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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

ID/OLJE
00796 *30.9.68
SAKSB:
ARKIV:

File RFL 5152B

Company Phillips Petroleum Company — Date Sampled June 4, 1968

Well 7/11-1X, DST 3 — Province

Field Block 7/11 — Country North Sea, Norway

FORMATION CHARACTERISTICS

Formation Name	
Date First Well Completed	, 19
Original Reservoir Pressure	PSIG @ Ft.
Original Produced Gas-Liquid Ratio	SCF/Bbl
Production Rate	Bbls/Day
Separator Pressure and Temperature	PSIG ° F.
Liquid Gravity at 60° F.	° API
Datum	Ft. Subsea

WELL CHARACTERISTICS

Elevation	Ft.
Total Depth	Ft.
Producing Interval	9770-9800 Ft.
Tubing Size and Depth	In. to Ft.
Open Flow Potential	MMSCF/Day
Last Reservoir Pressure	5705 PSIG @ 9779 Ft.
Date	, 19
Reservoir Temperature	235 ° F. @ Ft.
Status of Well	
Pressure Gauge	

SAMPLING CONDITIONS

Flowing Tubing Pressure		PSIG
Flowing Bottom Hole Pressure		PSIG
Primary Separator Pressure		250 PSIG
Primary Separator Temperature		71 ° F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		° F.
Field Stock Tank Liquid Gravity		° API @ 60° F.
Primary Separator Gas Production Rate		5613 MSCF/Day
Pressure Base	14.696 PSIA	
Temperature Base	60 ° F.	
Compressibility Factor (F_{pv})	1.024	
Gas Gravity (Laboratory)	0.693	
Gas Gravity Factor (F_g)	1.2013	
Stock Tank Liquid Production Rate @ 60° F.		417 Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio		13460 SCF/Bbl
	or	74.29 Bbls/MMSCF
Core Laboratories, Inc., Engineer		

REMARKS:

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152B

Well 7/11-1X, DST 3

Hydrocarbon Analyses of Separator Products and Calculated Well Stream

Component	Separator Liquid Mol Per Cent	Separator Gas Mol Per Cent	Separator Gas GPM	Well Stream Mol Per Cent	Well Stream GPM
Helium		Trace			
Hydrogen		Trace			
Hydrogen Sulfide		Nil			
Carbon Dioxide	0.54	2.58		2.44	
Nitrogen	0.03	0.86		0.80	
Methane	6.98	83.47		78.07	
Ethane	3.92	7.48		7.23	
Propane	5.34	3.10	0.851	3.26	0.895
iso-Butane	2.19	0.57	0.186	0.68	0.222
n-Butane	5.22	0.99	0.311	1.29	0.406
iso-Pentane	4.17	0.29	0.106	0.56	0.204
n-Pentane	4.52	0.27	0.098	0.57	0.206
Hexanes	9.54	0.20	0.081	0.86	0.350
Heptanes plus	57.55	0.19	0.086	4.24	2.466
	100.00	100.00	1.719	100.00	4.749

Properties of Heptanes plus

API gravity @ 60° F.	47.6		
Specific gravity @ 60/60° F.	0.7899		0.788
Molecular weight	147	103	145

Calculated separator gas gravity (air = 1.000) = 0.693

Calculated gross heating value for separator gas = 1147 BTU per cubic foot of dry gas @ 14.696 psia and 60° F.

Primary separator gas collected @ 250 psig and 71 °F.

Primary separator liquid collected @ 250 psig and 71 °F.

Primary separator gas/separator liquid ratio	11880	SCF/Bbl @ 60° F.
Primary separator liquid/stock tank liquid ratio	1.133	Bbls @ 60° F./Bbl
Primary separator gas/well stream ratio	929.44	MSCF/MMSCF
Stock tank liquid/well stream ratio	69.05	Bbls/MMSCF

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CORE LABORATORIES, Inc.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152B

Well 7/11-1X, DST 3

Pressure-Volume Relations of Reservoir Fluid at 235° F.
(Constant Composition Expansion)

Pressure PSIG	Relative Volume	Deviation Factor Z	
7000	0.8658	1.184	
6500	0.8923	1.133	
6000	0.9237	1.083	
5739	0.9424	1.057	
5705 Reservoir Pressure	0.9450	1.054	B_g = .00064
5679	0.9468	1.051	
5571	0.9554	1.040	
5375	0.9728	1.022	
5189	0.9901	1.004	
5131	0.9962	0.999	
5090 Dew Point Pressure	1.0000	0.995	
5062	1.0028		
4992	1.0108		
4906	1.0199		
4712	1.0431		
4430	1.0842		
4014	1.1592		
3637	1.2476		
3232	1.3728		
2843	1.5363		
2447	1.7664		
2058	2.0953		
1754	2.4606		
1531	2.8329		
1332	3.2705		
1169	3.7444		
1047	4.1976		
929	4.7498		

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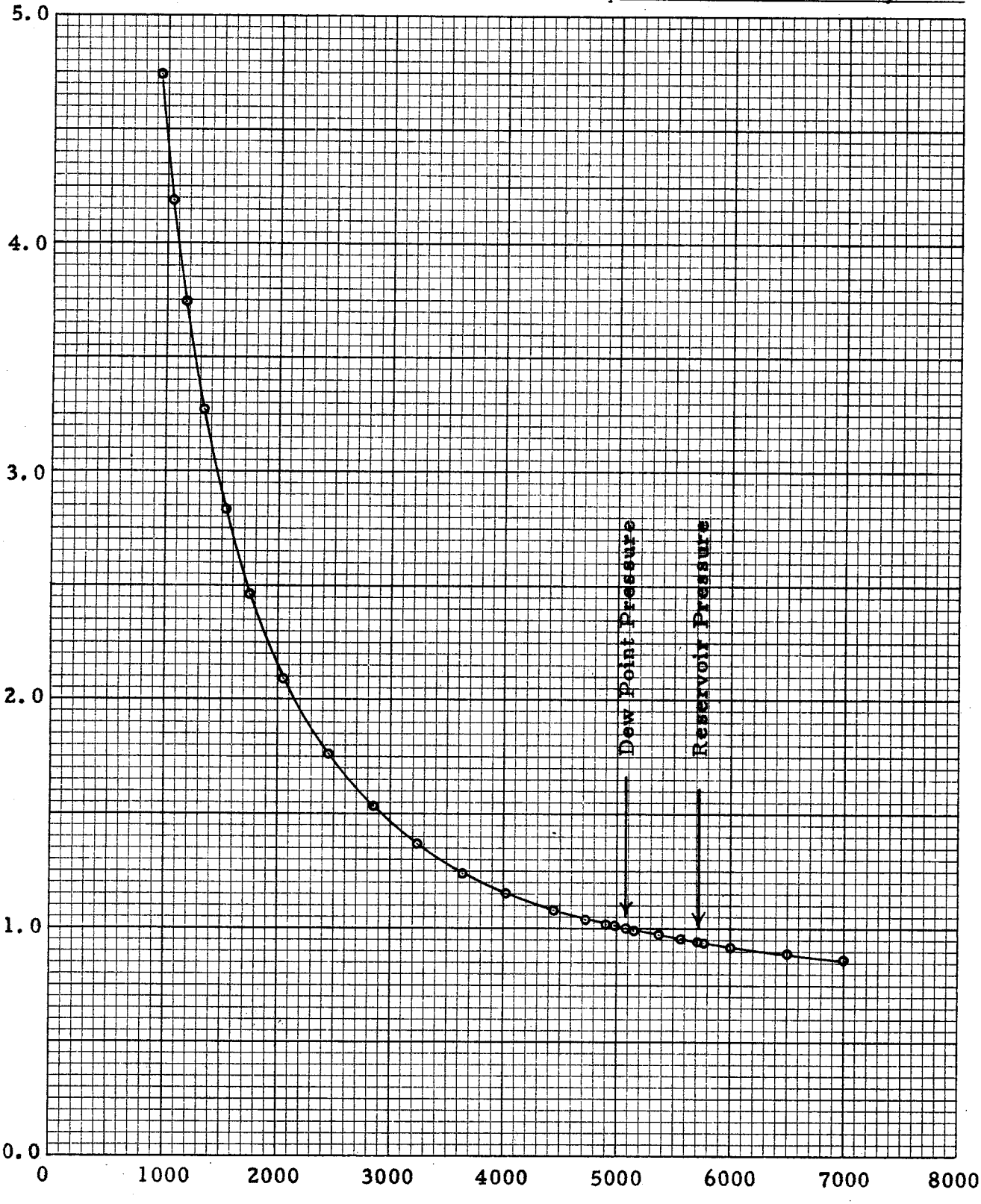
CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152B

Pressure-Volume Relations of Reservoir Fluid at 235° F.

Company Phillips Petroleum Company Formation
Well 7/11-1X, DST 3 Province
Field Block 7/11 Country North Sea, Norway



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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152A

Company Phillips Petroleum Company — Date Sampled June 10, 1968

Well 7/11-1X (DST 4) — Province

Field Block 7/11 — Country North Sea, Norway

FORMATION CHARACTERISTICS

Formation Name	
Date First Well Completed	, 19
Original Reservoir Pressure	PSIG @ Ft.
Original Produced Gas-Liquid Ratio	SCF/Bbl
Production Rate	Bbls/Day
Separator Pressure and Temperature	PSIG ° F.
Liquid Gravity at 60° F.	° API
Datum	Ft. Subsea

WELL CHARACTERISTICS

Elevation	Ft.
Total Depth	Ft.
Producing Interval	9527-9697 Ft.
Tubing Size and Depth	In. to Ft.
Open Flow Potential	MMSCF/Day
Last Reservoir Pressure	5328 PSIG @ 9529 Ft.
Date	, 19
Reservoir Temperature	230 ° F. @ Ft.
Status of Well	
Pressure Gauge	

SAMPLING CONDITIONS

Flowing Tubing Pressure		PSIG
Flowing Bottom Hole Pressure		PSIG
Primary Separator Pressure	1000	PSIG
Primary Separator Temperature	118	° F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		° F.
Field Stock Tank Liquid Gravity		° API @ 60° F.
Primary Separator Gas Production Rate	26108	MSCF/Day
Pressure Base	14.696 PSIA	
Temperature Base	60 ° F.	
Compressibility Factor (F_{pv})	1.080	
Gas Gravity (Laboratory)	0.704	
Gas Gravity Factor (F_g)	1.1918	
Stock Tank Liquid Production Rate @ 60° F.	855	Bbls/Day
Primary Separator Gas/ Stock Tank Liquid Ratio	30536	SCF/Bbl
or	32.75	Bbls/MMSCF

Core Laboratories, Inc., Engineer

REMARKS:

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152A

Company Phillips Petroleum Company Formation

Well 7/11-1X (DST 4) Province

Field Block 7/11 Country North Sea, Norway

HYDROCARBON ANALYSIS OF Separator GAS SAMPLE

COMPONENT	MOL PER CENT	G P M
Helium	Trace	
Hydrogen	Trace	
Hydrogen Sulfide	Nil	
Carbon Dioxide	2.65	
Nitrogen	0.81	
Methane	83.37	
Ethane	7.12	1.794
Propane	2.94	0.807
iso-Butane	0.58	0.189
n-Butane	1.05	0.330
iso-Pentane	0.37	0.135
n-Pentane	0.36	0.130
Hexanes	0.28	0.114
Heptanes plus	0.47	0.213
	100.00	3.712

Calculated gas gravity (air = 1.000) = 0.704

Calculated gross heating value = 1164 BTU
per cubic foot of dry gas at 14.696 psia at 60° F.

Collected at 1000 psig and 118 °F.

Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses

P. L. Moses
Manager

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Petroleum Reservoir Engineering
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File RFL 5152

Company Phillips Petroleum Company — Date Sampled June 11, 1968

Well 7/11-1X, DST 5 — Province

Field Block 7/11 — Country North Sea, Norway

FORMATION CHARACTERISTICS

Formation Name	
Date First Well Completed	, 19
Original Reservoir Pressure	PSIG @ Ft.
Original Produced Gas-Liquid Ratio	SCF/Bbl
Production Rate	Bbls/Day
Separator Pressure and Temperature	PSIG ° F.
Liquid Gravity at 60° F.	° API
Datum	Ft. Subsea

WELL CHARACTERISTICS

Elevation	Ft.
Total Depth	Ft.
Producing Interval	9440-9455 Ft.
Tubing Size and Depth	In. to Ft.
Open Flow Potential	MMSCF/Day
Last Reservoir Pressure	5260 PSIG @ 9442 Ft.
Date	, 19
Reservoir Temperature	228 ° F. @ Ft.
Status of Well	
Pressure Gauge	

SAMPLING CONDITIONS

Flowing Tubing Pressure		PSIG
Flowing Bottom Hole Pressure		PSIG
Primary Separator Pressure		210 PSIG
Primary Separator Temperature		54 ° F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		° F.
Field Stock Tank Liquid Gravity		° API @ 60° F.
Primary Separator Gas Production Rate		6161 MSCF/Day
Pressure Base	14.696 PSIA	
Temperature Base	60 ° F.	
Compressibility Factor (F_{pv})	1.023	
Gas Gravity (Laboratory)	0.674	
Gas Gravity Factor (F_g)	1.2181	
Stock Tank Liquid Production Rate @ 60° F.		508 Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio		12128 SCF/Bbl
	or	82.45 Bbls/MMSCF
Core Laboratories, Inc., Engineer		

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152

Well 7/11-1X, DST 5

Hydrocarbon Analyses of Separator Products and Calculated Well Stream

Component	Separator Liquid Mol Per Cent	Separator Gas Mol Per Cent	Separator Gas GPM	Well Stream Mol Per Cent	Well Stream GPM
Helium		Trace			
Hydrogen		Trace			
Hydrogen Sulfide		Nil			
Carbon Dioxide	0.24	2.55		2.38	
Nitrogen	0.03	0.79		0.73	
Methane	5.93	85.06		79.27	
Ethane	3.46	7.01		6.75	
Propane	4.69	2.68	0.736	2.83	0.777
iso-Butane	1.96	0.49	0.160	0.60	0.196
n-Butane	5.46	0.79	0.248	1.13	0.355
iso-Pentane	3.42	0.22	0.080	0.45	0.164
n-Pentane	5.18	0.19	0.069	0.56	0.202
Hexanes	10.79	0.12	0.049	0.90	0.366
Heptanes plus	58.84	0.10	0.045	4.40	2.605
	100.00	100.00	1.387	100.00	4.665

Properties of Heptanes plus

API gravity @ 60° F.	47.4			
Specific gravity @ 60/60° F.	0.7909			0.790
Molecular weight	149	103		148

Calculated separator gas gravity (air = 1.000) = 0.674

Calculated gross heating value for separator gas = 1120 BTU per cubic foot of dry gas @ 14.696 psia and 60° F.

Primary separator gas collected @ 210 psig and 54 °F.

Primary separator liquid collected @ 210 psig and 54 °F.

Primary separator gas/separator liquid ratio	11137 SCF/Bbl @ 60° F.
Primary separator liquid/stock tank liquid ratio	1.089 Bbls @ 60° F./Bbl
Primary separator gas/well stream ratio	926.85 MSCF/MMSCF
Stock tank liquid/well stream ratio	76.42 Bbls/MMSCF

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Petroleum Reservoir Engineering
DALLAS, TEXAS

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File RFL 5152

Well 7/11-1X, DST 5

Pressure-Volume Relations of Reservoir Fluid at 228° F.
(Constant Composition Expansion)

Pressure PSIG	Relative Volume	Deviation Factor Z
7000	0.9051	1.191
6500	0.9332	1.141
6000	0.9663	1.091
5692	0.9903	1.060
5647	0.9940	1.056
5606	0.9975	1.052
5593	0.9984	1.051
5576 Dew Point Pressure	1.0000	1.049
5553	1.0018	1.047
5528	1.0041	1.044
5442	1.0116	1.036
5344	1.0216	1.027
5260 Reservoir Pressure	1.0301	1.020
5129	1.0442	
4878	1.0741	
4511	1.1278	
4137	1.1962	
3757	1.2847	
3359	1.4061	
2973	1.5616	
2579	1.7802	
2189	2.0932	
1838	2.4973	
1573	2.9342	
1352	3.4319	
1189	3.9240	
1029	4.5540	

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152

Well 7/11-1X, DST 5

Retrograde Condensation During Gas Depletion at 228° F.

Pressure PSIG		Retrograde Liquid Volume Per Cent of Hydrocarbon Pore Space
5576	Dew Point Pressure	0.00
5260	Reservoir Pressure	0.25
4800	First Depletion Level	0.71
3800		3.61
2800		6.46
1800		6.78
1000		6.57
500		6.30
0		5.75

Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses (PL)
P. L. Moses
Manager

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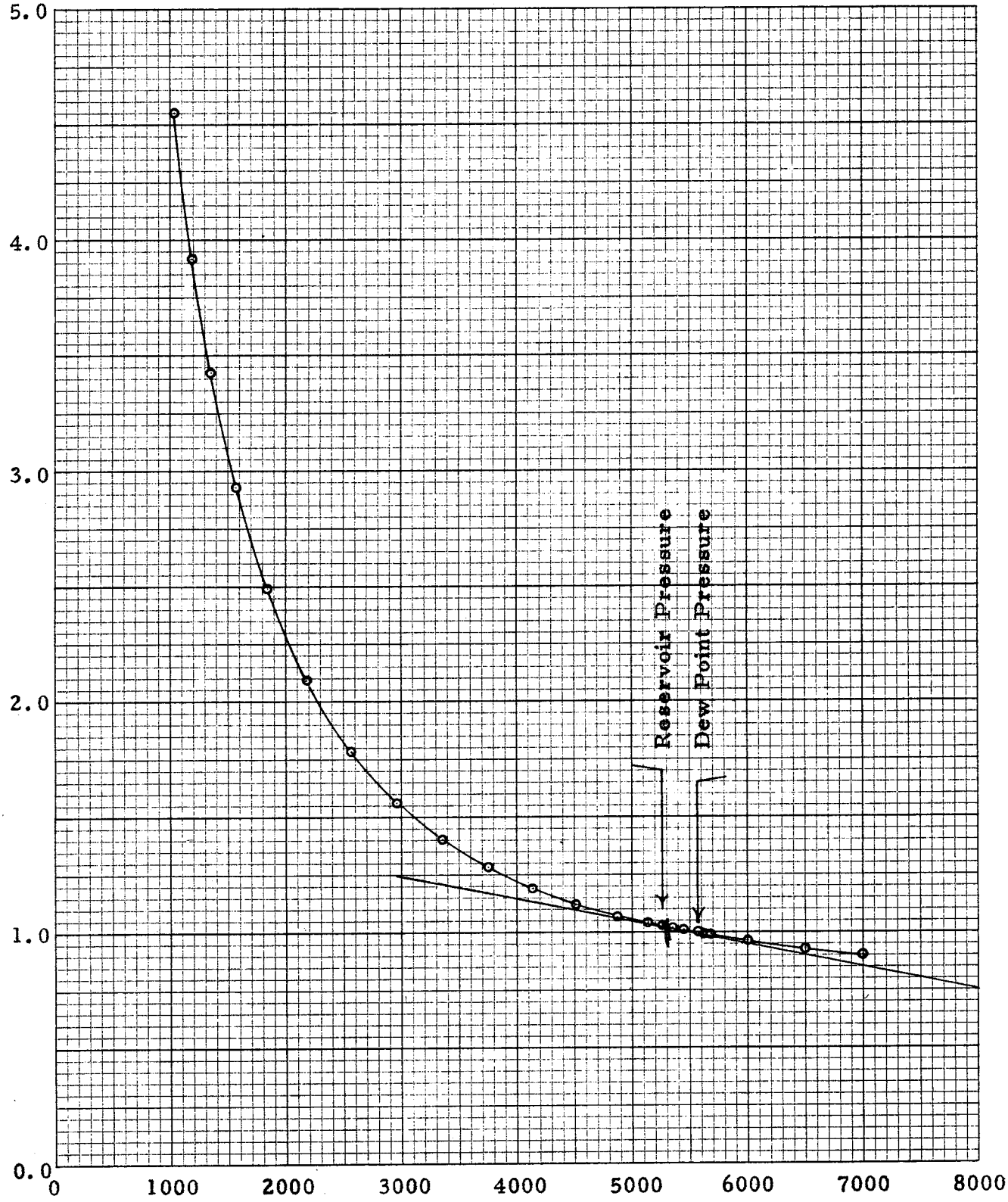
CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5152

Pressure-Volume Relations of Reservoir Fluid at 228° F.

Company Phillips Petroleum Company Formation
Well 7/11-1X, DST 5 Province
Field Block 7/11 Country North Sea, Norway



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Petroleum Reservoir Engineering
DALLAS, TEXAS

Retrograde Condensation During Depletion

Company Phillips Petroleum Company Formation
Well 7/11-1X, DST 5 Province
Field Block 7/11 Country North Sea, Norway