Petro-Log

Radiation Guard Log

WELL FILE

S.P.

"TIGHT HOLE"

COMPANY GEMINI CORPORATION

WELL GODTEL #3-704

FIELD WEST BOEVAU CANYON

COUNTY HITCHCOCK STATE NEBRASKA

Location 630' F.S.L. 1890' F.E.L. NE/4

Sec. 4 Twp. 3N Rge. 34W

Other Services:

Permanent Datum: GROUND LEVEL Elev. 3034

Log Measured From K.B. , 5 Ft. Above Perm. Datum

Drilling Measured From KELLY BUSHING

Elev.: K.B. 3039 D.F. G.L. 3034

Date	1/12/82				
Run No.	ONE				
Depth—Driller	4322				
Depth—Logger	4317				
Btm. Log Inter.	4316				
Top Log Inter.	SURF.				
Casing—Driller	8 5/8 @ 353	@	@	@	
Casing—Logger					
Bit Size	7 7/8				
Type Fluid in Hole	CHEMICAL				
Dens. | Visc.	9.5 48				
pH | Fluid Loss	9.5 6.8 ml	ml	ml	ml	ml
Source of Sample	FLOWLINE				
R_m @ Meas. Temp.	1.7 @ 72°F	@ °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.2 @ 72°F	@ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	2.4 @ 72°F	@ °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}	CHARTS				
R_m @ BHT	1.0 @ 118°F	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	2 HOURS				
Max. Rec. Temp.	118 °F	°F	°F	°F	°F
Equip. | Location	M-2 | McCOOK				
Recorded By	PORTER				
Witnessed By	MR. MIKE HALLOCK				

EQUIPMENT DATA

GAMMA RAY			NEUTRON		
RUN NO.	ONE		RUN NO.	ONE	
TOOL MODEL NO.	25		LOG TYPE	n/n	
DIAMETER	3.5"		TOOL MODEL NO.	25	
DETECTOR MODEL NO.	25		DIAMETER	3.5"	
TYPE	Scint		DETECTOR MODEL NO.	25	
LENGTH	4"		TYPE	He3	
DISTANCE TO N. SOURCE	120"		LENGTH	6"	
			SOURCE MODEL NO.	NEEI	
GENERAL			SERIAL NO.		
HOIST TRUCK NO.	M-2		SPACING	17"	
INSTRUMENT TRUCK NO.	M-2		TYPE	Am Be	
TOOL SERIAL NO.			STRENGTH	3 Curies	

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	4317	3050	30	2	278	1 L	10	2	75	7 L	100
1	3050	SURF.	60	1	278	1L	10	1	75	7L	100

Run No.	Bore Hole Record Bit	From	To	Casing Record Size	Wgt	From	To
1	12 1/4	Surf	360	8 5/8		Surf	353
1	7 7/8	360	4258				
1	6 1/8	4258	4288				

PETRO-LOG T.D. 4317

CUSTOMER T.D. 4322

RESET:

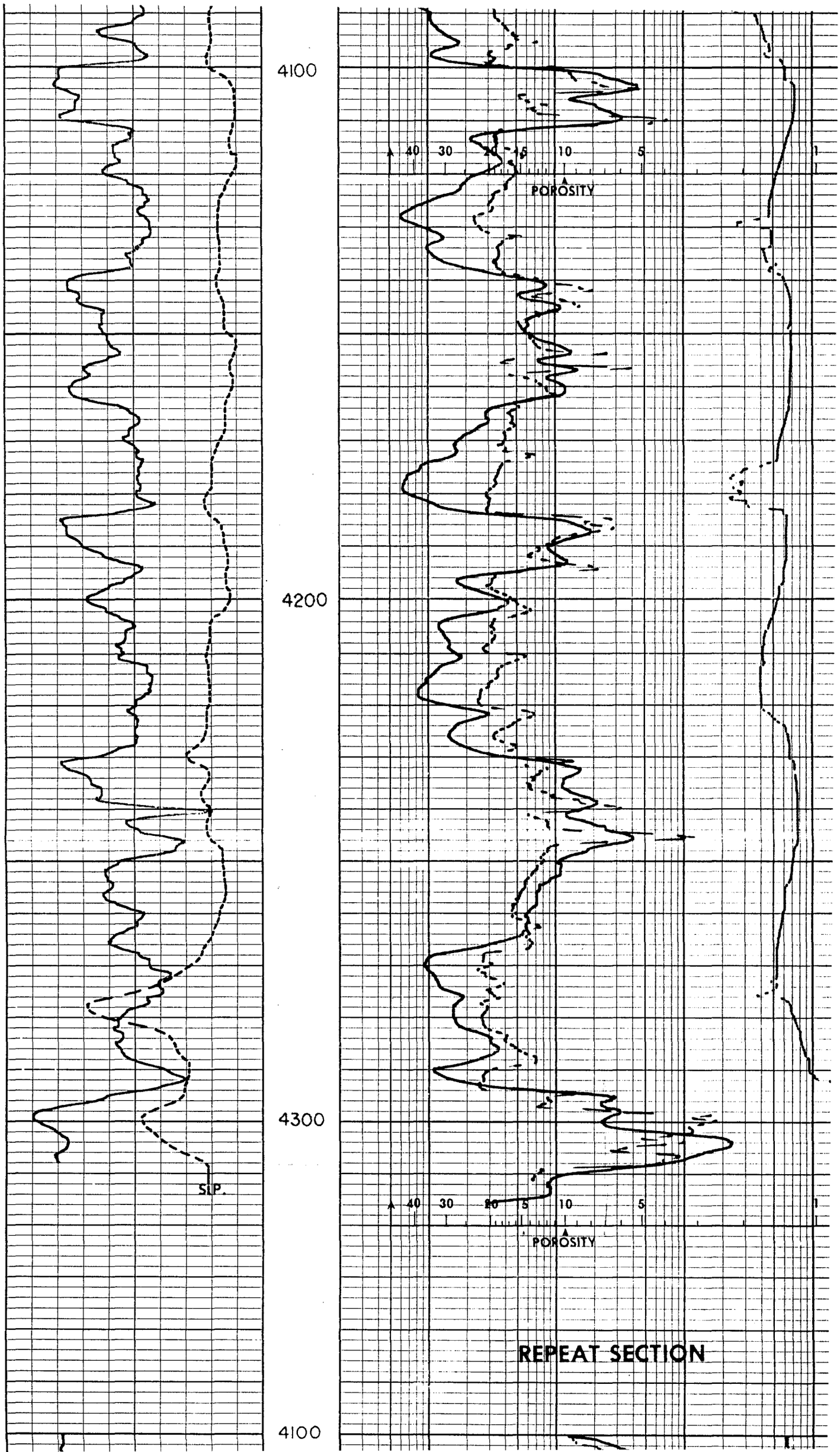
REMARKS

2" — 100'

GAMMA

10 110

NEUTRON


4100
4200
4300
4100
SP.
40
30
20
15
10
5
1
POROSITY
40
30
20
15
10
5
1
POROSITY
REPEAT SECTION

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

GEMINI CORPORATION
GODTEL NO. 3-704

DATE : 1-12-82
FORMATION : LANSING KC "F" ZONE

FILE NO. : RP-2-6772
ANALYSTS : BN

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

DEPTH INTERVAL: 4273.0 TO 4281.0

FEET OF CORE ANALYZED : 8.0 FEET OF CORE INCLUDED IN AVERAGES: 6.0

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

PERMEABILITY HORZONTAL RANGE (MD.)	:	0.00	TO	10. (UNCORRECTED FOR SLIPPAGE)
FLUID POROSITY RANGE (%)	:	3.5	TO	100.0
OIL SATURATION RANGE (%)	:	10.0	TO	40.0
WATER SATURATION RANGE (%)	:	30.0	TO	75.0

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGE PERMEABILITY (MILLIDARCIES)			
ARITHMETIC PERMEABILITY	:	2.2	
GEOMETRIC PERMEABILITY	:	0.13	
HARMONIC PERMEABILITY	:	0.02	
PRODUCTIVE CAPACITY (MILLIDARCY-FEET)			
ARITHMETIC CAPACITY	:	13.	
GEOMETRIC CAPACITY	:	0.78	
HARMONIC CAPACITY	:	0.14	
AVERAGE POROSITY (PERCENT)	:	8.6	
AVERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE)	:	26.6	
AVERAGE TOTAL WATER SATURATION (PERCENT OF PORE SPACE)	:		44.7
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)	1.15
ORIGINAL STOCK-TANK OIL IN PLACE (BARRELS PER ACRE-FOOT)	:	(C)	375.

INTERPRETATION OF DATA

4269 TO 4273 NONPRODUCTIVE.
4273 TO 4281 OIL PRODUCTIVE.
4281 TO 4283 NONPRODUCTIVE.

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

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

PERMEABILITY VS POROSITY

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON
WELL : GOUTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

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

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY MINIMUM	PERMEABILITY MAXIMUM	POROSITY MIN.	POROSITY MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
4273.0 - 4281.0	1 (X)	0.005	10.0	3.5	15.0	8.4	1.9	0.02	0.12

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((0.3306)(POROSITY) + -3.7005)

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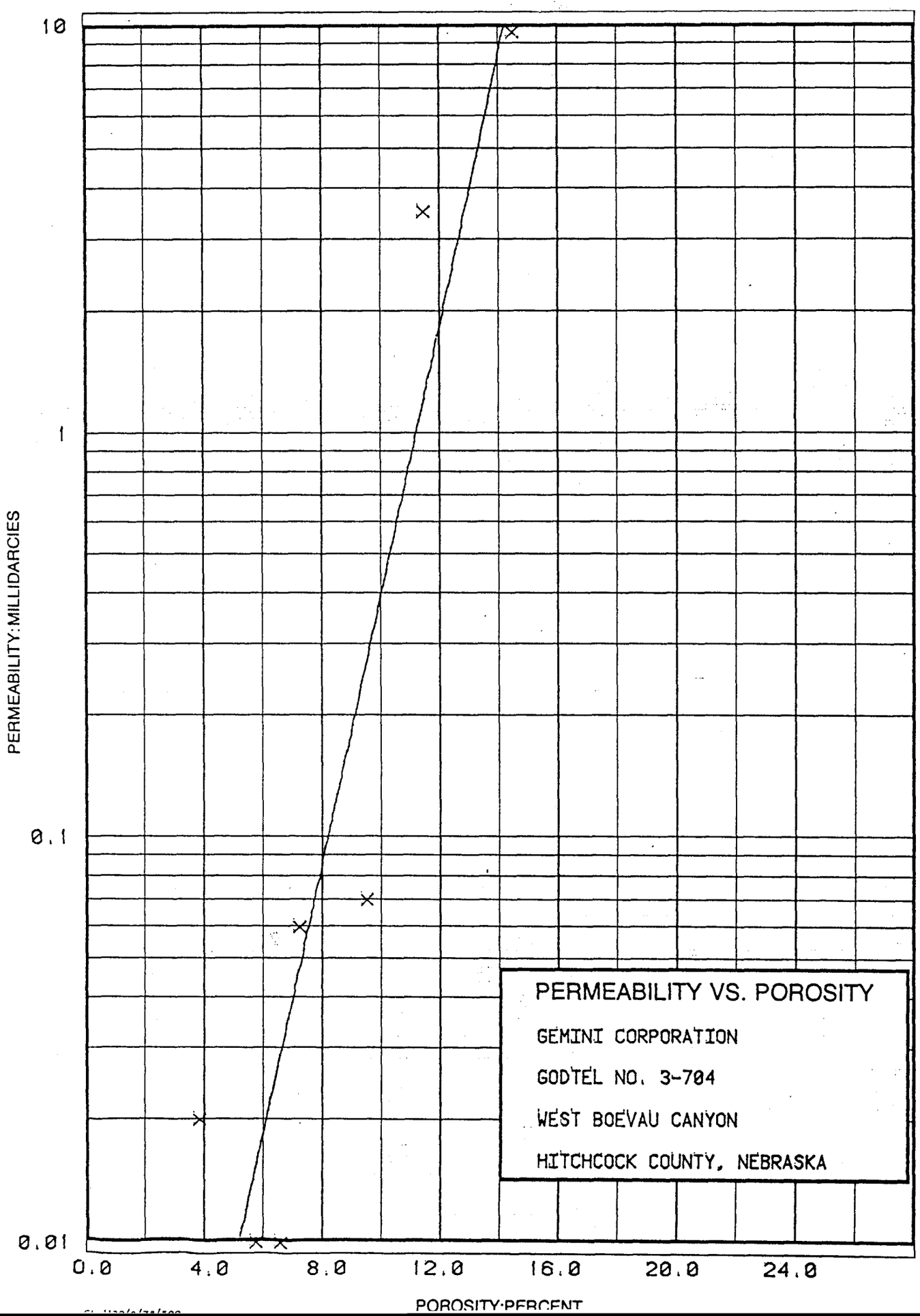
PERMEABILITY VS. POROSITY
GEMINI CORPORATION
GODTEL NO. 3-704
WEST BOEVAU CANYON
HITCHCOCK COUNTY, NEBRASKA
PERMEABILITY:MILLIDARCIES
10
1
0.1
0.01
0.0
4.0
8.0
12.0
16.0
20.0
24.0
POROSITY:PERCENT

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON

WELL : GODTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

AIR PERMEABILITY : MD. (HORIZONTAL) RANGE USED 0.005 TO 10.
POROSITY : PERCENT (FLUID SUMMATION) RANGE USED 3.5 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 4273.0 - 4281.0 INTERVAL LENGTH : 8.0
FEET ANALYZED IN ZONE : 9.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
8.4	1.9	0.02	0.12

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON

WELL : GODTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

GROUPING BY POROSITY RANGES

POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
2.0 - 4.0	1.0	3.8	0.020	0.020	14.3	14.3
4.0 - 6.0	1.0	5.7	0.010	0.010	14.3	28.6
6.0 - 8.0	2.0	6.8	0.024	0.035	28.6	57.1
8.0 - 10.0	1.0	9.4	0.070	0.070	14.3	71.4
10.0 - 12.0	1.0	11.4	3.5	3.5	14.3	85.7
14.0 - 16.0	1.0	14.5	9.6	9.6	14.3	100.0

TOTAL NUMBER OF FEET = 7.0

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON

WELL : GODTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.010 - 0.020	2.0	0.010	0.010	6.1	28.6	28.6
0.020 - 0.039	1.0	0.020	0.020	3.8	14.3	42.9
0.039 - 0.078	2.0	0.065	0.065	8.3	28.6	71.4
2.500 - 5.000	1.0	3.5	3.5	11.4	14.3	85.7
5.- 10.	1.0	9.6	9.6	14.5	14.3	100.0

TOTAL NUMBER OF FEET = 7.0

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON

WELL : GODTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

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	7.0	100.0	8.4	7.5
2.0	0.0	0.0	7.0	100.0	8.4	7.5
4.0	1.0	6.4	6.0	93.6	9.1	8.0
6.0	2.0	16.2	5.0	83.8	9.8	9.0
8.0	4.0	39.6	3.0	60.4	11.8	11.0
10.0	5.0	55.7	2.0	44.3	13.0	12.0
12.0	6.0	75.3	1.0	24.7	14.5	
14.0	6.0	75.3	1.0	24.7	14.5	
16.0	7.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 58.5

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: GEMINI CORPORATION
FIELD : WEST BOEVAU CANYON

WELL : GODTEL NO. 3-704
COUNTY, STATE: HITCHCOCK COUNTY, NEBRASKA

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	7.0	100.0	0.12	0.05
0.010	0.0	0.0	7.0	100.0	0.12	0.05
0.020	2.0	0.2	5.0	99.8	0.31	0.07
0.039	3.0	0.3	4.0	99.7	0.61	0.08
0.078	5.0	1.3	2.0	98.7	5.80	5.00
0.156	5.0	1.3	2.0	98.7	5.80	5.00
0.312	5.0	1.3	2.0	98.7	5.80	5.00
0.625	5.0	1.3	2.0	98.7	5.80	5.00
1.250	5.0	1.3	2.0	98.7	5.80	5.00
2.500	5.0	1.3	2.0	98.7	5.80	5.00
5.	6.0	27.7	1.0	72.3	9.60	
10.	7.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET(ARITHMETIC) = 13.27

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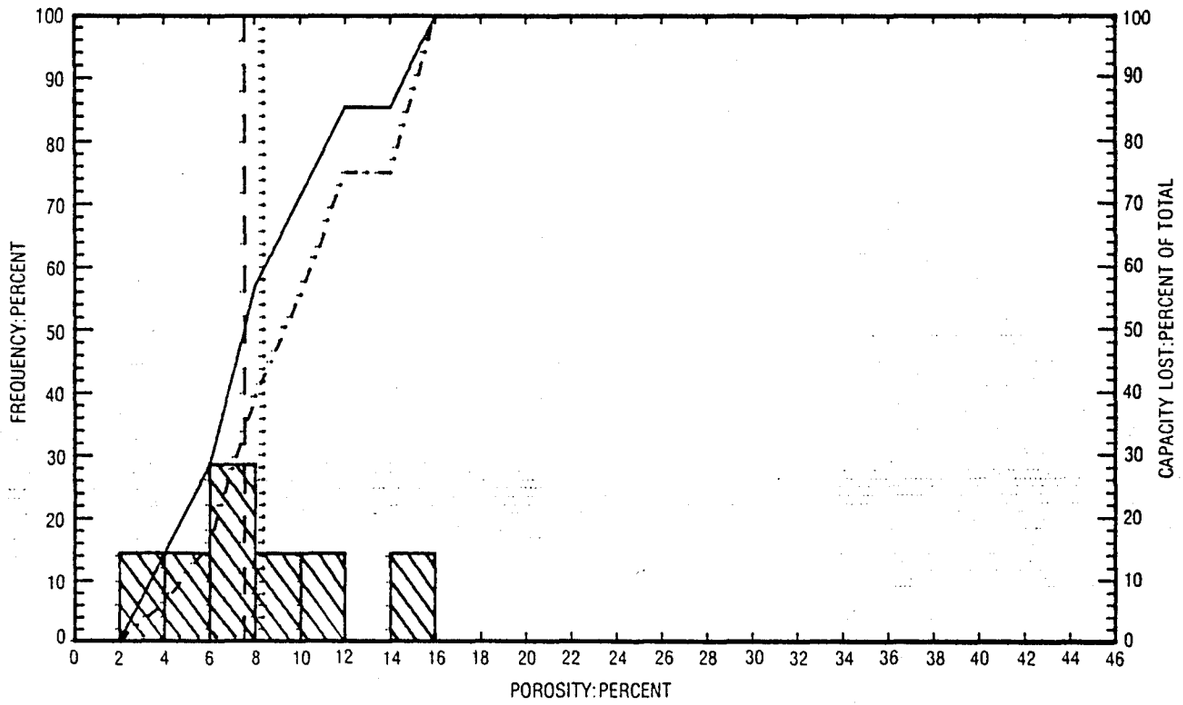

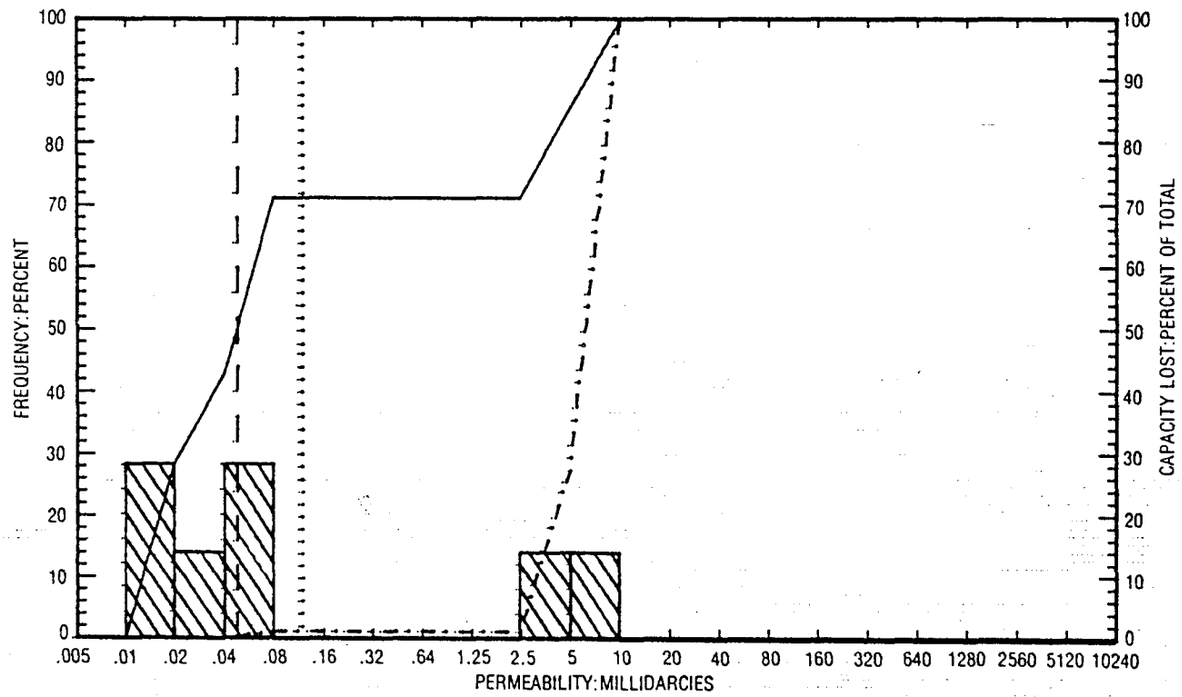

PERMEABILITY AND POROSITY HISTOGRAMS

GEMINI CORPORATION
GODTEL NO. 3-704
WEST BOEVAU CANYON
HITCHCOCK COUNTY, NEBRASKA

LEGEND

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

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CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY GEMINI CORPORATION FILE NO. RP-2-6772
WELL GODTEL NO. 3-704 DATE 1-12-82
FIELD WEST BOEVAU CANYON FORMATION LANSING KC "F" ZONE ELEV. 3034'GL
COUNTY HITCHCOCK STATE NEBRASKA DRLG. FLD. WATER BASE MUD CORES
LOCATION SE SE SEC 4-T3N-R34W

CORRELATION COREGRAPH

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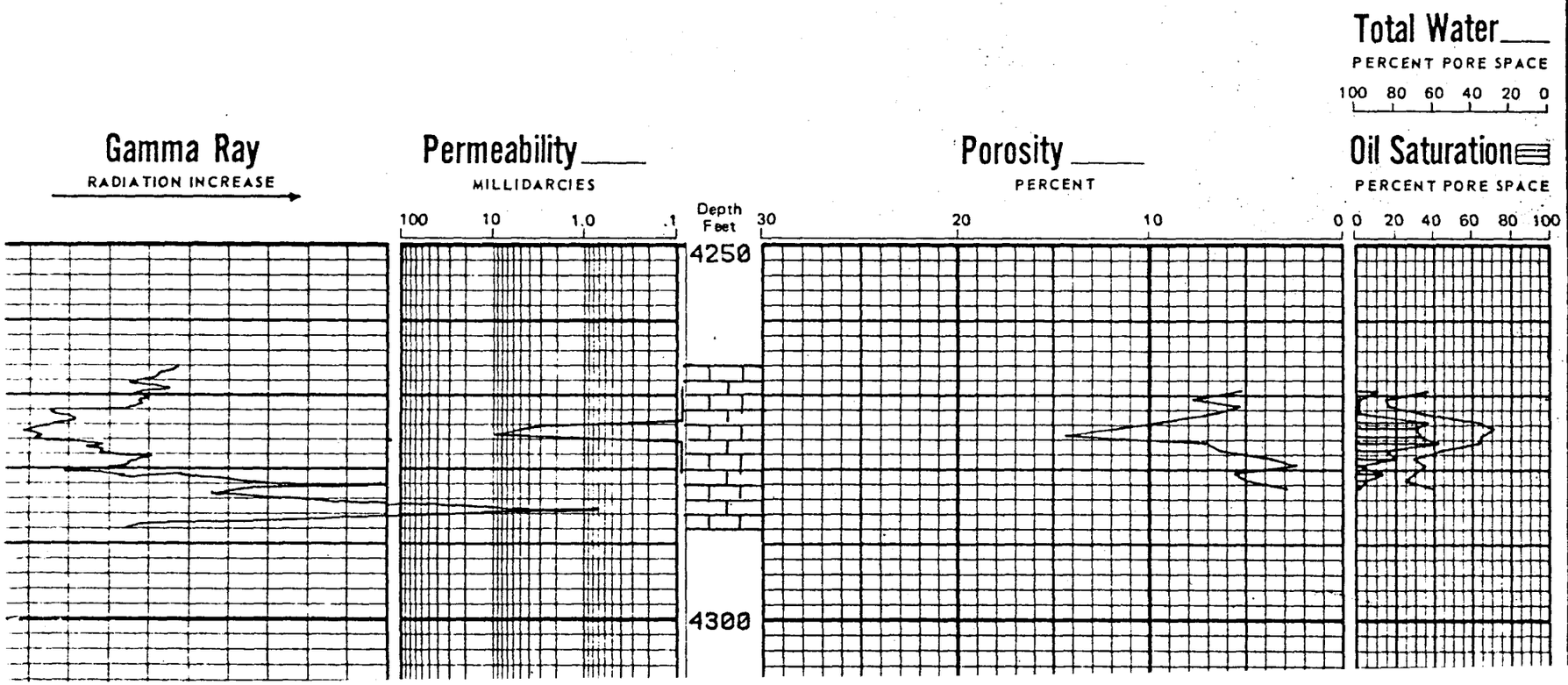
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