

PHILLIPS PETROLEUM COMPANY
Research and Development Division
Bartlesville, Oklahoma

September 5, 1972

Torfelt 2/4-8AX, Norwegian Sector,
North Sea - Porosity, Permeability,
and Grain Density Measurements on
Core Samples

WFB-41-72

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In compliance with Mr. R. M. Archambeault's letter of May 5, 1972, to Core Laboratories, Inc., measurements of porosity, specific gas permeability and grain density were made at atmospheric pressure on permeability plug core samples from the Torfelt 2/4-8AX, Norwegian Sector, North Sea. As requested these samples were shipped by mail on September 6, 1972, to Core Laboratories, Inc., in Dallas, Texas, for measurement of porosity and permeability under a range of net overburden pressures.

It was necessary to extract the oil from the core samples for eight days before the samples were considered clean. The samples were then dried at a temperature of 210°F before the measurements of porosity, permeability and grain density were made.

The grain volume measurements were obtained with the Boyles' law porosimeter, using helium gas and the bulk volume measurements were made by the direct liquid displacement with mercury. Nitrogen gas was used for the measurement of specific gas permeability.

The results from Core Laboratories, Inc., and from this laboratory are recorded on the attached table for comparison purposes.



W. F. Buce
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WFB:pam
Attachment

cc: R & D Files
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TORFELT 2/4-8AX

Samples to be Used for Porosity and
Permeability Measurements Under Overburden Pressure

Sample Number	Depth, Feet	Core Lab Measurements				Reservoir Engineering Lab Measurements		
		Porosity, Per Cent	Permeability, md		Grain Density, g/ml	Porosity, Per Cent	Specific Nitrogen Permeability, md	Grain Density, g/ml
			Air	Water				
54	10615	0.2	0.2	< 0.01	2.696	5.1	< 0.01	2.702
52	10611	1.2	.01	< .01	2.694	8.2	< .01	2.723
*341	10125	6.5	< .01	< .01	2.695	6.4	< .01	2.718
171	10373	8.3	.02	.01	2.681	11.7	.02	2.724
6	10524	9.2	.80	.54	2.689	9.9	1.34	2.713
154	10353	13.0	.12	.07	2.673	15.1	.09	2.730
534	9858	14.4	.06	.04	2.702	Not received in shipment		
351	10135	16.3	.24	.15	2.706	16.0	.16	2.712
110	10408	16.5	.12	.07	2.701	16.7	.08	2.709
159	10357	17.1	.27	.17	2.707	16.5	.23	2.697
219	10290	19.6	.45	.29	2.705	19.9	.29	2.722
291	10160	20.5	.45	.29	2.700	21.8	.32	2.729
106	10400	22.8	.72	.48	2.683	23.5	.51	2.698
524	9885	26.7	.22	.13	2.703	26.4	.15	2.711
241	10310	28.3	1.6	1.1	2.702	28.2	1.4	2.713
134	10333	28.4	2.0	1.4	2.684	29.9	1.6	2.708
208	10280	31.4	2.6	1.9	2.699	30.7	2.4	2.690
480	9930	36.6	20.	16.	2.697	36.4	1.6	2.699

*Sample fractured during tests.