HYDRO

WELL TEST RESULT

WELL: 34/8-4S

TEST NO.	1	2A	2B2
PERFORATED INTERVAL	3219.0-3241.0 m MD RKB	3133.0-3143.0 m MD RKB	3132.5-3142.5 3112.5-3127.5 3094.5-3104.5 3066.5-3082.0
CHOKE SIZE (mm)	15.87	17.46	20.63
OIL/COND. FLOW RATE /Sm^3/D)	441	754	985
GAS FLOW RATE (Sm^3/D)	410280	605090	792950
GOR (Sm^3/Sm^3)	930	803	805
OIL/COND. GRAVITY (g/cc) @ 15°C	0.782	0.788	0.785
GAS GRAVITY (air=1)	0.728	0.734	0.739
FWHP (bar)	173.0	247.8	233.5
SIWHP(bar)	138.0	163.0	180.3
WHT (deg C)	52.9	73.6	73.0
BHT (deg C)	113.3	114.4	112.3
BHFP (bar)	290.5	423.1	439.2
BHSIP (bar)	445.0	453.6	455.5
BS&W (%)	Trace	0	Trace
CO2 (%) (Max)	2.0	0.7	0.5
H2S (ppm) (Max)	0	0	0
K (mD)	32.0	657.9	353.0
S	+ 9.7	+ 16.4	+ 22.3
Pi (Sm^3/d/bar)	2.5	23.3	53.8
DEPTH OF BH MEASUREMENTS	3174.5 m MD RKB	3012.4 m MD RKB	3011.1 m MD RKB

HYDRO	WELL TEST RESULT	WELL: 34/8-4S	
TEST NO.	3	4	
PERFORATED INTERVAL	3000.7-3017.7 m MD RKB	2903.4-2917.4 m MD RKB	
CHOKE SIZE (mm)	21.43	25.40	
OIL/COND. FLOW RATE /Sm^3/D)	908	205	
GAS FLOW RATE (Sm^3/D)	708500	480000	
GOR (Sm^3/Sm^3)	781	2418	
OIL/COND. GRAVITY (g/cc) @ 15°C	0.777	0.770	
GAS GRAVITY (air=1)	0.738	0.690	
FWHP (bar)	204.6	65.7	
SIWHP(bar)	159.7	80.9	
WHT (deg C)	72.6	45.3	
BHT (deg C)	110.8	92.4	
BHFP (bar)	395.4	136.7	
BHSIP (bar)	447.4	419.4	
BS&W (%)	0	0	
CO2 (%) (Max)	0.1	1.0	
H2S (ppm) (Max)	0	0.6	
K (mD)	88.7	24.9	
S	+ 2.1	+ 50.4	
Pi (Sm^3 /d/bar)	15.5	-	
DEPTH OF BH MEASUREMENTS	2939.8 m MD RKB	2864.4 m MD RKB	

Table B.10: Daily mud properties

Daily mud properties

System : BORE

Date 10/6-1991

Well: 34/8-4S
Mud Contractor: MI
Data: "Mid depth" from table 3, otherwise from table 14.

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 Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115 gr. 600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	F: Mud Type
901207	420	1.05	1	1																				SPUD
901212	1165	1.25	1	1																				SEAWATER
901213	1165	1.05	1	1																				SEAWATER
901214	1165	1.20	1	1																				SEAWATER
901215	1165	1.20	1	1																				SEAWATER
901216	1165	1.20	1	1																				SEAWATER
901217	1165	1.20	10	3	1	2	8.0	4.6		50000/50000			0.80	440/440		7		27	17	11	6	2	1	KCL
901218	1186	1.20	14	5	1	2	10.0	4.4		49000/49000	0.10	0.80	0.80	400/400		7		38	24	17	20	3	2	KCL
901219	1488	1.20	14	5	1	2	8.4	4.4		49000/49000	0.10	0.80	0.80	400/400		7		38	24	17	20	3	2	KCLPOLYMER
901220	1846	1.40	29	8	2	3	8.0	3.8		49000/49000			1.20	800/800		15		75	46	35	23	4	3	KCL POLYMER
901221	2117	1.38	27	9	2	4	8.1	4.2		49000/49000			1.10	760/760		17		72	45	35	24	5	4	KCL POLYMER
901222	2177	1.40	25	13	2	6	8.1	3.8		49000/49000			1.10	760/760		17		77	52	40	28	6	5	KCL POLYMER
901223	2177	1.40	25	13	2	6	8.1	3.8		49000/49000			1.10	760/760		17		77	52	40	28	6	5	KCL POLYMER
901225	2177	1.40	25	13	2	6	8.1	3.8		49000/49000			1.10	760/760		17		77	52	40	28	6	5	KCL POLYMER
901226	2177	1.40	25	13	2	6	8.1	3.8		49000/49000			1.10	760/760		17		77	52	40	28	6	5	KCL POLYMER
901227	2177	1.40	25	13	2	3	8.2	3.8		49000/49000			1.10	760/760		16		77	52	40	28	4	3	KCL POLYMER
901228	2177	1.40	25	13	2	3	8.2	3.8		49000/49000			1.10	760/760		16		77	52	40	28	4	3	KCL POLYMER
901229	2177	1.40	25	13	2	3	8.2	3.6		49000/49000			1.10	760/760		16		77	52	40	28	4	3	KCL POLYMER
901230	2177	1.40	29	8	2	5	8.0	3.8		49000/49000			1.10	680/680		16		74	45	35	23	5	4	KCL POLYMER
901231	2177	1.40	29	9	2	5	8.0	3.7		48000/48000			1.10	680/680		16		76	47	36	23	5	4	KCL POLYMER
910101	2177	1.40	29	9	2	5	8.0	3.7		49000/49000			1.10	680/680		16		76	47	36	23	5	4	KCL POLYMER
910102	2177	1.40	29	9	2	5	8.0	3.7		49000/49000			1.10	680/680		16		76	47	36	23	5	4	KCL POLYMER
910103	2177	1.40	29	9	2	4	8.0	3.7		49000/49000			1.10	680/680		16		76	47	36	23	5	4	KCL POLYMER
910108	2177	1.40	21	7	2	4	8.0	3.8		46000/46000			1.10	800/800		16		57	36	26	16	4	3	KCL POLYMER
910110	2177	1.40	21	7	2	4	8.0	3.8		46000/46000			1.10	800/800		16		57	36	26	16	4	3	KCL POLYMER
910111	2177	1.40	21	7	2	4	8.0	3.8		46000/46000			1.10	800/800		16		57	36	26	16	4	3	KCL POLYMER
910115	2177	1.40	21	7	2	4	8.0	3.8		46000/46000			1.10	800/800		16		57	36	26	16	4	3	KCL POLYMER
910116	2177	1.40	21	11	3	5	8.0	3.6		43000/43000			1.10	600/600		15		65	44	37	26	7	5	KCL POLYMER
910117	2177	1.40	21	11	3	5	8.0	3.6		43000/43000			1.10	600/600		15		65	44	37	26	7	5	KCL POLYMER
910118	2177	1.40	20	12	3	4	8.0	3.4		43000/43000			1.80	600/600		15		64	44	36	26	7	5	KCL POLYMER
910119	2177	1.40	20	12	3	4	8.0	3.4		43000/43000			1.80	600/600		15		64	44	36	26	7	5	KCL POLYMER
910122	2180	1.40	23	12	3	6	9.7	4.3		43000/43000	0.10	0.80	0.80	700/700		14		70	47	37	25	6	4	KCL POLYMER
910123	2204	1.40	21	11	4	7	8.9	4.0	17.0	43000/43000	0.20	1.20	2.90	380/380		15		64	43	33	22	5	4	KCL POLYMER
910124	2300	1.45	24	12	3	5	8.7	3.8	15.0	45000/45000	0.20	0.90	3.60	340/340		18		73	49	38	26	6	4	KCL POLYMER
910125	2331	1.45	23	12	3	6	8.6	3.8	13.6	43000/43000	0.10	0.50	2.90	380/380	0	18	82	72	49	39	27	6	4	KCL POLYMER
910126	2518	1.50	24	13	3	7	8.5	3.6	13.2	43000/43000	0.10	0.20	3.00	440/440	0	19	81	74	50	40	28	7	5	KCL POLYMER
910127	2656	1.55	28	12	3	8	8.5	3.2	11.2	42000/42000	0.10	0.20	2.80	400/400	0	21	79	82	54	44	30	7	5	KCL POLYMER
910128	2767	1.60	34	13	3	7	8.3	2.8	12.8	42000/42000	0.10	0.10	2.70	400/400	0	22	78	96	62	49	33	7	6	KCL POLYMER
910129	2819	1.65	33	13	3	7	8.2	2.9	15.0	41000/41000	0.20	0.20	2.80	400/400	0	23	77	94	61	49	33	7	5	KCL POLYMER
910130	2859	1.65	31	12	3	8	8.2	2.8	15.0	41000/41000	0.20	0.20	2.80	400/400	0	23	77	87	56	44	30		5	KCL POLYMER
910131	2899	1.65	39	12	3	8	8.2	2.6	14.0	42000/42000	0.10	0.10	2.40	440/440	0	23	77	104	65	50	34	7	5	KCL POLYMER
910201	2927	1.65	34	12	3	8	8.3	2.1	11.8	41000/41000	0.10	0.10	2.40	440/440	0	23	77	93	59	47	31	6	4	KCL POLYMER
910202	3005	1.65	34	13	3	8	8.3	2.0	10.4	40000/40000	0.10	0.10	2.20	440/440	0	23	77	96	62	51	33	7	5	KCL POLYMER
910203	3021	1.65	34	12	3	8	8.3	1.8	9.4	41000/41000		0.10	2.20	440/440	0	23	77	92	58	46	30	7	5	KCL POLYMER

Daily mud properties

System : BORE

Date 10/6-1991

Well: 34/8-4S
Mud Contractor: MI
Data: "Mid depth" from table 3, otherwise from table 14.

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 Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out: mg/l	Oil: %	Sol: %	H2O %	V.G. meter at 115 gr. F: 600:rpm	300:rpm	200:rpm	100:rpm	6:rpm	3:rpm	Mud Type
910204:	3067:	1.65:	33:	11:	3:	13:	8.3:	2.2:	10.0:	40000/40000			0.10:	2.20:	520/520:	0:	23:	77	89:	56:	45:	30:	7:	5:	KCL POLYMER:
910205:	3085:	1.65:	34:	15:	3:	13:	8.2:	2.0:	9.6:	42000/42000			0.10:	2.30:	480/480:	0:	23:	77	100:	66:	51:	34:	8:	6:	KCL POLYMER:
910206:	3105:	1.65:	30:	11:	3:	9:	7.8:	2.2:	10.0:	41000/41000			0.10:	2.30:	480/480:	0:	23:	77	82:	52:	39:	25:	6:	5:	KCL POLYMER:
910207:	3124:	1.65:	30:	9:	3:	9:	8.4:	2.0:	11.0:	43000/43000			0.10:	2.30:	520/520:	0:	23:	77	81:	50:	38:	24:	6:	4:	KCL POLYMER:
910208:	3144:	1.65:	40:	15:	3:	9:	8.2:	2.0:	9.8:	44000/44000			0.10:	2.30:	480/480:	0:	23:	77	113:	72:	55:	35:	7:	5:	KCL POLYMER:
910209:	3173:	1.65:	40:	14:	3:	10:	8.1:	1.8:	10.6:	43000/43000			0.10:	2.40:	560/560:	0:	23:	77	110:	70:	42:	34:	7:	5:	KCL POLYMER:
910210:	3187:	1.65:	39:	12:	3:	8:	8.2:	2.0:	10.6:	42500/42500			0.10:	2.40:	560/560:	0:	24:	76	104:	65:	49:	31:	6:	4:	KCL POLYMER:
910211:	3208:	1.65:	40:	12:	3:	9:	8.0:	2.0:	10.8:	40000/40000			0.10:	2.40:	600/600:	0:	24:	76	106:	66:	50:	33:	6:	5:	KCL POLYMER:
910212:	3233:	1.65:	42:	13:	3:	8:	7.4:	1.8:	9.4:	43000/43000				2.80:	560/560:	0:	24:	76	112:	70:	53:	33:	5:	4:	KCL POLYMER:
910213:	3236:	1.65:	38:	13:	3:	9:	7.4:	1.8:	9.6:	43000/43000				2.80:	600/600:	0:	24:	76	104:	66:	51:	31:	5:	4:	KCL POLYMER:
910214:	3256:	1.65:	34:	12:	3:	9:	8.3:	2.2:	10.4:	43000/43000			0.10:	2.80:	520/520:	0:	24:	76	94:	60:	45:	29:	5:	4:	KCL POLYMER:
910215:	3276:	1.65:	40:	14:	4:	10:	7.8:	2.0:	10.4:	42000/42000				3.20:	320/320:	0:	24:	76	110:	70:	54:	34:	6:	5:	KCL POLYMER:
910216:	3279:	1.65:	42:	12:	3:	11:	7.8:	2.0:	11.2:	42000/42000	0.40:	0.10:	2.80:	320/320:		0:	24:	76	108:	66:	50:	32:	6:	4:	KCL POLYMER:
910217:	3286:	1.65:	36:	13:	3:	11:	8.5:	2.0:	10.6:	44000/44000	0.10:	0.10:	2.80:	160/160:		0:	24:	76	99:	63:	48:	30:	6:	4:	KCL POLYMER:
910218:	3292:	1.65:	39:	14:	3:	14:	8.6:	2.1:	10.8:	44000/44000	0.10:	0.10:	4.00:	120/120:		0:	25:	75	108:	69:	53:	35:	7:	5:	KCL POLYMER:
910219:	3319:	1.65:	37:	14:	3:	12:	8.6:	2.1:	10.9:	46000/46000	0.10:	0.40:	3.60:	230/230:		0:	24:	76	103:	66:	50:	33:	6:	4:	KCL POLYMER:
910220:	3333:	1.65:	40:	13:	3:	12:	8.4:	2.3:	10.8:	47000/47000	0.10:	0.30:	3.60:	200/200:		0:	24:	76	108:	68:	52:	33:	6:	4:	KCL POLYMER:
910221:	3358:	1.65:	39:	12:	3:	12:	8.6:	2.0:	11.4:	45000/45000	0.10:	0.40:	3.80:	200/200:		0:	24:	76	103:	64:	49:	32:	6:	4:	KCL POLYMER:
910222:	3380:	1.65:	39:	12:	3:	11:	8.4:	2.0:	10.8:	45000/45000	0.10:	0.20:	3.70:	200/200:		0:	24:	76	102:	63:	48:	31:	5:	4:	KCL POLYMER:
910223:	3386:	1.65:	38:	11:	3:	11:	8.6:	2.1:	10.8:	45000/45000	0.10:	0.30:	3.70:	200/200:		0:	24:	76	98:	60:	47:	31:	5:	4:	KCL POLYMER:
910224:	3412:	1.65:	38:	12:	3:	10:	8.4:	2.2:	10.2:	48000/48000	0.10:	0.10:	3.90:	180/180:		0:	24:	76	101:	63:	48:	30:	5:	4:	KCL POLYMER:
910225:	3439:	1.64:	38:	11:	3:	11:	8.6:	2.2:	10.2:	46000/46000	0.10:	0.10:	3.70:	200/200:		0:	24:	76	99:	61:	47:	30:	5:	4:	KCL POLYMER:
910226:	3466:	1.65:	41:	12:	3:	13:	8.3:	1.8:	9.6:	43500/43500	0.10:	0.10:	4.70:	160/160:		0:	24:	76	108:	67:	53:	34:	6:	5:	KCL POLYMER:
910227:	3474:	1.65:	40:	12:	3:	14:	8.5:	1.8:	10.2:	40000/40000	0.10:	0.10:	4.40:	200/200:		0:	24:	76	105:	65:	55:	35:	7:	5:	KCL POLYMER:
910228:	3486:	1.65:	40:	12:	2:	14:	8.5:	1.8:	10.0:	43000/43000	0.10:	0.10:	4.40:	220/220:		0:	24:	76	105:	65:	55:	35:	7:	5:	KCL POLYMER:
910301:	3518:	1.65:	37:	12:	3:	13:	8.5:	2.1:	10.4:	45000/45000	0.10:	0.10:	4.30:	220/220:		0:	24:	76	100:	63:	50:	32:	7:	5:	KCL POLYMER:
910302:	3561:	1.65:	35:	11:	3:	13:	8.5:	2.1:	9.2:	45000/45000	0.10:	0.10:	4.30:	220/220:		0:	24:	76	93:	58:	44:	29:	6:	5:	KCL POLYMER:
910303:	3615:	1.65:	34:	12:	3:	15:	8.5:	2.2:	10.2:	445000/445000	0.10:	0.10:	4.70:	200/200:		0:	24:	76	92:	58:	46:	30:	7:	5:	KCL POLYMER:
910304:	3671:	1.65:	46:	11:	2:	15:	8.5:	2.2:	9.8:	43000/43000	0.10:	0.10:	4.10:	160/160:		0:	24:	76	115:	69:	52:	31:	7:	5:	KCL POLYMER:
910305:	3671:	1.65:	36:	10:	3:	10:	9.1:	2.2:	9.8:	45000/45000	0.10:	0.20:	4.00:	360/360:		0:	24:	76	92:	56:	40:	24:	6:	4:	KCL POLYMER:
910306:	3671:	1.65:	40:	7:	3:	13:	8.6:	2.2:	9.8:	45000/45000	0.10:	0.10:	4.00:	360/360:		0:	24:	76	95:	55:	42:	24:	6:	4:	KCL POLYMER:
910307:	3671:	1.65:	41:	10:	2:	12:	8.3:	2.2:	10.4:	44000/44000			0.10:	4.20:	280/280:	0:	24:	76	103:	62:	44:	28:	7:	5:	KCL POLYMER:
910308:	3671:	1.65:	40:	9:	3:	11:	8.1:	2.3:	10.6:	43000/43000			0.10:	4.20:	160/160:	0:	24:	76	98:	58:	44:	27:	6:	5:	KCL POLYMER:
910309:	3671:	1.68:	52:	11:	3:	11:	8.2:	1.9:	9.8:	43000/43000	0.00:	0.10:	4.20:	240/240:		0:	25:	75	126:	74:	55:	34:	6:	5:	KCL POLYMER:
910310:	3671:	1.68:	34:	19:	3:	11:	8.2:	1.7:	9.7:	44000/44000	0.00:	0.10:	4.20:	120/120:		0:	25:	75	108:	74:	65:	48:	6:	5:	KCL POLYMER:
910311:	3673:	1.68:	45:	11:	3:	12:	8.5:	2.0:	9.8:	46000/46000	0.00:	0.10:	4.20:	120/120:		0:	25:	75	112:	67:	51:	31:	6:	4:	KCL POLYMER:
910312:	3673:	1.68:	40:	9:	2:	10:	8.4:	1.9:	9.8:	45000/45000	0.10:	0.10:	4.20:	120/120:		0:	25:	75	98:	58:	42:	26:	5:	4:	KCL POLYMER:
910313:	3673:	1.68:	42:	11:	5:	17:	7.6:	3.0:	12.8:	38000/38000	0.20:	0.10:	3.80:	160/160:		0:	25:	75	106:	64:	49:	31:	6:	5:	KCL POLYMER:
910314:	3673:	1.68:	37:	7:	4:	15:	7.6:	2.7:	11.6:	40000/40000			4.20:	120/120:		0:	25:	75	89:	52:	46:	25:	5:	4:	KCL POLYMER:
910315:	3673:	1.60:	26:	7:	3:	9:	8.1:	2.4:	11.6:	32000/32000	0.20:	0.30:	4.00:	160/160:		0:	21:	79	67:	41:	30:	19:	5:	4:	KCL POLYMER:
910316:	3746:	1.60:	31:	9:	3:	10:	10.2:	2.6:	11.2:	31000/31000	0.30:	2.70:	4.00:	480/480:		0:	22:	78	80:	49:	37:	23:	4:	3:	KCL POLYMER:
910317:	3781:	1.60:	30:	7:	3:	10:	8.8:	2.6:	10.6:	30000/30000	0.10:	1.10:	4.20:	480/480:		0:	22:	78	75:	45:	36:	20:	4:	3:	KCL POLYMER:
910318:	3874:	1.60:	38:	6:	3:	11:	8.9:	2.3:	10.2:	28000/28000	0.20:	1.30:	4.40:	320/320:		0:	22:	78	89:	51:	38:	22:	5:	3:	DISPERSED

Daily mud properties

Date: 10/6-1991

System : BORE

Well: 34/8-4S
Mud Contractor: MI
Norsk Hydro
Data: "Mid depth" from table 3, otherwise from table 14.

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 Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out mg/l	Oil: %	Sol: %	H2O %	V.G. meter at 115 gr. F: 600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	Mud Type
910319	3917	1.60	27	7	3	10	9.1	2.1	9.8	29000/29000	0.20	1.60	4.40	700/700	0	22	78	69	42	33	21	4	3	DISPERSED
910320	4027	1.60	24	6	2	10	8.8	2.4	9.7	26000/26000	0.20	1.30	4.60	520/520	0	22	78	60	36	27	17	4	3	DISPERSED
910321	4043	1.60	24	7	2	10	8.8	2.4	10.0	26000/26000	0.20	1.30	4.60	540/540	0	21	79	62	38	28	28	4	3	DISPERSED
910322	4071	1.60	22	7	3	11	9.0	2.2	9.8	25000/25000	0.20	1.20	5.40	320/320	0	21	79	58	36	26	17	4	4	DISPERSED
910323	4114	1.60	23	7	3	13	9.2	2.2	9.8	24500/24500	0.30	1.20	5.40	320/320	0	21	79	61	38	29	19	5	4	DISPERSED
910324	4122	1.60	26	8	3	14	9.0	2.2	10.2	24000/24000	0.20	1.20	5.40	320/320	0	23	77	68	42	34	22	5	4	DISPERSED
910325	4149	1.60	23	7	3	15	9.5	2.3	9.7	23000/23000	0.30	1.40	6.10	240/240	0	21	79	61	38	30	20	5	5	DISPERSED
910326	4150	1.59	20	7	3	13	9.5	2.3	9.8	23000/23000	0.30	1.40	6.00	200/200	0	21	79	54	34	25	17	5	3	DISPERSED
910327	4150	1.59	22	6	3	15	9.1	2.2	8.8	23000/23000	0.30	1.40	6.00	240/240	0	22	78	57	35	27	19	5	4	DISPERSED
910328	4150	1.59	22	7	3	14	9.0	2.2	9.0	23000/23000	0.30	1.40	6.20	240/240	0	22	78	58	36	27	19	5	4	DISPERSED
910329	4150	1.59	21	9	4	15	8.8	2.2	9.2	24000/24000	0.20	1.20	5.80	200/200	0	22	78	60	39	29	20	6	5	DISPERSED
910330	4150	1.59	21	8	4	14	8.8	2.2	9.2	24000/24000	0.20	1.20	5.80	200/200	0	22	78	59	38	28	20	6	5	DISPERSED
910331	4150	1.59	20	6	3	14	9.1	2.2	9.4	23000/23000	0.30	1.30	5.80	200/200	0	22	78	52	32	25	17	4	3	DISPERSED
910401	4150	1.59	20	6	3	14	9.2	2.2	9.4	23000/23000	0.30	1.30	5.80	200/200	0	22	78	52	32	24	17	4	3	DISPERSED
910402	4150	1.59	20	7	3	11	9.3	2.3	9.6	23000/23000	0.40	1.40	5.40	200/200	0	22	78	54	34	25	16	5	4	DISPERSED
910403	3560	1.59	20	7	4	11	9.2	2.2	9.4	23000/23000	0.30	1.40	5.40	200/200	0	22	78	55	35	26	17	5	4	DISPERSED
910404	3560	1.70	21	7	4	13	8.9	2.3	9.8	24000/24000	0.20	1.00	5.80	240/240	0	24	76	56	35	27	19	7	5	DISPERSED
910405	3150	1.70	21	7	4	13	8.9	2.3	9.8	24000/24000	0.20	1.00	5.80	240/240	0	24	76	56	35	27	19	7	5	DISPERSED
910406	3258	1.70	20	6	4	15	9.8	2.3	10.0	23000/23000	0.80	1.00	6.00	320/320	0	24	76	53	33	23	15	5	4	DISPERSED
910407	3255	1.70	21	6	3	14	9.5	2.3	10.0	23000/23000	0.60	1.40	5.80	320/320	0	24	76	54	33	23	15	5	4	DISPERSED
910411	3255	1.70	20	6	2	10	9.8	2.6		23000/23000	0.50	1.70	5.80	240/240	0	24	76	52	32	23	17	5	4	DISPERSED
910412	3255	1.70	20	6	2	10	9.8	2.6		23000/23000	0.50	1.70	5.80	240/240	0	24	76	52	32	23	17	5	4	DISPERSED
910414	3255	1.70	20	6	2	10	9.8	2.6		23000/23000	0.50	1.70	5.80	240/240	0	24	76	52	32	23	17	5	4	DISPERSED
910415	3255	1.70	20	6	2	10	9.8	2.6		23000/23000	0.50	1.70	5.80	240/240	0	24	76	52	32	23	17	5	4	DISPERSED
910416	3255	1.70	20	6	2	10	9.8	2.8		23000/23000	0.20	2.00	5.80	240/240	0	24	76	52	32	21	15	3	2	DISPERSED
910418	3255	1.70	20	5	2	9	9.8	2.8		23000/23000	0.20	2.00	5.80	240/240	0	24	76	51	31	20	15	3	2	DISPERSED
910419	3255	1.71	24	6	2	13	10.0	3.2		23000/23000	0.10	2.00	4.00	240/240	0	25	75	61	37	27	17	4	3	DISPERSED
910420	3184	1.71	24	6	3	13	10.0	3.2		23000/23000	0.10	2.00	4.00	240/240	0	25	75	61	37	27	17	4	3	DISPERSED
910421	3184	1.70	25	8	3	13	9.8	3.2		22000/22000	0.10	1.80	4.20	240/240	0	24	76	66	41	31	19	5	4	DISPERSED
910422	3134	1.70	24	9	3	28	10.8	3.8		21000/21000	0.60	5.80	6.00	560/560	0	24	76	66	42	31	20	6	5	DISPERSED
910423	3134	1.70	29	12	4	19	10.8	4.0		20000/20000	0.60	5.20	4.50	160/160	0	24	76	83	54	42	28	8	7	DISPERSED
910424	3160	1.70	30	9	4	18	11.0	4.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910425	3160	1.70	30	9	4	18	11.0	1.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910426	3160	1.70	30	9	4	18	11.0	1.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910428	3160	1.70	30	9	4	18	11.0	1.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910429	3160	1.70	30	9	4	18	11.0	4.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910430	3160	1.70	30	9	4	18	11.0	4.0		23000/23000	0.50	4.80	3.60	540/540	0	24	76	79	49	39	27	8	6	DISPERSED
910502	3160	1.70	30	12	4	20	10.5	3.8		27000/27000	0.40	4.70	4.30	600/600	0	24	76	84	54	44	30	10	8	DISPERSED
910503	3160	1.70	30	12	4	20	10.5	3.8		27000/27000	0.40	4.70	4.30	600/600	0	24	76	85	55	43	28	8	6	DISPERSED
910505	3160	1.70	30	12	4	20	10.5	3.8		27000/27000	0.40	4.70	4.30	600/600	0	24	76	85	55	43	28	8	6	DISPERSED
910507	3160	1.70	28	10	4	18	10.5	3.8		27000/27000	0.40	4.70	4.30	600/600	0	24	76	76	48	36	23	7	6	DISPERSED
910508	3160	1.70	28	10	4	18	10.5	3.8		27000/27000	0.40	4.70	4.30	600/600	0	24	76	76	48	36	23	7	6	DISPERSED
910510	3160	1.70	29	14	7	21	10.6	3.8		30000/30000	0.10	2.70	4.80	680/680	0	24	76	88	59	48	34	11	9	DISPERSED

Daily mud properties

Date: 10/6-1991

System : BORE

Well: 34/8-4S

Mud Contractor: MI

Data: "Mid depth" from table 3, otherwise from table 14.

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 Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115 gr. F: 600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	Mud Type
910511	3160	1.70	29	14	6	20	10.6	3.8		30000/30000	0.10	2.70	4.80	680/680	0	24	76	87	58	48	32	10	9	DISPERSED
910512	3160	1.70	27	17	6	19	10.0	4.2		28000/28000	0.20	2.40	3.20	400/400	0	24	76	90	63	52	35	12	9	DISPERSED
910515	3160	1.70	27	17	6	19	10.0	4.2		28000/28000	0.20	2.40	3.20	400/400	0	24	76	90	63	52	35	12	9	DISPERSED
910516	3160	1.70	30	13	6	20	10.0	4.2		29000/29000	0.20	2.40	3.20	480/480	0	24	76	88	58	46	32	10	8	DISPERSED
910517	3057	1.70	27	12	5	18	10.0	4.8		29000/29000	0.20	1.70	3.80	920/920	0	24	76	78	51	39	28	9	7	DISPERSED
910518	3050	1.70	28	15	6	19	10.0	4.8		29000/29000	0.20	2.00	3.80	800/800	0	24	76	87	59	41	30	10	8	DISPERSED
910519	3050	1.73	31	18	8	26	10.6	5.2		29000/29000	0.40	3.30	6.80	800/800	0	25	75	100	69	56	39	13	11	DISPERSED
910520	3050	1.73	29	19	8	24	9.8	6.4		29000/29000	0.30	3.80	6.80	720/720	0	25	75	98	69	56	39	12	10	DISPERSED
910521	3050	1.73	32	19	10	27	10.0	9.0		29000/29000	0.40	3.00	5.80	600/600	0	25	75	103	71	58	42	14	11	DISPERSED
910527	3050	1.73	31	18	10	27	10.0	9.0		29000/29000	0.40	3.00	5.80	600/600	0	25	75	99	68	56	42	15	11	DISPERSED
910528	3050	1.73	30	17	9	27	9.4	7.4		29000/29000	0.30	3.00	5.60	760/760	0	25	75	96	66	54	40	15	11	DISPERSED
910529	3050	1.70	30	17	10	2	10.0	7.4		29000/29000	0.30	3.00	5.80	860/860	0	24	76	96	66	55	41	16	12	DISPERSED
910604	2945	1.70	30	17	10	27	10.0	7.4		29000/29000	0.30	3.00	5.80	860/860	0	24	76	96	66	55	41	16	12	DISPERSED
910605	2945	1.70	29	13	7	25	9.6	7.0		29000/29000	0.20	2.60	5.20	860/860	0	24	76	86	57	46	33	13	10	DISPERSED
910606	2835	1.70	32	20	10	29	10.6	7.0		29000/29000	0.40	3.40	6.20	860/860	0	24	76	105	73	59	42	14	11	DISPERSED
910607	500	1.00	1	1																				WATER
910608	500	1.00	1	1																				WATER

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HYDRO

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Summary/Conclusion//Recommendation

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HYDRO

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HYDRO

1 OBJECTIVES

The objectives of this study have been to analyse oils(4) and gases(3) from 34/8-4S (see location map, Fig. 1.1) and compare these individually. These samples have identifications:

Test No.	Depth Test Intervals (m MD RKB)	Petroleum analysed
DST 1	3219 - 3241	oil & gas
DST 2A	3133 - 3143	oil
DST 3	3001 - 3018	oil & gas
DST 4	2903 - 2917	oil & gas

In addition, the provided oils and gases are correlated with oils and gases from wells 34/8-1, 34/8-3 and 3A which are analysed and reported by Dahl et al (1989). In this study these oils and gases were analysed:

Well	Test No.	Depth Test Intervals (m MD RKB)	Petroleum analysed
34/8-1	DST 2	2854.1-2857.1	oil & gas
34/8-1	DST 3	2767.9-2806.9	gas
34/8-3	DST 1	2935-2947	oil & gas
34/8-3	DST 2	2905-2921	gas
34/8-3	DST 3	2868-2880	gas

The oil from 34/8-3A, DST 1A (3087-3093m) was not analysed during the "1989-study", but have been analysed in conjunction with this study. No gas seems to have been available for analysis from well 34/8-3A.

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Analyses performed on oil samples are listed in Table 1.1.

Maturity profiles have been established for well 34/8-4S using vitrinite reflectance and colouration of spores and pollen.

Gas analyses (molecular and stable carbon isotope compositions) have been carried out by "Institutt for energiteknikk", Kjeller , Norway (Table 6.1 and 6.2). Vitrinite reflectance have been performed by GeoOptics, Newcastle, UK (Table 7.1) and the Spore Colouration and kerogen compositons by Robertson Research Group, Landudno, UK (Table 7.2).

HYDRO

LIST OF ABBREVIATIONS AND TERMS

Kerogen

Insoluble organic matter which is preserved in sedimentary rocks. Under the increasing influence of temperature and time (maturation), most kerogen produce hydrocarbons.

TOC

Total Organic Carbon: a measure of the organic carbon in a rock expressed as weight per cent. Used as a fundamental parameter in source rock classification.

RockEval

A commercial technique for the anhydrous pyrolysis of source rocks developed by IFP. It enables the chemical composition of kerogen and hence its hydrocarbon potential to be determined.

S_1

This is a measure of the already generated oil in source rocks or oil content in a reservoir. In units of kg/t rock.

S_2

This is a measure of the remaining hydrocarbon potential. In units of kg/t rock.

Tmax

The temperature in ^0C at which the pyrolytic yield of hydrocarbons from a rock sample reaches its maximum using RockEval.

Hydrogen Index (HI)

A parameter derived from RockEval which measures the hydrogen richness of kerogen. $HI = 100*S_2/TOC$. It has a direct relationship with the H/C ratio and is measured in mg of hydrocarbons/g TOC

Production Index (PI)

A maturity parameter derived from RockEval which is the ratio of already generated hydrocarbons (or migrated hydrocarbons) to potential hydrocarbons. $PI = S_1/S_1 + S_2$

Immature samples have values of 0.1 or less, mature samples 0.1 to 0.4. The PI is high in reservoirs.

Maturation

The process of chemical change in sedimentary organic matter induced by increasing time and temperature. These chemical reactions produce oil and hydrocarbon gases from the appropriate organic matter. The major maturity subdivisons are:

-immature
-early mature
-peak mature
-late mature
-post mature

Vitrinite

The type of organic matter derived from the lignified tissues of higher land plants.

Vitrinite reflectance

A maturity parameter based on the change in the reflectance of polished vitrinite particles with increasing time and temperature. Widely used values for maturity zones are:

<0.55 %, immature
0.55-1.3 %, mature for oil generation
>1.3 %, post mature for oil generation
0.7-3.0 %, mature for gas generation

EOM (Extractable Organic Matter)

Oil and oil-like products removed from rock samples using organic solvents. The amount of extract may be used to determine the level of maturation.

Saturated Hydrocarbons

Hydrocarbons which contain only carbon-carbon single bonds (alkanes).

Aromatic hydrocarbons

Unsaturated hydrocarbons and containing one or more rings with conjugated carbon-carbon double and single bonds.

NSO compounds

Fraction of oils or extracts containing heteroatoms like sulphur, oxygen and nitrogen.

Asphaltenes

The heavy molecular weight components of crude oils and sediment extracts which is soluble in CS_2 and insoluble in n-pentane.

n-C_{17}

n-alkane with 17 carbon atoms

n-alkane carbon number maximum

n-C_{17} maximum indicates algal input

n-C_{16} to n-C_{24} indicates bacterial input

n-C_{27}, n-C_{29}, n-C_{31} indicates higher plant input

Isoprenoids

Isoprenoids are branched and/or cyclic hydrocarbons built from multiples of the isoprene unit and are dominantly derived from plant and bacterial sources.

Pristane

C_{19} regular acyclic isoprenoid derived from the side chain of chlorophyll.

Phytane

C_{20} regular acyclic isoprenoid derived mainly from the side chain in chlorophyll. but have also been found in methanogenic bacteria and archaebacteria.

Pristane/phytane ratio

>3 = oxic conditions

<0.5 = anoxic conditions

The ratio may be affected by many factors

CPI (Carbon Preference Index)

The ratio of abundance of odd carbon number n-alkanes to even number n-alkanes. The preference decreases with increasing maturity until CPI = 1.0.

CPI $>$ 1.1 means oil or extract is of low maturity.

CPI $<$ 1.0 in carbonate source rocks.

Biodegradation

Degradation of oils by bacteria. Normal alkanes are generally the first to be attacked and removed.

GC-MS (Gas chromatography-mass spectrometry)

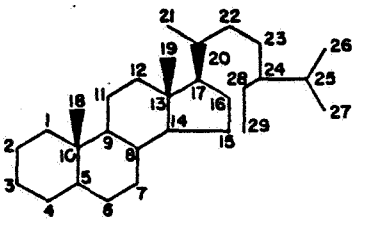
Method for identification of constituents in complex mixtures or for analysis of trace components using Single Ion Monitoring (SIM).

Biomarkers

Compounds found in petroleum or rock extracts which indicate an unambiguous link with a natural product.

Steranes

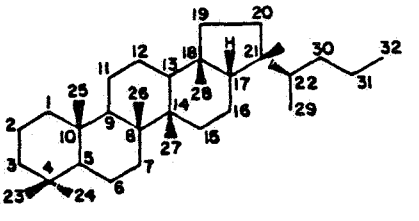
The alkanes derived from steroid natural products. Monitored by GC-MS of M/z 217 and 218.



Sterane

Triterpanes

C_{27} to C_{35} five ring cyclic alkanes derived from triterpenoid hydrocarbons in bacteria, fungi, algae and higher plants. Monitored by GC-MS of M/z 191.



Pentacyclic triterpane

Hopanes

C_{27} to C_{35} pentacyclic alkanes which dominate the triterpanes found in sediments and crude oils. They originate from bacteria.

M/z, m/e

The mass to charge ratio of fragment of molecules from GC-MS.

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TABLE 1.1

Samples and Analyses 34/8* – Oils

Table 1.1

Analysed Oils 34/8*

Well	Test #	Dyp m	Deasph.	MPLC	Iatro 1991	GC WO	GC SAT	GC ARO	MSD SAT	Isotop	Date of Analyses
34/8-4S	1	3219-41	X	X	X	X	X	X	X	O	1991
" "	2A	3133-43	X	X	X	X	X	X	X	O	1991
" "	3	3001-18	X	X	X	X	X	X	X	O	1991
" "	4	2903-17	X	X	X	X	X	X	X	O	1991
34/8-1	2	2854.1-- 57.1	X	X	X	X	X	X	X	O	1989
34/8-3	1	2935-47	X	X	X	X	X	X	X	O	1989
34/8-3A	1A	3087-93	X	X	X	X	X	X	X	O	1991

X= Norsk Hydro Research Center, Bergen, Norway

O= Geolab Nor A/S, Trondheim, Norway

TABLE 2.1

Iatroscan Grouptype Separation 34/8*

Table 2.1

IATROSCAN GROUPTYPE SEPARATION 34/8*

SAMPLE	DEPTH m	% SAT	% ARO	% NSO	% ASPH
34/8-1 #2	2854.1-57.1	54.5	38	7.5	
34/8-3 #1	2935-47	58.0	36	6.0	0.2
34/8-3A #1A	3087-93	56.0	39	5.0	0.2
34/8-4S #4	2903-17	69.0	27	4.0	
34/8-4S #3	3001-18	67.0	29	3.5	
34/8-4S #2A	3133-43	68.0	28	3.5	
34/8-4S #1	3219-41	74.5	24	2.5	

TABLE 3.1

Molecular Ratios from Chromatograms
of Saturated Fractions 34/8*

Table 3.1

MOLECULAR RATIOS FROM CHROMATOGRAMS OF THE SATURATED FRACTIONS 34/8-OILS

WELL	SAMPLE TYPE	TEST	DEPTH m	PRISTAN/ n-C17	PRISTAN/ PHYTAN	CP1	CP2 (Philippi)
34/8-1	OIL	#2	2854.1-57.1	0.62	1.6	1.10	1.00
34/8-3	OIL	#1	2935-47	0.52	1.6	1.10	1.00
34/8-3A	OIL	#1A	3087-93	0.50	1.6	1.00	1.00
34/8-4S	OIL	#4	2903-17	0.73	1.6	1.05	0.90
34/8-4S	OIL	#3	3001-18	0.70	1.7	1.05	0.95
34/8-4S	OIL	#2A	3133-43	0.67	1.7	1.05	0.90
34/8-4S	OIL	#1	3219-41	0.66	1.7	1.05	0.95

TABLE 4.1

Selected Biomarker Parameters 34/8*

Table 4.1

TRITERPANE ISOMERISATION WELLS 34/8*

WELL	SAMPLE TYPE	TEST	DEPTH m	Ts/TM	NOR/ NOR+HOP	BNOR/ BNOR+NOR	MORETAN/ HOPAN	% 22S BISHOMOHOP
34/8-1	OIL	#2	2854.1-57.1	3.1	0.29	0.23	0.12	59
34/8-3	OIL	#1	2935-47	3.3	0.27	0.19	0.10	60
34/8-3A	OIL	#1A	3087-93	3.0	0.25	0.21	0.12	61
34/8-4S	OIL	#4	2903-17	2.4	0.27	0.33	0.12	60
34/8-4S	OIL	#3	3001-18	3.5	0.26	0.31	0.11	61
34/8-4S	OIL	#2A	3133-43	3.4	0.27	0.29	0.12	61
34/8-4S	OIL	#1	3219-41	3.2	0.27	0.27	0.13	61

STERANE ISOMERISATION WELLS 34/8*

WELL	SAMPLE TYPE	TEST	DEPTH m	C-29 20S % aaa	C-29 20S+R % abb
34/8-1	OIL EX	#2	2854.1-57.1	51	63
34/8-3	OIL	#1	2935-47	48	61
34/8-3A	OIL	#1A	3087-93	55	58
34/8-4S	OIL	#4	2903.17	57	60
34/8-4S	OIL	#3	3001-18	58	59
34/8-4S	OIL	#2A	3133-43	57	59
34/8-4S	OIL	#1	3219-41	58	59

TABLE 5.1

Stable Carbon Isotope Data of
Analysed Oils 34/8*

Table 5.1

STABLE CARBON ISOTOPE DATA FOR OILS AND FRACTIONS 34/8*

SAMPLE	DEPTH m	WHOLE OIL 13C	SATURATES 13C	AROMATICS 13C	NSO-COMP. 13C	ASPHALTENES 13C	DEASPH. OIL 13C
34/8-1 #2	2854.1-57.1	-29.12	-29.50	-28.65	-28.24	-28.74	-29.1
34/8-3 #1	2935.0-47.0	-28.85	-29.17	-28.38	-28.16	-28.21	-28.6
34/8-3A #1A	3087-93	-28.75	-29.13	-28.06	-27.13	-27.04	
34/8-4S #4	2903-17	-28.69	-28.89	-26.83			
34/8-4S #3	3001-18	-29.08	-29.34	-27.96			
34/8-4S #2A	3133-43	-28.96	-29.26	-27.86			
34/8-4S #1	3219-41	-28.73	-29.27	-27.75			

TABLE 6.1

Molecular Composition of Natural Gases

34/8–1, 34/8–3 and 34/8–4S

Table 6.1

Molecular composition of natural gases, 34/8-1 and 34/8-3

Sample	Depth		Methane C_1 %	Ethane C_2 %	Propane C_3 %	Butane		C_2 + $100-C_1$	$\frac{iC_4}{nC_4}$	$\frac{C_1}{C_{2+}}$	ΣC_1-C_4 %	Wetness	CO_2 %
						iC_4 %	nC_4 %						
34/8-1, #2	2854.1-57.1		88.4	5.8	2.9	0.45	0.95	11.6	0.47	8.75	98.6	0.10	1.4
34/8-1, #3	2767.9-2806.9		89.4	5.3	2.7	0.40	0.95	10.6	0.42	9.56	98.7	0.09	1.3
34/8-3, #1	2935.0-47.0		85.7	7.9	2.7	0.41	0.89	14.3	0.46	7.20	98.0	0.12	2.0
34/8-3, #2	2905.0-21.0		89.0	5.5	2.5	0.41	0.93	11.0	0.44	9.52	98.8	0.10	1.2
34/8-3, #3	2868.0-80.0		87.1	6.8	2.4	0.38	0.89	12.9	0.43	8.32	98.0	0.11	2.0

Molecular composition of natural gases, 34/8-4S

Sample	Depth		Methane C_1 %	Ethane C_2 %	Propane C_3 %	Butane		Heptane		C_2 + $100-C_1$	ΣC_1-C_4 %	$\frac{iC_4}{nC_4}$	Wetness	CO_2 %
						iC_4 %	nC_4 %	iC_5 %	nC_5 %					
34/8-4S,#1	3219-41		78.1	9.7	6.6	0.94	2.0	0.43	0.53	21.9	97.4	0.46	0.21	1.6
34/8-4S,#3	3001-18		74.6	10.8	7.9	1.2	2.6	0.51	0.65	25.4	97.1	0.45	0.24	1.7
34/8-4S,#4	2903-17		83.2	7.2	4.6	0.72	1.6	0.40	0.53	16.8	97.3	0.44	0.15	1.8

TABLE 6.2

Stable Isotope Composition of Natural Gases

34/8–1, 34/8–3 and 34/8–4S

Table 6.2

Stable Isotope composition of natural gases, 34/8

Sample	Depth	Formation	Methane	Ethane	Propane	Butane		D	CO_2	
			δo/oo	δo/oo	δo/oo	δo/oo iC_4	δo/oo nC_4	δo/oo	δo/oo ^{13}C	δo/oo ^{18}O
34/8-1, #2	2854.1-57.1		-39.2	-30.5	-29.0	-29.1	-29.2	-170	-14.0	-12.7
34/8-1, #3	2767.9-2806.9		-41.5	-30.7	-29.4	-29.1	-29.2	-160	-14.8	-13.9
34/8-3, #1	2935.0-47.0		-39.4	-30.3	-28.0	-22.9	-25.6	-158	- 9.4	- 9.8
34/8-3, #2	2905.0-21.0		-39.5	-30.1	-28.0	-25.9	-25.8	-169	-14.9	-10.8
34/8-3, #3	2868.0-80.0		-39.5	-30.2	-28.3	-24.6	-26.2	-167	- 8.2	-12.0
34/8-4S,#1	3219-41		-43.2	-29.0	-24.3	-28.4	-27.8	-177	-18.8	- 4.7
34/8-4S,#3	3001-18		-43.4	-30.7	-27.9	-28.4	-26.4	-175	-16.6	- 9.7
34/8-4S,#4	2903-17		-40.9	-31.0	-28.5	-28.4	-29.4	-164	-16.1	-10.3

TABLE 7.1

Average Vitrinite Reflectance 34/8–4S

Table 7.1 **VITRINITE REFLECTANCE DATA WELL 34/8-4S**
Average values

Petroleum Geochemistry Group
Research Centre Bergen
HYDRO

Depth	Group/Fm.	%	Lithology	Type	Population I	Population II	Population III	SCI
1180.00		100	CALC.CLYST	DC	0.28 (20)			
1280.00		100	CALC.CLYST	DC	0.32 (23)			
1380.00		100	CALC.CLYST	DC	0.37 (20)			
1480.00		100	SH	DC	0.41 (6)			
1580.00		100	SH	DC	0.40 (3)			
1680.00		100	SH	DC	0.54 (4)			
1775.00		100	SH	DC	0.50 (7)			
1865.00		100	SLTY.SH	DC	0.46 (4)			
1980.00		80	SST	DC	0.39 (2)			
2085.00		100	SH	DC	0.00			
2170.00		100	SH	DC	0.36 (4)			
2280.00		70	SH	DC	0.42 (4)			
2380.00		100	SH	DC	0.44 (3)			
2480.00		100	SLTY.SH	DC	0.44 (8)			
2580.00		100	SLTY.SH	DC	0.39 (20)			
2690.00		100	SH	DC	0.41 (3)			
2795.00		90	SST	DC	0.46 (1)			
2890.00		100	SH	DC	0.45 (14)			

Table 7.1 **VITRINITE REFLECTANCE DATA WELL 34/8-4S** (cont'd)
Average values

Depth	Group/Fm.	%	Lithology	Type	Population I	Population II	Population III	SCI
2990.00		90	SST	DC	0.47 (1)			
3080.00		100	SLTY.SST	DC	0.00			
3232.00		90	SST	DC	0.50 (2)			
3325.00		80	SST	DC	0.00			
3442.00		80	SST	DC	0.47 (5)			
3540.00		100	SST	DC	0.45 (2)			
3627.00		100	SST	DC	0.00			
3730.00		50	SST	DC	0.30 (5)			
3780.00		90	SST	DC	0.37 (21)			
3800.00		90	SST	DC	1.06 (1)			
3915.00		50	SST	DC	0.00			
4015.00		100	SST	DC	1.03 (5)			
4120.00		100	SST	DC	0.64 (1)			

TABLE 7.2

Spore Colouration Index and
Kerogen Typing, 34/8–4S

Table 7.2

SPORECOLOURATION INDEX AND KEROGENTYPING
WELL 34/8-4S

DEPTH m	SAMPLE TYPE	SCI (1-10)	PALYNS/ CUTCLE	VITRINITE (STRUCT.)	INTERTINITE	AMPRH. (HUMIC)	AMORPH. (LIPTINITE)
1170.0	DC	2.50	5	10		85	
1270.0	DC	2.50	5	10		85	
1370.0	DC	2.75	5	15		80	
1470.0	DC	3.00		15	5	80	
1570.0	DC	3.00	5	30	15	50	
1670.0	DC	3.00	10	30	10	50	
1770.0	DC	3.00	5	10	5	80	
1860.0	DC	2.75	25	10	15	50	
1975.0	DC	3.00		20	60	20	
2080.0	DC	3.50	5	10	70	10	5
2175.0	DC	3.00		10	80	10	
2253.5	SWC	3.00		5	95		
2305.5	SWC	2.75	15		65		20
2441.5	SWC	3.00	20	10	40		30
2581.0	SWC	3.50	30	10	30		30
2633.5	SWC	3.50	30	10	30		30
2734.5	SWC	3.50	10	10	40	30	10
2797.0	SWC	3.50	20	10	30	20	20
2895.0	DC	3.50	5	5	80	10	
3015.6	COCH						
3110.2	COCH						
3203.5	COCH						ADDITIVE
3304.5	COCH						ADDITIVE
3403.2	COCH						
3484.3	COCH	6.00	10	20			
3701.0	SWC	8.00					ADDITIVE
3805.2	SWC						ADDITIVE
3908.0	SWC	8.00		20			
4150.0	DC						ADDITIVE