

CORE LABORATORIES, INC.  
*Petroleum Reservoir Engineering*  
DALLAS, TEXAS 75247

**FORTROLIG**  
i h.t. Beskyttelsesinstruksen,  
jfr. offentlighetslovens  
§ ..... nr. ....

Special Core Analysis Study

for

MOBIL EXPLORATION NORWAY, INC.

Number 33/9-9 Well  
Statfjord Field  
North Sea, Norway

30 JUL 1979  
REGISTRERT  
OLVEDIREKTORATET

CORE LABORATORIES, INC.  
*Petroleum Reservoir Engineering*  
DALLAS, TEXAS 75247

June 13, 1979

Mobil Exploration Norway, Inc.  
P. O. Box 510  
Stavanger 4001, Norway

Attention: Mr. L. Z. Valachi

Subject: Special Core Analysis Study  
Number 33/9-9 Well  
Statfjord Field  
North Sea, Norway  
File Number: SCAL-77398

Gentlemen:

At the request of representatives of Mobil Exploration Norway, Inc., preserved full-diameter well core recovered from the subject well were submitted to our Dallas, Texas, U.S.A. laboratory for routine core analysis measurements. Core Laboratories, Inc., was requested to perform the following: (1) Core Gamma Surface Log of the cored intervals, (2) Routine Core Analysis consisting of Residual Fluid saturations, Air Permeability determinations, and Grain Density calculations and (3) Cation Exchange Capacity (CEC) measurements on selected samples. It was also requested that the cored intervals be slabbed and that photographs be obtained of the entire core. The well core material was slabbed and photographed as directed and the slabs and photographs were submitted to the appropriate parties. All of the test results, with a detailed description of the test procedures, was presented to all parties at the sub-committee meeting held in Dallas, Texas on November 7, 1978. This study was maintained in our active files in anticipation of additional testing. Presented in this report are the results of the requested analyses in final form. In the event additional information or testing is required, the study can be reactivated.

Approximately 231.5 metres of preserved full-diameter well core recovered from the subject well was submitted to our Dallas laboratory for special handling and testing. A Core-Gamma surface log was run on the entire cored intervals. The Core-Gamma log, which is primarily used as a correlative tool with the down hole Gamma Ray log is presented on Page 1 of this report. For convenience, the cored intervals are listed in tabular form on Page 2. All of the depths referred to in this report are the uncorrected depth intervals.

The full-diameter well core material was slabbed in the following manner: (1) a segment approximately 2.5 centimeters thick was removed from the center of the core to be used as a permanent reference set, (2) a one half slab (approximately) was retained by Core Laboratories, Inc., for routine and special core analysis tests, (3) a quarter slab was prepared and submitted to the Norwegian

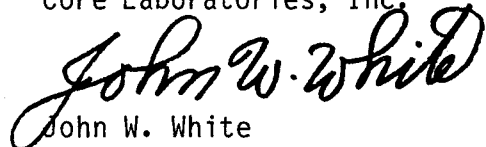
Petroleum Directorate and (4) a quarter slab was prepared and submitted to Mobil Research and Development Corporation. Routine core analyses, consisting of residual fluid saturations, porosities, air permeabilities and grain density calculations were performed on 454 well core segments each representing a different depth interval. These data are presented in tabular form on Pages 3 through 17.

Cation exchange capacity (CEC) measurements were performed on 72 specified well core samples utilizing an ammonium acetate method. The results of these CEC measurements are presented in tabular form on Pages 18 and 19. A brief description of the laboratory procedure is presented on Page 20.

It was a pleasure working with and for Mobil Exploration Norway, Inc., on this study. Should you have any questions pertaining to these test results or if we could be of further assistance, please do not hesitate to contact us.

Very truly yours,

Core Laboratories, Inc.



John W. White  
for Duane L. Archer, Manager  
Special Core Analysis

JWW:mc

21 cc. - Addressee

4 cc. - Mr. Ben Marek

Mobil Research and Development Corporation  
Dallas, Texas 75221

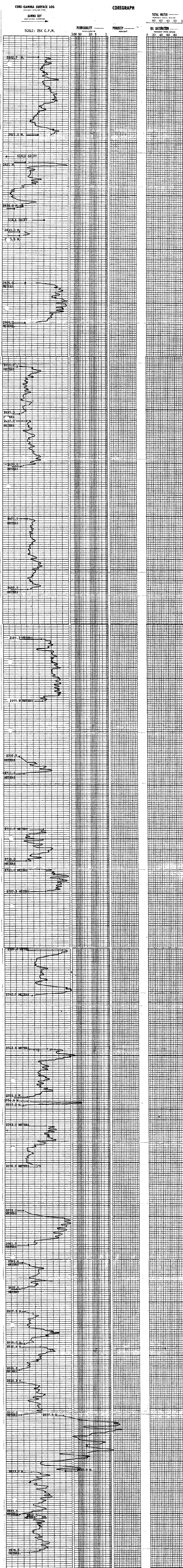


CORE LABORATORIES, INC. Petroleum Reservoir Engineering

COMPANY: MOBIL EXPLORATION-HONOLULU FIELD: FILE: 56A-27320  
WELL: HELL 33/9-9 COUNTY: O'NESSO DATE: 1-16-78  
LOCATION: STATE: HAWAII ELEV.:

### CORE-GAMMA CORRELATION

VERTICAL SCALE: 1" = 100'



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 File SCAL-77398

Well: 33/9-9 List of Cores

<u>Core Number</u>	<u>Incorrect Depth Metres</u>	<u>Correct Depth Metres</u>	<u>Formation</u>	<u>Recovery M - %</u>
1	2402.7-2421.0	2414.0-2432.3	Brent	18.30-100
2	2421.0-2433.0	2432.3-2444.3	Brent	11.65-97
3	2433.0-2435.0	2444.3-2446.3	Brent	0.50-25
4	2435.0-2444.0	2446.3-2455.3	Brent	9.00-100
5	2444.0-2457.0	2455.3-2468.3	Brent	11.00-85
6	2457.0-2471.0	2468.3-2482.3	Brent	13.00-93
7	2471.0-2489.3	2482.3-2500.6	Brent	18.30-100
8	2489.3-2506.3	2500.6-2517.6	Brent/Dunlin	16.30-95
9	11,30 2707.7-2711.0	+11.3 2719.0-2722.3	Statfjord	2.40-73
10	11,30 2711.0-2721.0	+11.3 2722.3-2732.3	Statfjord	8.00-80
11	11,3 2721.0-2729.0	+11.3 2732.3-2740.3	Statfjord	6.50-81
12	11,3 2729.0-2743.5	2740.3-2754.8	Statfjord	13.00-90
13	11,3 2743.5-2757.3	2754.8-2768.6	Statfjord	12.40-90
14	11,3 2757.3-2763.0	2768.6-2774.3	Statfjord	0.50-9
15	11,3 2763.0-2775.3	2774.3-2786.6	Statfjord	12.00-98
16	11,3 2775.3-2781.7	2786.6-2793.0	Statfjord	6.40-100
17*		2793.0-2807.5	Statfjord	6.90-4.7
18		2807.5-2818.4	Statfjord	8.70-80
19		2818.4-2826.2	Statfjord	7.80-100
20		2826.2-2837.5	Statfjord	11.3-88
21		2837.5-2853.5	Statfjord	15.0-94
22		2853.5-2866.0	Statfjord	12.0-96
23		2866.0-2876.0	Statfjord	10.5-100

212,428

\* Please note that Core 1 through 16 are off depth by +11.3 metres.

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 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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by Mobil Exploration Norway, Inc. Formation 33/9-9 File SCAL-77398  
 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 by North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

D SH M	DOLomite - DOL CHERT - CH GYPSUM - GYP	ANHYDRITE - ANHY CONGLOMERATE - CONG FOSSILIFEROUS - FOSS	SANDY - SDY SHALY - SHY LIMY - LMY	FINE - FN MEDIUM - MED COARSE - CSE	CRYSTALLINE - XLN GRAIN - GR GRANULAR - GRNL	BROWN - BRN GRAY - GRV MUGGY - MGY	FRACTURED - FRAC LAMINATION - LAM STYLOLITIC - STY	SLIGHTLY - SL/ VERY - V/ WITH - W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2402.70-3.00	147 ✓	24.0	33.8	23.3	2.64	
2403.00-3.33	2040 ✓	28.4	16.9	27.8	2.66	
2403.33-66	716	29.1	16.5	31.3	2.67	
2403.66-4.00	1045	30.3	16.8	33.3	2.66	
2404.00-.33	7090	36.2	18.2	24.0	2.66	Unconsolidated
2404.33-.66	3510	31.3	11.3	38.5	2.65	Unconsolidated
2404.66-5.00	3430	32.7	17.0	20.8	2.65	Unconsolidated
2405.00-.33	3200	32.6	11.7	36.9	2.64	Unconsolidated
2405.33-.66	2670	31.2	21.2	27.7	2.65	Unconsolidated
2405.66-6.00	695	30.7	12.6	59.4	2.63	Unconsolidated
2406.00-.33	975	32.6	16.4	45.3	2.64	Unconsolidated
2406.33-.66	1320	27.9	19.7	22.6	2.63	
2406.66-7.00	1140	26.1	24.1	21.8	2.64	
2407.00-.33	1290 ✓	28.2	19.1	23.4	2.64	
2407.33-.66	3660	31.2	16.7	40.0	2.65	
2407.66-8.00	744	28.3	20.1	20.1	2.66	
2408.00-.33	455	27.5	18.9	21.1	2.66	
2408.33-.66	270	24.6	16.3	24.0	2.67	
2408.66-9.00	746	27.3	20.9	27.8	2.65	
2409.00-.33	1400	27.7	17.7	15.2	2.64	
2409.33-.66	2910	29.1	13.5	33.8	2.64	Unconsolidated
2409.66-10.00	747	26.5	20.4	26.8	2.68	
2410.00-.33	303	26.2	21.8	21.0	2.68	
2410.33-.66	776	26.7	22.1	23.3	2.66	
2410.66-11.00	1310	27.2	20.7	23.8	2.66	
2411.00-.33	591	24.5	24.9	18.4	2.64	
2411.33-.66	708	25.2	25.0	25.4	2.65	
2411.66-12.00	641	25.0	23.6	24.4	2.63	
2412.00-.33	228	23.9	24.3	20.9	2.61	
2412.33-.66	676	25.4	24.4	16.9	2.63	
2412.66-13.00	508	25.7	22.6	21.0	2.63	
2413.00-.33	316	25.2	19.8	23.0	2.64	
2413.33-.66	170	26.1	18.4	28.0	2.66	
2413.66-14.00	551	25.4	22.1	20.5	2.62	
2414.00-.33	436	24.9	20.1	25.3	2.66	
2414.33-.66	321	25.6	21.0	24.2	2.66	

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**CORE LABORATORIES, INC.**  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 \_\_\_\_\_ Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 City North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

SD SH LM	DOLOMITE - DOL CHERT - CH GYPSUM - GYP	ANHYDRITE - ANHY CONGLOMERATE - CONS FOSSILIFEROUS - FOSS	SANDY - SDY SHALY - SHY LIMY - LMY	FINE - FNE MEDIUM - MED COARSE - COE	CRYSTALLINE - XLN GRAIN - GR GRANULAR - GRNL	BROWN - BRN GRAY - GRY VUGGY - VUGY	FRACTURED - FRAC LAMINATION - LAM STYLOLITIC - STY	SLIGHTLY - SL/ VERY - V/ WITH - W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2414.66-15.00	452	25.1	34.4	24.0	2.67	
2415.00-.33	2830	28.7	20.2	17.4	2.65	
2415.33-.66	377	25.9	29.0	27.0	2.76	
2415.66-16.00	2290	29.7	17.2	23.2	2.64	
2416.00-.33	2650	27.9	20.4	17.2	2.66	
2416.33-.66	1140	28.7	23.0	11.5	2.67	
2416.66-17.00	1440	28.5	13.7	28.8	2.64	
2417.00-.33	5640	28.5	15.1	29.5	2.67	
2417.33-.66	5010	27.8	23.7	20.9	2.66	
2417.66-18.00	3440	29.6	20.6	22.6	2.66	
2418.00-.33	422	26.4	27.7	13.3	2.68	
2418.33-.66	4550	27.8	25.5	14.4	2.65	
2418.66-19.00	1090	27.4	22.3	19.7	2.66	
2419.00-.33	779	26.2	25.6	15.6	2.74	
2419.33-.66	895	27.8	19.1	15.5	2.68	
2419.66-20.00	1610	29.9	16.7	16.7	2.66	
2420.00-.33	645	31.7	20.5	19.9	2.70	
2420.33-.60	727	30.7	20.5	12.7	2.69	
2420.66-21.00	444	29.7	23.9	23.9	2.73	
2421.00-.33	239	28.7	21.6	30.3	2.74	
2421.33-.66	146	27.7	23.9	32.5	2.77	
2421.66-2422.00	350	29.0	12.8	32.8	2.73	
2422.00-.33	819	30.2	20.9	19.2	2.67	
2422.33-.66						Shale
2422.66-23.00	279	25.6	21.9	16.1	2.65	
2423.00-.33	794	26.4	18.9	16.8	2.66	
2423.33-.66	168	30.1	19.3	18.3	2.70	
2423.66-24.00	68	29.2	19.2	30.5	2.69	
2424.00-.33	38	25.4	20.5	27.2	2.66	
2424.33-.66	350	29.4	16.0	21.4	2.66	
2424.66-25.00	21	19.3	26.4	36.7	2.70	
2425.00-.33	2440	32.3	19.9	41.3	2.65	
2425.33-.66						Shale
2425.66-26.00						Shale
2426.00-.33	36	25.6	14.5	39.8	2.63	
2426.33-.66	2990	30.5	22.9	21.5	2.64	

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 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation 33/9-9 File SCAL-77398  
 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 City North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

SD SH LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONS FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XLM GRAIN-GR GRANULAR-GRNL	BROWN-BRN GRAY-GRY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2426.66-27.00 - 2427.00-.33						Shale
2427.33-.66	628	29.0	16.2	34.1	2.62	
2427.66-28.00	3370	34.9	21.4	25.5	2.64	
2428.00-.33	4450	30.5	21.6	13.4	2.64	
2428.33-.66	3402	30.9	17.8	18.4	2.65	
2428.66-29.00	3360	27.2	14.3	26.5	2.65	
2429.00-.33	2510	29.2	18.2	19.9	2.65	
2429.33-.66	2983	29.1	18.9	23.4	2.65	
2429.66-30.00	2680	27.5	15.3	35.3	2.65	
2430.00-.33	2080	26.5	20.8	27.2	2.64	
2430.33-.66	4140	28.4	15.1	29.6	2.65	
2430.66-31.00	1430	28.0	21.4	22.1	2.69	
2431.00-.33	26	27.6	31.1	19.6	2.64	
2431.33-.66 - 2432.00-.33						Shale
2432.33-.66	8.0	18.8	20.5	32.2	2.68	
2432.66-32.00	9.8	15.8	28.5	37.6	2.62	
2433.00-.33	63	17.6	18.7	38.6	2.62	
2433.33-.66						Sandy shale
2435.00-.33 - 2438.33-.66						Sandy shale
2438.66-39.00	20	22.9	18.0	20.1	2.72	
2439.00-.33	181	20.2	17.8	52.5	2.66	
2439.33-.33 - 2441.33-.66						Shale
2441.66-42.00	14	22.3	14.8	35.0	2.65	
2442.00-.33	318	23.6	15.3	39.4	2.65	
2442.33-.66	21	24.9	20.9	45.4	2.65	
2442.66-43.00	77	25.9	21.2	33.4	2.65	
2443.00-.33	17	22.1	22.6	20.4	2.67	
2443.33-.66	175	22.3	30.0	19.3	2.63	
2443.66-44.00						Sandy shale
2444.00-.33	391	26.9	16.7	51.3	2.67	
2444.33-.66	129	19.7	26.9	29.9	2.65	
2444.66-45.00						Sandy shale
2445.00-.33	15	22.4	12.9	27.7	2.68	
2445.33-.66	1820	32.3	11.1	25.4	2.69	

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 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation \_\_\_\_\_ File SCAL-77398  
 Well 33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE - DOL	ANHYDRITE - ANHY	SANDY - SDY	FINE - FN	CRYSTALLINE - CLM	BROWN - BRN	FRACTURED - FRAC	SLIGHTLY - SL/
CHERT - CH	CONGLOMERATE - CONG	SHALY - SHY	MEDIUM - MED	GRAIN - GR	GRAY - GRY	LAMINATION - LAM	VERY - V/
GYPSEUM - GYP	FOSSILIFEROUS - FOSS	LIMY - LMV	COARSE - CSR	GRANULAR - GRNL	VUGGY - VGY	STYLOLITIC - STY	WITH - W/

DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2459.66-60.00	153	29.2	21.9	34.6	2.68	
2460.00-.33	109	28.4	17.3	28.9	2.68	
2460.33-.66	981	28.1	16.3	28.8	2.66	
2460.66-61.0	1490	33.8	14.2	44.1	2.66	
2461.00-.33	1530	31.4	14.6	37.3	2.67	
2461.33-.66	843	28.6	14.7	38.1	2.68	
2461.66-62.00	1760	35.1	13.7	43.9	2.67	
2462.00-.33	1840	38.5	12.2	53.8	2.67	
2462.33-.66	960	37.4	12.6	52.4	2.66	
2462.66-63.00	1785	37.9	14.0	47.2	2.67	
2463.00-.33	1280	37.3	11.5	43.2	2.66	
2463.33-.66	1510	34.9	12.6	33.5	2.65	
2463.66-64.00	1500	33.4	13.8	39.5	2.67	
2464.00-.33	900	34.9	13.2	44.4	2.67	
2464.33-.66	1090	34.6	12.1	47.1	2.65	
2464.66-.6500	962	34.3	14.6	52.8	2.65	
2465.00-.33	1780	32.1	13.7	49.8	2.65	
2465.33-.66	303	29.9	14.4	45.8	2.70	
2465.66-66.00	107	29.4	18.7	44.2	2.73	
2466.00-.33	1260	32.9	16.8	43.3	2.66	
2466.33-.66	490	32.5	14.2	48.6	2.67	
2466.66-47.00	911	36.9	11.7	54.2	2.65	
2467.00-.33	807	34.4	11.3	47.4	2.65	
2467.33-.66	1060	34.3	27.4	56.0	2.66	
2467.66-68.00	802	36.6	12.0	74.6	2.66	
2468.00-.33	567	34.0	14.4	49.7	2.66	
2468.33-.66	552	34.5	13.3	41.7	2.66	
2468.66-69.00	518	33.8	11.8	37.6	2.67	
2469.00-.33	694	35.1	15.1	35.3	2.66	
2469.33-.66	266	29.9	17.4	25.1	2.67	
2469.66-70.0	614	34.6	11.8	34.4	2.67	
2470.00-.33	487	30.6	14.7	35.9	2.67	
2470.33-.66	644	31.8	14.2	44.0	2.67	
2470.66-71.00	546	29.1	19.6	37.1	2.68	
2471.00-.33	403	30.7	12.7	36.2	2.68	
2471.33-.66	580	32.3	16.4	39.9	2.67	

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**CORE LABORATORIES, INC.**  
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 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE - DOL CHERT - CH GYPSUM - GYP	ANHYDRITE - ANHY CONGLOMERATE - CONG FOSSILIFEROUS - FOSS	SANDY - SDY SHALY - SHY LIMY - LMY	FINE - FN MEDIUM - MED COARSE - CSE	CRYSTALLINE - XLN GRAIN - GR GRANULAR - GRNL	BROWN - BRN GRAY - GRV MUSKY - MUY	FRACTURED - FRAC LAMINATION - LAM STYLOLITIC - STY	SLIGHTLY - SL/ VERY - V/ WITH - W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2471.66-72.00	598	31.1	17.0	27.3	2.67	
2472.00-.33	494	30.5	16.4	28.9	2.67	
2472.33-.66	550	30.3	15.2	24.1	2.66	
2472.66-73.00	180	29.2	17.1	24.0	2.66	
2473.00-.33	248	28.9	14.5	28.4	2.68	
2473.33-.66	105	26.2	25.2	32.4	2.69	
2473.66-74.00	237	28.1	23.5	26.0	2.66	
2474.00-.33	34	22.9	19.7	37.6	2.64	
2474.33-.66	198	29.1	29.9	25.2	2.67	
2474.66-75.00	543	30.0	17.7	18.3	2.65	
2475.00-.33	204	29.1	20.3	33.3	2.67	
2475.33-.66	148	29.0	16.9	29.7	2.67	
2475.66-76.0	140	27.6	22.5	26.4	2.68	
2477.00-.33	112	26.8	26.5	35.1	2.69	
2477.33-.66	189	27.3	19.8	27.5	2.69	
2477.66-78.0	150	25.2	14.7	36.9	2.67	
2478.00-.33	419	28.1	22.4	30.6	2.67	
2478.33-.66	509	29.7	21.5	38.7	2.66	
2478.66-79.00	292	26.8	22.0	33.2	2.67	
2479.00-.33	335	29.6	20.6	26.4	2.67	
2479.33-.66	346	30.0	17.7	29.0	2.66	
2479.66-80.00	492	28.8	21.2	35.8	2.65	
2480.00-.33	146	27.0	19.6	31.1	2.69	
2480.33-.66	32	25.9	22.8	24.7	2.67	
2480.66-81.00	460	29.8	15.1	34.9	2.66	
2481.00-.33	114	26.5	24.2	27.2	2.66	
2481.33-.66	112	24.9	28.5	27.7	2.68	
2481.66-82.00	3.8	17.6	16.6	29.5	2.70	
2482.00-.33	5.8	17.6	33.5	28.4	2.70	
2482.33-.66	11	19.7	22.8	32.0	2.73	
2482.66-83.00	1.4	13.8	29.0	42.0	2.79	
2483.00-.33	9.2	20.0	22.5	23.0	2.70	
2483.33-.66	3.6	17.7	35.0	27.7	2.70	
2483.66-84.00	4.2	20.1	18.9	23.4	2.68	
2484.00-.33	0.3	20.3	22.7	25.6	2.68	
2484.33-.66						Slightly sandy shale

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**CORE LABORATORIES, INC.**  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 City North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

SD -SH LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-BDY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XLN GRAIN-GR GRANULAR-GRNL	BROWN-BRN GRAY-GRY UGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2484.66-85.00	2.1	21.4	26.6	22.9	2.68	
2485.00-.33	18	23.4	17.9	25.2	2.67	
2485.33-.66	3.5	21.5	25.6	25.1	2.68	
2485.66-86.00	254	28.9	22.1	37.0	2.66	
2486.00-.33	334	29.5	18.3	23.7	2.65	
2486.33-.66	466	30.6	18.0	29.1	2.66	
2486.66-87.00	386	30.1	17.9	29.2	2.66	
2487.00-.33	255	29.0	17.9	25.5	2.65	
2487.33-.66	353	29.2	22.3	22.9	2.66	
2487.66-88.00	285	29.6	19.9	24.3	2.67	
2488.00-.33						Slightly sandy shale
2488.33-.66	4.1	20.1	23.4	40.8	2.66	
2488.66-89.00	5.0	15.1	31.8	43.0	2.66	
2489.33-.66 - 2489.66-90.00						Slightly sandy shale
2490.00-.33	1.1	18.0	18.9	55.0	2.63	
2490.33-.66 - 2490.66-91.00						Slightly sandy shale
2491.00-.33	0.79	16.2	21.0	53.7	2.62	
2491.33-.66 - 2492.66-93.00						Shale
2493.00-.33	3.1	16.1	3.7	72.0	2.65	
2493.33-.66 - 2505.00-.33						Shale
2707.66-.99	964	19.4	17.5	18.0	2.64	
2708.00-.33	0.2	11.3	13.4	26.8	2.62	
2708.33-.66	212	26.4	12.5	48.5	2.63	
2708.66-09.00	15	29.2	7.2	70.2	2.64	
2709.00-.33	86	28.6	7.0	62.9	2.63	
2709.33-.66 - 2710.66-11.00						Clay
2711.00-.33	0.7	11.7	0.0	81.2	2.62	
2711.33-.66	2.9	22.6	16.4	41.2	2.62	
2711.66-12.00	83	27.2	16.2	31.3	2.62	
2712.00-.33	188	26.8	13.4	31.7	2.63	
2712.33-.66	248	26.6	14.7	32.3	2.62	
2712.66-13.00	290	27.2	13.2	33.8	2.66	
2713.00-.33						Shale
2713.33-66	0.2	19.9	8.0	67.3	2.61	
2713.66-14.00	1250	28.5	14.4	2.98	2.64	
2714.00-.33	30	27.7	12.6	31.0	2.65	

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**CORE LABORATORIES, INC.**  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE - DOL	ANHYDRITE - ANHY	SANDY - SDY	FINE - FNE	CRYSTALLINE - XLN	BROWN - BRN	FRACTURED - FRAC	SLIGHTLY - SL/
CHERT - CRT	CONGLOMERATE - CONG	SHALY - SHY	MEDIUM - MED	GRAIN - GR	GRAY - GRY	LAMINATION - LAM	VERY - V/
GYPSEUM - GYP	FOSSILIFEROUS - FOSS	LIMY - LMY	COARSE - CSR	GRANULAR - GRNL	VUGGY - VGY	STYLOLITIC - STY	WITH - W/

DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2714.33-.66	26	24.7	13.4	37.2	2.62	
2714.66-15.00	0.4	11.5	9.6	61.7	2.60	
2715.00-.33	99	23.8	15.1	22.7	2.63	
2715.33-.66	787	24.4	13.9	23.8	2.65	
2715.66-16.00 - 2716.66-17.00						Shale
2717.00-.33	162	20.3	14.3	24.6	2.73	
2717.33-.66	291	21.3	10.8	46.5	2.62	
2717.66-18.00	649	26.6	10.5	26.3	2.69	
2718.00-.33	3.7	13.4	12.3	37.5	2.64	
2718.33-.66	865	27.0	15.6	42.9	2.65	
2718.66-19.00						Drilling mud only
2721.00-.33 - 2727.33-.66						Clay
2729.00-.33						Sl/mica clay
2729.33-.66						Sl/mica ss w/dolomite
2729.66-.99						Sl/mica ss w/clay
2730.00-.33	1.1	15.8	11.4	46.2	2.64	
2730.33-.66	1.7	18.5	5.4	68.6	2.65	
2730.66-.99	9.0	19.1	14.1	34.6	2.64	
2731.00-.33	3.6	16.6	7.8	45.8	2.64	
2731.33-.66	0.9	15.0	0.0	60.7	2.64	
2731.66-.99	214	25.0	7.7	49.9	2.64	
2732.00-.33	170	26.8	6.0	49.6	2.66	
2732.33-.66	746	26.3	12.2	34.2	2.64	
2732.66-.99	311	25.8	13.2	38.0	2.65	
2733.00-.33	293	25.4	10.6	38.2	2.65	
2733.33-.66	185	22.6	13.7	39.8	2.64	
2733.66-.99	14	20.6	14.2	36.2	2.63	
2734.00-.33	38	19.9	15.5	43.3	2.65	
2734.33-.66	52	24.6	11.0	35.0	2.65	
2734.66-.99	280	23.2	14.7	35.8	2.64	
2735.00-.33	295	22.3	16.1	27.8	2.64	
2735.33-.66	232	20.8	16.3	37.0	2.65	
2735.66-.99	683	24.8	12.1	31.5	2.65	
2736.00-.33	112	22.1	17.2	24.4	2.68	
2736.33-.66	590	25.1	14.3	22.7	2.65	
2736.66-.99	32	19.0	15.3	36.6	2.65	

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**CORE LABORATORIES, INC.**  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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any Mobil Exploration Norway, Inc. Formation File SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 \_\_\_\_\_ Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 y North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

D SH M	DOLOMITE-DOL CHERT-CN GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-ELN GRAIN-GR GRANULAR-GRNL	BROWN-BRN GRAY-GRY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2739.00-.33	862	29.1	12.2	24.8	2.65	
2737.33-.66	315	25.5	13.3	33.3	2.64	
2737.66-.99	169	24.0	16.3	33.3	2.60	
2738.00-.33	329	24.8	14.9	28.2	2.63	
2738.33-.66	420	24.1	15.8	36.9	2.64	
2738.66-.99	0.8	8.3	16.9	37.3	2.65	
2739.00-.33	0.7	8.2	13.4	25.6	2.64	
2737.33-.66	0.2	12.7	4.7	58.3	2.63	
2739.66-.99	984	25.0	14.4	18.4	2.63	
2740.00-.33	0.7	18.5	11.9	42.1	2.65	
2740.33-.66	0.2	13.6	5.9	60.3	2.64	
2740.66-.99	0.1	9.4	0.0	66.0	2.64	
2741.00-.33	0.6	15.0	0.0	58.7	2.68	
2741.33-.66	13	19.6	17.9	28.1	2.62	
2741.66-.99	167	27.5	13.8	31.3	2.63	
2742.00-.33 - 2743.33-.66						Shale
2743.66-.99	1.5	18.4	26.6	29.9	2.64	
2744.00-.33	140	24.0	15.4	32.9	2.64	
2744.00-.66	676	24.8	13.7	28.2	2.62	
2744.66-.99	60	24.6	16.3	35.0	2.63	
2745.00-.33	52	24.9	14.1	29.7	2.64	
2745.33-.66	179	26.3	15.6	36.1	2.63	
2745.66-.99	8.0	20.1	19.9	22.9	2.64	
2746.00-.33	45	23.2	15.9	30.2	2.64	
2746.33-.66	180	21.8	18.3	33.9	2.63	
2746.66-.99	294	24.4	16.4	31.1	2.63	
2747.00-.33	129	24.4	17.6	25.0	2.62	
2747.33-.66	359	25.7	14.4	28.0	2.64	
2747.66-.99	238	25.6	14.5	45.7	2.65	
2748.00-.33	417	23.9	17.6	30.1	2.63	
2748.33-.66	389	23.9	16.3	31.0	2.64	
2748.66-.99	614	21.2	17.9	30.7	2.67	
2749.00-.33	607	22.7	16.3	22.0	2.62	
2749.33-.66	13	19.0	14.7	24.2	2.62	
2749.66-.99	257	24.0	17.1	31.3	2.63	
2750.00-.33	301	24.2	15.3	29.3	2.65	

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**CORE LABORATORIES, INC.**  
**Petroleum Reservoir Engineering**  
**DALLAS, TEXAS**

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

SD DOL LM	DOLomite - DOL CHert - CH GYPSUM - GYP	ANhydrite - ANHY CONglomerate - CONG FOSSiliferous - FOSS	SANDy - SDY SHALt - SHY LIMy - LMY	FINE - FN MEDIUm - MED COARSE - CSE	CRYSTALLINE - ELN GRAIN - GR GRANULAR - GRNL	BROWN - BRN GRAY - GRY VUGGY - VGY	FRactured - FRAC LAMINATION - LAM STYLOLITIC - STY	SLIGHTLY - SL/ VERY - V/ WITH - W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2750.33-.66	727	23.9	16.3	24.3	2.62	
2750.66-.99	151	24.0	16.2	31.7	2.62	
2751.00-.33	19	22.8	19.3	34.2	2.64	
2751.33-.66	95	25.1	16.7	34.7	2.63	
2751.66-.99	126	25.0	17.6	25.2	2.62	
2752.00-.33	1.2	11.2	14.3	54.5	2.61	
2752.33-.66	42	20.2	14.9	31.7	2.63	
2752.66-.99	808	24.3	14.0	29.2	2.63	
2753.00-.33	561	22.1	14.9	25.8	2.63	
2753.33-.66	48	21.4	14.0	38.8	2.63	
2753.66-.99	156	24.1	12.0	34.4	2.63	
2754.00-.33	541	24.0	13.8	31.7	2.63	
2754.33-.66	54	24.3	13.6	37.0	2.62	
2754.66-.99	252	24.4	11.5	34.4	2.61	
2755.00-.33	139	22.4	15.2	43.3	2.61	
2755.33-.66	159	22.2	13.1	29.3	2.62	
2755.66-.99	318	24.9	11.2	37.0	2.62	
2763.00-.33	266	25.4	0.0	85.8	2.61	
2763.33-.66 - 2766.33-.66						Shale
2766.66-.99						Shale-mica claceus
2767.00-.33 - 2767.66-.99						Shale
2768.00-.33	21	21.4	7.9	33.2	2.62	
2768.33-.66	0.3	8.5	13.1	33.6	2.66	
2768.66-.99						Mica clay
2769.00-.33	2.0	18.4	12.0	28.8	2.62	
2769.33-.66	0.1	5.9	0.0	35.6	2.66	
2769.66-.99	0.1	4.2	0.0	33.3	2.63	
2770.00-.33	248	23.6	14.4	36.9	2.61	
2770.33-.66	171	21.1	7.1	37.4	2.62	
2790.66-.99	142	21.5	16.3	36.3	2.62	
2771.00-.33	32	17.6	18.8	28.4	2.62	
2771.33-.66	9.0	13.5	17.8	37.0	2.64	
2771.66-.99	13	17.2	17.4	42.4	2.64	
2772.00-.33	26	19.1	15.9	38.6	2.64	
2772.33-.66	840	24.3	17.9	32.1	2.62	
2772.66-.99	636	23.4	17.1	35.1	2.62	

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**CORE LABORATORIES, INC.**  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**CORE ANALYSIS RESULTS**

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Company Mobil Exploration Norway, Inc. Formation 33/9-9 File SCAL-77398  
 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 City North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

SD -SH LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONS FOSSILIFEROUS-FOSS	SANDY-SBY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-CLM GRAIN-GR GRANULAR-GRNL	BROWN-BRN GRAY-GRY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2773.00-.33	900	24.3	14.8	36.2	2.62	
2773.33-.66	395	24.7	15.0	55.5	2.62	
2773.66-.99	80	19.1	9.4	49.7	2.64	
2774.00-.33	532	22.6	11.1	41.6	2.62	
2774.33-.66	1070	25.8	7.4	50.0	2.61	
2774.69-.99	215	24.2	7.4	45.6	2.69	
2775.33-.66	0.2	7.0	15.7	27.1	2.65	
2775.66-.99	91	19.6	11.2	33.7	2.62	
2776.00-.33	456	21.4	13.6	33.6	2.64	
2776.33-.66	2.5	13.7	11.7	29.9	2.63	
2776.66-.99 - 2777.00-.33						Mica shale
2777.33-.66	0.6	6.5	16.9	52.3	2.65	
2777.66-.99 - 2780.33-.66						Clay
2780.66-.99	4.4	20.8	9.6	49.0	2.65	
2781.00-.33	245	19.6	17.9	34.2	2.64	
2781.33-.66	415	22.3	16.5	32.1	2.64	
2793.00-.33	607	24.9	12.9	29.7	2.63	
2793.33-.66	328	24.1	13.3	27.4	2.65	
2793.66-.99	3.0	15.3	11.7	40.2	2.64	
2794.00-.33	97	20.3	14.3	25.6	2.64	
2794.33-.66	3.6	11.4	0.0	73.6	2.65	
2794.66-.99	23.0	9.9	0.0	73.7	2.66	
2795.00-.33 - 2796.00-.33						Ss green clays no flo
2796.33-.66	3.8	11.0	15.5	35.2	2.67	
2796.66-.99						Ss green clays no flo
2797.00-.33	14	16.7	0.0	61.0	2.64	
2797.33-.66	77	22.0	4.4	64.8	2.63	
2797.66-.99	0.7	5.2	0.0	26.9	2.65	
2798.00-.33	174	26.5	16.2	40.8	2.63	
2798.33-.66						Clay
2798.66-.99	0.3	6.4	0.0	31.3	2.67	
2799.00-.33	1760	31.2	7.6	28.1	2.63	
2799.33-.66	163	26.3	12.9	22.8	2.63	
2799.66-.99	19.0	24.3	10.7	50.2	2.63	
2807.66-.99	1.8	15.6	26.9	51.3	2.64	
2808.00-.33						Drilling mud

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Company Mobil Exploration Norway, Inc. Formation 33/9-9 File SCAL-77398  
 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SBY SHALY-SHY LIMY-LMY	FINE-FM MEDIUM-MED COARSE-CSE	CRYSTALLINE-CLM GRAIN-GR GRANULAR-GRNL	BROWN-BRN GRAY-GRY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2808.33-.66	0.9	10.7	14.0	57.9	2.64	
2808.66-.99	13	23.2	9.5	44.8	2.64	
2809.00-.33	5.1	20.8	9.6	51.4	2.64	
2809.33-.66	2.2	20.6	10.2	48.5	2.64	
2809.66-.99	2.2	20.7	13.0	52.2	2.65	
2810.00-.33	18	23.6	12.3	43.6	2.64	
2810.33-.66	22	18.2	7.7	60.4	2.65	
2810.66-.99	0.9	9.1	10.9	48.4	2.65	
2811.00-.33	0.2	4.7	0.0	83.0	2.67	
2811.33-.66	4.6	11.9	18.5	47.1	2.65	
2811.66-.99	100	20.1	16.4	38.3	2.65	
2812.00-.33	261	24.0	13.3	45.4	2.65	
2812.33-.66	12	18.8	12.2	39.4	2.64	
2812.66-.99	15	18.3	7.1	46.4	2.63	
2813.00-.33 - 2813.66-.99						Mica shale
2814.00-.33						Green clays no flo
2814.33-.66 - 2818.33-.66						Clay
2818.66-.99 - 2819.66-.99						S1/sandy clay
2820.00-.33						Calc/clay
2820.33-.66	5.4	16.6	0.0	61.4	2.63	
2820.66-.99	3.2	10.5	0.0	61.9	2.65	
2821.00-.33	20.0	13.1	0.0	63.4	2.64	
2821.33-.66	11.0	16.7	8.4	58.1	2.62	
2821.66-.99	5.2	19.4	6.7	49.5	2.64	
2822.00-.33	0.5	5.4	0.0	51.9	2.66	
2822.33-.66						Mica shale
2822.66-.99						Clay no flo
2823.00-.33						Contaminated drilling mud
2823.33-.66 - 2825.33-.66						Clay
2825.66-.99	0.1	2.7	0.0	76.6	2.70	
2826.00-.33	0.1	2.4	0.0	63.0	2.70	
2827.00-.33						Green/sandy/shale no flo
2827.33-.66						Iron oxide clay
2827.66-.99						Clay
2828.00-.33						Iron oxide clay
2828.33-.66 - 2832.00-.33						Clay

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 Well 33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_ Location \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE-DOL	ANHYDRITE-ANH	SANDY-SDY	FINE-FN	CRYSTALLINE-ELM	BROWN-BRN	FRACTURED-FRAC	SLIGHTLY-SL/
CHERT-CH	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	BRAIN-BR	GRAY-GRY	LAMINATION-LAM	VERY-V/
GYPSUM-GYP	FOSSILIFEROUS-FOSS	LIMY-LMY	COARSE-CSE	GRANULAR-GRNL	VUGGY-VGY	STYLOLITIC-STY	WITH-W/

DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2850.66-.99	3620	26.7	10.9	49.4	2.63	
2851.00-.33	1990	25.3	15.0	40.7	2.63	
2851.33-.66	2980	25.3	8.7	47.4	2.63	
2851.66-.99	568	21.9	7.8	50.2	2.65	
2852.00-.33 - 2853.66-.99						Clay
2854.00-.33	0.6	20.2	0.0	57.9	2.68	
2854.33-.66	1.2	17.3	4.6	68.8	2.67	
2854.66-.99	1.4	11.2	0.0	55.4	2.64	
2855.00-.33	3.1	15.2	0.0	63.2	2.63	
2855.33-.66	0.1	5.0	0.0	48.0	2.67	
2855.66-.99	0.1	4.6	0.0	63.0	2.67	
2856.00-.33						Clay no flo
2856.33-.66						Sl/sandy clay no flo
2856.66-.99 - 2857.00-.33						Clay
2857.33-.66	57	23.5	0.0	89.4	2.65	
2857.66-.99	0.6	11.1	0.0	58.6	2.65	
2858.00-.33	5.5	16.6	0.0	49.1	2.65	
2858.33-.66	0.4	8.8	0.0	67.9	2.65	
2858.66-.99	1.4	10.4	0.0	58.7	2.66	
2859.00-.33						Clay no flo
2859.33-.66						Sl/mica clay
2859.66-.99	4.1	14.2	0.0	58.5	2.63	
2860.00-.33	0.2	7.4	0.0	65.1	2.68	
2860.33-.66						Clay no flo
2860.66-.99	0.9	8.4	0.0	44.9	2.66	
2861.00-.33 - 2861.33-.66						Red clay no flo
2861.66-.99	0.7	11.5	0.0	82.6	2.66	
2862.00-.33	85.0	23.2	0.0	24.6	2.70	
2862.33-.66	1.1	13.5	0.0	52.6	2.65	
2862.66-.99	26	19.5	0.0	80.5	2.65	
2863.00-.33	39.0	22.1	0.0	65.6	2.65	
2863.33-.66	4.5	17.7	0.0	49.7	2.61	
2863.66-.99 - 2864.00-.33						Sl/sandy shale
2864.33-.66 - 2865.66-.99						Clay no flo
2866.00-.33	23	14.8	0.0	27.0	2.63	
2866.33-.66	6.9	18.1	0.0	33.1	2.60	

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**DALLAS, TEXAS**

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Company Mobil Exploration Norway, Inc. Formation \_\_\_\_\_ File SCAL-77398  
33/9-9 Core Type \_\_\_\_\_ Date Report \_\_\_\_\_  
 Drilling Fluid \_\_\_\_\_ Analysts \_\_\_\_\_  
 Location North Sea State Norway Elev. \_\_\_\_\_

**Lithological Abbreviations**

DOLOMITE - DOL	ANHYDRITE - ANHY	SANDY - SDY	FINE - FNE	CRYSTALLINE - XLN	BROWN - BRN	FRACTURED - FRAC	SLIGHTLY - SL/
CHERT - CH	CONGLOMERATE - CONG	SHALY - SHY	MEDIUM - MED	GRAIN - GR	GRAY - GRY	LAMINATION - LAM	VERY - V/
GYPSEUM - GYP	FOSSILIFEROUS - FOSS	LIMY - LMY	COARSE - COE	GRANULAR - GRNL	VUGGY - VGY	STYLOLITIC - STY	WITH - W/

DEPTH Metres	PERMEABILITY MILLIDARCIES	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE		Grain Density gm/cc	Remarks
			OIL	TOTAL WATER		
2866.66-.99	0.1	12.6	0.0	45.2	2.69	
2867.00-.33 - 2867.33-.66						S1/sandy shale
2867.66-.99	0.4	3.9	0.0	62.5	2.67	
2868.00-.33	2.6	14.1	0.0	41.4	2.67	
2868.33-.66	1.4	13.8	0.0	71.7	2.66	
2868.66-.99	2.2	4.9	0.0	63.3	2.67	
2869.00-.33	2.3	12.7	0.0	42.5	2.65	
2869.33-.66	0.4	8.2	0.0	54.9	2.66	
2869.66-.99	0.1	8.2	0.0	67.0	2.69	
2870.00-.33	0.1	4.1	0.0	50.4	2.68	
2870.33-.66	2.7	11.3	0.0	57.6	2.64	
2870.66-.99	9.6	16.1	0.0	73.9	2.63	
2871.00-.33	5.2	12.7	0.0	58.7	2.61	
2871.33-.66	8.0	15.0	0.0	54.7	2.62	
2871.66-.99						S1/sandy shale (no flo) red color
2872.00-.33	48	22.2	0.0	60.8	2.63	
2872.33-.66	71	21.3	0.0	60.3	2.62	
2872.66-.99	15	16.0	0.0	64.4	2.61	
2873.00-.33	86	22.5	0.0	70.7	2.62	
2873.33-.66	61	19.1	0.0	74.2	2.63	
2873.66-.99						Clay no flo oxidized red Oxd. clay no flo
2874.00-.33 - 2875.33-.66						
2875.66-.99	0.3	10.9	0.0	69.7	2.65	
2876.00-.33	12.0	15.2	0.0	63.8	2.66	
2876.33-.66	0.2	5.5	0.0	38.2	2.67	

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Cation Exchange Capacity Data

Sample Number	Depth Interval Metres	Formation	Cation Exchange Capacity meg/100 gm*
1B	2402.8	Brent	1 0.95
1M	2403	Brent	3 1.01
2M	2407	Brent	2 1.30
3M	2410.25	Brent	4 1.98
2B	2410.7	Brent	5 0.99
3B	2420.8	Brent	7 0.35
6M	2420.8	Brent	6 1.65
5M	2421.2	Brent	8 0.73
7M	2424.4	Brent	9 1.95
8M	2426.1	Brent	10 4.08
9M	2426.7	Brent	11 1.16
4B	2426.7	Brent	11 0.57
10M	2428-2431	Brent	12 3.70
5B	2430.1	Brent	13 0.46
12M	2438.6	Brent	13 3.43
13M	2441.72	Brent	14 5.08
14M	2442.2	Brent	15 3.25
15M	2442.2	Brent	17 2.65
6B	2442.2	Brent	16 3.72
17M	2449.73-.83	Brent	18 0.79
18M	2450.8	Brent	19 0.22
7B	2450.8	Brent	20 0.10
8B	2452.6	Brent	21 0.06
20M	2457.2	Brent	22 1.07
9B	2461.2	Brent	23 0.96
23M	2461.5-61.8	Brent	24 1.35
25M	2471.8-72.0	Brent	25 1.33
10B	2472.1	Brent	26 0.71
11B	2472.5	Brent	27 0.45
27M	2475.3-75.5	Brent	28 1.12
28M	2476.51-76.76	Brent	29 2.14
29M	2479.85-80.05	Brent	30 1.50
30M	2481.0-81.2	Brent	32 2.28
31M	2480.4-80.6	Brent	31 1.30
32M	2481.85-82.1	Brent	33 1.96
36M	2486.43-86.53	Brent	34 1.18
37M	2711.4	Statfjord	1.67
1S	2711.4	Statfjord	1.35
38M	2712.9	Statfjord	0.97

\* meq = milliequivalents

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Cation Exchange Capacity Data

<u>Sample Number</u>	<u>Depth Interval Metres</u>	<u>Formation</u>	<u>Cation Exchange Capacity meq/100 gm*</u>
39M	2713.1	Statfjord	1.54
40M	2713.3	Statfjord	0.34
42M	2730.35	Statfjord	2.44
43M	2730.5	Statfjord	3.48
45M	2730.14	Statfjord	2.80
44M	2730.93	Statfjord	4.09
46M	2734.23	Statfjord	0.91
47M	2739.55	Statfjord	0.49
48M	2740.5	Statfjord	2.41
49M	2743.9	Statfjord	1.48
50M	2745.3	Statfjord	0.70
2S	2745.3	Statfjord	0.72
51M	2745.75	Statfjord	1.11
52M	2745.99	Statfjord	1.00
54M	2751.15-.30	Statfjord	1.00
3S	2751.8	Statfjord	0.76
4S	2753.3	Statfjord	0.80
5S	2754.4	Statfjord	0.84
58M	2768.5-.63	Statfjord	1.21
6S	2771.3	Statfjord	0.57
7S	2794.9	Statfjord	0.93
60M	2795.0	Statfjord	6.04
61M	2797.4	Statfjord	2.01
8S	2800.0	Statfjord	1.36
9S	2808.7	Statfjord	1.38
63M	2809.12	Statfjord	1.84
65M	2810.0	Statfjord	1.29
67M**	2813.65	Statfjord	9.65 & 9.79
66M	2819.4	Statfjord	3.35
69M	2822.2	Statfjord	5.45
73M	2850.3-50.6	Statfjord	1.23
74M***	2870.7-71.0	Statfjord	4.67
75M	2876.0	Statfjord	2.53

\* meq = milliequivalents

\*\* Sample 67M rerun to verify high CEC content. Both initial and rerun values are included.

\*\*\* Sample 74M reported on preliminary data as 2.67. Recalculation of this Value indicates the CEC value to be 4.67.

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Cation Exchange Capacity

Analytical Procedure

The procedure used for analyses was an ammonium acetate method. The samples were prepared for testing by crushing the entire sample to pass a 10 mesh sieve and cleaning them in toluene, followed by acetone, followed by methanol. They were then air dried and pulverized to pass a 60 mesh sieve, then split into two equal portions, one to use as the sample and the other to oven dry at 105°C to use as a corrected dry weight. The air dried portion for analysis was then boiled in a 2 Normal ammonium chloride solution to remove carbonates, then filtered dry. The sample was then agitated in 1 Normal ammonium acetate (pH neutral) to exchange the cations naturally present on the clays for ammonia. Each sample was then washed with a 70%-30% solution of methanol and distilled water to remove the cations not bound to the clays. The ammonia was then distilled from the clays into a 0.1 Normal hydrochloric acid solution and the excess acid was titrated with 0.1 Normal sodium hydroxide. The cation exchange values for each sample were then calculated as follows:

$$\text{CEC meq/100 gms} = \frac{(\text{ml HCl} \times \text{Norm. HCl}) - (\text{ml NaOH} \times \text{Norm. NaOH})}{\text{equivalent wt. of } 105^{\circ}\text{C oven dried sample}} \times 100$$