

6.3. Mud report

36" Hole Section.

A 17 1/2" pilot hole was drilled using seawater and viscous slugs on connections. The hole was then opened to 36" and displaced to high viscous mud. A wiper trip was made and the hole displaced to 1.25 rd. high viscous mud. The 30" casing was run without any problems.

Material used in this section was: Barite, Bentonite, Soda Ash, Caustic Soda, Lime and WO21.

26" Hole Section.

The 30" casing was drilled using seawater. The hole was then displaced to mud and the 17 1/2" pilot hole drilled to total depth dumping the sand trap on every connections. The 17 1/2" hole was underreamed to 26" using the same mud. The hole was opened from 579 m to 666 m using 26" bit after the riser was pulled. The hole was then displaced to 1.2 rd. viscous mud and the 20" casing run and cemented.

Material used in this section was: Barite, Bentonite, Caustic Soda, Soda Ash, WO21 and Drilling Detergent.

17 1/2" Hole Section.

The 20" casing shoe was drilled using seawater. The hole was then displaced to a KCL/polymer system with 30 ppb KCl concentration. The KCl concentration was increased to 35 ppb due to tight hole and Drispac SL was added, during drilling of the 17 1/2" hole. The mudweight was increased from 1.15 rd. to 1.20 rd. during the drilling due to increase in pore pressure. the logs were run and the 13 3/8" casing landed and cemented without problems.

Material used in this section was: Barite, Gel, Milpolymer 302, Drispac Reg., Permalose, KOH, KCl, Bicarbonate, KCl Brine, Macolube, Drispac S/L.

12 1/4" Hole Section.

The 13 3/8" casing was drilled out after the mudweight was increased to 1.27 rd. The 12 1/4" hole was drilled using the same mud as above except that the KCl concentration was lowered to 30 ppb. Due to differential stuck pipe the mudweight was lowered to 1.20 r. at 1711 m. The logs at total depth of the well was run without any hole problems.

Material used in this section was: Barite, Bentonite, Caustic Soda, Drispac Reg., Drispac S/L, KCl, Permalose, KOH, Maggolube, Milpolymer.



TABLE 3-5

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO A/S LEGAL DESCRIPTION _____
 Well Name _____
 Rig No. TREASURE SCOUT And No. 7120/12-4 Field NORTH SEA COUNTRY NORWAY
 Promud a/s HAMMERFEST Spud Date 18/2/84 No. Drilling Days To T.D. _____ DATE T.D. REACHED 12/4/84 TOTAL DEPTH 2200 m TOTAL COST \$ 355,586.51

DATE (1984)	TIME	DEPTH meters	WT. (ppg)	FV API#	PV cp @	YIELD POINT (lb/100ft ³)	GELS (lb/100ft ³) 0/10	pH	FILTRATE (ml/30 min)			Coke (3rd in)	Alkalinity		Chloride (ppm)	Calcium (ppm)	Sand (% by Vol.)	Solids (% by Vol.)	Oil (% by Vol.)	Water (% by Vol.)	Methy. Blue (mg/ml mud)	KC1 ppb	Circ. Volume (bbl)	REMARKS
									API	HT-HP	°F		P _m	P _f / M _f										
18/2	2200	0	1.04	110	18	25	7/17	9.0																Spud.
19/2	2100	240	1.04	115	14	22	6/14	"																Pilot ahead.
20/2	2200	225	1.04	127	21	28	8/19	"																Open hole to 914 m.
21/2	2100	236	1.06	130	22	30	9/22	"																
22/2	2000	237	1.06	80	14	15	7/12	"																Run casing. 762 mm.
23/2	2200	370	1.08	58	8	16	7/10	"																Drill 660 mm hole.
24/2	2100	600	1.12	57	10	17.5	8/14	"																"
25/2	1300	665	1.12	60	12	17	8/14	"																"
26/2	2200	445	1.11	55	9	14	5/11	"																"
27/2	2200	533	1.11	65	12	15.5	7/10	"																"
28/2	1300	594	1.11	60	10	14	5/9	"																"
29/2	1600	666	1.2	88	15	26																		"
1/3																								"
2/3	2400																							Run BOP + riser.
3/3	2400	666	1.06	55	8	15	4/5	10	15		1	.4	2/7	40000	40	-	3.5	96.5		30	210		Test BOP.	
4/3	2400	692	1.15	44	9	16	5/6	10.8	7		1	1.0	6/1.0	35000	140	.2	8	92		26	206		Drilling 17 1/2" hole.	
5/3	2400	716	1.15	48	13	16	3/4	10.5	6.4		1	.8	4/7	46000	100	.5	6	94		27	244		Fishing for junk.	
6/3	2400	867	1.16	49	12	15	3/4	10	6.6		1	.3	15/3	48000	100	3/4	7	93		29	262		Drilling 17 1/2" hole.	
7/3	2400	994	1.16	48	12	15	3/4	10	8		1	.35	15/3	58000	80	3/4	7	93		30.5	292		Drilling 17 1/2" hole.	
8/3	2400	1114	1.16	50	13	17	4/6	10	6.8		1	.4	5/3	60000	100	1	8	92		36	289		Drilling 17 1/2" hole.	
9/3	2400	1199	1.20	48	14	15	4/5	10	6.9		1	.4	15/4	60000	80	1	9	91		35	321		Drig. 17 1/2" hole. Logging.	
10/3	2400	1199	1.20	50	14	16	3/4	10	7.0		1	.4	2/4	60000	80	1	9	91	10	35	321		Run casing.	
11/3	2400	1199	1.20	50	14	15.5	2/4	10	7.5		1	.4	2/4	60000	180	1	9	91	10		123		Run casing.	
12/3	2400	1230	1.27	44	15	10	2/3	10	8.7		1	.6	5/8	60000	400	.75	10	90	10		261		Drill out cement.	
13/3	2400	1314	1.27	48	15	12.5	3/4	10	9.5	250	22	1	.4	2/4	55000	280	.75	10	90	10	30	260		Drill ahead. Raise mw.
14/3	2400	1448	1.27	50	19	14	4/6	10	7.5	250	18	1	.4	2/4	55000	280	.75	10	90	15	30	255		Drilling 12 1/4" hole.
15/3	2400	1449	1.27	50	18	15	4/6	9.5	8	250	19	1	.4	2/4	58000	190	.75	10	90	10	31	266		Fishing for cones.
16/3	2400	1475	1.27	45	15	10	2/4	10	7	250	19	1	.4	2/4	54000	400	.75	10	90	15	28	269		Drilling 12 1/4" hole.

Promud a/s _____
 Date 16/3/84 Technical Representative Carter District North Sea Region Norway PAGE 1 OF 2

TABLE B-5

DRILLING MUD RECAP



Contractor WILHELMSEN OPERATOR NORSK HYDRO A/S LEGAL DESCRIPTION _____

Rig No. TREASURE SCOUT Well Name And No. 7120/12-4 Field NORTH SEA COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 18/2/84 No. Drilling Days To T.D. _____ DATE T.D. REACHED _____ TOTAL DEPTH _____ TOTAL COST \$ _____

DATE (1984)	TIME	DEPTH meters	WT (ppg)	FV API	PV cp	YIELD POINT (lb/100ft ²)	GELS (lb/100ft ²) 0/10	PH	FILTRATE (ml/30 min)			Coke (32wt in)	Alkalinity		Chloride (ppm)	Calcium (ppm)	Sand (% by Vol.)	Solids (% by Vol.)	Oil (% by Vol.)	Water (% by Vol.)	Methy. Blue (mg/ml mud)	KCl ppb	Circ. Volume (bbl)	REMARKS
									API	HT-HP	°F		P _m	P _i / M _t										
17/3	2400	1527	1.27	44	13	11	2/4	10	7.0	19	250	1	.6	2/.5	56000	460	.75	10	90	10	31	273	Coring.	
18/3	2400	1615	1.27	44	17	11	2/4	10	7.0	18	250	1	.4	2/.4	55000	280	.75	10	90	10	29	252	Drilling.	
19/3	0900	1654	1.27	44	13	12	2/4	10	7.0	18	250	1	.4	.23/.5	53000	280	.75	10	90	10	28	262	Test BOPs.	
20/3	2400	1680	1.27	43	13	9	2/4	10	7.5	20	250	1	.8	4/7	55000	120	.75	10	90	10	30	272	RIH with bit.	
21/3	2400	1711	1.20	45	14	12	3/4	10	6.5	19	250	1	.6	4/6	52000	250	.75	10	90	10	26	290	Ream to bottom.	
22/3	2400	1730	1.20	44	14	11.5	2/5	10	5.5	18	250	1	.6	.5/8	55000	160	.75	9	91	10	30	300	RIH with turbine.	
23/3	2400	1771	1.20	46	17	12	3/7	10	5.5	18	250	1	.6	3/.5	54000	150	.5	9	91	10	29	285	Drill ahead.	
24/3	2400	1814	1.20	49	18	13.5	3/7	10	5.5	18	250	1	.7	.41/.6	54000	150	.5	9	91	10	29	281	Drill 12 1/4" hole.	
25/3	2400	1859	1.20	48	17	12.5	2/5	10	5.5	17	250	1	.7	.41/.6	55000	140	.5	8	92	10	30	291	Drill 12 1/4" hole.	
26/3	2400	1873	1.20	46	16	13.5	2.5/5	10	5.0	18	250	1	.7	.51/.8	55000	140	.5	8	92	10	30	296	Work on stock.	
27/3	2400	1873	1.20	44	15	11	2.5/4.5	10	5.5	18	250	1	.6	.31/.5	53000	140	.5	8	92	10	29	296	Work on stock.	
28/3	2400	1873	1.20	46	15	12	3/6	10	5.5	18	250	1	.6	.36/.6	53000	140	.5	8	92	10	30	296	WOW.	
29/3	2400	1873	1.20	48	17	13	3/6	10	5.5	18	250	1	.6	.21/.4	54000	160	.5	8	92	10	30	296	Run and test BOP.	
30/3	2400	1886	1.20	48	17	14	2.5/4.5	10	6.0	18	250	1	.7	.36/.7	52000	200	.5	8	92	10	29	299	Drilling.	
31/3	2400	1886	1.20	48	16	12.5	2/5	10	5.6	20	250	1	.7	.32/.7	52000	120	.5	8	92	10	29	302	Fishing for bit.	
1/4	2400	1895	1.20	48	16	12	2/5	10	5.2	19	250	1	.7	3/.6	53000	200	.5	8	92	10	29	289	Drilling.	
2/4	2400	1933	1.20	47	17	12	2.5/5	10	5.2	19	250	1	.7	3/.6	56000	180	.5	8	92	10	31	303	"	
3/4	2400	1958	1.20	47	18	13	2.5/5	10	5.1	20	250	1	.7	4/.7	56000	160	.5	8	92	10	31	292	"	
4/4	2400	1974	1.20	46	17	12	2/4	10	5.4	18	250	1	.7	3/.6	53000	100	.5	9	91	10	30	306	"	
5/4	2400	2004	1.20	45	18	13	2.5/5	10.2	5.4	18	250	1	.7	.25/.6	55000	150	.5	8	92	10	31	323	"	
6/4	2400	2015	1.20	50	14	15	3/7	10	5.6	18	250	1	.64	3/.6	55 K	140	.5	10	90	10	31	322	"	
7/4	2400	2066	1.20	50	15	14	3/6	9.6	6.0	18.2	250	1	.7	2/.5	54 K	110	.5	10	90	10	30	320	"	
8/4	2400	2102	1.20	50	15	14	3/5	10	6.0	18	250	1	.62	.22/.5	55 K	100	.5	10	90	12	30	322	"	
9/4	2400	2154	1.20	50	14	14	2.5/6.5	10	5.8	18.2	250	1	.8	2/.6	55 K	110	.5	10	90	12	30	338	"	
10/4	2400	2182	1.20	50	14	15	3/6	10	5.6	18.2	250	1	.56	.24/.4	55 K	110	.5	10	90	12	30	325	Drig.-Work on drawwork.	
11/4	2400	2182	1.20	50	12.5	13	2/3	9.8	5.6	18	250	1	.6	2/.5	55 K	120	.5	10	90	12	30	315	"	
12/4	2400	2200	1.20	50	13	13	2/4	"	5.0	18	250	1	.66	.22/.6	54 K	140	.5	10	90	10	ANN.	303	TD. Drilling.	
14/4	1800	2200	1.20	50	13	14.5	2.5/4	10	5.6	18.2	250	1	.7	.8/.6	54 K	160	.5	10	90	10	29		TD. P/A.	

Date 14/4/84. Promud a/s Technical Representative Carter. District Tromsøflaket. Region North Sea. PAGE 2 OF 2

PROMUD A/S. SANDNES

TABLE B-6

Mud material consumption

Material	Quantity	Unit/Weight
Barite	327	MT
Bentonite	65,5	MT
Lime	50	SXS
Caustic Soda	282	SXS
Soda Ash	23	SXS
Gypsum	336	SXS
WO 21	16	SXS
Milpolymer 301	364	SXS
Drispac SL	182	SXS
Drispac Reg.	10	SXS
Mud Detergent	2	drums
Al. Stearate	1	SXS

Note: The quantities of mud materials given above do not include any losses, nor do they account for any inaccuracy in weight measurements.

Geochemical Report for Well NOCS 7120/12-4

Authors:

Malvin Bjorøy
Ian L. Ferriday

Geolab Nor A/S
Hornebergveien 5
7038 Trondheim
Norway

Date :

16.03.92

BA-94-550-1

1.2 Analytical Program

A total of 268 cuttings and core-chip samples formed the basis for the analytical program.

<u>Analysis type</u>	<u>No of samples</u>	<u>Figures</u>	<u>Tables</u>
Lithology description	268	1	1
TOC - total organic carbon	47	1	1,2
Rock-Eval pyrolysis	47	2-4	2
Thermal extraction GC (GHM, S ₁)	16	5a-b	
Pyrolysis GC (GHM, S ₂)	16	6a-f, 7	3
Solvent Extraction	6		
MPLC separation and asphaltene precipitation	6		4a-e
Saturated hydrocarbon GC	6	8a-b	5
Aromatic hydrocarbon GC	9	9a-c	6
Vitrinite reflectance	9	10	7
Visual kerogen microscopy	7	11	7,8
Isotope composition of EOM and C ₁₅ + fractions	1	12,13	9a-b
GC - MS of saturated and aromatic fractions	1	14a-c	10a-i

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
240.00						0001
				100 Cont : cem, prp		0001-1L
				tr S/Sst : w, crs, l		0001-2L
				tr Sh/Clst: dsk brn		0001-3L
260.00						0002
				100 S/Sst : lt gy to m gy to drk gy, crs, l		0002-1L
280.00						0003
				90 S/Sst : lt gy to m gy to drk gy, crs, l		0003-1L
				10 Cont : dd		0003-2L
300.00						0004
				95 S/Sst : lt gy to m gy to drk gy, crs, l,		0004-1L
				f, kln		
				5 Cont : dd, prp		0004-2L
320.00						0005
				100 S/Sst : lt gy to m gy to drk gy, crs, l,		0005-1L
				f, kln		
				tr Cont : dd, prp		0005-2L
340.00						0006
				85 S/Sst : lt gy to m gy to drk gy, crs, l,		0006-1L
				f, kln		
				15 Cont : dd, prp		0006-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
360.00						0007
				90 S/Sst	: lt gy to m gy to drk gy, crs, l	0007-1L
				10 Cont	: dd	0007-2L
380.00						0008
				90 S/Sst	: lt gy to m gy to drk gy, crs, l	0008-1L
				10 Cont	: dd, prp	0008-2L
400.00						0009
				90 S/Sst	: lt gy to m gy to drk gy, crs, l	0009-1L
				10 Cont	: dd, prp	0009-2L
425.00						0010
				90 S/Sst	: w to lt gy, crs, l	0010-1L
				5 Sh/Clst	: lt gy to lt brn gy	0010-2L
				5 Cont	: prp	0010-3L
440.00						0011
				90 S/Sst	: w to lt gy, crs, l, f, kln	0011-1L
				10 Sh/Clst	: m y brn to pl brn	0011-2L
450.00						0012
				80 Sltst	: m gy, cly	0012-1L
				15 S/Sst	: w to lt gy, crs, l	0012-2L
				5 Sh/Clst	: m brn to pl brn	0012-3L
				tr Ca	: lt or to or gy	0012-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
460.00						0013
			100	Sltst : lt gy to lt brn gy, cly, calc		0013-1L
				tr S/Sst : w to lt gy, crs, l		0013-2L
				tr Sh/Clst: m brn to pl brn		0013-3L
470.00						0014
			60	Sh/Clst: lt gy to lt brn gy, calc		0014-1L
			25	Sltst : lt brn gy to m gy, cly		0014-2L
			10	Sh/Clst: m brn		0014-3L
			5	S/Sst : w to lt gy, crs, l		0014-4L
				tr Cont : dd		0014-5L
480.00						0015
			75	Sh/Clst: m gy to drk gy, calc		0015-1L
			20	S/Sst : w to lt gy, crs, l		0015-2L
			5	Ca : lt or		0015-3L
				tr Cont : dd		0015-4L
490.00						0016
			95	Sh/Clst: m gy to pl y brn		0016-1L
			5	Cont : dd		0016-2L
500.00						0017
			40	Marl : lt gy to lt or		0017-1L
			30	Sh/Clst: drk gy to brn blk		0017-2L
			10	Sltst : lt gy, s		0017-3L
			10	S/Sst : w to lt gy, crs, l		0017-4L
			10	Cont : dd		0017-5L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
510.00						0018
			60	Marl : lt gy to lt or		0018-1L
			20	Cont : dd		0018-4L
			10	Sltst : lt gy, s		0018-2L
			10	Ca : lt or to or gy		0018-3L
520.00						0019
			70	S/Sst : w to lt gy, crs, l, f, kln		0019-1L
			15	Coal : dsk brn to blk		0019-2L
			15	Sh/Clst: lt gy to m bl gy to pl brn		0019-3L
530.00						0020
			60	Ca : lt or to or gy		0020-1L
			40	Sh/Clst: m gy to drk gy		0020-2L
540.00						0021
			100	Sh/Clst: m gy to drk gy		0021-1L
			tr	Ca : lt gy to lt or		0021-2L
550.00						0022
			100	Sh/Clst: m gy		0022-1L
			tr	Ca : lt gy to lt or		0022-2L
560.00						0023
			95	Sh/Clst: m gy		0023-1L
			5	Cont : dd		0023-2L
			tr	Ca : w to lt or		0023-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
570.00						0024
				95 Sh/Clst: m gy to brn gy		0024-1L
				5 Cont : dd		0024-2L
				tr Ca : w to lt or		0024-3L
580.00						0025
				45 Sh/Clst: m gy to brn gy		0025-1L
				45 Sh/Clst: pl brn, calc		0025-2L
				10 Cont : dd		0025-3L
590.00						0026
				100 Sh/Clst: m gy		0026-1L
				tr Cont : dd		0026-2L
600.00						0027
				100 Sh/Clst: m gy		0027-1L
				tr Cont : dd		0027-2L
610.00						0028
				100 Sh/Clst: m gy to drk gy		0028-1L
				tr Cont : dd		0028-2L
620.00						0029
				75 Sh/Clst: m gy to drk gy		0029-1L
				15 S/Sst : w to lt gy, f, kln		0029-2L
				5 Ca : w to lt or		0029-3L
				5 Sh/Clst: m brn to pl brn to dsk brn		0029-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
630.00						0030
				70 Sh/Clst: m gy to drk gy		0030-1L
				15 S/Sst : w to lt gy, f, kln		0030-2L
				10 Cont : dd, prp		0030-4L
				5 Sh/Clst: m brn to pl brn to dsk brn		0030-3L
640.00						0031
				75 S/Sst : w to lt gy, f, kln		0031-1L
				20 Sh/Clst: m gy to drk gy		0031-2L
				5 Ca : lt or		0031-3L
				tr Coal : brn blk, wx		0031-4L
				tr Cont : dd		0031-5L
650.00						0032
				100 Sh/Clst: m gy to drk gy		0032-1L
				tr Cont : dd		0032-2L
660.00						0213
				65 Sh/Clst: m gy to drk gy, mic		0213-1L
				30 S/Sst : w to lt gy, f, kln, crs, l, pyr		0213-2L
				5 Sh/Clst: m brn to pl brn		0213-3L
				tr Coal : blk		0213-4L
670.00						0033
				75 Sh/Clst: pl y brn to m gy, calc		0033-1L
				20 Cont : cem, prp, dd		0033-2L
				5 S/Sst : w to lt gy, f, kln		0033-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
680.00						0034
				75 Sh/Clst: m gy to drk gy		0034-1L
				15 Cont : cem, prp, dd		0034-2L
				10 S/Sst : w to lt gy, f, kln		0034-3L
690.00						0035
				85 Sh/Clst: m gy		0035-1L
				10 S/Sst : w, f, kln		0035-2L
				5 Cont : cem, prp		0035-3L
700.00						0036
				60 S/Sst : w to lt gy, f, kln, l		0036-1L
				30 Sh/Clst: m gy		0036-2L
				10 Cont : cem, prp, dd		0036-3L
				tr Sh/Clst: pl brn to drk y brn		0036-4L
710.00						0214
				80 S/Sst : w to lt gy, f, kln		0214-1L
				20 Sh/Clst: m gy, mic		0214-2L
720.00						0037
				75 S/Sst : w to lt gy, f, kln, l		0037-1L
				10 Sh/Clst: m gy		0037-2L
				10 Coal : dsk brn to blk		0037-3L
				5 Cont : cem, prp		0037-4L
730.00						0038
				50 Sh/Clst: m gy		0038-2L
				40 S/Sst : w to lt gy, f, kln, l		0038-1L
				5 Ca : lt or to or gy		0038-3L
				5 Cont : cem, prp		0038-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
760.00						0039
				70 S/Sst : w to lt gy, f, kln, l		0039-1L
				30 Sh/Clst: m gy, pyr		0039-2L
				tr Coal : dsk brn to blk		0039-3L
				tr Cont : prp		0039-4L
770.00						0040
				75 Sh/Clst: m gy, mic, slt		0040-2L
				25 S/Sst : w to lt gy, f, kln, l		0040-1L
				tr Cont : prp		0040-3L
780.00						0041
				60 Sh/Clst: m gy, mic, slt		0041-2L
				40 S/Sst : w to lt gy, f, kln, mic		0041-1L
790.00						0215
				50 S/Sst : w to lt gy, f, kln		0215-1L
				50 Sh/Clst: gn gy		0215-2L
800.00						0042
				90 S/Sst : w to lt gy, f, kln, mic		0042-1L
				10 Sh/Clst: gy gn		0042-2L
				tr Cont : prp		0042-3L
810.00						0043
				95 S/Sst : w to lt gy, f, kln, mic		0043-1L
				5 Sh/Clst: gy gn to m gy, mic		0043-2L
				tr Cont : prp		0043-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
820.00						0216
				75 S/Sst : w to lt gy, f, kln, 1		0216-1L
				25 Sh/Clst: gn gy		0216-2L
830.00						0217
				80 S/Sst : w to lt gy, f, kln, 1		0217-1L
				20 Sh/Clst: gn gy to m gy, mic		0217-2L
840.00						0218
				85 S/Sst : w to lt gy, f, kln, 1		0218-1L
				15 Sh/Clst: gn gy to m gy, mic		0218-2L
850.00						0219
				60 S/Sst : w to lt gy, f, kln, 1		0219-1L
				40 Sh/Clst: gn gy to m gy, mic		0219-2L
860.00						0220
				80 S/Sst : w to lt gy, f, kln, 1		0220-1L
				15 Sh/Clst: gn gy to m gy, mic		0220-2L
				5 Ca : w to lt or, mrl		0220-3L
870.00						0221
				95 S/Sst : w to lt gy, f, kln, 1		0221-1L
				5 Sh/Clst: gn gy to m gy, mic		0221-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
880.00						0222
				95 S/Sst	: w to lt gy, f, kln, l	0222-1L
				5 Sh/Clst:	gn gy to m gy, mic	0222-2L
				tr Ca	: w to lt or, mrl	0222-3L
890.00						0223
				95 S/Sst	: w to lt gy, f, kln, crs, l	0223-1L
				5 Sh/Clst:	gn gy to m gy, mic	0223-2L
				tr Ca	: w to lt or, mrl	0223-3L
900.00						0224
				90 S/Sst	: w to lt gy, f, kln, crs, l	0224-1L
				5 Sh/Clst:	gn gy to m gy, mic	0224-2L
				5 Sh/Clst:	brn to pl brn	0224-3L
				tr Ca	: w to lt or, mrl	0224-4L
910.00						0225
				85 S/Sst	: w to lt gy, f, kln, mic, crs, l	0225-1L
				10 Sh/Clst:	gn gy to m gy, mic	0225-2L
				5 Sh/Clst:	brn to pl brn	0225-3L
				tr Ca	: w to lt or, mrl	0225-4L
				tr Cont	: prp	0225-5L
920.00						0226
				60 S/Sst	: w to lt gy, f, kln, mic, l	0226-1L
				40 Sh/Clst:	gn gy to m gy, mic, slt	0226-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
930.00						0044	
		85	S/Sst	: w to lt gy, f, kln, mic, l		0044-1L	
		10	Sh/Clst:	gy gn to m gy, mic		0044-2L	
		5	Cont	: prp		0044-3L	
		tr	Marl	: w to lt gy		0044-4L	
940.00						0045	
		45	S/Sst	: w to lt gy, f, kln, mic, l		0045-1L	
		45	Sh/Clst:	gy gn to m gy, mic		0045-2L	
		5	Cont	: prp		0045-3L	
		5	Marl	: w to lt gy		0045-4L	
950.00						0207	
		90	S/Sst	: lt gy, f, kln		0207-1L	
		10	Sh/Clst:	gn gy to lt gy, mic		0207-2L	
		tr	Sh/Clst:	pl brn to gy brn, wx		0207-3L	
		tr	Coal	: blk		0207-4L	
960.00						0227	
		60	Sh/Clst:	gn gy to m gy, mic, slt		0227-1L	
		40	S/Sst	: w to lt gy, f, kln, l		0227-2L	
970.00						0228	
		85	S/Sst	: w to lt gy, f, kln, l		0228-1L	
		15	Sh/Clst:	gn gy to m gy, slt, mic		0228-2L	
980.00						0229	
		50	S/Sst	: lt gy, f, kln, l		0229-1L	
		50	Sh/Clst:	lt gy to m gy, slt, mic		0229-2L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
992.00						0230	
			75	Sh/Clst:	lt gy to m gy, slt, mic	0230-1L	
			25	S/Sst	: w to lt gy, f, kln, l	0230-2L	
			tr	Ca	: w to lt or, mrl	0230-3L	
1000.00						0046	
			100	Sh/Clst:	lt gy to m gy, mic, slt	0046-1L	
			tr	Cont	: dd, prp	0046-2L	
1010.00						0047	
			95	Sh/Clst:	lt gy to m gy, mic, slt	0047-1L	
			5	Cont	: dd, prp	0047-2L	
			tr	Marl	: w to lt gy	0047-3L	
1020.00						0208	
			85	Sh/Clst:	lt gy to m gy, mic, slt	0208-1L	
			15	S/Sst	: lt gy, f, kln	0208-2L	
			tr	Cont	: prp	0208-3L	
1030.00						0231	
			85	Sh/Clst:	lt gy to m gy, slt, mic	0231-1L	
			15	Sltst	: lt gy to m gy, mic	0231-2L	
			tr	Ca	: w to lt or, mrl	0231-3L	
			tr	Cont	: prp	0231-4L	
1040.00						0232	
			75	Sh/Clst:	lt gy to m gy, slt, mic	0232-1L	
			25	Sltst	: lt gy to m gy, mic	0232-2L	
			tr	Ca	: w to lt or, mrl	0232-3L	
			tr	Cont	: prp	0232-4L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1050.00						0233
				75 Sh/Clst: lt gy to m gy, mic		0233-1L
				25 Sltst : lt gy to m gy, mic		0233-2L
				tr Marl : w to lt gy		0233-3L
				tr Cont : prp		0233-4L
1060.00						0234
				75 Sh/Clst: lt gy to m gy, mic		0234-1L
				25 Sltst : lt gy to m gy, calc		0234-2L
1070.00						0209
				90 Sh/Clst: lt gy to m gy, mic, slt		0209-1L
				10 S/Sst : lt gy, f, kln		0209-2L
1080.00						0210
				80 Sh/Clst: lt gy to m gy, mic, slt		0210-1L
				20 Sltst : lt gy, calc		0210-2L
1090.00						0235
				65 Sh/Clst: lt gy to m gy, mic		0235-1L
				30 Sltst : lt gy to m gy, calc		0235-2L
				5 Ca : w to lt gy, mrl		0235-3L
				tr Cont : prp		0235-4L
1100.00						0236
				80 Sh/Clst: lt gy to m gy		0236-1L
				20 S/Sst : lt gy, f, kln, calc		0236-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1110.00						0237
			100	Sh/Clst: lt gy to m gy tr Cont : prp		0237-1L 0237-2L
1120.00						0238
			80	Sh/Clst: lt gy to m gy		0238-1L
			20	Sltst : lt gy to m gy, s, mic		0238-2L
			tr	Marl : or gy		0238-3L
1130.00						0239
			50	Sh/Clst: lt gy to m gy		0239-1L
			30	Sltst : lt gy to m gy, s, mic		0239-2L
			20	Marl : w to lt or, slt		0239-3L
1140.00						0240
			50	Sh/Clst: lt gy to m gy		0240-1L
			50	S/Sst : w to lt gy, calc		0240-2L
1150.00						0241
			50	Sh/Clst: lt gy to m gy		0241-1L
			50	S/Sst : w to lt gy, calc		0241-2L
			tr	Cont : prp		0241-3L
1160.00						0242
			50	Sh/Clst: lt gy to m gy		0242-1L
			45	S/Sst : w to lt gy, calc		0242-2L
			5	Ca : w		0242-4L
			tr	Cont : prp		0242-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1170.00						0243
				70 Sh/Clst: lt gy to m gy		0243-1L
				30 S/Sst : w to lt gy, f, kln		0243-2L
				tr Cont : prp		0243-3L
1180.00						0244
				70 Sh/Clst: lt gy to m gy		0244-1L
				20 S/Sst : w to lt gy, f, kln		0244-2L
				10 Ca : w		0244-3L
				tr Cont : prp		0244-4L
1190.00						0245
				90 Sh/Clst: lt gy to m gy		0245-1L
				5 S/Sst : w to lt gy, f, kln		0245-2L
				5 Ca : w to lt or		0245-3L
				tr Cont : prp		0245-4L
1200.00						0246
				70 Cont : cem, prp		0246-1L
				30 Sh/Clst: lt gy to m gy, calc		0246-2L
				tr S/Sst : w to lt gy to or gy, f, kln, crs, l		0246-3L
1210.00						0247
				50 Cont : cem, prp		0247-1L
				40 Marl : m gy		0247-2L
				5 Sh/Clst: lt gy to m gy, calc		0247-3L
				5 S/Sst : w to lt gy to or gy, f, kln, crs, l		0247-4L
				tr Ca : w to lt or		0247-5L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1220.00						0248
				95 Sh/Clst: m gy		0248-1L
				5 Marl : lt gy to w		0248-2L
				tr Cont : prp, dd, cem		0248-3L
1230.00						0249
				60 Sh/Clst: m gy		0249-1L
				30 Cont : cem, prp, dd		0249-2L
				10 S/Sst : w to lt gy, f, kln		0249-3L
1240.00						0250
				50 Sh/Clst: m gy		0250-1L
				30 S/Sst : w to lt gy, f, kln		0250-2L
				20 Cont : cem, prp, dd		0250-3L
1250.00						0251
				75 S/Sst : w to lt gy, f, kln		0251-2L
				10 Sh/Clst: m gy		0251-1L
				10 Ca : w		0251-4L
				5 Cont : prp, cem		0251-3L
1260.00						0252
				75 S/Sst : w to lt gy, f, kln		0252-2L
				10 Sh/Clst: lt gy to m gy, mic		0252-1L
				10 Ca : w		0252-4L
				5 Cont : prp, cem		0252-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1270.00						0253
				60 Sh/Clst: lt gy to m gy, mic		0253-1L
				35 S/Sst : w to lt gy, f, kln		0253-2L
				5 Cont : prp, dd		0253-3L
1280.00						0254
				80 S/Sst : w to lt gy to or gy, crs, l, f, kln		0254-1L
				10 Cont : prp, dd		0254-2L
				10 Sh/Clst: lt gy to m gy, mic		0254-3L
				tr Ca : w		0254-4L
1290.00						0211
				80 S/Sst : w to lt gy, f, kln, l		0211-1L
				20 Cont : dd, prp		0211-2L
				tr Ca : w to lt or		0211-3L
1300.00						0255
				60 S/Sst : w to lt gy, f, kln		0255-1L
				20 Cont : prp, dd		0255-2L
				15 Sh/Clst: lt gy to m gy, mic		0255-3L
				5 Ca : w		0255-4L
1310.00						0256
				60 S/Sst : w to lt gy, f, kln		0256-1L
				35 Sh/Clst: lt gy to m gy		0256-2L
				5 Cont : prp		0256-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1320.00						0257
				60 S/Sst : w to lt gy, f, kln		0257-1L
				35 Sh/Clst: lt gy to m gy		0257-2L
				5 Cont : prp		0257-3L
1330.00						0258
				60 S/Sst : w to lt gy to or gy, f, kln, crs,		0258-1L
				1		
				35 Sh/Clst: lt gy to m gy		0258-2L
				5 Cont : prp		0258-3L
1340.00						0259
				50 S/Sst : w to lt gy to or gy, f, kln, crs,		0259-1L
				1		
				40 Sh/Clst: lt gy to m gy		0259-2L
				10 Cont : prp		0259-3L
1350.00						0260
				80 S/Sst : w to lt gy to or gy, f, kln, crs,		0260-1L
				1		
				10 Cont : prp, cem		0260-3L
				5 Sh/Clst: lt gy to m gy		0260-2L
				5 Ca : w		0260-4L
1360.00						0261
				30 Sh/Clst: brn to pl brn		0261-1L
				30 Sh/Clst: m gy, mic		0261-2L
				30 S/Sst : w to lt gy, f, kln		0261-3L
				5 Ca : w to lt or		0261-4L
				5 Cont : prp		0261-5L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1365.00						0262
				50 Sh/Clst: m gy to drk gy, mic		0262-2L
				25 S/Sst : w to lt gy, f, kln		0262-3L
				10 Sh/Clst: brn to pl brn		0262-1L
				5 Ca : w to lt or		0262-4L
				5 Coal : blk, wx		0262-5L
				5 Cont : prp		0262-6L
1370.00						0263
				80 S/Sst : lt gy to w, crs, l, f, kln, mic		0263-1L
				10 Chert : m gy to brn gy		0263-2L
				5 Ca : w to lt or to lt gy, mrl		0263-3L
				5 Coal : blk, wx		0263-4L
				tr Sh/Clst: brn to pl brn		0263-5L
				tr Cont : prp		0263-6L
1375.00						0048
				90 S/Sst : lt gy to w, crs, l, f, kln, mic		0048-1L
				5 Sh/Clst: m gy to brn gy		0048-2L
				5 Ca : lt or to lt gy, mrl		0048-3L
				tr Cont : prp		0048-4L
1380.00						0049
				75 S/Sst : lt gy to w, crs, l, f, kln, mic		0049-1L
				10 Sh/Clst: m gy to brn gy, pyr		0049-2L
				10 Ca : lt or to lt gy to m gy, sil		0049-3L
				5 Cont : prp, dd		0049-4L
1385.00						0264
				100 S/Sst : w to lt gy, crs, l, kln		0264-1L
				tr Ca : w, mrl		0264-2L
				tr Sh/Clst: lt gy to m gy, mic		0264-3L
				tr Sh/Clst: brn to pl brn		0264-4L
				tr Cont : prp		0264-5L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1390.00						0050
				100 S/Sst : w to lt gy, crs, l		0050-1L
				tr Sh/Clst: m gy to brn gy, pyr		0050-2L
				tr Ca : lt gy, mrl		0050-3L
				tr Cont : prp		0050-4L
1395.00						0051
				90 S/Sst : w to lt gy, crs, l		0051-1L
				5 Sh/Clst: m gy to brn gy, pyr		0051-2L
				5 Ca : lt gy to w, mrl		0051-3L
				tr Cont : prp		0051-4L
1400.00						0052
				90 S/Sst : lt gy, crs, l		0052-1L
				5 Sh/Clst: m gy, pyr		0052-2L
				5 Ca : lt gy to w, mrl		0052-3L
				tr Cont : prp		0052-4L
1405.00						0053
				95 S/Sst : lt gy, crs, l		0053-1L
				5 Ca : lt gy to w, mrl		0053-3L
				tr Sh/Clst: m gy to drk gy, pyr		0053-2L
				tr Cont : prp		0053-4L
1410.00						0054
				85 S/Sst : lt gy, crs, l		0054-1L
				5 Sh/Clst: m gy to drk gy, pyr		0054-2L
				5 Ca : lt gy to w, mrl		0054-3L
				5 Cont : prp, dd		0054-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1415.00						0055
				85 S/Sst : lt gy, crs, l		0055-1L
				5 Sh/Clst: m gy to drk gy, pyr		0055-2L
				5 Ca : lt gy to w, mrl		0055-3L
				5 Cont : prp, dd		0055-4L
1420.00						0056
				85 S/Sst : lt gy, crs, l, kln		0056-1L
				5 Sh/Clst: m gy to drk gy, pyr		0056-2L
				5 Ca : lt gy to w, mrl		0056-3L
				5 Cont : prp, dd		0056-4L
1425.00						0057
				95 S/Sst : lt gy, crs, l, kln		0057-1L
				5 Cont : prp, dd		0057-4L
				tr Sh/Clst: m gy to drk gy, pyr		0057-2L
				tr Ca : lt gy to w, mrl		0057-3L
1430.00						0265
				100 S/Sst : lt gy, crs, l, kln		0265-1L
				tr Ca : w to lt gy, mrl		0265-2L
				tr Cont : prp, dd		0265-3L
1435.00						0058
				90 S/Sst : lt gy, crs, l, kln		0058-1L
				10 Cont : prp, dd		0058-4L
				tr Sh/Clst: m gy to drk gy, pyr		0058-2L
				tr Ca : lt gy to w, mrl		0058-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1440.00						0266
				95 S/Sst : lt gy, crs, l, kln		0266-1L
				5 Ca : w to lt gy, mrl		0266-2L
				tr Sh/Clst: lt gy to m gy, mic		0266-3L
				tr Cont : prp, dd		0266-4L
1445.00						0059
				85 S/Sst : lt gy, crs, l, kln		0059-1L
				10 Cont : cem, prp, dd		0059-2L
				5 Sh/Clst: m gy to drk gy		0059-3L
				tr Marl : lt gy		0059-4L
1450.00						0060
				85 S/Sst : lt gy, crs, l, kln		0060-1L
				10 Cont : cem, prp, dd		0060-2L
				5 Sh/Clst: m gy to drk gy		0060-3L
				tr Marl : lt gy		0060-4L
1455.00						0267
				75 S/Sst : lt gy, f, kln, l		0267-1L
				10 Ca : w to lt gy, mrl		0267-2L
				10 Cont : prp, dd, cem		0267-4L
				5 Sh/Clst: lt gy to m gy, mic		0267-3L
1460.00						0268
				50 S/Sst : lt gy, f, kln, l		0268-1L
				30 Sh/Clst: lt gy to m gy, mic		0268-2L
				20 Cont : prp, dd, cem		0268-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1465.00						0061
				100 Sh/Clst: m gy to drk gy, mic		0061-1L
				tr Ca : w to lt gy, mrl		0061-2L
				tr Cont : prp, dd		0061-3L
1470.00						0062
				60 S/Sst : w, crs, kln		0062-1L
				20 Ca : w		0062-2L
				20 Sh/Clst: m gy, mic		0062-3L
1475.00						0063
				50 S/Sst : w, crs, kln		0063-1L
				50 Ca : w		0063-2L
				tr Sh/Clst: m gy to drk gy		0063-3L
				tr Cont : prp		0063-4L
1480.00						0064
				70 Ca : w		0064-1L
				20 S/Sst : w, crs		0064-2L
				10 Sh/Clst: lt gy to m gy to gy brn, calc		0064-3L
				tr Cont : prp		0064-4L
1485.00						0065
				60 Ca : w to lt or		0065-1L
				40 S/Sst : w, crs		0065-2L
				tr Sh/Clst: m gy		0065-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
1490.00						0066	
		75	Ca	:	w to lt or to lt gy, mrl, sil	0066-1L	
		25	S/Sst	:	w to lt brn gy, crs	0066-2L	
1495.00						0067	
		85	Ca	:	w to lt or to lt gy, mrl, sil	0067-1L	
		15	S/Sst	:	w to lt brn gy, crs	0067-2L	
1500.00						0068	
		75	Ca	:	w to lt gy, mrl, sil	0068-1L	
		25	S/Sst	:	w to lt brn gy, crs	0068-2L	
1505.00						0069	
		75	S/Sst	:	w to lt gy, crs, l	0069-1L	
		25	Ca	:	w to lt or	0069-2L	
1510.00						0070	
		90	S/Sst	:	w to lt gy, crs, l, f, kln	0070-1L	
		10	Ca	:	w to lt or	0070-2L	
		tr	Sh/Clst:	:	drk gy	0070-3L	
1514.00	ccp					0196	
		100	S/Sst	:	lt gy to m gy, crs, kln	0196-1L	
1519.05	ccp					0197	
		100	S/Sst	:	w to lt gy to m gy, crs, calc	0197-1L	

Table 1 : Lithology description for well N0CS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1524.20	ccp					0198
			100	S/Sst : lt gy, crs, kln		0198-1L
1529.00	ccp					0199
			100	S/Sst : lt gy, crs, kln, calc		0199-1L
1531.70	ccp					0200
			100	S/Sst : lt gy to m gy, crs, kln, calc, mic		0200-1L
1535.00						0071
			90	S/Sst : w to lt gy to m gy, crs, l		0071-1L
			5	Ca : w to lt or		0071-2L
			5	Sh/Clst: drk gy		0071-3L
			tr	Cont : prp, dd		0071-4L
1540.00						0072
			95	S/Sst : w to lt gy to m gy, crs, l		0072-1L
			5	Ca : w to lt or		0072-2L
			tr	Sh/Clst: drk gy		0072-3L
			tr	Cont : prp, dd		0072-4L
1545.00						0073
			100	S/Sst : lt gy, crs, l		0073-1L
			tr	Ca : lt or		0073-2L
			tr	Sh/Clst: m gy		0073-3L
			tr	Cont : prp		0073-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
1550.00						0074	
		100	S/Sst	:	w to lt gy to m gy, crs, l, f, kln	0074-1L	
			tr Ca	:	lt or	0074-2L	
			tr Cont	:	prp	0074-3L	
1555.00						0075	
		100	S/Sst	:	w to lt gy to m gy, crs, l, f, kln	0075-1L	
			tr Ca	:	lt or to lt gy, mrl	0075-2L	
			tr Coal	:	blk, wx	0075-3L	
1560.00						0076	
		100	S/Sst	:	w to lt gy to m gy, crs, l, f, kln	0076-1L	
			tr Ca	:	w to lt gy, mrl	0076-2L	
1565.00						0077	
		100	S/Sst	:	lt gy to m gy, f, slt, kln	0077-1L	
			tr Ca	:	lt or to lt gy, mrl	0077-2L	
			tr Cont	:	prp	0077-3L	
1570.00						0078	
		100	Sh/Clst:	:	m gy, mic, slt, calc	0078-1L	
			tr S/Sst	:	w to lt gy, crs, l	0078-2L	
1575.00						0079	
		100	Sh/Clst:	:	m gy, mic	0079-1L	
			tr Ca	:	lt or	0079-2L	
			tr Cont	:	prp	0079-3L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1580.00						0080
				100 Sh/Clst: lt gy to m gy, mrl		0080-1L
1585.00						0081
				100 Sh/Clst: m gy, calc tr Marl : lt gy		0081-1L 0081-2L
1590.00						0082
				100 Marl : m gy to lt gy		0082-1L
1595.00						0083
				100 Marl : m gy to lt gy		0083-1L
1600.00						0084
				100 Marl : m gy to lt gy		0084-1L
1605.00						0085
				100 Marl : m gy to lt gy, slt		0085-1L
1610.00						0086
				100 Sh/Clst: m gy, slt, mrl		0086-1L
1615.00						0087
				100 Sh/Clst: m gy, slt, mrl		0087-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1620.00						0088
			100	Sh/Clst: m gy, slt, mrl		0088-1L
1625.00						0089
			100	Sh/Clst: m gy, slt, mrl		0089-1L
1630.00						0090
			100	Sh/Clst: m gy, slt, mrl		0090-1L
1635.00						0091
			100	Sh/Clst: m gy, slt, mrl		0091-1L
1640.00						0092
			100	Sh/Clst: m gy, mrl		0092-1L
1645.00						0093
			100	Sh/Clst: m gy, calc		0093-1L
			tr Ca	: w to lt or		0093-2L
1650.00						0094
			70	Ca : w to lt or		0094-1L
			20	S/Sst : w to lt gy, crs		0094-2L
			10	Sh/Clst: m gy, calc		0094-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1654.00	ccp					0201
		100	Ca	: lt or to w, hd		0201-1L
1659.20	ccp					0202
		95	Ca	: lt or to w, hd		0202-1L
		5	Sh/Clst:	m gy to drk gy		0202-2L
1665.00						0095
		85	Ca	: w to lt or		0095-1L
		10	S/Sst	: w to lt gy, crs		0095-2L
		5	Sh/Clst:	m gy, calc		0095-3L
		tr	Cont	: prp		0095-4L
1680.00						0096
		70	S/Sst	: w to lt gy to m gy, crs, l, f, kln		0096-2L
		30	Ca	: w to lt or		0096-1L
1685.00						0097
		80	S/Sst	: w, crs, l, f, kln		0097-1L
		10	Ca	: lt or to w		0097-2L
		10	Sltst	: lt gy, kln		0097-3L
		tr	Sh/Clst:	lt gy to m gy		0097-4L
1690.00						0098
		70	S/Sst	: w to lt gy, crs, l, f, kln		0098-1L
		15	Sh/Clst:	m gy to drk gy		0098-2L
		15	Ca	: w to lt or		0098-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1695.00						0099
				60 Sh/Clst: m gy, calc, hd		0099-1L
				25 S/Sst : w to lt gy, crs, l		0099-2L
				15 Ca : lt or to w		0099-3L
1700.00						0100
				75 Sh/Clst: m gy, calc, hd		0100-1L
				15 Marl : lt gy to m gy		0100-3L
				10 S/Sst : w to lt gy, crs, l		0100-2L
				tr Ca : lt or		0100-4L
1705.00						0101
				60 Ca : w to lt or		0101-1L
				20 S/Sst : w to lt brn gy, crs		0101-2L
				20 Sh/Clst: lt gy to m gy, mrl, hd		0101-3L
1710.00						0102
				90 Ca : w to lt or		0102-1L
				5 S/Sst : w to lt brn gy, crs		0102-2L
				5 Sh/Clst: lt gy to m gy, mrl, hd		0102-3L
				tr Cont : prp		0102-4L
1715.00						0103
				100 Ca : w to lt or		0103-1L
				tr S/Sst : w to lt brn gy, crs		0103-2L
				tr Sh/Clst: lt gy to m gy, mrl, hd		0103-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1720.00						0104
			100	Chert : lt gy to w, hd tr S/Sst : w, crs, l		0104-1L 0104-2L
1725.00						0105
			100	Chert : lt gy to w, hd		0105-1L
1730.00						0106
			95	Chert : lt or to lt gy to m gy, hd		0106-1L
			5	Cont : prp		0106-2L
			tr	Sh/Clst: lt gy to pl brn		0106-3L
1735.00						0107
			100	Chert : lt or to lt gy to m gy, hd		0107-1L
			tr	Cont : prp		0107-2L
1740.00						0108
			100	Sh/Clst: m gy to drk gy, mrl		0108-1L
1745.00						0109
			100	Sh/Clst: m gy to drk gy, mrl		0109-1L
1750.00						0110
			100	Sh/Clst: m gy to drk gy, calc		0110-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1755.00						0111
			100	Sh/Clst: m gy to drk gy, calc		0111-1L
1760.00						0112
			100	Sh/Clst: m gy to drk gy		0112-1L
1765.00						0113
			80	S/Sst : w to lt gy, crs, l, kln		0113-1L
			20	Sh/Clst: m gy		0113-2L
1770.00						0114
			95	S/Sst : w to lt gy, crs, l, kln		0114-1L
			5	Sh/Clst: m gy		0114-2L
1775.00						0115
			95	S/Sst : w to lt gy, crs, l, kln		0115-1L
			5	Sh/Clst: m gy		0115-2L
1780.00						0116
			100	S/Sst : w to lt gy, crs, l, kln		0116-1L
				tr Sh/Clst: m gy		0116-2L
				tr Ca : w to lt or		0116-3L
1785.00						0117
			100	S/Sst : w to lt gy, crs, l, kln		0117-1L
				tr Sh/Clst: m gy		0117-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1790.00						0118
				100 S/Sst : w to lt gy, crs, l, kln tr Sh/Clst: lt gy to m gy, mic		0118-1L 0118-2L
1795.00						0119
				100 S/Sst : w to lt gy, crs, l, kln tr Sh/Clst: lt gy to m gy, mic		0119-1L 0119-2L
1800.00						0120
				100 S/Sst : w to lt gy, crs, l, kln tr Sh/Clst: lt gy to m gy, mic		0120-1L 0120-2L
1805.00						0121
				100 S/Sst : w to lt gy, crs, l, kln tr Sh/Clst: lt gy to m gy, mic		0121-1L 0121-2L
1810.00						0122
				50 S/Sst : w to lt gy, crs, l, kln 50 Sh/Clst: m gy to drk gy, mic		0122-1L 0122-2L
1815.00						0123
				60 S/Sst : w to lt gy, crs, l, kln 40 Sh/Clst: m gy to drk gy, mic		0123-1L 0123-2L
1820.00						0124
				95 Sh/Clst: m gy to drk gy, mic 5 S/Sst : w to lt gy, crs, kln, l tr Cont : prp		0124-1L 0124-2L 0124-3L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1825.00						0125
			100	Sh/Clst: m gy to drk gy		0125-1L
1830.00						0126
			100	Sh/Clst: m gy to drk gy		0126-1L
1835.00						0127
			100	Sh/Clst: m gy to drk gy		0127-1L
1840.00						0212
			85	Sh/Clst: m gy to drk gy, mic		0212-1L
			10	S/Sst : w to lt gy to ol gy to dsk brn, crs, kln, l		0212-2L
			5	Ca : lt gy, mrl		0212-3L
1845.00						0128
			100	Sh/Clst: m gy to drk gy		0128-1L
			tr	Ca : lt gy, mrl		0128-2L
1850.00						0129
			100	Sh/Clst: m gy to drk gy		0129-1L
1855.00						0130
			100	Sh/Clst: m gy to drk gy		0130-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1860.00						0131
				100 Sh/Clst: m gy to drk gy		0131-1L
1865.00						0132
				100 Sh/Clst: m gy to drk gy		0132-1L
				tr Cont : prp		0132-2L
1870.00						0133
				100 Sh/Clst: m gy to drk gy		0133-1L
1875.00						0134
				100 Sh/Clst: m gy to drk gy		0134-1L
				tr Cont : prp		0134-2L
1880.00						0135
				100 Sh/Clst: m gy to drk gy		0135-1L
				tr Cont : prp		0135-2L
1885.00						0136
				100 Sh/Clst: m gy to drk gy		0136-1L
				tr Cont : prp		0136-2L
1890.00						0137
				100 Sh/Clst: m gy to drk gy, calc		0137-1L
				tr Cont : prp		0137-2L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
1895.00						0138	
		100	Sh/Clst: m gy to drk gy, calc			0138-1L	
			tr Cont : prp			0138-2L	
1900.00						0139	
		100	Sh/Clst: m gy to drk gy			0139-1L	
			tr Cont : prp			0139-2L	
1905.00						0140	
		100	Sh/Clst: m gy to drk gy			0140-1L	
			tr Cont : prp			0140-2L	
1910.00						0141	
		100	Sh/Clst: m gy to drk gy			0141-1L	
			tr Cont : prp, dd			0141-2L	
1915.00						0142	
		100	Sh/Clst: m gy to drk gy			0142-1L	
			tr Cont : prp, dd			0142-2L	
1920.00						0143	
		100	Sh/Clst: m gy to drk gy			0143-1L	
			tr Cont : prp, dd			0143-2L	
1925.00						0144	
		100	Sh/Clst: m gy, calc			0144-1L	
			tr Cont : prp, dd			0144-2L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1930.00						0145
				100 Sh/Clst: m gy, calc		0145-1L
1935.00						0146
				90 Sh/Clst: lt gy to m gy, calc, hd		0146-1L
				10 Cont : prp		0146-2L
1940.00						0147
				100 Sh/Clst: lt gy to m gy, calc, hd		0147-1L
1945.00						0148
				100 Sh/Clst: lt gy to m gy, calc, hd		0148-1L
1950.00						0149
				100 Sh/Clst: lt gy to m gy, calc, hd		0149-1L
1955.00						0150
				100 Sh/Clst: lt gy to m gy, calc, hd		0150-1L
1960.00						0151
				100 Sh/Clst: lt gy to m gy, calc, hd		0151-1L
1965.00						0152
				100 Sh/Clst: lt gy to m gy, calc, hd		0152-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1970.00						0153
			100	Sh/Clst: lt gy to m gy to drk gy, calc, hd		0153-1L
1975.00						0154
			95	Sh/Clst: m gy to drk gy, calc, hd		0154-1L
			5	Cont : prp		0154-2L
1980.00						0155
			100	Sh/Clst: lt gy to m gy, calc, hd		0155-1L
				tr Cont : prp		0155-2L
1985.00						0156
			95	Sh/Clst: lt gy to m gy to drk gy, calc, hd		0156-1L
			5	Cont : prp		0156-2L
1990.00						0157
			100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd		0157-1L
				tr Cont : prp		0157-3L
1995.00						0158
			100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd		0158-1L
2000.00						0159
			100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd		0159-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2005.00						0160	
		100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd tr Cont : prp				0160-1L 0160-2L
2010.00						0161	
		100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd tr Cont : prp				0161-1L 0161-2L
2015.00						0162	
		100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd				0162-1L
2020.00						0163	
		100	Sh/Clst: lt gy to m gy to drk gy, mrl, hd				0163-1L
2025.00						0164	
		100	Sh/Clst: lt gy to m gy, calc, hd				0164-1L
2030.00						0165	
		100	Sh/Clst: gy to m gy, calc, hd				0165-1L
2035.00						0166	
		100	Sh/Clst: gy to m gy, calc				0166-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2040.00						0167
			100	Sh/Clst: gy to m gy, calc		0167-1L
2045.00						0168
			100	Sh/Clst: gy to m gy, calc		0168-1L
2050.00						0169
			100	Sh/Clst: lt gy to m gy, calc		0169-1L
2055.00						0170
			100	Sh/Clst: lt gy to m gy, hd		0170-1L
2060.00						0171
			100	Sh/Clst: lt gy to m gy to lt brn gy, hd		0171-1L
2065.00						0172
			100	Sh/Clst: lt gy to m gy to lt brn gy, hd		0172-1L
2070.00						0173
			100	Sh/Clst: lt gy to m gy to lt brn gy, hd		0173-1L
2075.00						0174
			100	Sh/Clst: lt gy to m gy to lt brn gy, hd		0174-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2080.00						0175	
		100	Sh/Clst: lt gy to m gy, calc, hd			0175-1L	
2085.00						0176	
		100	Sh/Clst: lt gy to m gy, hd			0176-1L	
2090.00						0177	
		100	Sh/Clst: lt gy to m gy to pl brn, slt, hd			0177-1L	
2095.00						0178	
		100	Sh/Clst: lt gy to m gy, calc, hd			0178-1L	
2100.00						0179	
		100	Sh/Clst: lt gy to m gy, calc, hd			0179-1L	
2105.00						0180	
		100	Sh/Clst: lt gy to m gy, calc, hd			0180-1L	
2110.00						0181	
		100	Sh/Clst: lt gy to m gy, calc, hd			0181-1L	
2115.00						0182	
		100	Sh/Clst: lt gy to m gy, calc, hd			0182-1L	
			tr Cont : prp			0182-2L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2120.00						0183
				70 Sh/Clst: lt gy to m gy, calc		0183-1L
				20 Sh/Clst: gy pi to lt brn to pl brn		0183-2L
				10 S/Sst : gy pi to lt brn, f, l		0183-4L
2125.00						0184
				50 Sh/Clst: lt gy to m gy, calc		0184-1L
				30 Sh/Clst: lt brn to pl brn, mic		0184-2L
				20 S/Sst : gy pi to lt brn to m brn, f, l		0184-3L
2130.00						0185
				60 Marl : lt brn to m brn to pl brn		0185-1L
				30 Sh/Clst: lt gy to m gy, calc		0185-2L
				10 S/Sst : gy pi to lt brn, f, crs, l		0185-3L
2135.00						0186
				50 Marl : lt brn to m brn to pl brn		0186-1L
				30 S/Sst : gy pi to lt brn, f, crs, l		0186-3L
				20 Sh/Clst: lt gy to m gy, calc		0186-2L
2140.00						0187
				90 Marl : lt brn to m brn to pl brn		0187-1L
				5 Sh/Clst: m gy to drk gy		0187-2L
				5 Ca : w to lt or		0187-3L
2145.00						0188
				80 Marl : lt brn to m brn to pl brn		0188-1L
				15 S/Sst : gy pi to lt brn, f, crs, l		0188-2L
				5 Ca : lt or		0188-3L
				tr Sh/Clst: m gy, calc		0188-4L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2150.00						0189	
		60	Marl	:	lt brn to m brn to pl brn	0189-1L	
		30	S/Sst	:	gy pi to lt brn, f, crs, l	0189-2L	
		5	Ca	:	lt or	0189-3L	
		5	Sh/Clst:		m gy, calc	0189-4L	
		tr	Cont	:	dd, prp	0189-5L	
2155.00						0190	
		40	Marl	:	lt brn to m brn to pl brn	0190-1L	
		40	S/Sst	:	gy pi to lt brn to lt gy, f, crs, l	0190-2L	
		10	Ca	:	lt or to w	0190-3L	
		10	Sh/Clst:		m gy, calc	0190-4L	
2160.00						0191	
		40	Marl	:	lt brn to m brn to pl brn	0191-1L	
		40	S/Sst	:	gy pi to lt brn to lt gy, f, crs, l	0191-2L	
		15	Ca	:	lt or to w	0191-3L	
		5	Sh/Clst:		m gy, calc	0191-4L	
2165.00						0192	
		70	Marl	:	lt brn to m brn to pl brn	0192-1L	
		20	S/Sst	:	gy pi to lt brn to lt gy, f, crs, l	0192-2L	
		10	Ca	:	lt or to w	0192-3L	
		tr	Sh/Clst:		m gy, calc	0192-4L	
		tr	Cont	:	prp	0192-5L	

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2170.00						0193
				40 Marl : lt brn to m brn to pl brn, slt		0193-1L
				40 S/Sst : gy pi to lt brn to lt gy, crs, l, f, kln		0193-2L
				20 Ca : lt or to w		0193-3L
				tr Sh/Clst: m gy, calc		0193-4L
				tr Cont : prp		0193-5L
2175.00						0194
				50 Marl : lt brn to m brn to pl brn, slt		0194-1L
				25 Ca : lt or to w		0194-3L
				25 Sh/Clst: m gy, calc		0194-4L
				tr S/Sst : gy pi to lt brn to lt gy, crs, l, f, kln		0194-2L
2180.00						0195
				50 S/Sst : gy pi to lt brn to lt gy, crs, l, f, kln		0195-2L
				35 Marl : lt brn to m brn to pl brn		0195-1L
				10 Sh/Clst: m gy, calc		0195-4L
				5 Ca : lt or to w		0195-3L
2182.00	ccp					0203
				100 Sh/Clst: m brn to pl brn, slt		0203-1L
2187.50	ccp					0204
				100 sltst : m brn to pl brn, calc, hd		0204-1L

Table 1 : Lithology description for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2189.35	ccp					0205	
		100	Sltst : m brn to pl brn, calc, mic, hd				0205-1L
2194.25	ccp					0206	
		100	Sltst : m brn to pl brn, s, calc, hd				0206-1L

Table 2 : Rock-Eval table for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
450.00	cut	Sltst : m gy	0.06	0.07	0.20	0.35	0.20	35	100	0.1	0.46	430	0012-1L
470.00	cut	Sh/Clst: lt gy to lt brn gy	0.05	0.12	0.60	0.20	0.39	31	154	0.2	0.29	428	0014-1L
490.00	cut	Sh/Clst: m gy to pl y brn	0.08	0.39	1.07	0.36	0.78	50	137	0.5	0.17	429	0016-1L
510.00	cut	Marl : lt gy to lt or	0.20	0.57	0.46	1.24	1.06	54	43	0.8	0.26	428	0018-1L
530.00	cut	Ca : lt or to or gy	-	-	0.09	-	0.03	-	300	-	-	-	0020-1L
550.00	cut	Sh/Clst: m gy	0.08	0.36	1.18	0.31	0.72	50	164	0.4	0.18	427	0022-1L
610.00	cut	Sh/Clst: m gy to drk gy	0.08	0.60	0.77	0.78	0.88	68	88	0.7	0.12	439	0028-1L
640.00	cut	S/Sst : w to lt gy	0.01	-	0.01	-	0.03	-	33	-	1.00	-	0031-1L
650.00	cut	Sh/Clst: m gy to drk gy	0.12	0.87	2.78	0.31	1.57	55	177	1.0	0.12	429	0032-1L
690.00	cut	Sh/Clst: m gy	0.24	0.73	1.30	0.56	0.93	78	140	1.0	0.25	429	0035-1L
730.00	cut	Sh/Clst: m gy	0.33	0.77	0.73	1.05	0.91	85	80	1.1	0.30	432	0038-2L
770.00	cut	Sh/Clst: m gy	0.27	0.28	0.54	0.52	0.37	76	146	0.6	0.49	417	0040-2L
810.00	cut	S/Sst : w to lt gy	0.06	0.02	0.18	0.11	0.04	50	450	0.1	0.75	327	0043-1L
960.00	cut	Sh/Clst: gn gy to m gy	0.49	0.44	1.04	0.42	0.38	116	274	0.9	0.53	424	0227-1L
1000.00	cut	Sh/Clst: lt gy to m gy	3.94	0.26	0.70	0.37	0.64	41	109	4.2	0.94	417	0046-1L

Table 2 : Rock-Eval table for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1130.00	com	bulk	1.27	0.27	0.35	0.77	0.33	82	106	1.5	0.82	424	0269-0B
1190.00	cut	Sh/Clst: lt gy to m gy	3.20	1.28	0.36	3.56	0.88	145	41	4.5	0.71	426	0245-1L
1220.00	cut	Sh/Clst: m gy	0.98	1.89	0.43	4.40	0.86	220	50	2.9	0.34	432	0248-1L
1270.00	cut	Sh/Clst: lt gy to m gy	0.71	0.29	0.45	0.64	0.31	94	145	1.0	0.71	420	0253-1L
1300.00	cut	S/Sst : w to lt gy	1.38	0.35	3.34	0.10	0.43	81	777	1.7	0.80	386	0255-1L
1340.00	cut	Sh/Clst: lt gy to m gy	2.40	0.85	0.48	1.77	0.57	149	84	3.3	0.74	382	0259-2L
1365.00	cut	Sh/Clst: m gy to drk gy	2.21	1.39	0.38	3.66	1.40	99	27	3.6	0.61	435	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	5.64	0.91	0.86	1.06	1.90	48	45	6.5	0.86	424	0061-1L
1480.00	cut	Ca : w	0.97	0.26	0.52	0.50	0.15	173	347	1.2	0.79	368	0064-1L
1519.05	ccp	S/Sst : w to lt gy to m gy	-	0.03	0.14	0.21	0.06	50	233	-	-	320	0197-1L
1531.70	ccp	S/Sst : lt gy to m gy	0.12	0.29	0.21	1.38	0.65	45	32	0.4	0.29	438	0200-1L
1570.00	cut	Sh/Clst: m gy	0.24	0.52	0.57	0.91	1.07	49	53	0.8	0.32	427	0078-1L
1615.00	cut	Sh/Clst: m gy	0.20	0.53	0.61	0.87	0.97	55	63	0.7	0.27	434	0087-1L
1659.20	ccp	bulk	0.09	0.06	0.11	0.55	0.10	60	110	0.2	0.60	415	0202-0B
1700.00	cut	Sh/Clst: m gy	0.27	1.07	0.27	3.96	0.67	160	40	1.3	0.20	437	0100-1L

Table 2 : Rock-Eval table for well N0CS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1740.00	cut	Sh/Clst: m gy to drk gy	0.31	0.88	0.43	2.05	1.36	65	32	1.2	0.26	437	0108-1L
1820.00	cut	Sh/Clst: m gy to drk gy	0.34	2.33	0.25	9.32	1.64	142	15	2.7	0.13	436	0124-1L
1840.00	com	bulk	0.28	1.23	0.73	1.68	1.48	83	49	1.5	0.19	438	0270-0B
1865.00	cut	Sh/Clst: m gy to drk gy	0.34	0.84	0.76	1.11	1.50	56	51	1.2	0.29	427	0132-1L
1885.00	cut	Sh/Clst: m gy to drk gy	0.41	1.32	0.42	3.14	1.51	87	28	1.7	0.24	436	0136-1L
1915.00	cut	Sh/Clst: m gy to drk gy	0.51	0.93	1.67	0.56	1.33	70	126	1.4	0.35	428	0142-1L
1940.00	cut	Sh/Clst: lt gy to m gy	0.20	0.38	0.39	0.97	0.29	131	134	0.6	0.34	437	0147-1L
1970.00	cut	Sh/Clst: lt gy to m gy to drk gy	0.27	0.63	0.50	1.26	0.52	121	96	0.9	0.30	441	0153-1L
2000.00	cut	Sh/Clst: lt gy to m gy to drk gy	0.26	0.39	1.05	0.37	0.54	72	194	0.6	0.40	430	0159-1L
2030.00	cut	Sh/Clst: gy to m gy	0.07	0.05	0.45	0.11	0.17	29	265	0.1	0.58	428	0165-1L
2060.00	cut	Sh/Clst: lt gy to m gy to lt brn gy	0.04	0.01	0.43	0.02	0.15	7	287	0.1	0.80	-	0171-1L
2090.00	cut	Sh/Clst: lt gy to m gy to pl brn	0.06	0.03	0.42	0.07	0.20	15	210	0.1	0.67	354	0177-1L
2130.00	cut	Marl : lt brn to m brn to pl brn	0.15	0.05	0.54	0.09	0.06	83	900	0.2	0.75	323	0185-1L
2165.00	cut	Marl : lt brn to m brn to pl brn	0.12	0.02	0.66	0.03	0.07	29	943	0.1	0.86	-	0192-1L

Table 2 : Rock-Eval table for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2182.00	ccp	Sh/Clst: m brn to pl brn	0.08	0.05	0.08	0.63	0.06	83	133	0.1	0.62	-	0203-1L
2194.25	ccp	Sltst : m brn to pl brn	0.03	0.02	0.08	0.25	0.03	67	267	0.1	0.60	-	0206-1L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
510.00	cut	Marl : lt gy to lt or	12.19	33.21	48.76	5.84	0.57	0018-1L
690.00	cut	Sh/Clst: m gy	11.07	32.94	49.37	6.62	0.73	0035-1L
770.00	cut	Sh/Clst: m gy	6.84	33.81	51.42	7.93	0.28	0040-2L
960.00	cut	Sh/Clst: gn gy to m gy	14.04	34.30	45.01	6.66	0.44	0227-1L
1000.00	cut	Sh/Clst: lt gy to m gy	6.14	27.50	50.56	15.80	0.26	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	9.39	36.41	46.83	7.37	1.28	0245-1L
1220.00	cut	Sh/Clst: m gy	4.46	24.45	49.73	21.36	1.89	0248-1L
1300.00	cut	S/Sst : w to lt gy	4.60	37.55	50.76	7.09	0.35	0255-1L
1365.00	cut	Sh/Clst: brn to pl brn	6.73	27.82	52.79	12.66	-	0262-1L
1465.00	cut	Sh/Clst: m gy to drk gy	7.50	26.26	52.82	13.42	0.91	0061-1L
1480.00	cut	Ca : w	4.15	27.78	55.08	12.99	0.26	0064-1L
1570.00	cut	Sh/Clst: m gy	16.23	34.77	41.31	7.70	0.52	0078-1L
1820.00	cut	Sh/Clst: m gy to drk gy	5.68	20.83	42.31	31.18	2.33	0124-1L
1885.00	cut	Sh/Clst: m gy to drk gy	8.44	32.23	49.51	9.82	1.32	0136-1L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
2000.00	cut	Sh/Clst: lt gy to m gy to drk gy	12.76	24.96	52.20	10.08	0.39	0159-1L
2130.00	cut	Marl : lt brn to m brn to pl brn	3.64	42.77	48.08	5.50	0.05	0185-1L

Table 4 a: Weight of EOM and Chromatographic Fraction for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC(e) (%)	Sample
1000.00	cut	Sh/Clst: lt gy to m gy	7.2	24.8	12.9	0.8	0.9	10.2	13.7	11.1	0.62	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	2.5	11.5	4.9	1.2	0.5	4.9	6.1	5.4	0.88	0245-1L
1300.00	cut	S/Sst : w to lt gy	0.9	2.7	0.9	0.8	0.3	0.7	1.7	1.0	0.24	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	1.0	3.0	1.5	0.6	0.5	0.4	2.1	0.9	1.33	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	1.6	12.2	5.7	1.2	0.7	4.6	6.9	5.3	1.63	0061-1L
1480.00	cut	Ca : w	1.0	3.5	1.2	1.1	0.7	0.5	2.3	1.2	0.17	0064-1L

Table 4 b: Concentration of EOM and Chromatographic Fraction (wt ppm rock) for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1000.00	cut	Sh/Clst: lt gy to m gy	3454	1796	111	125	1420	1908	1545	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	4637	1975	483	201	1975	2459	2177	0245-1L
1300.00	cut	S/Sst : w to lt gy	3176	1058	941	352	823	2000	1176	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	3092	1546	618	515	412	2164	927	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	7393	3454	727	424	2787	4181	3212	0061-1L
1480.00	cut	Ca : w	3431	1176	1078	686	490	2254	1176	0064-1L

Table 4 c: Concentration of EOM and Chromatographic Fraction (mg/g TOC(e)) for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1000.00	cut	Sh/Clst: lt gy to m gy	557.10	289.78	17.97	20.22	229.13	307.75	249.35	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	526.94	224.52	54.99	22.91	224.52	279.51	247.43	0245-1L
1300.00	cut	S/Sst : w to lt gy	1323.53	441.18	392.16	147.06	343.14	833.33	490.20	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	232.54	116.27	46.51	38.76	31.01	162.78	69.76	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	453.62	211.94	44.62	26.03	171.04	256.55	197.06	0061-1L
1480.00	cut	Ca : w	2018.45	692.04	634.37	403.69	288.35	1326.41	692.04	0064-1L

Table 4 d: Composition of material extracted from the rock (%) for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	HC	Non-HC	Sat	HC	Sample
			EOM	EOM	EOM	EOM	EOM	EOM	Aro	Non-HC	
1000.00	cut	Sh/Clst: lt gy to m gy	52.02	3.23	3.63	41.13	55.24	44.76	1612.50	123.42	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	42.61	10.43	4.35	42.61	53.04	46.96	408.33	112.96	0245-1L
1300.00	cut	S/Sst : w to lt gy	33.33	29.63	11.11	25.93	62.96	37.04	112.50	170.00	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	50.00	20.00	16.67	13.33	70.00	30.00	250.00	233.33	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	46.72	9.84	5.74	37.70	56.56	43.44	475.00	130.19	0061-1L
1480.00	cut	Ca : w	34.29	31.43	20.00	14.29	65.71	34.29	109.09	191.67	0064-1L

Table 5 : Saturated Hydrocarbon Ratios for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	Pristane	Pristane	Pristane + Phytane	Phytane	CPI	Sample
			nC17	Phytane	nC17 + nC18	nC18		
1000.00	cut	Sh/Clst: lt gy to m gy	0.62	1.20	0.82	1.36	-	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	0.40	0.90	0.45	0.51	-	0245-1L
1300.00	cut	S/Sst : w to lt gy	0.60	1.00	0.68	0.79	1.22	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	0.53	1.27	0.64	0.85	1.55	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	0.50	0.94	0.61	0.76	-	0061-1L
1480.00	cut	Ca : w	0.73	1.07	0.86	1.06	-	0064-1L

Table 6 : Aromatic Hydrocarbon Ratios for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT (3+2) /1MDBT	Sample
1000.00	cut	Sh/Clst: lt gy to m gy	-	-	-	-	-	-	-	-	3.25	0046-1L
1190.00	cut	Sh/Clst: lt gy to m gy	-	-	-	-	-	-	-	-	-	0245-1L
1300.00	cut	S/Sst : w to lt gy	-	-	-	-	-	-	-	-	-	0255-1L
1365.00	cut	Sh/Clst: m gy to drk gy	-	-	-	1.16	0.69	0.60	0.81	-	-	0262-2L
1465.00	cut	Sh/Clst: m gy to drk gy	1.03	-	-	3.73	1.72	2.33	1.43	-	4.29	0061-1L
1480.00	cut	Ca : w	-	-	-	-	-	-	-	-	-	0064-1L

Table 7 : Thermal Maturity Data for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T _{max} (°C)	Sample
480.00	cut bulk	0.25	9	0.04	-	-	-	0015-0B
510.00	cut Marl : lt gy to lt or	-	-	-	-	4.0-4.5	428	0018-1L
650.00	cut Sh/Clst: m gy to drk gy	-	-	-	-	4.5-5.0	429	0032-1L
780.00	cut bulk	0.38	4	0.04	-	-	-	0041-0B
960.00	cut Sh/Clst: gn gy to m gy	-	-	-	-	5.0	424	0227-1L
992.00	cut bulk	0.35	9	0.04	-	-	-	0230-0B
1150.00	cut bulk	0.27	6	0.02	-	-	-	0241-0B
1220.00	cut Sh/Clst: m gy	-	-	-	-	4.0-5.0	432	0248-1L
1365.00	cut Sh/Clst: brn to pl brn	-	-	-	-	5.5	-	0262-1L
1575.00	cut bulk	0.52	3	0.03	-	-	-	0079-0B
1695.00	cut bulk	0.55	4	0.04	-	-	-	0099-0B
1820.00	cut Sh/Clst: m gy to drk gy	-	-	-	-	5.5	436	0124-1L
1850.00	cut bulk	0.81	5	0.04	-	-	-	0129-0B
2000.00	cut Sh/Clst: lt gy to m gy to drk gy	-	-	-	-	5.5(?)	430	0159-1L

Table 7 : Thermal Maturity Data for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T _{max} (°C)	Sample
2005.00	cut	bulk	NDP	-	-	-	-	-	0160-0B
2187.50	ccp	bulk	NDP	-	-	-	-	-	0204-0B

Table 8 : Visual Kerogen Composition Data for well NOCS 7120/12-4

Depth unit of measure: m

Depth	Typ	Lithology	L	A	L	S	C	D			I	S	I	M	S	V	C	V	A	Sample
			%	L	t	l	l	n	e	l	t	L	%	n	s	t	n	o	I	
510.00	cut	Marl : lt gy to lt or	30	**	**	*	*				15	*				55	**	*	*	0018-1L
650.00	cut	Sh/Clst: m gy to drk gy	20	**	**	*	*	*			10	*	*			70	**	*	*	0032-1L
960.00	cut	Sh/Clst: gn gy to m gy	5	*	*						20	*	*			75	*	*	**	0227-1L
1220.00	cut	Sh/Clst: m gy	90	*	*	**		**	**		5	*				5	*		**	0248-1L
1365.00	cut	Sh/Clst: brn to pl brn	65	**	**	*	*				20	*	*			15	*		**	0262-1L
1820.00	cut	Sh/Clst: m gy to drk gy	TR	*	*		*	*			50	*				50	**	*		0124-1L
2000.00	cut	Sh/Clst: lt gy to m gy to drk gy	NDP		*	*	*			?	NDP	*	*	*		NDP	*		*	0159-1L

Table 9a : Tabulation of carbon isotope data for EOM/Oil - fractions or Oils for well N0CS 7120/12-4

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>EOM/Oil</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>NSO</u>	<u>Asphaltenes</u>	<u>Kerogen</u>	<u>Sample</u>
1300.00	cut		-	-25.63	-25.84	-25.94	-25.40	-	0255-1L

Table 9b : Tabulation of cv values from carbon isotope data for well N0CS 7120/12-4

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Sample</u>
1300.00	cut		-25.63	-25.84	-4.17	0255-1L

Table 10A: Variation in Triterpane Distribution (peak height) for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Lithology	B/A	B/B+A	B		C/E	C/C+E	X/E	Z/E	Z/C	Z/Z+E	Q/E	E/E+F	C+D		J1		Sample
				B+E+F										C+D+E+F	D+F/C+E	J1+J2%		
1300.00	S/Sst	0.80	0.45	0.10		0.42	0.30	0.06	0.07	0.16	0.06	0.21	0.92	0.31	0.12	57.48		0255-1

Table 10B: Variation in Sterane Distribution (peak height) for Well NOCS 7120/12-4

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
1300.00	S/Sst	0.56	-	83.58	1.49	1.00	0.79	0.74	0.72	-	2.54	0255-1

Ratio1: $a / a + j$

Ratio2: $q / q + t * 100\%$

Ratio3: $2(r + s) / (q + t + 2(r + s)) * 100\%$

Ratio4: $a + b + c + d / h + k + l + n$

Ratio5: $r + s / r + s + q$

Ratio6: $u + v / u + v + q + r + s + t$

Ratio7: $u + v / u + v + i + m + n + q + r + s + t$

Ratio8: $r + s / q + r + s + t$

Ratio9: q / t

Ratio10: $r + s / t$

Table 10C: Variation in Triaromatic Sterane Distribution for Well NOCS 7120/12-4

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Sample</u>
1300.00	S/Sst	-	-	-	-	-	0255-1

Ratio1: $a1 / a1 + g1$

Ratio2: $b1 / b1 + g1$

Ratio3: $a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1$

Ratio4: $a1 / a1 + e1 + f1 + g1$

Ratio5: $a1 / a1 + d1$

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
1300.00	S/Sst	0.74	0.51	0.74	0.79	0255-1

Ratio1: $A1 / A1 + E1$
 Ratio2: $B1 / B1 + E1$

Ratio3: $A1 / A1 + E1 + G1$
 Ratio4: $A1+B1 / A1+B1+Cl+Dl+E1+F1+G1+H1+I1$

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Sample</u>
1300.00	S/Sst	1.00	-	0255-1

$$\text{Ratio1: } \frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$$

$$\text{Ratio2: } g1 / g1 + I1$$

Table 10F: Raw GCMS triterpane data (peak height) for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Lithology	p	q	r	s	t	a	b	z	c	Sample
		x	d	e	f	g	h	i	j1		
		j2	k1	k2	l1	l2	m1	m2			
1300.00	S/Sst	26.91	9.93	2.41	5.03	1.16	6.95	5.59	3.16	20.38	0255-1
		2.83	3.56	48.15	4.33	16.21	12.15	1.93	8.95		
		6.62	9.42	5.59	4.11	2.49	3.63	3.17			

Table 10G: Raw GCMS sterane data (peak height) for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Lithology	u	v	a	b	c	d	e	f	g	Sample
		h	i	j	k	l	m	n	o		
		p	q	r	s	t					
1300.00	S/Sst	54.16	12.02	10.33	4.83	0.00	0.00	3.75	3.86	2.77	0255-1
		0.00	5.88	5.59	8.19	4.28	0.00	0.00	0.00	0.00	
			0.00	7.78	4.79	4.94					

Table 10H: Raw GCMS trioaromatic sterane data (peak height) for Well NOCS 7120/12-4

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	Sample
1300.00	S/Sst	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0255-1

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	h1	i1	Sample
1300.00	S/Sst	15.43	5.51	0.00	0.00	5.40	0.00	0.00	0.00	0.00	0255-1

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COMPANY INCORPORATED IN U.K. NO. 1509402
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UNIT 14, PARAMOUNT INDUSTRIAL ESTATE,
SANDOWN ROAD, WATFORD WD2 4XA.
TEL: 43196/31416 TELEX: 8812973.

PETROLEUM GEOCHEMISTRY REPORT

PREPARED FOR

NORSK HYDRO.

Geochemical Source Rock Evaluation of Sediments from
Well: 7120/12-4.

BA 84-2194-1

September 1984

21 SEPT. 1984

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SHORT FORM GEOCHEMICAL LOG

WELL: 7120/12-4

STRATIGRAPHY

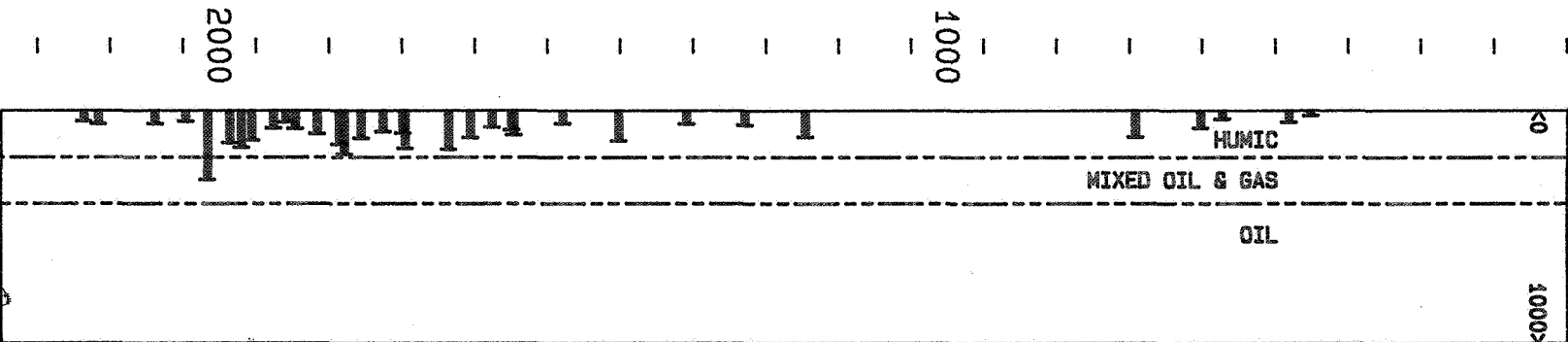
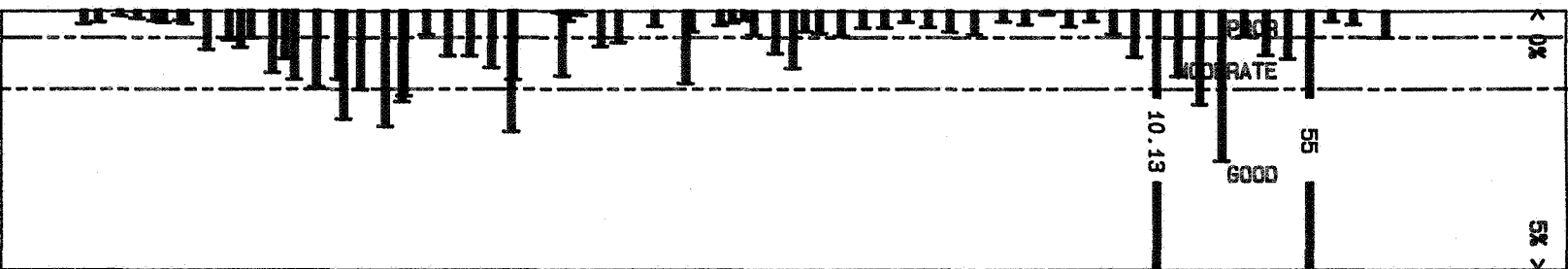
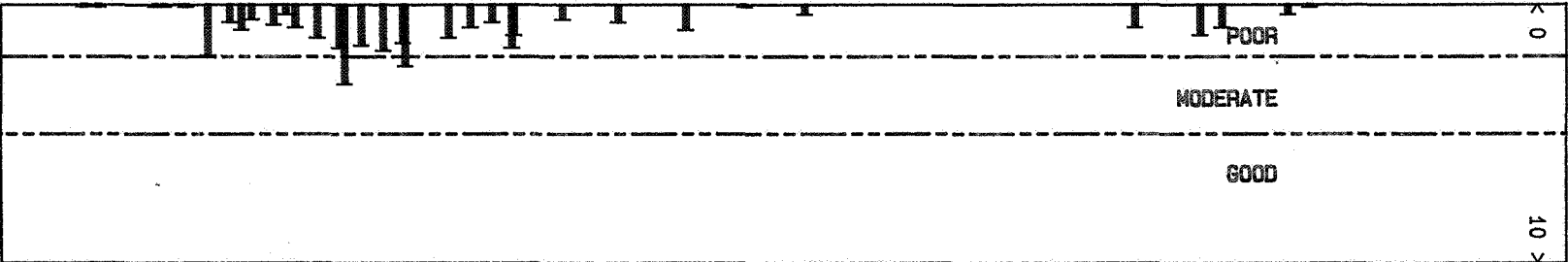
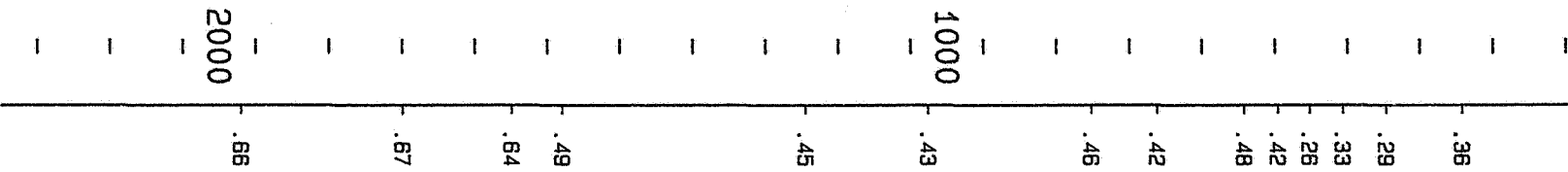
Ro

PYROLYSIS YIELD
Kgs/TONNE

TOC %WT

HYDROGEN
INDEX

PALAEOZOIC	MESOZOIC	TT/QUART
UPPER PERMIAN	MIDDLE-LATE TRIASSIC	L.PLI/PLE



Summary

1. The Trias at the 7120/12-4 locality is only marginally mature. The Permian is mature in the depth range 1450 to 2100 m BRT. The lack of a Jurassic and Cretaceous contrasts with the 7120/12-1 locality.
2. Major structural inversion and erosion has occurred. A thick Jurassic and Cretaceous/Tertiary sequence has not been developed at this locality, supported by former maturity evidence of the Triassic at 7120/12-1 where the depth to the top of the oil window is at ca 3200 m BRT.
3. No source rock potential has been identified. Minor coal abundances, unless better developed in the offstructural setting, are insufficient to realise major gas potential.
4. Extremely high methane contents (>99% CH₄+) are indicative of a biogenic gas reservoir (Triassic age) at shallow depth, 435 to 735 m.

1. Introduction

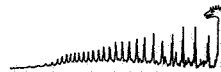
A total of sixty-five cuttings samples, thirteen sidewall cores and four core pieces were used for a geochemical source rock evaluation of the Well: 7120/12-4. Samples from depths 270 m - 2190 m of Pleistocene to Upper Permian ages were analysed. Biostratigraphic dating was provided by Norsk Hydro,

Maturity was determined by Vitrinite Reflectance (Ro) and Spore Colouration Indices (SCI) from Visual Kerogen analyses. UV fluorescence data corroborates Ro and SCI data. Additional maturity data from pyrolysis techniques is reported.

Total Organic Carbon (TOC) contents of the sediments were used to determine organic richness and derive hydrogen indices (HI) and predict oil and/or gas type for Kerogen rich sediments.

Concentration of head space gases in samples from 435 - 930 m were measured. Analyses from deeper strata were not requested.

Pyrolysis techniques were used to establish the hydrocarbon source potential of the sediments. Hydrocarbon typing by pyrolysis was supported by Visual Kerogen descriptions completed where possible at the same depth.



2. Samples and Techniques

All the cuttings samples were received in tin cans, the sidewall cores in Schlumberger jars and the four core pieces wrapped in plastic.

Prior to washing the head space cuttings gases were determined by gas chromatographic separation of the C₁ - C₄ hydrocarbons using a Perkin Elmer F11 Gas Chromatograph. Results are recorded in Table 2.

Samples were then thoroughly washed with water to remove all traces of drilling mud and air dried under controlled conditions at 40°C. The cuttings samples were then carefully hand picked to remove obvious caved material and concentrate organic rich lithologies.

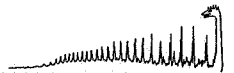
Samples for Vitrinite Reflectance measurements were ground ca 1 mm, mounted in an epoxy resin block and polished. Reflectivity values were measured using a reflected light microscope with an oil immersion objective. Results are recorded in Table 3. Histograms of reflectance distributions are presented in Figure 1. UV spore fluorescence colours are additionally recorded.

Samples for Total Organic Carbon (TOC) measurements were finely ground, sieved to homogenise and digested with fuming hydrochloric acid to remove mineral carbonate. Acid digested samples were then combusted in a Carlo Erba 1106 Carbon, Hydrogen, Nitrogen analyser and the TOC determined relative to those of calibrated standards. The results of these measurements are shown in Table 5. Repeats were run to ensure accuracy.

Samples for Screening Pyrolysis were ground, sieved and examined using a modified Hewlett-Packard 5711 Gas Chromatograph. To measure source rock potential, samples

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were subjected to two initial isothermal heating periods of 150°C and 325°C and then ramped to 575°C. Two peaks of interpretative significance were evolved, which are conventionally referred to as P1 and P2 and were related to those of a calibrated standard. Standards are run daily to ensure accuracy.



3. Results and Discussion

(a) Gas Analysis

Cuttings samples from 435 m - 930 m were examined for their C₁ (Methane) to C₄ (Butane) hydrocarbon content. From this data gas wetness values were produced which are shown in Table 2.

(i) Gas Content

In the majority of samples examined, Methane content was extremely high, > 50000 ppm. The major proportion of the total C₁ - C₄ gases was Methane C₁ with very minor quantities of Ethane C₂, the remaining C₃ - C₄ fraction were absent from the head space cuttings. The extremely high dry gas (ca > 99% CH₄) contents at such shallow depths are indicative of a biogenic gas reservoir.

ii) The gas wetness value is derived from the following formula.

$$\text{Percent gas wetness} = \frac{C_2 + C_3 + iC_4 + nC_4}{C_1 + C_2 + C_3 + iC_4 + nC_4} \times 100$$

In the 7120/12-4 well, wet gas contents are extremely low, indicative of dry biogenic methane. (Hunt (1979, 1), has indicated that in a number of sedimentary basins, dry biogenic methane may be found at shallow depths, methane plus heavier gas (wet gases) in deeper catagenic areas, followed by dry gases (thermogenic) in the deepest and oldest sediments. As requested further gas analyses at deeper intervals were not performed.

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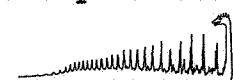
(b) Maturity

Various maturity thresholds based on Vitrinite Reflectance are documented (2, 3). Generation thresholds based on Vitrinite Reflectance and Spore Colouration ratings used at Paleochem are as follows:

	<u>Ro %</u> <u>(Average)</u>	<u>UV Fluorescence</u> <u>Colours</u>	<u>Spore Colours</u> <u>(1-7 Scale)</u>
Oil Generation Threshold	0.45 to 0.6	Light Orange to Mid Orange	3/4 Yellow/Orange-Orange
Peak Oil	0.7 to 0.9	Deep Orange to Orange/Red	4/5 Orange/Brown
Gas Generation	0.7 to 1.0	Deep Orange to Red	5 Brown
Oil Floor (40 \leq API oils)	1.3	-	5/6 Brown-Black/Black
Condensate Floor	? 2.0		
Gas Floor	3.2		7 Black

The results of individual Vitrinite Reflectance measurements are shown in Table 3. In addition, histograms showing the distributions of the individual reflectance values are given at the end of this report.

Sediments 270 m - 1196 m Quaternary to Mesozoic, showed Ro values in the range 0.26 - 0.48%, which suggests that this interval is immature for hydrocarbon generation onstructure. Upper Permian sediments from 1453 m - 2089 m contained predominantly reworked phytoclast material and inertinite and only minor quantities of vitrinite which severely hampered maturity measurements. Ro values of 0.49% to 0.72% suggest the Upper Permian is mature for hydrocarbon generation. The present day shallow depth for the oil window (1450 m - 2100 m) is explained by uplift and erosion at this locality. Bjoroy et al (1983, 4), have reported the top of the



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oil window ($R_o = 0.60\%$) at ca 2700 m (BRT) in the 7119/12-1 well. For 7120/12-1 the depth is ca 3200 m within the Triassic.

Yellow - yellow orange fluorescence colours for the Quaternary - Middle Triassic sediments and mid orange to red fluorescence colours for the Upper Permian sediments are also in agreement with maturity levels indicated by R_o values.

Visual Kerogen descriptions on twenty-four samples from 730 - 2190 m (Middle - Late Triassic to Upper Permian) were severely hampered by the paucity of miospores and colour maturation ratings were based on the acritarchs present in the sediments. It has been found that acritarchs do not reflect maturation levels as clearly as miospores. Maturation colours of 3/4 - 5 however, are in general agreement with the Vitrinite Reflectance measurements and suggest sediments from 921 - 1290 m are approaching the O.G.T., while sediments below 1290 m are mature for hydrocarbon generation. However, the following section reveals little source rock potential for either gas or oil in the studied sequence.

(c) Source Potential

Samples having Total Organic Carbon values below 0.5% are generally regarded as containing insufficient organic material to be of commercial value (5). Thus this value is used as a cut-off point in this report unless Screening Pyrolysis indicates otherwise. Source potential ratings, based on conventional geochemical data are given below.

Poor	Less than 0.5% TOC
Moderate	0.5% to 1.5% TOC
Good	Greater than 1.5% TOC

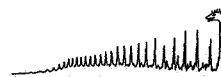


Pyrolytic methods are widely used for estimating the generation capabilities of potential source rocks (6). Pyrolysis techniques complement the more traditional method of assessing hydrocarbon potential using Total Organic Carbon measurements, because they provide more meaningful data. Pyrolysis does not take into account any reworked and/or inertinite present in source rocks. Inertinite adds to the organic carbon value, but has very limited or no hydrocarbon potential.

The first peak (P1) represents the quantity of free hydrocarbons that are present in the sediment at the time of sampling. The second peak represents the quantity of hydrocarbons present and yet to be generated. The P2 peak is produced by conversion of the Kerogen content by thermal cracking in the instrument. This represents the amount of hydrocarbons yet to be generated by the complete conversion, under natural conditions, throughout future geological history. Both the P1 and P2 yields are expressed in kg./tonne. Often samples may contain significant quantities of in situ hydrocarbons (P1) relative to the amount of Kerogen breakdown products (P2) and during conventional pyrolysis these may elute with the P2 fraction. For this reason, samples with significant hydrocarbon potential, and where the P1 is above 10% of the P2 value, are solvent-extracted prior to re-evaluation of the hydrocarbon potential. A more accurate assessment of the P2 yield is thus obtained.

Comparison of pyrolysis data with conventional geochemical data to provide hydrocarbon potential ratings gives P2 yield values in practical exploration terms of:

Poor	0.1 to 2.0 kg./tonne rock
Moderate	2.0 to 5.0 kg./tonne rock
Good	5.0 to 15.0 kg./tonne rock
Excellent	>15.0 kg./tonne rock



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In addition, P1 P2 and TOC values can be used to derive the Hydrogen Index (HI) and Production Index (PI) as follows:-

$$\text{Hydrogen Index} = \frac{\text{P2 yield}}{\% \text{ TOC}} \times 100$$

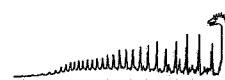
$$\text{Production Index} = \frac{\text{P1}}{\text{P1} + \text{P2}}$$

HI is independent of the abundance of organic matter present in a sediment and can be used to determine the type of Kerogen (oil and/or gas prone) present in a source rock. In general, the higher the hydrogen index, the more oil prone the Kerogen.

The Production Index is a quantitative evaluation of hydrocarbon generation from Kerogen. The P1 yield represents the fraction of the Kerogen transformed into hydrocarbons unless affected by migrated or contaminant hydrocarbons. The P2 yield represents hydrocarbons yet to be generated. If unaffected by migrated or contaminant hydrocarbons, the P1/P1 + P2 ratio determines the minimum amount of hydrocarbon generation which has formerly occurred or is presently occurring. It is possible that some of the generated hydrocarbons have migrated from the mature source rock. Hence, the P1/P1 + P2 ratio represents a minimum value. A P1/P1 + P2 ratio of 0.1, equivalent to 10% generation, is therefore equated with a maturity \geq OGT. If migration has not occurred, and this is not common for mature source rocks, a ratio of 0.5 is equated with \geq peak oil generation.

i) Quaternary - Tertiary

This interval includes sediments from 270 m - 405 m (Pleistocene to Lower Pliocene). Total Organic Carbon



content for this interval ranged from poor to moderate organic richness (TOC % wt. range 0.27% - 0.52%). No further analyses were requested for this interval.

ii) Middle - Late Triassic

Forty sediments from 435 m to 1360 m were analysed from the Middle - Late Triassic. Lithologies from this interval consisted predominantly of sandstone with minor amounts of siltstone, mudstone and shale.

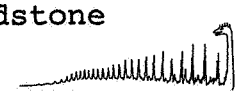
Total Organic Carbon contents for this interval were poor. (TOC % wt. range 0.07 - 0.55%). TOC values $> 10\%$ are attributable to minor quantities of carbonaceous shales and coals, such as at 495 m to 510 m ($R_o = 0.26\%$). This lignite was not studied further.

Screening Pyrolysis measurements downrate all sediments to poor hydrocarbon potential in the range 0.1 kg. - 1.5 kg./tonne rock. Hydrogen indices are low (< 100) which indicates a poor humic gas prone formation.

Visual Kerogen descriptions completed on four samples from Middle - Late Triassic showed trace to common quantities of vascular plant material and trace quantities of amorphous kerogen and suggested that if the interval had any significant generative potential it would be classified as being predominantly gas prone. Low hydrogen indices indicative of oxidised and/or reworked kerogens preclude the presence of source potential, even for gas. Minor coal sequences on structure would not yield much gas potential.

iii) Upper Permian

Thirty-seven sediments from the Upper Permian interval were analysed (1380 m - 2190 m). The predominant lithology for the interval 1380 m - 1815 m was sandstone

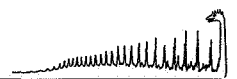


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grading to siltstone with minor quantities of limestone. From 1830 m - 2190 m mudstone and shales predominate with minor limestone and dolomite. TOC contents for this interval ranged from poor to good (TOC% wt. range 0.02% - 2.34%). Screening Pyrolysis measurements downrated all sediments to poor to moderate (40.1 kg. - 3 kg./tonne rock). It is considered that this downrating in potential is partly due to the presence of reworked material and inertinite identified by reflected light microscopy.

Hydrogen indices for the majority of samples is low (<200) which indicate that these samples have at best moderate gas potential. One sample at 2010-25 m with an HI value of 267 suggests that this sediment has poor potential to source both oil and gas. The low P2 potential (1.9 kg./tonne rock) precludes its classification as a potential source rock onstructure.

Visual Kerogen data for the Upper Permian confirmed pyrolysis results and revealed a humic gas prone formation. An increase of amorphous sapropelic kerogen at 2010 - 25 m suggested mixed oil and gas potential at this depth. The quantitative pyrolytic yield (1.9 kg./tonne rock) indicated that no oil potential could be realised.



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4. Conclusions

- i) Extremely high methane contents at 435 to 735 m (>40,000 ppm) and dry gas character (99% + methane) reveal a biogenic gas reservoir at shallow depth.
- ii) Permian sediments are mature onstructure, 1450 to 2100 m BRT at shallow depth, indicative of major structural inversion at this locality. At 7120/12-1 BJOROY et al (1983) have reported that the Triassic at ca 3200 m (BRT) is mature ($R_o = 0.60\%$). At this latter locality a significant Jurassic and Cretaceous sequence is evident which is missing from the 7120/12-4 locality.
- iii) No significant oil and/or gas potential has been observed at the 7120/12-4 locality. No real evidence for oil shows or stains were discovered.

References

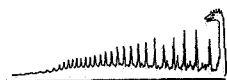
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2. Saxby J.D. J. Pet. Geol., 5, 2. pp 117 - 128 (1982).
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Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
270-315	Cuttings	Pleistocene	100% quartz and igneous rock.
390-405	Cuttings	L. Pliocene	100% quartz sand.
435-450	Cuttings	Mid-Late Triassic	100% Siltstone, dark grey/med. grey.
450-465	Cuttings	Mid-Late Triassic	100% Siltstone, dark grey/med. grey.
465-480	Cuttings	Mid-Late Triassic	90% Sandstone, med. grey, 10% Mudstone, dark grey.
495-510	Cuttings	Mid-Late Triassic	70% Siltstone, med. grey, 30% coal.
525-540	Cuttings	Mid-Late Triassic	100% Sandstone, medium/light grey.
540-555	Cuttings	Mid-Late Triassic	90% Sandstone, medium grey to light grey, 10% Claystone, grey.
555-570	Cuttings	Mid-Late Triassic	50% Sandstone, med. grey, 50% Mudstone dark grey.
585-600	Cuttings	Mid-Late Triassic	50% Sandstone, med. grey/light grey. 50% Mudstone, dark grey.
615-630	Cuttings	Mid-Late Triassic	50% Sandstone, med. grey/light grey, 50% Mudstone, dark grey.
645-660	Cuttings	Mid-Late Triassic	85% Mudstone, dark grey, 15% Limestone, white.
675-690	Cuttings	Mid-Late Triassic	45% Sandstone, light grey, 55% Mudstone, dark grey.

Table 1



Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
705-720	Cuttings	Mid-Late Triassic	45% Sandstone, light grey, 45% quartz, yellow brown, 5% carb. shale.
720-735	Cuttings	Mid-Late Triassic	50% Sandstone, light grey, 50% Mudstone, med. grey.
735-750	Cuttings	Mid-Late Triassic	50% Sandstone, light grey, 50% Mudstone, med. grey.
730	SWC	Mid-Late Triassic	100% Shale, med./dark grey.
765-780	Cuttings	Mid-Late Triassic	70% Sandstone, light grey, 30% Mudstone, med. grey.
795-810	Cuttings	Mid-Late Triassic	50% Sandstone, light grey, 50% Mudstone, green/grey.
825-840	Cuttings	Mid-Late Triassic	80% Sandstone, light grey, 20% Mudstone, green/grey.
855-870	Cuttings	Mid-Late Triassic	100% Sandstone, light grey.
885-800	Cuttings	Mid-Late Triassic	100% Sandstone, light grey.
915-930	Cuttings	Mid-Late Triassic	100% Sandstone, light grey.
921	SWC	Mid-Late Triassic	90% Sandstone, light grey, 10% Mudstone, med. grey.
960-975	Cuttings	Mid-Late Triassic	80% Sandstone, light grey, 20% Mudstone, med. grey.

Table 1 - continued

Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
990-1005	Cuttings	Mid-Late Triassic	40% Sandstone, light grey, 60% Siltstone, med. grey.
1020-1035	Cuttings	Mid-Late Triassic	95% Siltstone, med. grey, 5% Sandstone, light grey.
1050-1065	Cuttings	Mid-Late Triassic	95% Siltstone, med. grey, 5% Sandstone, light grey.
1080-1095	Cuttings	Mid-Late Triassic	100% Siltstone, light grey to med. grey.
1110-1125	Cuttings	Mid-Late Triassic	100% Siltstone, light grey to med. grey.
1140-1155	Cuttings	Mid-Late Triassic	60% Sandstone, light grey, 40% Mudstone, med. grey.
1180	SWC	Mid-Late Triassic	100% Mudstone, med. grey.
1170-1185	Cuttings	Mid-Late Triassic	50% Sandstone, light grey, 50% Mudstone, dark grey.
1200-1215	Cuttings	Mid-Late Triassic	100% Mudstone, medium grey/light grey, calcareous.
1230-1245	Cuttings	Mid-Late Triassic	50% Mudstone, medium grey/light grey, 50% Limestone, white.
1260-1275	Cuttings	Mid-Late Triassic	90% Limestone, white, 10% Mudstone, med. grey.
1280	SWC	Mid-Late Triassic	100% Siltstone, medium grey.
1275-1290	Cuttings	Mid-Late Triassic	100% Mudstone, med./light grey, calcareous, iron oxide staining.

Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
1290-1305	Cuttings	Mid-Late Triassic	100% Mudstone, med./ light grey, calcareous.
1305-20	Cuttings	Mid-Late Triassic	90% Sandstone, light grey, 10% Mudstone, medium grey.
1335-50	Cuttings	Mid-Late Triassic	100% Sandstone, light grey, iron staining.
1360	SWC	Mid-Late Triassic	100% Mudstone, sub- fissile, medium grey.
1380-1395	Cuttings	Upper Permian	Received empty tin
1395-1410	Cuttings	Upper Permian	100% Siltstone, medium grey/dark grey.
1453	SWC	Upper Permian	100% Siltstone, medium/ dark grey.
1440-1455	Cuttings	Upper Permian	Received empty tin.
1470-1485	Cuttings	Upper Permian	90% Limestone, white, 10% Mudstone, medium grey.
1500-1515	Cuttings	Upper Permian	50% Limestone, white, 50% quartz, translucent white.
1519.30	Core	Upper Permian	100% Sandstone, light grey.
1515-1530	Cuttings	Upper Permian	100% Sandstone, light grey.
1528.10	Core	Upper Permian	100% Sandstone, light grey.
1529.65	Core	Upper Permian	70% Sandstone, light grey, 30% Siltstone, dark grey.

PALEOCHEM

Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
1530.40	Core	Upper Permian	100% Sandstone, light grey.
1560-75	Cuttings	Upper Permian	100% Sandstone, light grey.
1590-1605	Cuttings	Upper Permian	100% Siltstone, medium grey.
1600	SWC	Upper Permian	100% Siltstone, dark grey.
1620-1635	Cuttings	Upper Permian	100% Siltstone, med./dark grey.
1650-1665	Cuttings	Upper Permian	85% Limestone, white, 15% Siltstone, med. grey.
1680-1695	Cuttings	Upper Permian	85% Limestone, white, 15% Siltstone, med. grey.
1710-1725	Cuttings	Upper Permian	Received empty tin.
1750	SWC	Upper Permian	100% Mudstone, dark/ med. grey.
1740-1755	Cuttings	Upper Permian	95% Siltstone, dark grey, micaceous, 5% Limestone, white.
1770-1785	Cuttings	Upper Permian	85% Sandstone, light grey, 15% Siltstone, med. grey.
1800-1815	Cuttings	Upper Permian	85% Sand, light grey, 15% Siltstone, med./ dark grey.
1830	SWC	Upper Permian	100% Mudstone, dark grey.
1830-1845	Cuttings	Upper Permian	95% Siltstone, dark grey, 5% Limestone, white.

Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
1860-1875	Cuttings	Upper Permian	95% Siltstone, dark grey, 5% Limestone, white.
1890-1905	Cuttings	Upper Permian	95% Siltstone, dark grey, 5% Limestone, white.
1910	SWC	Upper Permian	100% Mudstone, dark grey.
1920-1935	Cuttings	Upper Permian	50% Siltstone, dark grey, 50% Limestone, white.
1950-1965	Cuttings	Upper Permian	100% Mudstone, dark grey/med. grey, slightly calcareous.
1971	SWC	Upper Permian	100% Shale, medium grey.
1980-1995	Cuttings	Upper Permian	100% Shale, dark grey/med. grey, slightly calcareous.
2010-2025	Cuttings	Upper Permian	100% Shale, dark grey/med. grey, slightly calcareous.
2040-2055	Cuttings	Upper Permian	100% Mudstone, light grey/med. grey, slightly calcareous.
2053	SWC	Upper Permian	100% Mudstone, light grey.
2089	SWC	Upper Permian	100% Mudstone, medium grey.
2070-2085	Cuttings	Upper Permian	100% Mudstone, light grey/med. grey, slightly calcareous.
2100-2115	Cuttings	Upper Permian	100% Mudstone, light grey/med. grey, slightly calcareous.

Well: 7120/12-4

LITHOLOGICAL DESCRIPTION

Depth m	Sample Type	Stratigraphy	Lithological Description
2130-2145	Cuttings	Upper Permian	50% Mudstone, light grey, 50% Siltstone, brick red.
2160-2175	Cuttings	Upper Permian	40% Dolomite, light grey, 60% quartz sand, brick red.
2175-2190	Cuttings	Upper Permian	40% Dolomite, light grey, 60% quartz sand, brick red.

Well: 7120/12-4

HEADSPACE GASES DATA

Depth (m)	Methane (C ₁)	Ethane (C ₂)	Propane (C ₃)	Isobutane (iC ₄)	Gas Wetness
435-50	47400	-	-	-	-
465-80	85900	-	-	-	-
495-510	89800	120	-	-	0.1
525-40	620	-	-	-	-
555-70	6300	100	-	-	1.6
585-600	21000	-	-	-	-
615-30	20100	120	-	-	0.6
645-60	69000	-	-	-	-
675-90	37400	60	-	-	0.2
705-20	85800	60	-	-	0.1
720-35	70000	100	-	-	0.1
735-50	40700	60	-	-	0.1
765-80	19200	-	-	-	-
795-810	10100	-	-	-	-

PALEOCHEM

Table 2

Well: 7120/12-4

HEADSPACE GASES DATA

Depth (m)	Methane (C ₁)	Ethane (C ₂)	Propane (C ₃)	Isobutane (C ₄)	Gas Wetness
825-40	150	-	-	-	-
855-70	9500	-	-	-	-
885-900	12700	-	-	-	-
915-930	7000	-	-	-	-

Table 2 - continued

PALEOCHEM

Well No: 7120/12-4

VITRINITE REFLECTANCE DATA

Depth m	Lithology	Special Mineralogy	Bitumen Form	Content	Phytoclasts Inert/Rew./Vit.	Fluorescence Typ/Cont/Col.	Vitrinite Ro _{av} (Points)
270-315	Shale	-	Staining + Wisps	Mod.	Vit. > Inert/Tr.	Sp/Low/Y-Y/O	0.36 ₍₁₁₎
390-405	Shale		Staining	Strong	Vit. > Inert/Tr.	NDP	0.29 ₍₂₀₎
450-465	Siltstone	Haematite	Wisps	Trace	Vit./Tr.	Sp/Tr/Y-Y/O	0.33 ₍₁₄₎
495-510	Coal	-	-	-	Vit./Ab.	NDP	0.26 ₍₂₀₎
540-555	Shale	-	Staining + Wisps	Low	Inert/Low	Sp/Low/Y/O	0.42 ₍₈₎
585-600	Shale	-	Wisps	Mod.	Inert/Mod.	Sp/Tr/Y/O	0.48 ₍₂₀₎
705-720	Shale	-	Staining + Wisps	Low	Vit./Mod.	Sp/Mod./Y	0.42 ₍₂₀₎
795-810	Shale	-	Wisps	Low	Vit./Low	Sp/Low/Y	0.46 ₍₂₀₎
885-900	Sandstone	-	Wisps	Trace	-	-	NDP
1020-35	Shaley Siltstone	-	Wisps	Low	Inert/Tr.	Sp/Low/Y/O	0.43 ₍₉₎
1196	Shale	-	Staining + Wisps	Mod.	Vit./Mod.	Sp/High/Y-R	0.45 ₍₁₉₎ 1.01 ₍₁₎

PALEOCHEM

Table 3

Well No: 7120/12-4

VITRINITE REFLECTANCE DATA

Depth m	Lithology	Special Mineralogy	Bitumen Form	Content	Phytoclasts Inert/Rew/Vit.	Fluorescence Typ/Cont/Col.	Vitrinite Ro _{Av} (Points)
1280	Silty Shale	-	Wisps	Trace	Inert	NDP	0.90 ₍₁₎
1360	Silty Shale	Graphite	-	-	Vit./Tr.	NDP	1.37 ₍₃₎
1453	Silty Shale	Graphite	Wisps+ Staining	Mod.	Rew/High	Sp/Tr./MO-OR	0.72 ₍₁₂₎ 1.07 ₍₇₎ 1.61 ₍₄₎
1529.65	Sandstone	-	Wisps	Mod.	Vit./Mod.	HS/Tr./Y-Y/O	0.49 ₍₂₀₎
1600	Silty Shale	Graphite	Wisps+ Staining	High	Rew/High	Sp/Mod./MO-R	0.64 ₍₁₅₎ 0.93 ₍₃₎ 1.37 ₍₂₎
1750	Silty Shale	Graphite	Wisps+ Staining	High	Rew/High	Sp/Mod./ DO-R	0.67 ₍₅₎ 1.09 ₍₃₎ 1.52 ₍₂₎
1830	Shale	Graphite	Wisps+ Staining	Mod.	Rew/High	Sp/Mod./DO/R	0.64 ₍₆₎ 0.93 ₍₃₎ 1.31 ₍₂₎
1910	Shale	Graphite	Wisps+ Staining	Low	Inert/Mod.	Sp/Mod./OR-R	0.86 ₍₁₎ 1.40 ₍₁₃₎ 2.23 ₍₁₎
1971	Shale	-	Wisps+ Staining	Low	Inert/Low	Sp/High/MO-R	0.66 ₍₁₎ 1.17 ₍₁₎
2053	Limestone + Shale	-	-	-	Inert/Tr.	NDP	1.53 ₍₂₎
2089	Limestone	-	-	-	None	NDP	NDP

PALEOCHEM

Table 3 - continued

Well: 7120/12-4

VITRINITE REFLECTANCE DATA

Depth m	Lithology	Special Mineralogy	Bitumen Form	Content	Phytoclasts Inert/Rew/Vit.	Fluorescence Typ/Cont/Col.	Vitrinite Ro _{Av} (Points)
2100-15	Marl	Iron Oxide	Staining + Wisps	Low	Inert/Tr.	Sp/Low/Y/O	0.97 ₍₃₎
2175-90	Marl	Haematitic	Staining + Wisps	Tr.	Inert/Tr.	Sp/Low/Y/O	NDP

PALEOCHEM

Table 3 - continued

Well: 7120/12-4

VISUAL KEROGEN DATA

PALEOCHEN

Depth (m)	Palynomorphs	Cuticles	Brown Wood	Black Wood	Amorphous	Predominant Source Type	Colour Maturation Rating
730	Abundant*	Trace	Common	Trace/ Common	Trace	Gas	3
921	Trace/Common*	Trace	Trace	Trace	-	None	3/4
1180	Common*	-	Common	Trace/ Common	Trace	Gas	3/4
1275-90	Trace*	Trace	Trace	Trace	Trace	None	3/4
1529.65	Common*	-	Common	Common	-	Gas	4
1620-35	Trace/Common*	-	Abundant	Trace/ Common	-	Gas	4/5
1650-65	Trace/Common*	-	Abundant	Trace/ Common	-	Gas	4/5
1680-95	Trace*	-	Common	Trace	Common	Gas	4/5
1740-55	Common*	-	Abundant	Trace/ Common	Trace	Gas	4/5
1770-85	Trace/Common	-	Common	Trace/ Common	Common	Gas	4/5

Table 4

PALEOCHEM

Well: 7120/12-4

VISUAL KEROGEN DATA

Depth (m)	Palynomorphs	Cuticles	Brown Wood	Black Wood	Amorphous	Predominant Source Type	Colour Maturation Rating
1800-15	Common	-	Common	Trace/ Common	Trace	Gas	4/5
1830-45	Trace/Common*	-	Common	Trace/ Common	Trace	Gas	4/5
1860-75	Trace/Common*	-	Common	Trace/ Common	-	Gas	4/5
1890-1905	Trace/Common*	-	Trace/ Common	Common	-	Gas	4/5
1920-35	Trace*	-	Trace/ Common	Trace/ Common	Trace	Gas	4/5
1950-65	Common*	-	Trace/ Common	Trace/ Common	Trace/ Common	Gas	4/5
1971	Trace*	-	Common	Trace/ Common	Trace	Gas	4/5
1980-95	Common*	-	Trace/ Common	Trace/ Common	Common	Gas	4/5
2010-25	Common*	-	Trace	Trace/ Common	Common/Ab.	Oil/Sub.Gas	4/5
2040-55	Trace	-	Trace	Trace	Trace	None	NDP

Table 4 - continued

Well: 7120/12-4

VISUAL KEROGEN DATA

Depth (m)	Palynomorphs	Cuticles	Brown Wood	Black Wood	Amorphous	Predominant Source Type	Colour Maturation Rating
2070-85	Trace	-	Trace	Trace	Trace	None	NDP
2160-75		B A R R E N					
2175-90		B A R R E N					

* = Acritarchs

NDP = No determination possible.

Table 4 - continued

PALEOCHEM

PALEOCHEM

Well No: 7120/12-4

T.O.C. AND PYROLYSIS DATA

Depth m	TOC	Yield (Kg./tonne)		Hydrogen Index	Production Index
		P1 Peak	P2 Peak		
390-405	0.52				
435-350	0.27				
465-480	0.21				
495-510	0.55	0.1	0.1	18	0.50
525-40	0.93	0.1	0.4	43	0.20
555-70	0.86				
585-600	0.49				
615-30	2.90	0.1 (0.2R)	0.9 (0.9R)	31	0.10
645-60	1.81	0.2 (0.2R)	1.2 (1.5R)	66	0.14
675-90	1.26				
705-20	10.13				
735-50	0.90	0.3 (0.2R)	0.9 (1.1R)	100	0.25
765-80	0.46 (0.45R)				
795-810	0.21				
825-40	0.31				
855-70	0.07				
885-900	0.29				
915-30	0.21				
960-75	0.46				
990-1005	0.41				
1020-35	0.32				
1050-65	0.22				
1080-93	0.33				

Table 5

PALEOCHEM

Well: 7120/12-4

T.O.C. AND PYROLYSIS DATA

Depth m	TOC	Yield (Kg./tonne)		Hydrogen Index	Production Index
		P1 Peak	P2 Peak		
1110-25	0.33		S ₂		
1140-53	0.49 (0.50R)				
1170-85	0.44				
1197	0.40	0.1	0.4	100	0.16
1200-25	1.11				
1230-45	0.82				
1260-75	0.47				
1280	0.18	<0.1	0.1	55	-
1290-1305	0.23				
1305-20	0.28				
1335-50	0.41				
1360	1.41	0.1	1.0	50	0.09
1395-1410	0.30				
1453	0.61	0.2 (0.3R)	0.7 (0.7R)	115	0.22
1470-85	0.69				
1500-15	0.08				
1519.30	0.05				
1528.10	0.05				
1529.65	1.26	0.1	0.6	48	0.14
1515-30	0.2 (0.2R)				
1530.40	0.02				
1590-1605	1.33	0.3 (0.1R)	1.2 (1.1R)	92	0.20
1600	2.34 (2.34R)	0.3	1.7	73	0.15

Table 5 - continued

PALEOCHEM

Well: 7120/12-4

T.O.C. AND PYROLYSIS DATA

Depth m	TOC	Yield (Kg./tonne)		Hydrogen Index	Production Index
		P1 Peak	P2 Peak		
1620-35	1.1	0.2	0.7	63	0.22
1650-65	0.87	0.4	0.9	103	0.30
1680-95	0.87	0.3	1.3	149	0.18
1710-25	0.47				
1740-55	1.65	0.4	2.4	145	0.14
1750	1.76	0.3 (0.4R)	1.5 (1.5R)	85	0.17
1770-85	2.24	0.6	1.8	80	0.25
1800-15	1.53 (1.21R)	0.3	1.6	105	0.16
1830	2.1	0.4	3.1	168	0.11
1830-45	1.32	0.4	1.7	129	0.19
1860-75	1.48	0.6	1.3	88	0.31
1890-1905	1.33	0.3 (0.3R)	0.9 (0.9R)	68	0.25
1910	0.93	0.2 (0.2R)	0.4 (0.5R)	43	0.33
1920-35	1.20	0.2	0.8	67	0.20
1950-65	0.53	0.2	0.6	113	0.25
1971	0.71	0.2	1.0	142	0.17
1980-95	0.57	0.2	0.7	123	0.22
2010-25	0.75	0.4 (0.2R)	1.9 (2.0R)	267	0.17
2040-55	0.25	0.1	0.1	40	0.50
2053	0.19	0.1	<0.1	-	-
2070-85	0.23	<0.1	0.1	-	-
2089	0.2	<0.1 (0.1R)	0.1 (0.1R)	50	-
2110-15	0.15				
2130-45	0.1 (0.1R)				

PALEOCHEM

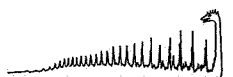
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T.O.C. AND PYROLYSIS DATA

Depth m	TOC	Yield (Kg./tonne)		Hydrogen Index	Production Index
		P1 Peak	P2 Peak		
2160-75	0.22	0.1	0.1	50	0.50
2175-90	0.26	0.1	0.1	39	0.50

R = Repeat Value

Table 5 - continued



7120/12-4 VITRINITE REFLECTANCE DISTRIBUTIONS

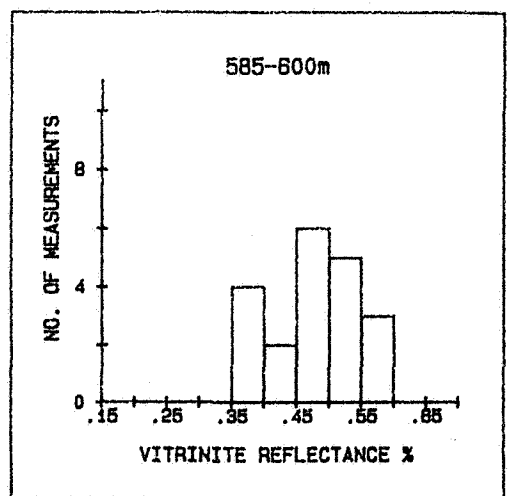
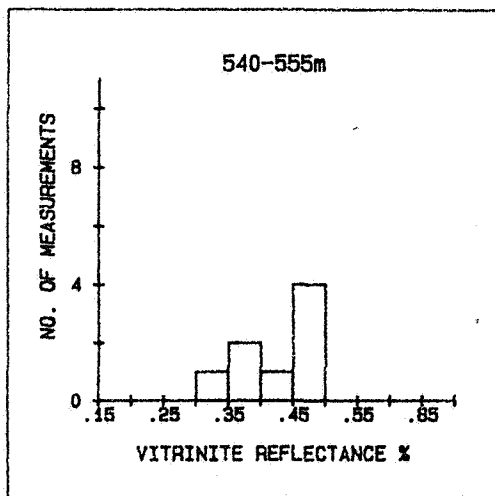
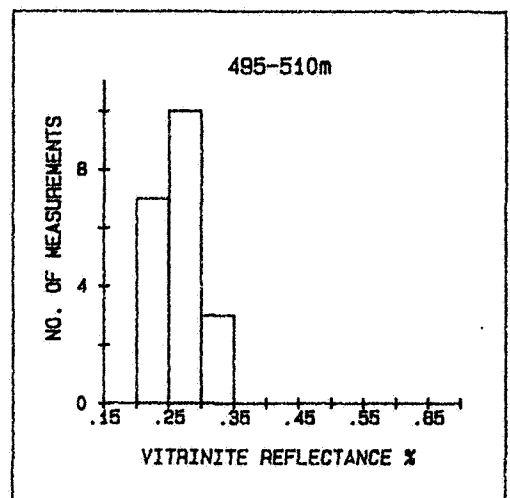
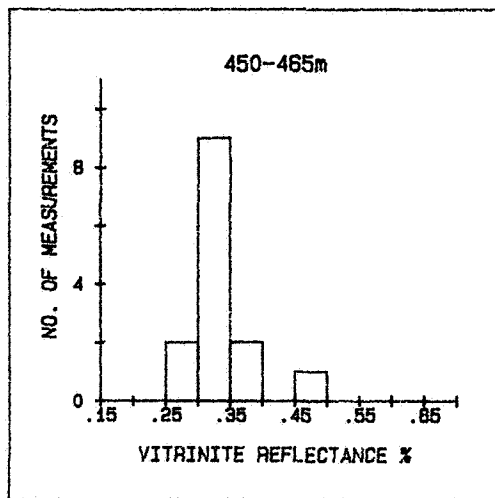
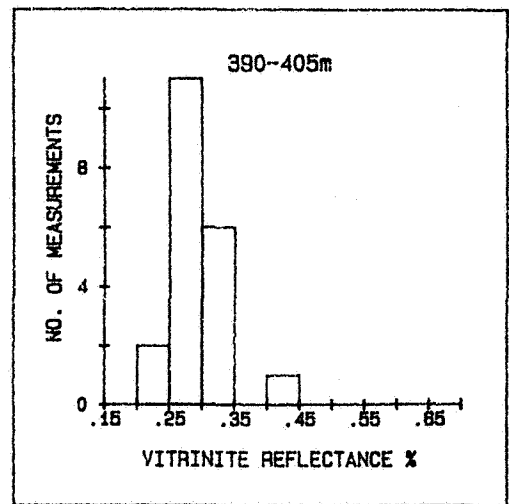
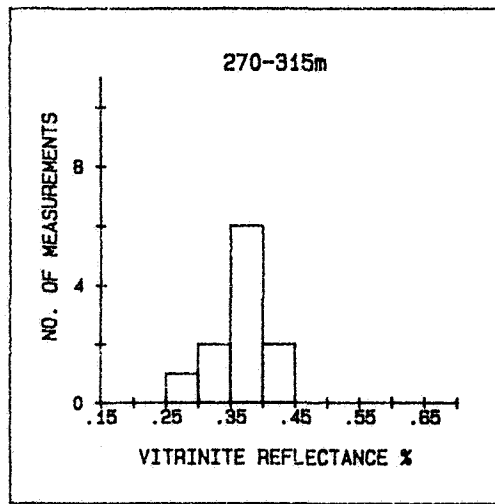


Figure 1

7120/12-4 VITRINITE REFLECTANCE DISTRIBUTIONS

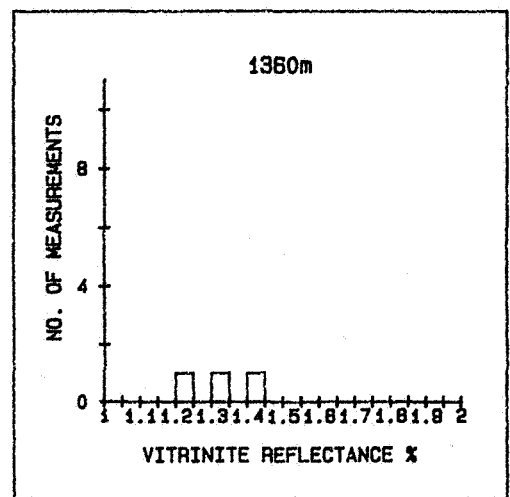
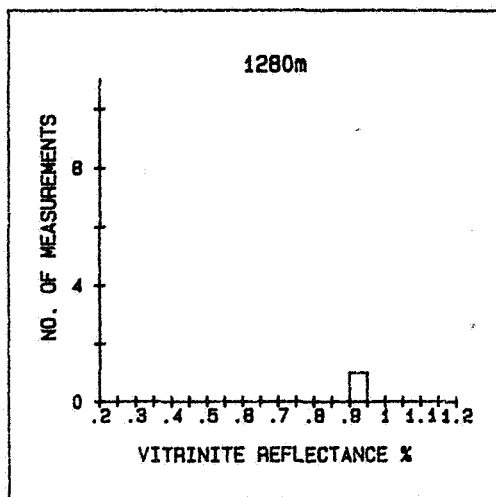
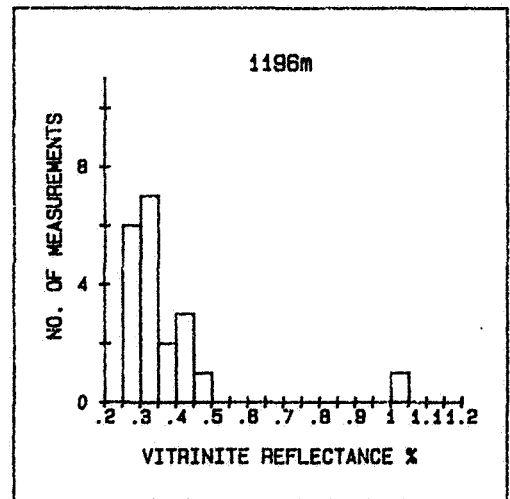
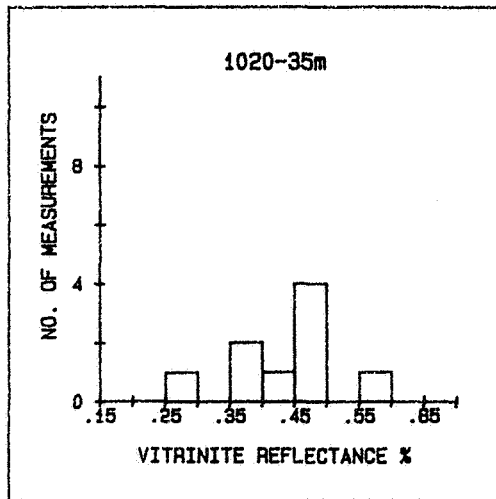
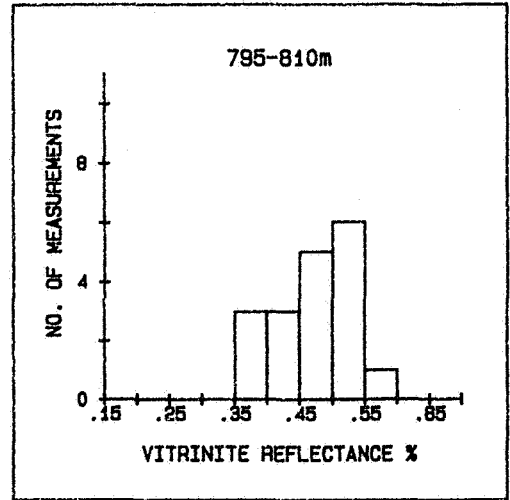
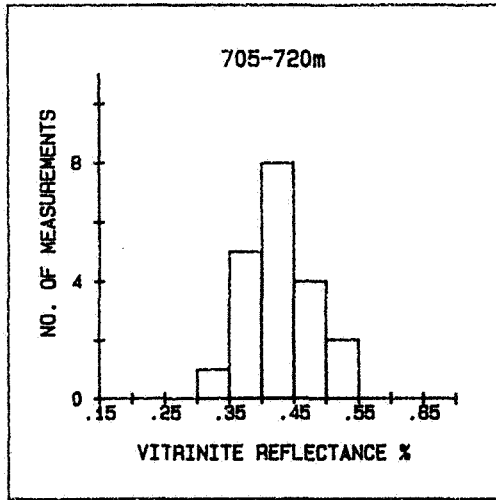


Figure 1 - continued

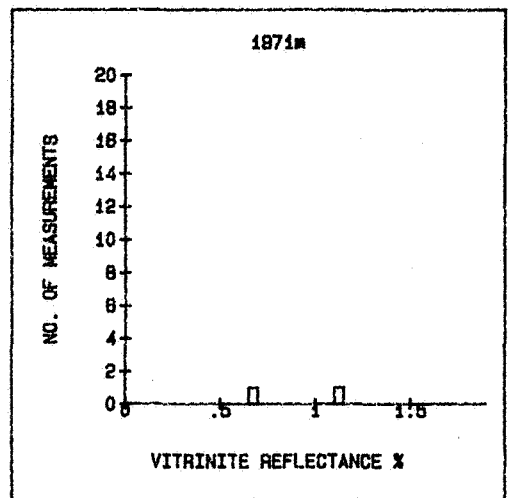
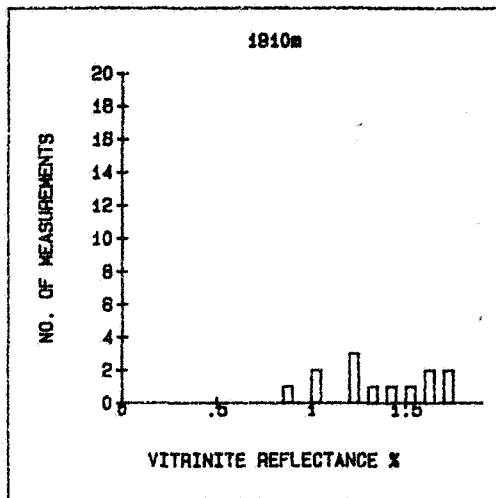
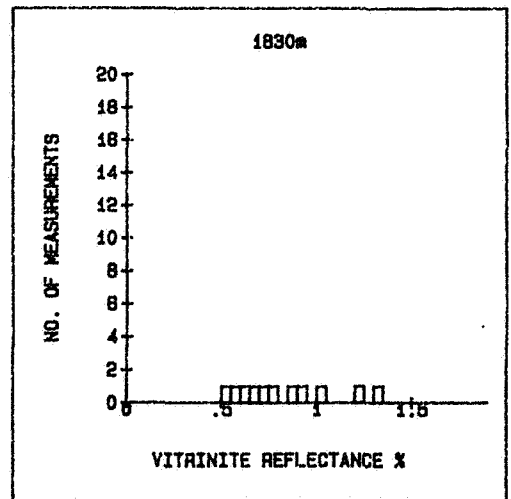
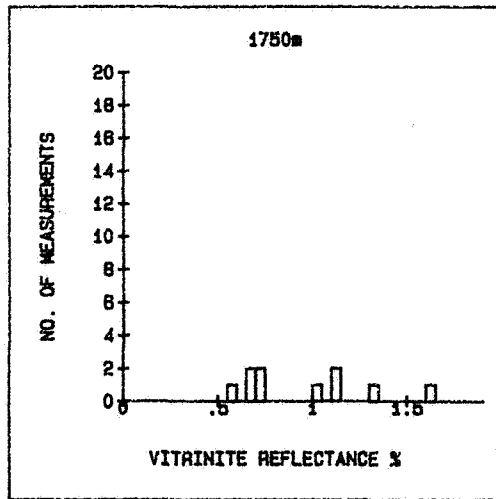
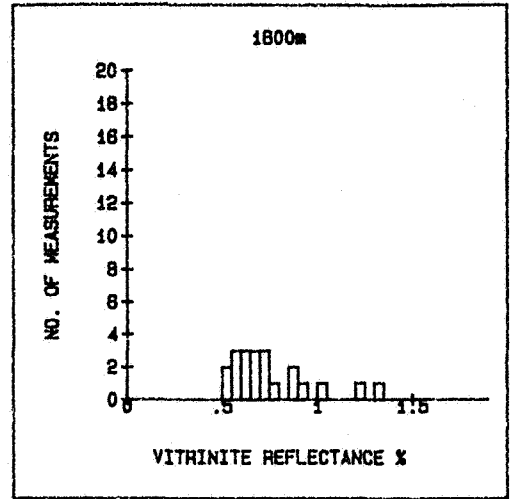
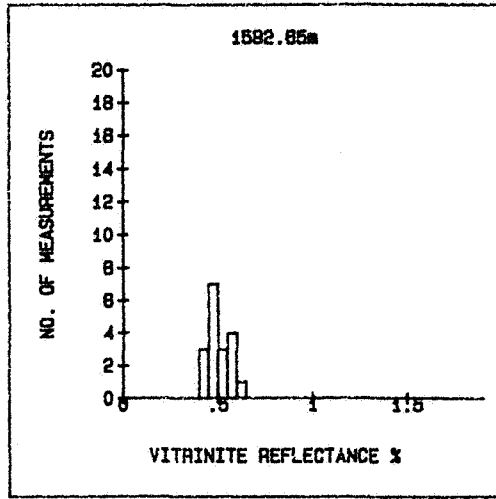


Figure 1 - continued

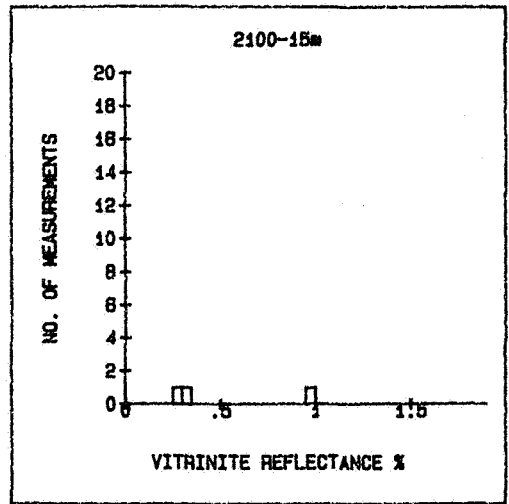
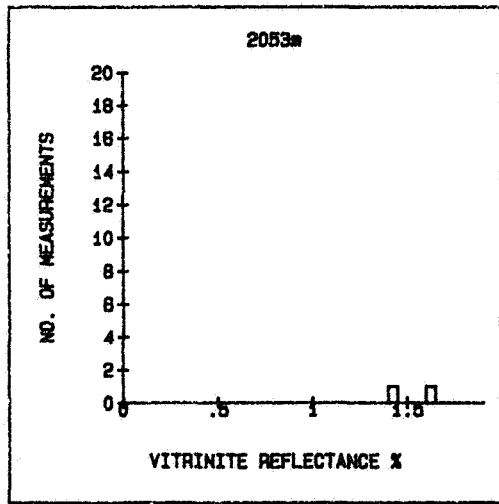


Figure 1 - continued

