485.82NOK vs 2178.3 NOK. However, the cost per meter of this sidetrack was less at 2286.02 NOK vs 3717.81 NOK for the straight hole.

The higher cost/m3 can be explained by the greater concentrations of chemicals in the mud at the end of the sidetrack compared with the original well. These are shown below:

FINAL MUD CONCENTRATIONS:	2/5-10	2/5-10-A
IDF Polttemp	7.67 kg/m3	8.63 kg/m3
IDF HitempII	18.3 kg/m3	18.6 kg/m3
IDTHIN	5.98 kg/m3	11.1 kg/m3
Borewell	0.00 kg/m3	0.91 kg/m3

PLUG AND ABANDON.

After running the electric logs the decision was made to plug and abandon the well. Following the last logging run, open tubing was run in and two plugs were set. Plug #1 was set from 4715 m MD. to 4565 m, with plug #2 set from 4310 m.
After cementing, mud was circulated b/up and 5 to 12 m3 of high pH mud dumped. Borewell was added at 1.4kg/m3 in order to control any increase in rheology due to cement influence.
Plug #2 was tagged 2 meters inside the shoe, at 4125m.and a third plug was set.
This plug was set from 4210 and was tagged at 4115m. The casing was successfully tested to 130 bar.

Reserve mud was prepared at 1.67 sg to displace the hole at 2100 m.by diluting back with drill water and using IDVIS to give the required viscosity.

At this stage the abandonment phase was reassigned to the initial well (2/5-10) along with all associated costs.

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WELL: 2/5-10-A

VOLUME ANALYSIS 8.375" HOLE SECTION

INITIAL VOLUME OF FLUID ON RIG:	509	M3
NET VOLUME RECEIVED ON RIG:	0	M3
VOLUME BUILT ON RIG.	407	M3
SUB TOTAL:	916	M3
SURFACE LOSSES:	437	M3
SUB SURFACE LOSSES:	28	M3
OTHER LOSSES:	0	M3
TOTAL LOSSES:	465	M3
VOLUME BACKLOADED TO TOWN	0	M3
VOLUME LEFT AT END OF INTERVAL:	451	M3
IRRECOVERABLE VOLUME (TOTAL LOSSES):	465	M3

COST SUMMARY 8.375" HOLE SECTION

		ACTUAL
DEPTH DRILLED: (M)		423
COST PER M:	NOK	2370.31
DAYS ON INTERVAL:		24
COST PER DAY:	NOK	41776.66
ENGINEERING COST:	NOK	158400.00
IRRECOVERABLE VOLUME: (M3)		465
COST PER M3:	NOK	2463.49
CEMENTING COST:	NOK	0.00
NET INTERVAL COST	**NOK**	**1002639.72**
TOTAL INTERVAL COST	**NOK**	**1002639.72**

Geochemical Report for Wells NOCS 2/5-10 and 2/5-10A

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Chapter 1

INTRODUCTION

The wells NOCS 2/5-10 and 2/5-10A were analyzed on behalf of Norsk Agip by authorization of Knut Schjerverud. At the request of Norsk Agip, the data are presented in two separate reports, one for each of the wells, while the interpretation is in a separate report (this report) which includes interpretation for both wells.

The wells are located in the Norwegian sector of the North Sea and is situated in the Central Graben. All depths given are relative to KB unless otherwise specified. The location of the well is shown in Figure 1.

Samples (cuttings, side-wall cores and conventional cores) were supplied by Norsk Agip and delivered to Geolab Nor's laboratory in Trondheim. A preliminary stratigraphy was provided by Norsk Agip and is used in this report. Note that this stratigraphy may differ slightly from the final stratigraphy.

Both screening and follow-up analyses were performed. Samples for analyses were selected in agreement with Knut Schjerverud on a continuous basis. Well 2/5-10 was analyzed from 1000 m to 4350 m and 2/5-10A from 4350 m to 4750 m. The exception was some samples from 2/5-10 which were analyzed from below 4350 m (see the data report for 2/5-10). Conventional core samples were preferred for analyses where available and side-wall cores were preferred to cuttings samples. The results are presented in the relevant stratigraphic sections of this report.

The report is divided into chapters according to the various analytical methods used. Within the chapters the results are discussed mainly in a (descending) stratigraphic context.

1.1 General Comments

The cuttings samples were supplied unwashed in bags. The samples were washed, described and picked before analyses commenced. The conventional core samples were supplied as core-chips which were used after removal of any superficial contamination. The side-wall cores were cleansed of drill-mud before analyses.

The quality of the rock samples was good, except for cuttings samples from below 4350 m in well NOCS 2/5-10. Some of these samples contained up to 100 % mud additives, mainly barite. No analytical problems were encountered.

1.2 Analytical Program

In accordance with the contract, sample availability and the screening analysis results, the following analytical program was executed for the wells NOCS 2/5-10 (1000 m to 4577.55 m) and 2/5-10A (4348 m to 4712 m).

Well NOCS 2/5-10 (Tables in Data Report for Well NOCS 2/5-10)

Analysis type	No of samples	Figures	Tables
Headspace and occluded Gas	19	3a-d	1a-c
Lithology description	53	2a	2
Rock-Eval pyrolysis	22	4-11	3
Thermal extraction and pyrolysis GC (GHM)	7	12-14	4
Soxhlet extraction of organic matter	2		
MPLC/HPLC separation	2	15	5a-d
Whole oil GC	1		

Appendix 1 A

Tables

Table 1a: C1 to C7 hydrocarbons in HEADSPACE gas
(µl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wetness	iC4/nC4
4352.00	3467	5995	12675	2375	8213	8313	32725	29258	89.4	0.29
4361.00	6265	10705	24566	5021	15470	13501	62027	55762	89.9	0.32
4370.00	1683	2973	8871	1989	6890	7340	22406	20723	92.5	0.29
4379.00	2297	3112	9619	1982	7350	7696	24360	22063	90.6	0.27
4388.00	7710	5447	11939	2962	9295	7990	37353	29643	79.4	0.32
4397.00	4420	5989	7612	954	2956	2093	21931	17511	79.9	0.32
4406.00	4131	5306	7901	1375	5027	6236	23740	19609	82.6	0.27
4415.00	2412	2568	3632	662	2158	3233	11432	9020	78.9	0.31
4424.00	5844	3981	6529	1445	4045	3719	21844	16000	73.3	0.36
4433.00	8373	7586	12766	2575	7895	7913	39195	30822	78.6	0.33
4442.00	6064	7862	10615	1922	5915	7312	32378	26314	81.3	0.32
4451.00	5346	5323	11065	2492	7528	7108	31754	26408	83.2	0.33
4460.00	4682	4297	7024	1358	3926	4048	21287	16605	78.0	0.35
4469.00	6074	8417	15975	3822	9720	9278	44008	37934	86.2	0.39
4478.00	32671	22604	46255	8609	32734	36283	142873	110*	77.1	0.26
4487.00	13009	14800	39874	9487	32901	42759	110071	97062	88.2	0.29
4496.00	16580	16700	59334	20694	52686	52366	165994	149*	90.0	0.39
4505.00	2535	3606	4669	724	2196	1588	13730	11195	81.5	0.33
4514.00	4988	8374	9052	1068	3548	3251	27030	22042	81.6	0.30
4523.00	5077	7382	8336	1051	3418	3087	25264	20187	79.9	0.31
4532.00	4449	5099	5510	754	2324	2080	18136	13687	75.5	0.32
4541.00	2776	4299	5021	684	2288	2164	15068	12292	81.6	0.30
4550.00	3277	4707	5472	744	2304	1411	16504	13227	80.1	0.32

Table 1a: C1 to C7 hydrocarbons in HEADSPACE gas
(µl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wetness	iC4/nC4
4559.00	1153	1053	1022	145	370	318	3743	2590	69.2	0.39
4568.00	2867	3831	5134	788	2319	2127	14939	12072	80.8	0.34
4577.00	4216	4281	5028	803	2166	2109	16494	12278	74.4	0.37
4589.00	61188	10347	6827	1113	3178	2432	82653	21465	26.0	0.35
4601.00	6072	7202	8292	1287	3871	4148	26724	20652	77.3	0.33
4610.00	8701	7385	8730	1454	3960	3858	30230	21529	71.2	0.37
4622.00	5169	5546	7545	1183	4019	4737	23462	18293	78.0	0.29
4631.00	5158	4527	5034	703	2238	1460	17660	12502	70.8	0.31
4640.00	6195	6502	7736	1116	3427	2843	24976	18781	75.2	0.33
4649.00	2227	2668	3853	594	2059	2304	11401	9174	80.5	0.29
4658.00	5398	6612	6213	866	2702	1573	21791	16393	75.2	0.32
4667.00	199	731	1234	197	652	778	3013	2814	93.4	0.30
4676.00	5616	7131	7966	1033	3370	3030	25116	19500	77.6	0.31
4685.00	3628	5234	5724	842	2641	1924	18069	14441	79.9	0.32
4694.00	285	3339	3759	479	1667	1604	9529	9244	97.0	0.29
4703.00	5512	5911	6439	846	2539	2382	21247	15735	74.1	0.33
4712.00	3347	4512	5010	679	2055	1968	15603	12256	78.6	0.33

Table 1b: C1 to C7 hydrocarbons in CUTTINGS gas
(µl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
4352.00	62	328	3037	1289	5516	12270	10232	10170	99.4	0.23
4361.00	180	730	7261	3444	13578	30337	25193	25013	99.3	0.25
4370.00	112	230	3198	2052	8587	29418	14179	14067	99.2	0.24
4379.00	68	154	1892	1066	4583	12870	7763	7695	99.1	0.23
4388.00	151	284	2658	1725	7089	20684	11907	11756	98.7	0.24
4397.00	114	625	2954	894	3442	6468	8029	7915	98.6	0.26
4406.00	228	338	2385	1107	4785	17849	8843	8615	97.4	0.23
4415.00	407	389	1526	656	2767	11138	5745	5338	92.9	0.24
4424.00	326	525	2533	1275	5156	20423	9815	9489	96.7	0.25
4433.00	397	631	3012	1536	6101	19393	11677	11280	96.6	0.25
4442.00	231	669	3348	1398	5426	13055	11072	10841	97.9	0.26
4451.00	276	297	2016	1104	4667	14958	8360	8084	96.7	0.24
4460.00	299	607	3238	1366	5398	13828	10908	10609	97.3	0.25
4469.00	276	508	2316	817	3701	10198	7618	7342	96.4	0.22
4478.00	309	141	833	585	2510	11373	4378	4069	92.9	0.23
4487.00	500	201	917	630	2649	13019	4897	4397	89.8	0.24
4496.00	312	138	1178	982	3685	14843	6295	5983	95.0	0.27
4505.00	373	2193	8972	3027	12338	40110	26903	26530	98.6	0.25
4514.00	460	3299	12854	3953	14609	2644	35175	34715	98.7	0.27
4523.00	495	2808	10491	3471	12644	23885	29909	29414	98.3	0.27
4532.00	445	2459	8189	2518	9102	16906	22713	22268	98.0	0.28
4541.00	439	2523	10554	3526	13432	38481	30474	30035	98.6	0.26
4550.00	458	2609	10425	3515	13695	34358	30702	30244	98.5	0.26

Table 1b: C1 to C7 hydrocarbons in CUTTINGS gas
(μl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
4559.00	744	3550	10684	3235	11719	2397	29932	29188	97.5	0.28
4568.00	209	787	3535	1174	4433	9445	10138	9929	97.9	0.26
4577.00	295	1430	6366	2539	8875	20293	19505	19210	98.5	0.29
4589.00	185	601	2864	1118	4166	10779	8934	8749	97.9	0.27
4601.00	218	659	2981	1070	4261	12873	9189	8971	97.6	0.25
4610.00	243	726	3289	1203	4591	12224	10052	9809	97.6	0.26
4622.00	281	401	2652	1263	4825	14633	9422	9141	97.0	0.26
4631.00	368	1300	5649	2078	7728	16591	17123	16755	97.9	0.27
4640.00	368	1422	6056	2193	7853	19901	17892	17524	97.9	0.28
4649.00	186	478	2901	1127	4484	12191	9176	8990	98.0	0.25
4658.00	372	2307	9044	2564	9867	19488	24154	23782	98.5	0.26
4667.00	226	1050	4646	1451	5628	13071	13001	12775	98.3	0.26
4676.00	325	1601	6863	2166	8474	21589	19429	19104	98.3	0.26
4685.00	210	1254	5111	1504	5875	9551	13954	13744	98.5	0.26
4694.00	183	844	3529	1048	4248	9564	9852	9669	98.1	0.25
4703.00	263	1288	5229	1615	6207	10173	14602	14339	98.2	0.26
4712.00	196	1294	5267	1531	6186	14681	14474	14278	98.7	0.25

Table 1c: C1 to C7 hydrocarbons in HEADSPACE and CUTTINGS gas
(µl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
4352.00	3529	6323	15712	3664	13729	20583	42957	39428	91.8	0.27
4361.00	6445	11435	31827	8465	29048	43838	87220	80775	92.6	0.29
4370.00	1795	3203	12069	4041	15477	36758	36585	34790	95.1	0.26
4379.00	2365	3266	11511	3048	11933	20566	32123	29758	92.6	0.26
4388.00	7861	5731	14597	4687	16384	28674	49260	41399	84.0	0.29
4397.00	4534	6614	10566	1848	6398	8561	29960	25426	84.9	0.29
4406.00	4359	5644	10286	2482	9812	24085	32583	28224	86.6	0.25
4415.00	2819	2957	5158	1318	4925	14371	17177	14358	83.6	0.27
4424.00	6170	4506	9062	2720	9201	24142	31659	25489	80.5	0.30
4433.00	8770	8217	15778	4111	13996	27306	50872	42102	82.8	0.29
4442.00	6295	8531	13963	3320	11341	20367	43450	37155	85.5	0.29
4451.00	5622	5620	13081	3596	12195	22066	40114	34492	86.0	0.29
4460.00	4981	4904	10262	2724	9324	17876	32195	27214	84.5	0.29
4469.00	6350	8925	18291	4639	13421	19476	51626	45276	87.7	0.35
4478.00	32980	22745	47088	9194	35244	47656	147251	114*	77.6	0.26
4487.00	13509	15001	40791	10117	35550	55778	114968	101*	88.3	0.28
4496.00	16892	16838	60512	21676	56371	67209	172289	155*	90.2	0.38
4505.00	2908	5799	13641	3751	14534	41698	40633	37725	92.8	0.26
4514.00	5448	11673	21906	5021	18157	5895	62205	56757	91.2	0.28
4523.00	5572	10190	18827	4522	16062	26972	55173	49601	89.9	0.28
4532.00	4894	7558	13699	3272	11426	18986	40849	35955	88.0	0.29
4541.00	3215	6822	15575	4210	15720	40645	45542	42327	92.9	0.27

Table 1c: C1 to C7 hydrocarbons in HEADSPACE and CUTTINGS gas
(µl gas/kg rock)

Project: 2/5-10
Well: 2/5-10A
Depth unit of measure: n * Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4/nC4
4550.00	3735	7316	15897	4259	15999	35769	47206	43471	92.1	0.27
4559.00	1897	4603	11706	3380	12089	2715	33675	31778	94.4	0.28
4568.00	3076	4618	8669	1962	6752	11572	25077	22001	87.7	0.29
4577.00	4511	5711	11394	3342	11041	22402	35999	31488	87.5	0.30
4589.00	61373	10948	9691	2231	7344	13211	91587	30214	33.0	0.30
4601.00	6290	7861	11273	2357	8132	17021	35913	29623	82.5	0.29
4610.00	8944	8111	12019	2657	8551	16082	40282	31338	77.8	0.31
4622.00	5450	5947	10197	2446	8844	19370	32884	27434	83.4	0.28
4631.00	5526	5827	10683	2781	9966	18051	34783	29257	84.1	0.28
4640.00	6563	7924	13792	3309	11280	22744	42868	36305	84.7	0.29
4649.00	2413	3146	6754	1721	6543	14495	20577	18164	88.3	0.26
4658.00	5770	8919	15257	3430	12569	21061	45945	40175	87.4	0.27
4667.00	425	1781	5880	1648	6280	13849	16014	15589	97.4	0.26
4676.00	5941	8732	14829	3199	11844	24619	44545	38604	86.7	0.27
4685.00	3838	6488	10835	2346	8516	11475	32023	28185	88.0	0.28
4694.00	468	4183	7288	1527	5915	11168	19381	18913	97.6	0.26
4703.00	5775	7199	11668	2461	8746	12555	35849	30074	83.9	0.28
4712.00	3543	5806	10277	2210	8241	16649	30077	26534	88.2	0.27

Table 2 : Lithology description for well NOCS 2/5-10A

Depth unit of measure: m

Depth Int	Cvd	Type TOC%	%	Grp	Frm	Age / Lithology description	Trb	Sample
4348.00	swc							0001
		4.02	100			Sh/Clst: dsk y brn to brn blk		0001-1L
4352.00								0026
			100			Sh/Clst: brn blk		0026-1L
4361.00								0027
			100			Sh/Clst: brn blk		0027-1L
4365.00	swc							0002
		3.90	100			Sh/Clst: dsk y brn to brn blk		0002-1L
4370.00								0028
			100			Sh/Clst: brn blk		0028-1L
			tr			Sh/Clst: gy red		0028-2L
			tr			Ca : w to lt gy, chk		0028-3L
4379.00								0029
			100			Sh/Clst: brn blk		0029-1L
			tr			Sh/Clst: gy red		0029-2L
			tr			Ca : w to lt gy, chk		0029-3L
4388.00								0030
			100			Sh/Clst: brn blk		0030-1L
			tr			Sh/Clst: gy red		0030-2L
			tr			Cont : prp		0030-3L

Table 2 : Lithology description for well NOCS 2/5-10A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
4395.00	swc					0004
	4.36	100	Sh/Clst: dsk y brn to brn blk			0004-1L
4397.00						0031
		100	Sh/Clst: brn blk			0031-1L
		tr	Sh/Clst: gy red			0031-2L
		tr	Cont : prp			0031-3L
4405.00	swc					0003
	1.54	100	Sh/Clst: dsk y brn to brn blk			0003-1L
4406.00						0032
		100	Sh/Clst: gy blk to brn blk			0032-1L
		tr	Sh/Clst: gy red			0032-2L
		tr	Ca : w to lt gy, chk			0032-3L
4415.00						0033
		80	Sh/Clst: gy blk, dol			0033-1L
		10	Ca : lt gy			0033-2L
		10	Sh/Clst: dsk y brn, dol			0033-3L
4424.00						0034
	2.18	95	Sh/Clst: gy blk to brn blk			0034-1L
		5	Sh/Clst: dsk y brn, dol			0034-3L
		tr	Ca : lt gy			0034-2L

Table 2 : Lithology description for well NOCS 2/5-10A

Depth unit of measure: m

Depth	Type		Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description				
4433.00							0035
		95	Sh/Clst: gy blk to brn blk				0035-1L
		5	Cont : prp				0035-4L
		tr	Ca : lt gy				0035-2L
		tr	Sh/Clst: dsk y brn, dol				0035-3L
4442.00							0036
		95	Sh/Clst: gy blk to brn blk				0036-1L
		5	Cont : prp				0036-4L
		tr	Ca : lt gy				0036-2L
		tr	Sh/Clst: dsk y brn, dol				0036-3L
4451.00	swc						0005
	2.36	100	Sh/Clst: dsk y brn to brn blk				0005-1L
4451.00							0037
		95	Sh/Clst: gy blk to brn blk				0037-1L
		5	Cont : prp				0037-3L
		tr	Sh/Clst: dsk y brn, dol				0037-2L
4460.00							0038
		90	Sh/Clst: gy blk to brn blk				0038-1L
		10	Ca : lt gy, prp				0038-3L
		tr	Sh/Clst: dsk y brn, dol				0038-2L
4469.00							0039
	2.41	100	Sh/Clst: gy blk				0039-1L
		tr	Sh/Clst: dsk y brn, dol				0039-2L
		tr	Ca : lt gy, prp				0039-3L