

M E M O R A N D U M

To: Mr. John Mason

March 10, 1965

Re: Special Core Analysis on Core Sample from Moore "D" No. 1, Schaben Field, Ness County, Kansas

Special core analyses including air permeability, porosity, water permeability, oil permeability with connate water saturation, connate water saturation, water-oil relative permeability ratios, residual oil saturation and permeability to water at floodout have been run on a core sample from the Moore "D" No. 1, Schaben Field, Ness County, Kansas.

Several samples were cut from the interval of 4365 ft to 4408 ft. Most of the samples had no permeability. Results of the tests on a sample from 4392 foot depth are presented on the table below and on the attached graph.

Oil in Place: 28 cp at 77° F
Injection Water: 25,000 ppm NaCl Brine
Connate Water: 25,000 ppm NaCl Brine

<u>Air Perm. md.</u>	<u>Por., %</u>	<u>Water Perm. md.</u>	<u>Oil Perm. w/Connate Water, md.</u>	<u>Connate H₂O Sat., % PV</u>	<u>Final Oil Sat., % PV</u>	<u>Effect. Perm., to H₂O at Floodout, md.</u>
7.4	15.9	7.3	6.8	31	33	1.75

R. V. Maul
R. V. Maul

RVM/maw

Attachment

M E M O R A N D U M

To: Mr. John Mason

March 22, 1965

Re: Special Core Analyses on Core Samples from Moore "D" No. 1, Moore "B" No. 1, and Humberg "A" No. 1, Schaben Field, Ness County, Kansas

Special flow studies including air permeabilities, porosities, water permeabilities, oil permeabilities with connate water, connate water saturations, water-oil relative permeability ratios, residual oil saturations, and permeabilities to water at floodout have been run on core samples from the Moore "D" No. 1, Moore "B" No. 1, and Humberg "A" No. 1, Schaben Field, Ness County, Kansas.

The tests were run using 28.0 cp mineral oil as the oil in place and 25,000 ppm NaCl brine solution for both the connate water and the injection water. The sample from the Moore "D" No. 1 at 4383 ft depth developed a fracture when the pressure was increased to 20 atmospheres when water was injected into the core. This can be noted from the increase in permeability to air of 0.64 md to the permeability to oil with connate water in place of 8.8 md. Connate water saturations were extremely high in the samples. This is probably a function of the type of fractures which are present. Oil recoveries varied from 18 to 25%.

Complete data are shown on the attached table and curves.

R. V. Maul

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RVM/maw

TABLE 1

Schaben Field, Ness County, Kansas

<u>Well</u>	<u>Depth, Ft.</u>	<u>Air Perm., md.</u>	<u>Por., %</u>	<u>Waterflood Data</u>			<u>Final Oil Sat., % P.V.</u>	<u>Oil Recovery, % P.V.</u>	<u>Effect. Perm. to H₂O at Floodout, md.</u>
				<u>Water Perm., md.</u>	<u>Oil Perm., w/Connate Water, md.</u>	<u>Connate H₂O Sat., % P.V.</u>			
Moore "D" No. 1	4383	0.64	16.2	4.0	8.8	40	35	25	2.30
Moore "D" No. 1	4386	3.10	15.8	2.0	3.2	56	23	21	0.76
Humberg "A" No. 1	4364	4.30	19.0	3.2	3.4	51	28	21	0.80
Moore "B" No. 1	4405	12.80	17.5	10.6	10.8	56	26	18	3.30

Figure 1

Moore "D" No. 1,
Schaben Field,
Ness County, Kansas
Water-Oil Relative
Permeability Ratio
Depth - 4392 ft

$\frac{K_w}{K_o}$

10

9

8

7

6

5

4

3

2

1.0

9

8

7

6

5

4

3

2

0.1

10

20

30

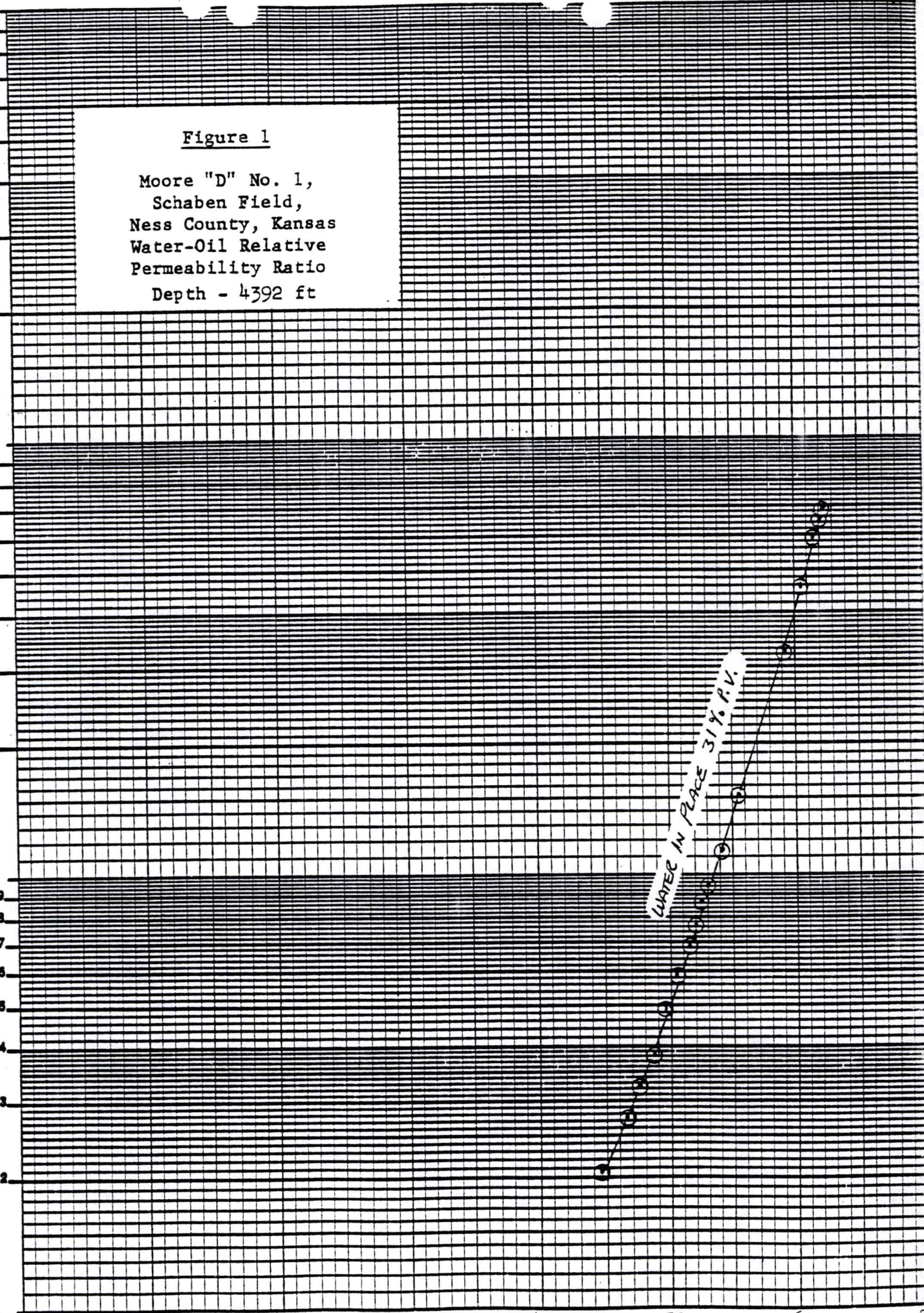
40

50

60

Water Saturation, % Pore Volume

WATER IN PLACE 31% P.V.



100
9
8
7
6
5
4
3
2

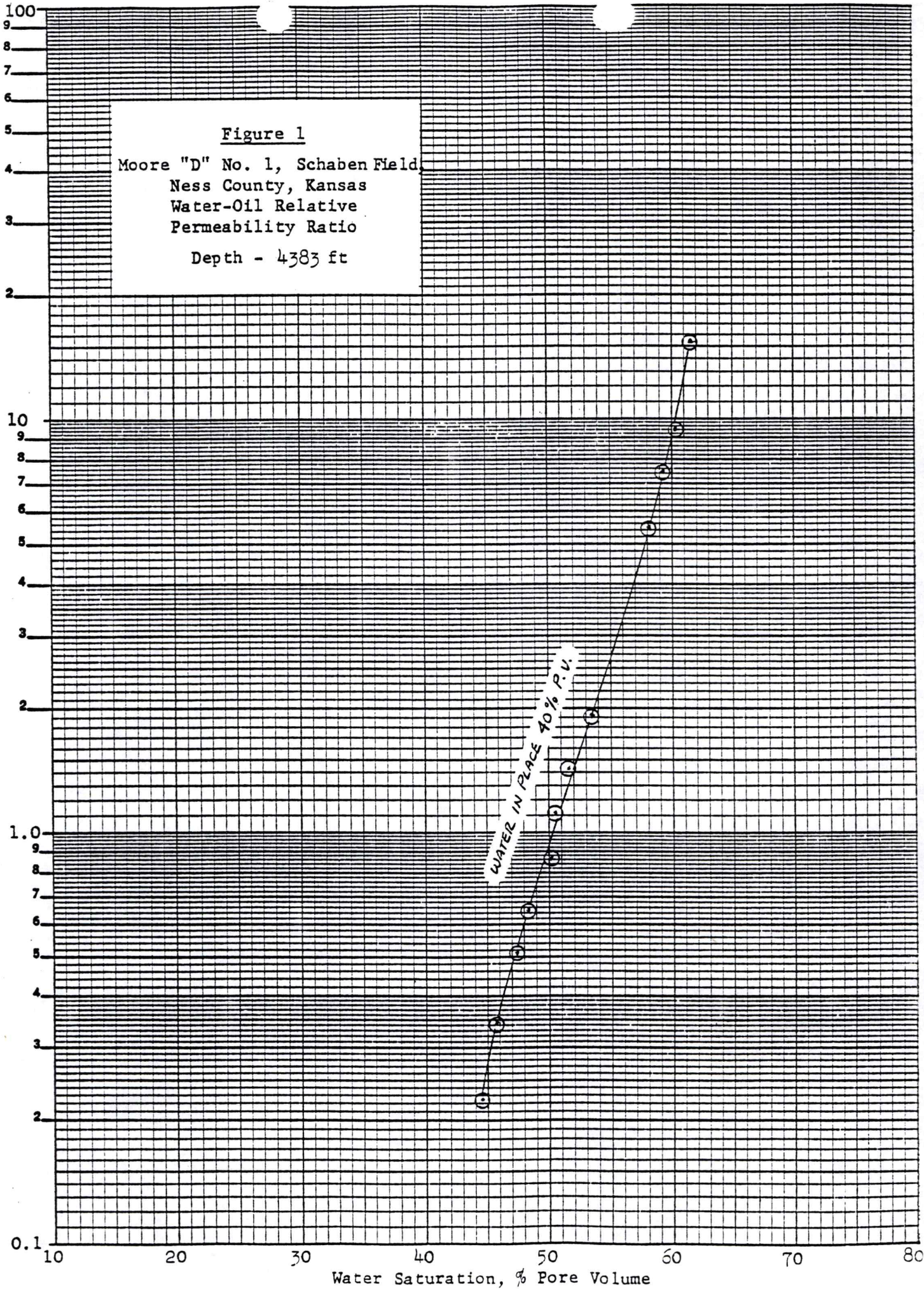
10
9
8
7
6
5
4
3
2

1.0
9
8
7
6
5
4
3
2

0.1

Figure 1
Moore "D" No. 1, Schaben Field,
Ness County, Kansas
Water-Oil Relative
Permeability Ratio
Depth - 4383 ft

$\frac{K_w}{K_o}$



WATER IN PLACE 40% P.V.

Water Saturation, % Pore Volume

Figure 2

Moore "D" No. 2, Schaben Field,
Ness County, Kansas
Water-Oil Relative
Permeability Ratio

Depth - 4386 ft

$\frac{K_w}{K_o}$

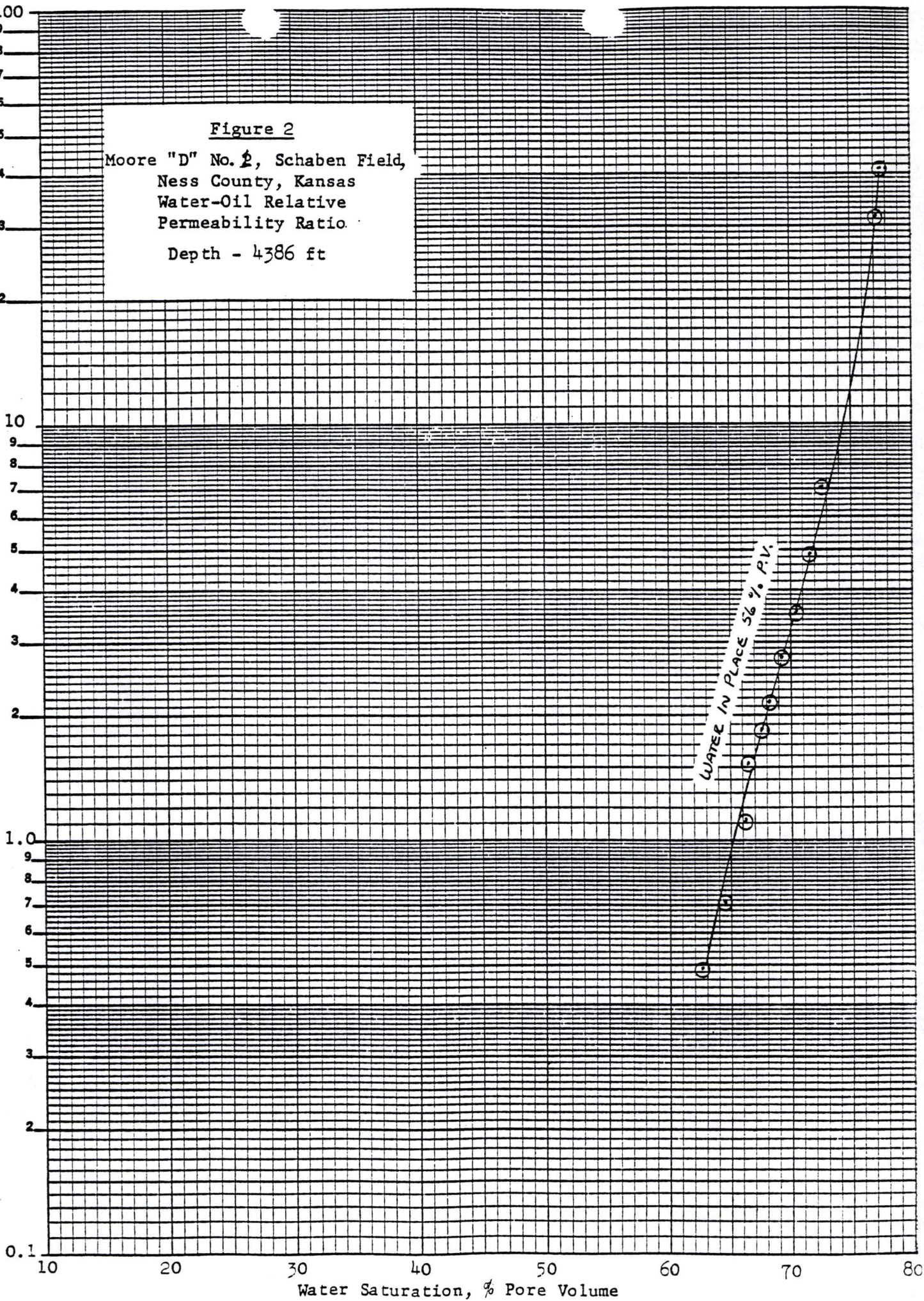


Figure 4

Moore "B" No. 1, Schaben Field,
Ness County, Kansas
Water-Oil Relative
Permeability Ratio
Depth - 4405 ft

$\frac{K_w}{K_o}$

