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CORE ANALYSIS REPORT

FOR

PAN CANADIAN PETROLEUM COMPANY

SCHUCK 33-17 NO. 1
PEN FIELD
GRAHAM COUNTY, KANSAS

17-6-22W
C NW SE

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

PAN CANADIAN PETROLEUM COMPANY
SCHUCK 33-17 NO. 1
PEN FIELD
GRAHAM COUNTY, KANSAS

DATE ON : 21-JUN-85 OFF: 02-JUL-85
FORMATION : KANSAS CITY
DRLG. FLUID: CHEM GEL
LOCATION : NW SE SEC 17-T6S-R22W

FILE NO : 3806-7740
LABORATORY: AURORA
ANALYSTS : BB:JW:MH
ELEVATION : 2347 KB

FULL DIAMETER ANALYSIS--BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH FEET	PERM MD MAX Ka	PERM MD 90DEG Ka	PERM MD VERT Ka	He POR	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
1	3718.0-19.0	0.01	0.01	<0.01	1.1	0.0	25.9	2.72	LM LT GRY-WH FN-XLN
2	3719.0-20.0	0.01	<0.01	<0.01	1.9	0.0	48.4	2.74	LM LT GRY-WH FN-XLN
3	3720.0-21.0	0.41	0.15	<0.01	5.5	0.0	79.3	2.75	LM LT GRN-TAN FN-XLN CLY LAM
4	3721.0-22.0	0.01	<0.01	<0.01	2.0	0.0	76.3	2.72	LM LT GRY-WH FN-XLN CLY LAM
5	3722.0-23.0	0.02	0.02	<0.01	3.2	0.0	65.1	2.75	LM LT GRY-WH FN-XLN CLY LAM
6	3723.0-24.0	0.07	0.05	<0.01	3.7	0.0	73.4	2.75	LM LT GRY-WH FN-XLN CLY LAM
7	3724.0-25.0	0.03	<0.01	<0.01	1.6	0.0	68.5	2.73	LM LT GRY-WH FN-XLN CLY LAM
8	3725.0-26.0	<0.01	<0.01	<0.01	2.0	0.0	72.8	2.73	LM LT GRY-WH FN-XLN CLY LAM
9	3726.0-27.0	0.06	0.01	<0.01	2.1	0.0	92.3	2.72	LM LT GRY-WH FN-XLN
10	3727.0-28.0	0.01	<0.01	<0.01	3.2	0.0	86.4	2.74	LM LT GRY-WH FN-XLN CLY LAM
11	3728.0-29.0	0.55	**	<0.01	7.6	0.0	82.4	2.72	LM LT GRY-WH FN-XLN
	3729.0-36.0								SHALE - NO ANALYSIS CLIENT REQUEST
	3736.0-41.0								LOST CORE
12	3741.0-42.0	0.10	0.01	<0.01	1.5	0.0	84.8	2.67	LM LT GRN-WH FN-XLN CLY
13	3742.0-43.0	<0.01	**	<0.01	1.9	37.3	13.3	2.71	LM LT GRN-WH FN-XLN
14	3743.0-44.0	<0.01	**	<0.01	1.3	0.0	53.1	2.70	LM LT GRY-WH FN-XLN SL/ARG
15	3744.0-45.0	***	**	0.24	7.5	7.9	78.5	2.82	DOLO TAN FN-XLN SL/VGY
16	3745.0-46.0	0.05	**	0.03	7.3	7.8	67.2	2.81	DOLO TAN FN-XLN SL/VGY SL/CALC
17	3746.0-47.0	2.9	2.7	0.07	13.5	10.1	38.5	2.78	DOLO LT BRN FN-XLN SL/VGY SL/CALC
18	3747.0-48.0	7.7	7.1	0.12	9.4	35.0	56.0	2.71	LM TAN FN-XLN
19	3748.0-49.0	25.	23.	10.	10.4	15.3	39.2	2.71	LM TAN FN-XLN
20	3749.0-50.0	0.11	0.05	<0.01	5.4	15.9	39.9	2.74	LM TAN FN-XLN
21	3750.0-51.0	0.05	0.01	<0.01	3.5	0.0	85.5	2.74	LM TAN FN-XLN SL/ARG
22	3751.0-52.0	<0.01	<0.01	<0.01	1.8	0.0	62.1	2.71	LM LT BRN FN-XLN CLY LAM
23	3752.0-53.0	0.01	<0.01	<0.01	1.1	0.0	39.7	2.70	LM TAN FN-XLN CLY LAM

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

AN CANADIAN PETROLEUM COMPANY DATE ON : 21-JUN-85 OFF: 02-JUL-85 FILE NO : 3806-7740
CHUCK 33-17 NO. 1 FORMATION : KANSAS CITY LABORATORY: AURORA

Schuck 17-6-22W

FULL DIAMETER ANALYSIS--BOYLE'S LAW POROSITY

AMPLE UMBER	DEPTH FEET	PERM MD MAX Ka	PERM MD 90DEG Ka	PERM MD VERT Ka	He POR	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
24	3753.0-54.0	0.02	0.02	<0.01	1.0	0.0	63.0	2.71	LM TAN FN-XLN CLY LAM
25	3754.0-55.0	<0.01	<0.01	<0.01	0.9	0.0	71.2	2.70	LM TAN FN-XLN CLY LAM
26	3755.0-56.0	0.01	<0.01	<0.01	0.8	0.0	40.5	2.70	LM TAN FN-XLN CLY LAM
27	3756.0-57.0	0.03	<0.01	<0.01	1.3	0.0	44.6	2.71	LM LT GRY FN-XLN CLY LAM
28	3757.0-58.0	* 0.19	0.03	<0.01	3.5	6.4	64.3	2.70	LM LT BRN FN-XLN CLY LAM FOSS
	3758.0-66.0								SHALE - NO ANALYSIS CLIENT REQUEST
29	3766.0-67.0	0.15	0.10	<0.01	4.7	0.0	92.2	2.72	LM LT GRY FN-XLN CLY LAM
30	3767.0-68.0	0.02	0.02	<0.01	2.0	0.0	82.4	2.71	LM TAN FNA-XLN
31	3768.0-69.0	0.23	0.04	<0.01	5.6	1.1	87.8	2.72	LM LT TAN FN-XLN CLY LAM
32	3769.0-70.0	<0.01	**	<0.01	1.3	0.0	94.2	2.71	LM LT GRY-WH FN-XLN CLY LAM
	3770.0-71.0								LOST CORE

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**UNSUITABLE FOR FULL DIAMETER ANALYSIS

***UNSUITABLE FOR PERMEABILITY MEASUREMENT

*FRACTURED PERMEABILITY

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

AN CANADIAN PETROLEUM COMPANY DATE : 21-JUN-85 FILE NO. : 3806-7740
CHUCK 33-17 NO. 1 FORMATION : KANSAS CITY ANALYSTS : BB:JW:MH

Schrock
17-6-22W

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*** CORE SUMMARY AND CALCULATED RECOVERABLE OIL ***

DEPTH INTERVAL: 3746.0 TO 3750.0

FEET OF CORE ANALYZED : 4.0 FEET OF CORE INCLUDED IN AVERAGES: 4.0

-- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED --

PERMEABILITY HORZONTAL RANGE (MD.)	:	0.10	TO 30.	(UNCORRECTED FOR SLIPPAGE)
HELIUM POROSITY RANGE (%)	:	5.0	TO 100.0	
OIL SATURATION RANGE (%)	:	10.0	TO 40.0	
WATER SATURATION RANGE (%)	:	35.0	TO 60.0	

SHALE SAMPLES EXCLUDED FROM AVERAGES.

VERAGE PERMEABILITY (MILLIDARCIES)				
ARITHMETIC PERMEABILITY	:	8.9		
GEOMETRIC PERMEABILITY	:	2.8		
HARMONIC PERMEABILITY	:	0.42		
RODUCTIVE CAPACITY (MILLIDARCY-FEET)				
ARITHMETIC CAPACITY	:	36.		
GEOMETRIC CAPACITY	:	11.		
HARMONIC CAPACITY	:	1.7		
VERAGE POROSITY (PERCENT)	:	9.7		
VERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE)	:	18.4		
AVERAGE TOTAL WATER SATURATION (PERCENT OF PORE SPACE)	:			43.1
AVERAGE CONNATE WATER SATURATION (PERCENT OF PORE SPACE)	:	(E)		35.0
OIL GRAVITY (API)	:	(E)		30.0
ORIGINAL FORMATION VOLUME FACTOR (BBLS SATURATED OIL/STOCK-TANK BBL)	:	(E)		1.10
ORIGINAL STOCK-TANK OIL IN PLACE (BARRELS PER ACRE-FOOT)	:	(C)		444.

INTERPRETATION OF DATA

3746.0-3750.0 OIL PRODUCTIVE

(C) CALCULATED (E) ESTIMATED (M) MEASURED (*) REFER TO ATTACHED LETTER.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

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PERMEABILITY VS POROSITY

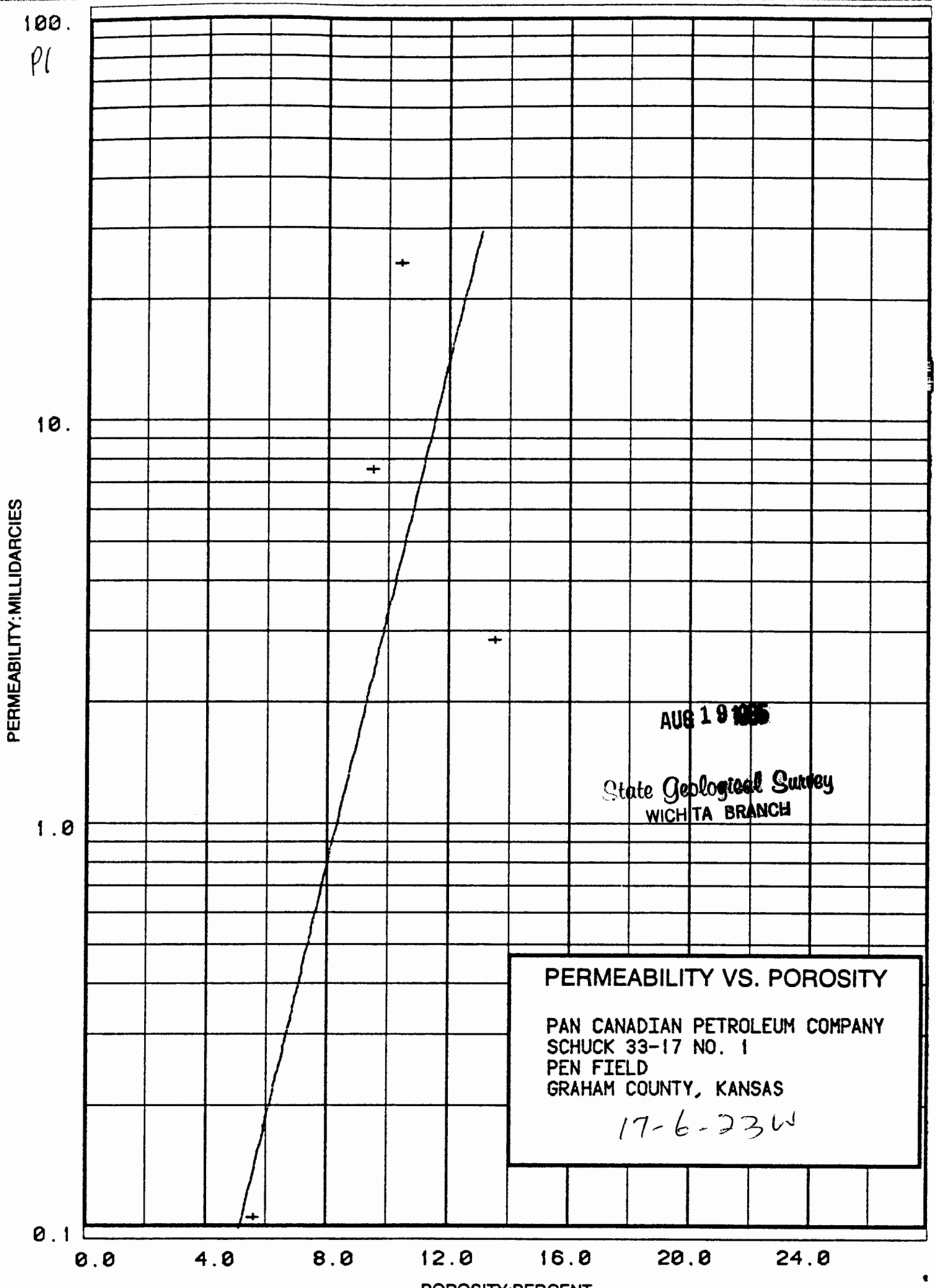
COMPANY: PAN CANADIAN PETROLEUM COMPANY WELL : SCHUCK 33-17 NO. 1
FIELD : PEN FIELD COUNTY, STATE: GRAHAM COUNTY, KANSAS
17-6-22W

AIR PERMEABILITY : MD - HORIZONTAL (UNCORRECTED FOR SLIPPAGE)
POROSITY : PERCENT (HELIUM)

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY MINIMUM	PERMEABILITY MAXIMUM	POROSITY MIN.	POROSITY MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
3746.0 - 3750.0	1 (+)	0.100	30.0	5.0	15.0	9.7	8.9	0.42	2.8

EQUATION OF REDUCED LINE RELATING PERMEABILITY(K) TO POROSITY :
LOG(K) = (SLOPE)(POROSITY) + LOG OF INTERCEPT
K = ANTILOG((SLOPE)(POROSITY) + LOG OF INTERCEPT)

RANGE	EQUATION OF THE LINE
1	PERM = ANTILOG((0.3029)(POROSITY) + -2.4831)



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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: PAN CANADIAN PETROLEUM COMPANY WELL : SCHUCK 33-17 NO. 1
FIELD : PEN FIELD COUNTY, STATE: GRAHAM COUNTY, KANSAS

17-6-23W

AIR PERMEABILITY : MD. (HORIZONTAL) RANGE USED 0.100 TO 30.
POROSITY : PERCENT (HELIUM) RANGE USED 5.0 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 3746.0 - 3750.0 INTERVAL LENGTH : 4.0
FEET ANALYZED IN ZONE : 5.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
9.7	8.9	0.42	2.8

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: PAN CANADIAN PETROLEUM COMPANY
FIELD : PEN FIELD
WELL : SCHUCK 33-17 NO. 1
COUNTY, STATE: GRAHAM COUNTY, KANSAS

17-6 22W

GROUPING BY POROSITY RANGES

POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
4.0 - 6.0	1.0	5.4	0.110	0.110	25.0	25.0
8.0 - 10.0	1.0	9.4	7.7	7.7	25.0	50.0
10.0 - 12.0	1.0	10.4	25.	25.	25.0	75.0
12.0 - 14.0	1.0	13.5	2.9	2.9	25.0	100.0

TOTAL NUMBER OF FEET = 4.0

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: PAN CANADIAN PETROLEUM COMPANY WELL : SCHUCK 33-17 NO. 1
FIELD : PEN FIELD COUNTY, STATE: GRAHAM COUNTY, KANSAS
17-6-22W

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.078 - 0.156	1.0	0.110	0.110	5.4	25.0	25.0
2.500 - 5.000	1.0	2.9	2.9	13.5	25.0	50.0
5.- 10.	1.0	7.7	7.7	9.4	25.0	75.0
20.- 40.	1.0	25.	25.	10.4	25.0	100.0

TOTAL NUMBER OF FEET = 4.0

CORE LABORATORIES, INC.
troleum Reservo[Engineer
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: PAN CANADIAN PETROLEUM COMPANY
FIELD : PEN FIELD
WELL : SCHUCK 33-17 NO. 1
COUNTY, STATE: GRAHAM COUNTY, KANSAS

15-6-22W

POROSITY-FEET OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.0	0.0	0.0	4.0	100.0	9.7	10.0
2.0	0.0	0.0	4.0	100.0	9.7	10.0
4.0	0.0	0.0	4.0	100.0	9.7	10.0
6.0	1.0	14.0	3.0	86.0	11.1	11.0
8.0	1.0	14.0	3.0	86.0	11.1	11.0
10.0	2.0	38.2	2.0	61.8	11.9	12.0
12.0	3.0	65.1	1.0	34.9	13.5	
14.0	4.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 38.7

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

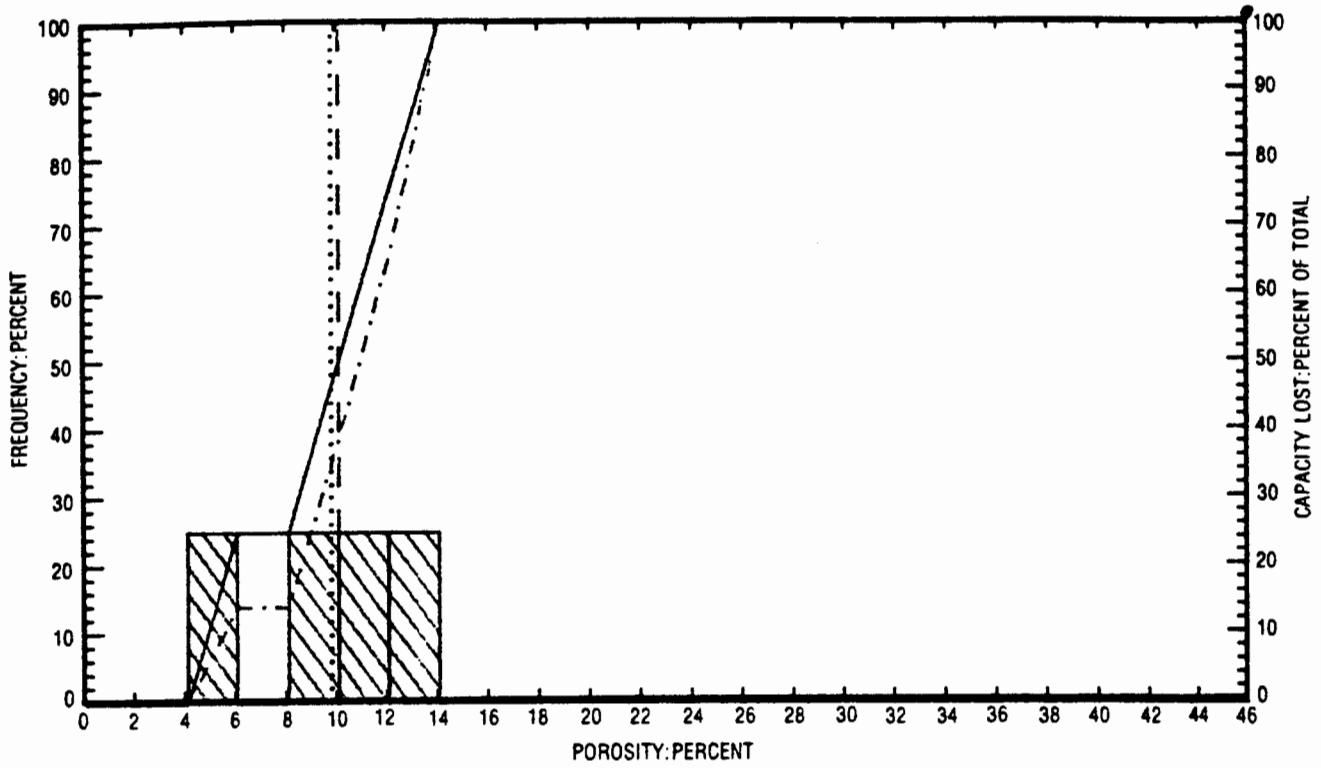
COMPANY: PAN CANADIAN PETROLEUM COMPANY
FIELD : PEN FIELD
WELL : SCHUCK 33-17 NO. 1
COUNTY, STATE: GRAHAM COUNTY, KANSAS

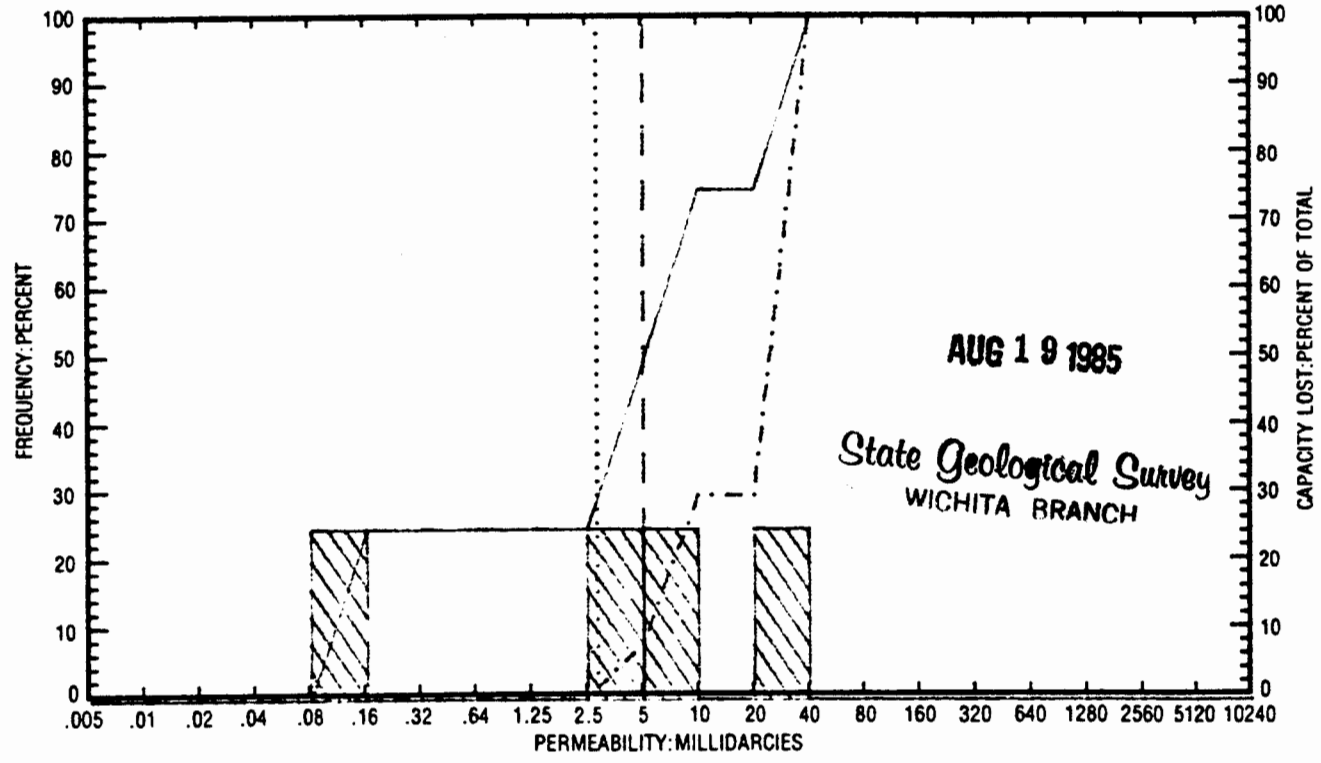
17-6-22 W

MILLIDARCY-FEET OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
0.005	0.0	0.0	4.0	100.0	2.80	5.00
0.010	0.0	0.0	4.0	100.0	2.80	5.00
0.020	0.0	0.0	4.0	100.0	2.80	5.00
0.039	0.0	0.0	4.0	100.0	2.80	5.00
0.078	0.0	0.0	4.0	100.0	2.80	5.00
0.156	1.0	0.3	3.0	99.7	8.23	7.07
0.312	1.0	0.3	3.0	99.7	8.23	7.07
0.625	1.0	0.3	3.0	99.7	8.23	7.07
1.250	1.0	0.3	3.0	99.7	8.23	7.07
2.500	1.0	0.3	3.0	99.7	8.23	7.07
5.	2.0	8.4	2.0	91.6	13.87	10.00
10.	3.0	30.0	1.0	70.0	25.00	
20.	3.0	30.0	1.0	70.0	25.00	
40.	4.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET(ARITHMETIC) = 35.71





PERMEABILITY AND POROSITY HISTOGRAMS

PAN CANADIAN PETROLEUM COMPANY
SCHUCK 33-17 NO. 1
PEN FIELD 17-6-22W
GRAHAM COUNTY, KANSAS

LEGEND

- ARITHMETIC MEAN POROSITY
- GEOMETRIC MEAN PERMEABILITY
- MEDIAN VALUE
- CUMULATIVE FREQUENCY
- CUMULATIVE CAPACITY LOST

17-6-22W

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CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY PAN CANADIAN PETROLEUM COMPANY — FILE NO. 3886-7740
WELL SCHUCK 33-17 NO. 1 — DATE 21-JUN-85
FIELD PEN — FORMATION KANSAS CITY — ELEV. 2347 KB
COUNTY GRAHAM — STATE KANSAS — DRLG. FLD. CHEM GEL — CORES
LOCATION NW SE SEC 17-T6S-R22W

CORRELATION COREGRAPH

VERTICAL SCALE: 5" = 100'