

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS



CORE ANALYSIS REPORT

FOR

INTERCONTINENTAL ENERGY

STATE NO. 2
SOUTH ROMAN
ARAPAHOE COUNTY, COLORADO

COLO. OIL & GAS CONS. COM. 11

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

PAGE 1

INTERCONTINENTAL ENERGY
 STATE NO. 2
 SOUTH ROMAN
 ARAPAHOE COUNTY, COLORADO

DATE : 1-14-82
 FORMATION : "J" SAND
 DRLG. FLUID: WATER BASE MUD
 LOCATION : NE SW SEC 36 T48-R58W

FILE NO : RP-2-6774
 ANALYSTS : CW,KS,AT
 ELEVATION: 5025'GL

CONVENTIONAL CORE ANALYSIS

SAMPLE NUMBER	DEPTH	PERM K _D MAXIMUM	POR. FLD	FLUID OIL	SATS. WTR	DESCRIPTION
	5144.0-50.0					NO ANALYSIS - SHALE
1	5150.0-51.0	0.03	14.0	14.4	61.9	SS GY VF-FN SHY
2	5151.0-52.0	1.20	19.1	19.5	63.3	SS GY VF-FN SHY
3	5152.0-53.0	2.20	18.8	14.6	67.0	SS GY VF-FN SHY
4	5153.0-54.0	2.80	14.0	23.6	48.6	SS GY VF-FN SHY
5	5154.0-55.0	17.	17.3	15.1	53.8	SS LT GY VF-FN
6	5155.0-56.0	5.80	16.4	18.4	59.7	SS GY VF-FN SHY
7	5156.0-57.0	5.60	18.6	17.6	54.7	SS GY VF-FN SHY
8	5157.0-58.0	16.	14.0	24.1	33.4	SS LT GY VF-FN
9	5158.0-59.0	26.	13.9	36.1	29.1	SS LT GY VF-FN
10	5159.0-60.0	0.87	12.2	15.5	58.8	SS LT GY VF-FN SL/CALC
11	5160.0-61.0	0.04	9.3	5.3	77.0	SS GY VFG SHY
12	5161.0-62.0	0.54	8.9	10.1	76.4	SS GY VFG SHY
13	5162.0-63.0	3.90	16.4	0.0	88.8	SS GY VFG SHY
14	5163.0-64.0	3.50	16.5	0.0	91.7	SS GY VFG SHY
15	5164.0-65.0	1.20	15.3	3.1	86.5	SS GY VFG SHY
16	5165.0-66.0	1.00	17.6	0.5	80.8	SS GY VFG SHY
17	5166.0-67.0	0.30	15.6	4.3	80.3	SS GY VFG SHY
18	5167.0-68.0	0.71	13.9	0.0	87.2	SS GY VFG SHY
19	5168.0-69.0	0.12	11.1	6.4	81.3	SS GY VFG SHY
20	5169.0-70.0	0.02	7.9	15.6	70.0	SS GY VFG SHY
21	5170.0-71.0	0.02	7.3	9.6	79.5	SS GY VFG SHY
22	5171.0-72.0	0.07	7.3	9.8	78.0	SS GY VFG SHY
23	5172.0-73.0	0.01	7.0	1.4	88.4	SS GY VFG SHY
24	5173.0-74.0	0.07	6.1	0.0	89.2	SS GY VFG SHY
	5174.0-78.0					NO ANALYSIS - SHALE
25	5178.0-79.0	*	11.4	0.0	71.4	SS GY FG V/SHY
26	5179.0-80.0	37.	15.1	0.0	78.1	SS GY FG



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INTERCONTINENTAL ENERGY
 STATE NO. 2

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FILE NO : RP-2-6774
 ANALYSTS : CW:KE:AT

CONVENTIONAL CORE ANALYSIS

SAMPLE NUMBER	DEPTH	PERM Ks MAXIMUM	FOR. FLD	FLUID OIL	SATS. WTR	DESCRIPTION				
27	5180.0-81.0	12.	13.4	0.0	84.3	SS	GY	FG	SHY	
28	5181.0-82.0	94.	15.7	0.0	81.8	SS	GY	FG	SHY	
29	5182.0-83.0	15.	16.6	0.0	82.4	SS	GY	FG	SHY	
30	5183.0-84.0	0.07	6.7	10.3	73.7	SS	GY	FG	SHY	
31	5184.0-85.0	0.12	12.0	0.8	82.8	SS	GY	FG	SHY	
32	5185.0-86.0	0.32	12.5	3.7	77.8	SS	GY	FG	SHY	
33	5186.0-87.0	0.31	13.2	8.4	73.1	SS	GY	FG	SHY	
34	5187.0-88.0	0.13	11.9	16.5	67.5	SS	GY	FG	SHY	
35	5188.0-89.0	0.05	7.9	38.0	52.3	SS	GY	FG	SHY	
36	5189.0-90.0	59.	10.8	0.0	58.5	SS	GY	FG		VF
37	5190.0-91.0	50.	13.2	0.0	62.7	SS	GY	FG	SHY	VF
38	5191.0-92.0	30.	15.1	4.3	68.0	SS	GY	FG	SHY	
39	5192.0-93.0	9.70	12.2	6.9	67.0	SS	GY	FG	SHY	
40	5193.0-94.0	138.	17.8	9.1	63.1	SS	GY	FG	SHY	
41	5194.0-95.0	21.	14.3	0.0	79.4	SS	GY	FG		
42	5195.0-96.0	218.	15.0	0.0	69.6	SS	GY	FG		
43	5196.0-97.0	0.50	12.6	0.0	72.3	SS	GY	FG		
44	5197.0-98.0	5.30	11.0	0.0	71.5	SS	GY	FG		
45	5198.0-99.0	60.	10.2	0.0	77.1	SS	GY	FG		VF
46	5199.0-00.0	8.90	13.5	0.0	69.5	SS	GY	FG		VF

VF = VERTICAL FRACTURE

* = UNSUITABLE FOR PERMEABILITY MEASUREMENT



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Petroleum Reservoir Engineering
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INTERCONTINENTAL ENERGY
 STATE NO. 2

DATE : 1-14-82
 FORMATION : "J" SAND

FILE NO. : RP-2-67
 ANALYSTS : CW,KS,A

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

DEPTH INTERVAL: 5150.0 TO 5160.0

FEET OF CORE ANALYZED : 10.0 FEET OF CORE INCLUDED IN AVERAGES: 9.0

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

PERMEABILITY HORIZONTAL RANGE (MD.)	:	0.01 TO 30.	(UNCORRECTED FOR SLIPPAGE)
FLUID POROSITY RANGE (%)	:	10.0 TO 100.0	
OIL SATURATION RANGE (%)	:	14.0 TO 25.0	
WATER SATURATION RANGE (%)	:	25.0 TO 70.0	

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGE PERMEABILITY (MILLIDARCIES)

ARITHMETIC PERMEABILITY	:	5.8
GEOMETRIC PERMEABILITY	:	2.3
HARMONIC PERMEABILITY	:	0.25

AVERAGE TOTAL WATER SATURATION (PERCENT OF PORE SPACE)	:	56.3
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AVERAGE CONNATE WATER SATURATION (PERCENT OF PORE SPACE)	:	(E) 30.0
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PRODUCTIVE CAPACITY (MILLIDARCY-FeET)

ARITHMETIC CAPACITY	:	52.
GEOMETRIC CAPACITY	:	21.
HARMONIC CAPACITY	:	2.2

OIL GRAVITY (API)	:	(E) 40.0
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ORIGINAL FORMATION VOLUME FACTOR (BBL.S SATURATED OIL/STOCK-TANK BBL)	:	(E) 1.30
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AVERAGE POROSITY (PERCENT)	:	16.0
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ORIGINAL STOCK-TANK OIL IN PLACE (BARRELS PER ACRE-FOOT)	:	(C) 670.
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AVERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE)	:	18.0
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INTERPRETATION OF DATA

5150 - 5160	OIL PRODUCTIVE.
5160 - 5174	WATER PRODUCTIVE.
5178 - 5200	WATER PRODUCTIVE.

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



PERMEABILITY VS POROSITY

COMPANY: INTERCONTINENTAL ENERGY
 FIELD : SOUTH ROMAN

WELL : STATE NO. 2
 COUNTY, STATE: ARAPAHOE COUNTY, COLORADO

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

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY		POROSITY		POROSITY AVERAGE	PERMEABILITY AVERAGES		
		MINIMUM	MAXIMUM	MIN.	MAX.		ARITHMETIC	HARMONIC	GEOMETRIC
5150.0 - 5160.0	1 (X)	0.010	30.0	10.0	20.0	15.8	7.8	0.27	2.9

EQUATION OF REDUCED LINE RELATING PERMEABILITY(K) TO POROSITY :
 $\log(K) = (\text{SLOPE})(\text{POROSITY}) + \log \text{ OF INTERCEPT}$
 $K = \text{ANTILOG}((\text{SLOPE})(\text{POROSITY}) + \log \text{ OF INTERCEPT})$

RANGE	EQUATION OF THE LINE
1	PERM = ANTILOG((0.3400)(POROSITY) + -4.9157)



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PERMEABILITY: MILLIDARCIES

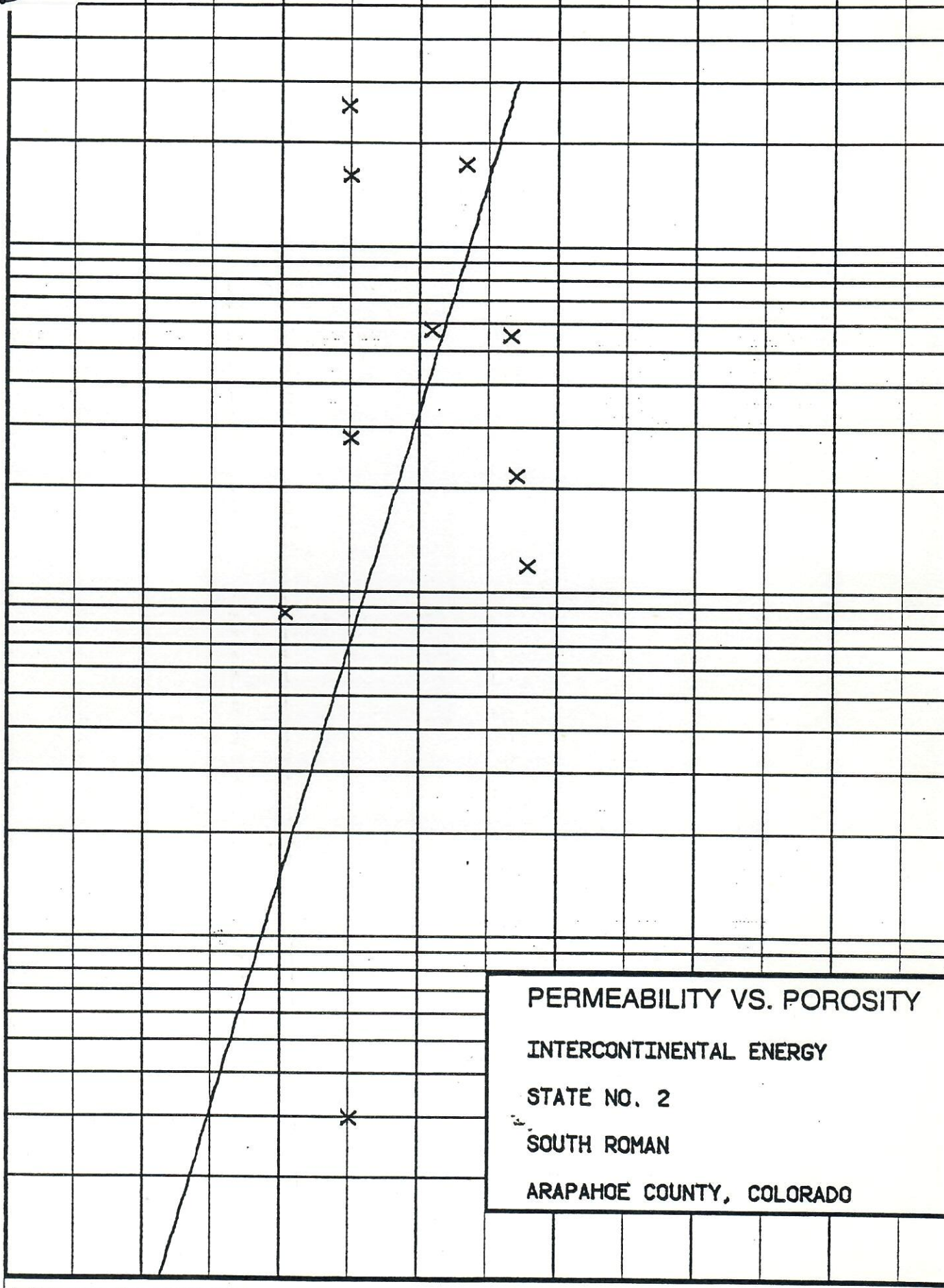
10
1
0.1
0.01

4.0 8.0 12.0 16.0 20.0 24.0 28.0

POROSITY: PERCENT

PERMEABILITY VS. POROSITY
INTERCONTINENTAL ENERGY
STATE NO. 2
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ARAPAHOE COUNTY, COLORADO

14



STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: INTERCONTINENTAL ENERGY
 FIELD : SOUTH ROMAN

WELL : STATE NO. 2
 COUNTY, STATE: ARAPAHOE COUNTY, COLORADO

AIR PERMEABILITY : MD. (HORIZONTAL) RANGE USED 0.010 TO 30.
 POROSITY : PERCENT (FLUID SUMMATION) RANGE USED 10.0 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 5150.0 - 5160.0 INTERVAL LENGTH : 10.0
 FEET ANALYZED IN ZONE : 11.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

POROSITY AVERAGE	PERMEABILITY AVERAGES		
	ARITHMETIC	HARMONIC	GEOMETRIC
15.8	7.8	0.27	2.9



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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: INTERCONTINENTAL ENERGY
 FIELD : SOUTH ROMAN

WELL : STATE NO. 2
 COUNTY, STATE: ARAPAHOE COUNTY, COLORADO

GROUPING BY POROSITY RANGES

POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
12.0 - 14.0	3.0	13.3	7.2	14.	30.0	30.0
14.0 - 16.0	2.0	14.0	0.290	1.4	20.0	50.0
16.0 - 18.0	2.0	16.8	10.	12.	20.0	70.0
18.0 - 20.0	3.0	18.9	2.5	3.0	30.0	100.0

TOTAL NUMBER OF FEET = 10.0



16

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

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GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.020 - 0.039	1.0	0.030	0.030	14.0	10.0	10.0
0.625 - 1.250	2.0	1.0	1.0	15.7	20.0	30.0
1.250 - 2.500	1.0	2.2	2.2	18.8	10.0	40.0
2.500 - 5.000	1.0	2.8	2.8	14.0	10.0	50.0
5.- 10.	2.0	5.7	5.7	17.5	20.0	70.0
10.- 20.	2.0	17.	17.	15.6	20.0	90.0
20.- 40.	1.0	26.	26.	13.9	10.0	100.0

TOTAL NUMBER OF FEET = 10.0



STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: INTERCONTINENTAL ENERGY
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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	10.0	100.0	15.8	16.0
2.0	0.0	0.0	10.0	100.0	15.8	16.0
4.0	0.0	0.0	10.0	100.0	15.8	16.0
6.0	0.0	0.0	10.0	100.0	15.8	16.0
8.0	0.0	0.0	10.0	100.0	15.8	16.0
10.0	0.0	0.0	10.0	100.0	15.8	16.0
12.0	0.0	0.0	10.0	100.0	15.8	16.0
14.0	3.0	25.3	7.0	74.7	16.9	17.5
16.0	5.0	43.0	5.0	57.0	18.0	18.3
18.0	7.0	64.3	3.0	35.7	18.9	
20.0	10.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 158.3



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18

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

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WELL : STATE NO. 2
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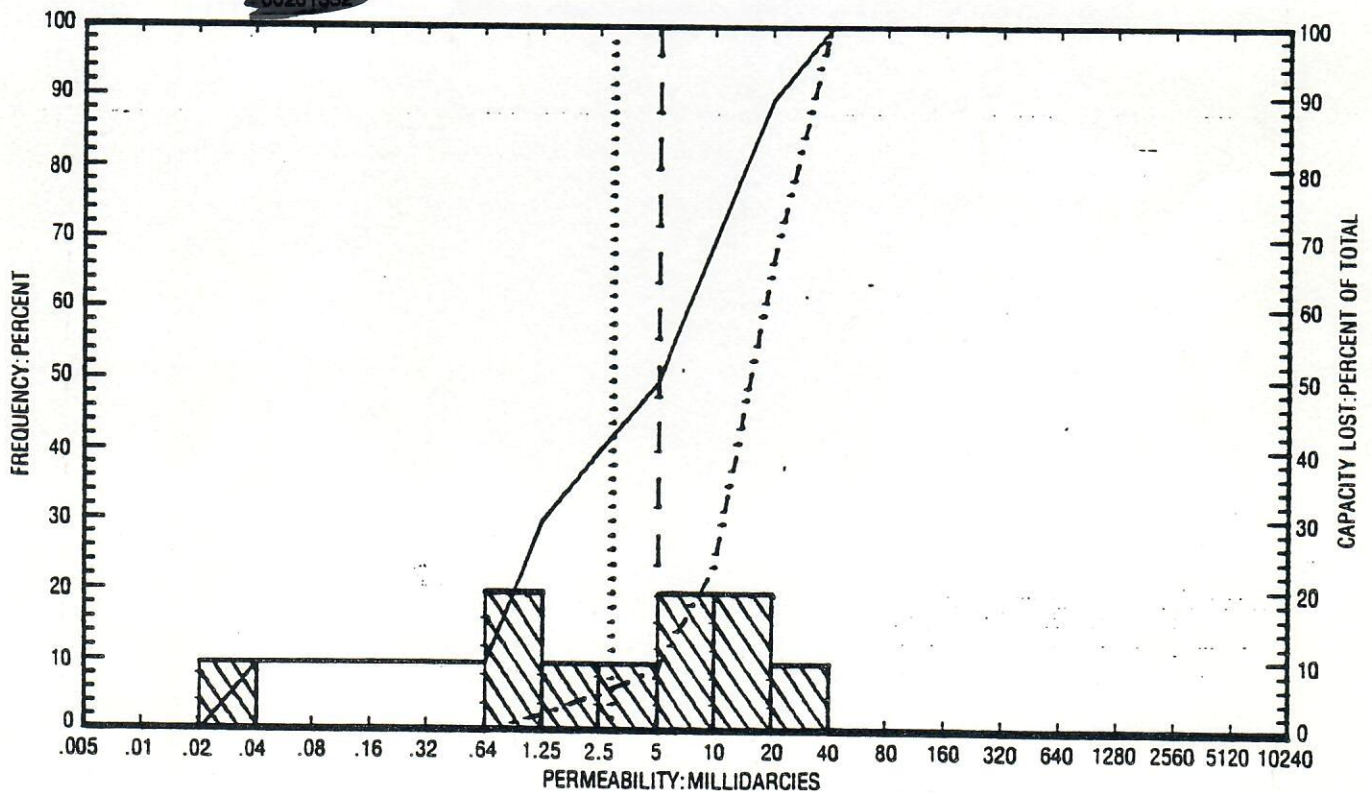
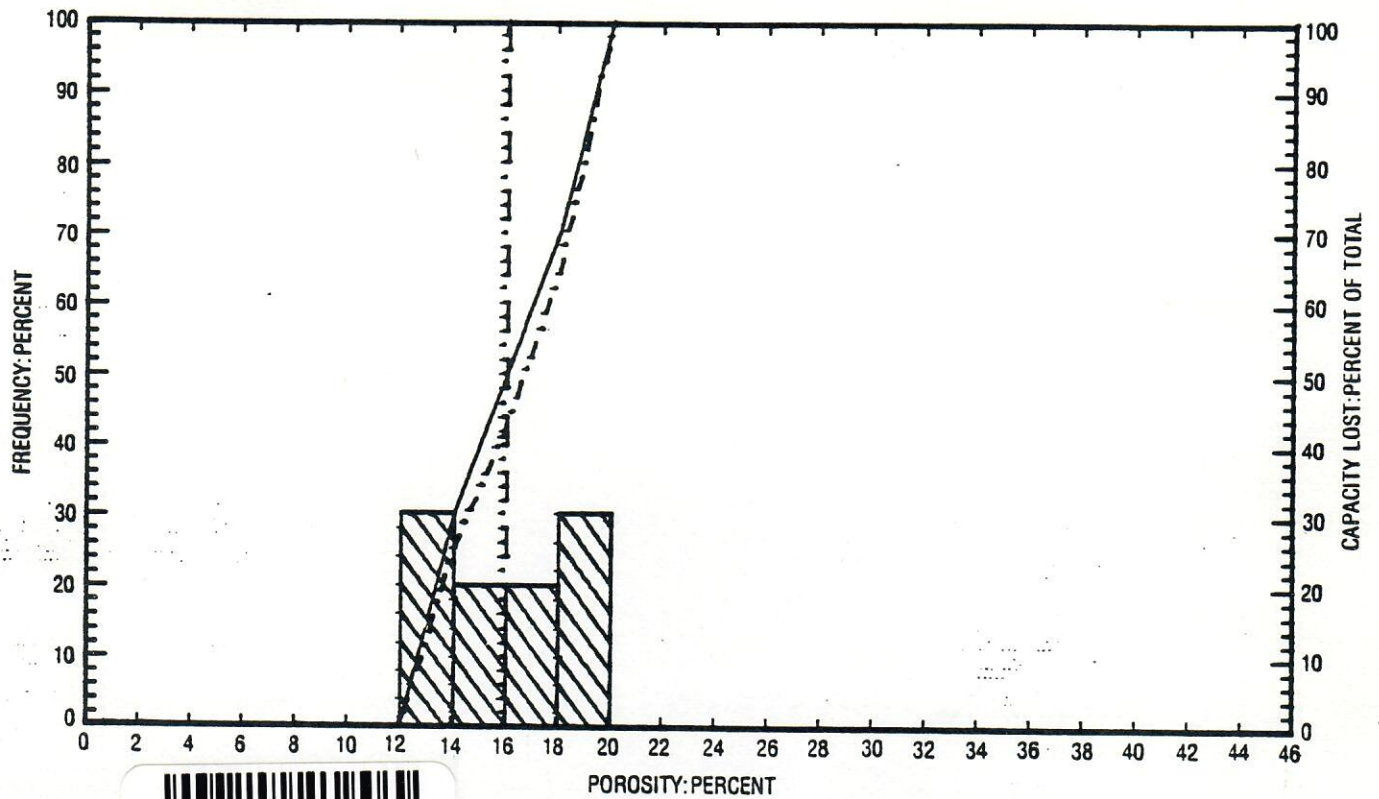
MILLIDARCY-FEET OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
-----	-----	-----	-----	-----	-----	-----
0.005	0.0	0.0	10.0	100.0	2.93	5.00
0.010	0.0	0.0	10.0	100.0	5.75	5.00
0.020	0.0	0.0	10.0	100.0	2.93	5.00
0.039	1.0	0.0	9.0	100.0	4.87	5.95
0.078	1.0	0.0	9.0	100.0	4.87	5.95
0.156	1.0	0.0	9.0	100.0	4.87	5.95
0.312	1.0	0.0	9.0	100.0	4.87	5.95
0.625	1.0	0.0	9.0	100.0	4.87	5.95
1.250	3.0	2.7	7.0	97.3	7.61	8.41
2.500	4.0	5.5	6.0	94.5	9.36	10.00
5.	5.0	9.1	5.0	90.9	11.91	11.89
10.	7.0	23.7	3.0	76.3	19.48	
20.	9.0	66.9	1.0	33.1	25.90	
40.	10.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET (ARITHMETIC) = 78.20



19
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PERMEABILITY AND POROSITY HISTOGRAMS

INTERCONTINENTAL ENERGY
 STATE NO. 2
 SOUTH ROMAN
 ARAPAHOE COUNTY, COLORADO

LEGEND

- ARITHMETIC MEAN POROSITY (dotted line)
- GEOMETRIC MEAN PERMEABILITY (dotted line)
- MEDIAN VALUE ----- (dashed line)
- CUMULATIVE FREQUENCY _____ (solid line)
- CUMULATIVE CAPACITY LOST -.-.-.-.- (dash-dot line)

20