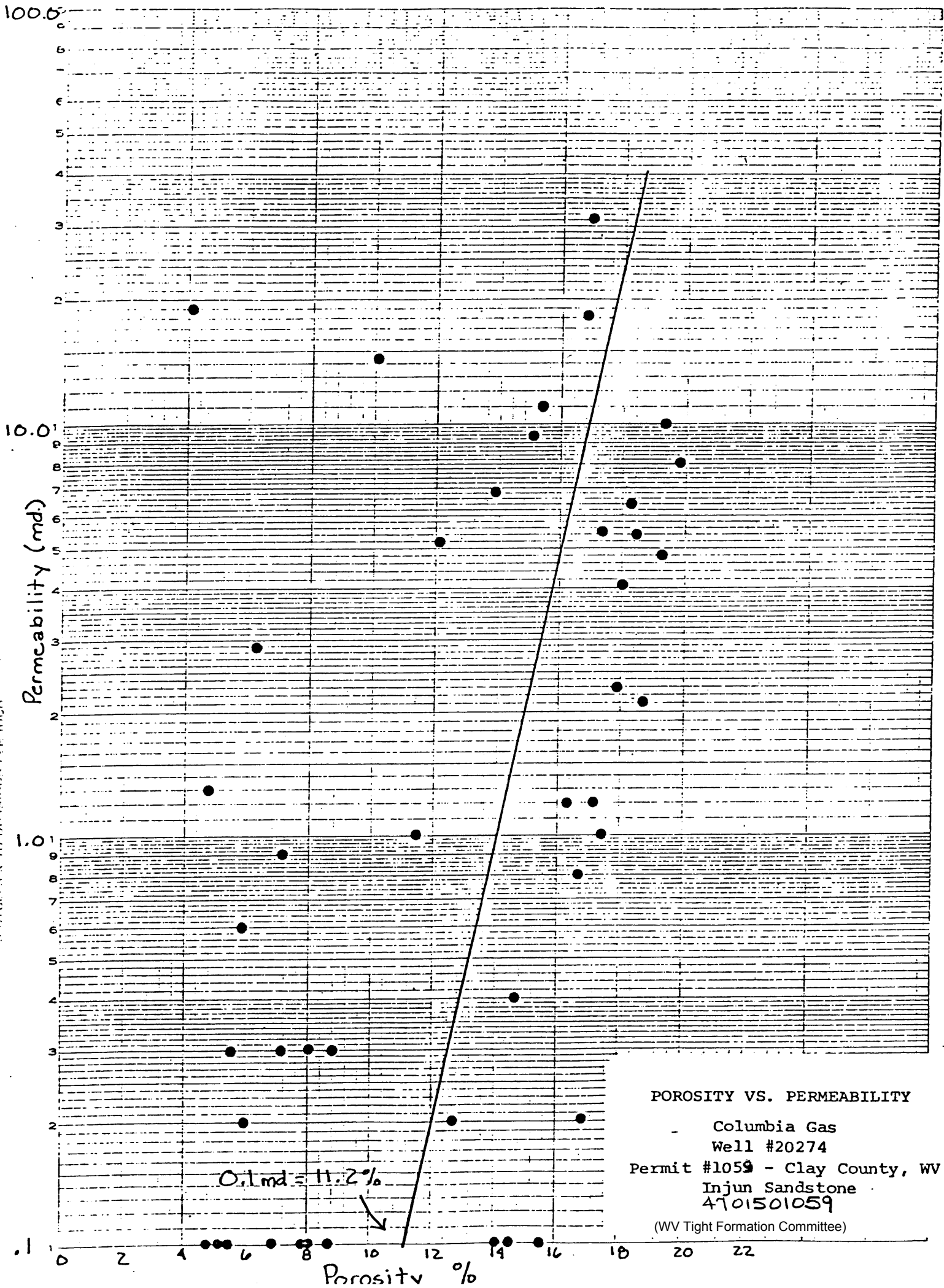


DIETZGEN CORPORATION
MADE IN U.S.A.

NO. 1000-1-10 DIETZGEN GRAPE PAPER
SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH



POROSITY VS. PERMEABILITY

Columbia Gas
Well #20274
Permit #1059 - Clay County, WV
Injun Sandstone
4701501059

(WV Tight Formation Committee)

0.1 md = 11.2%



41-54

Clay - 1059

CORE ANALYSIS RESULTS

Formation: Injun

Company ERDA, MORGANTOWN ENERGY RESEARCH CENTER

File 3402-8355

Well COLUMBIA GAS TRANSMISSION CORPORATIONS' GERRY WELL NO. 20274

Date Report 7-8-75

Field Drilling Fluid

Analysts PUGH

County CLAY State WEST VIRGINIA Location

Lithological Abbreviations

SAND-SD SHALE-SH LIME-LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANNY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY LMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-CLN GRAIN-GRN GRANULAR-GRNL	BROWN-BRN GRAY-GY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL VERY-V/ WITH-W/
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SAMPLE NUMBER	DEPTH FEET	PERMEABILITY, MILLIDARCY'S			POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		GRAIN DENS.	SAMPLE DESCRIPTION AND REMARKS	NaCl ppm
		N-S	E-W	VERT.		OIL	TOTAL WATER			

WHOLE-CORE ANALYSIS										
		CC1	CC2	CC3						
1	1978.0-79.0	<0.1	<0.1	<0.1	10.4	20.0	61.7	2.88	Dol	202,000
2	1979.0-80.0	0.1	0.1	0.1	7.9	14.5	73.4	2.67	Sd, lmy	150,600
3	1980.0-81.0	5.2	6.1	5.5	12.1	6.4	72.2	2.66	Sd, shy, lmy	33,110
4	1981.0-82.0	0.3	0.3	0.3	8.8	6.4	67.4	2.66	Sd, silty, lmy	72,800
5	1982.0-83.0	10.1	11.2	6.4	15.5	7.3	52.9	2.65	Sd	16,320
6	1983.0-84.0	6.8-	7.4	2.7	13.9	7.8	54.5	2.65	Sd, silty	27,380
7	1984.0-85.0	18,2-	19.9	11.2	16.8	14.3	46.4	2.65	Sd	11,390
8	1985.0-86.0	0.3	0.2	0.3	8.2	14.4	54.4	2.65	Sd, silty	33,260
9	1986.0-87.0	0.2	<0.1	0.1	3.9	12.8	50.2	2.67	Sd, shy, lmy	91,770
10	1987.0-88.0	<0.1	<0.1	<0.1	4.7	14.2	42.6	2.67	Sd, silty, shy, lmy	169,500
11	1988.0-89.0	0.6	0.2	0.5	5.9	11.1	43.0	2.66	Sd, silty, shy	247,000
12	1989.0-90.0	<0.1	0.1	0.1	6.9	12.3	59.2	2.67	Sd, shy, lmy	110,600
13	1990.0-91.0	0.3	0.2	0.3	7.2	15.2	50.7	2.66	Sd, silty, shy	179,300
14	1991.0-92.0	<0.1	<0.1	<0.1	8.0	13.2	54.9	2.67	Sd, silty, lmy	124,300
15	1992.0-93.0+	19.0	8.4	<0.1	4.2	8.4	58.0	2.65	Sd, silty	237,500
16	1993.0-94.0	1.0	1.2	0.3	11.6	18.5	46.7	2.65	Sd, silty	40,230
17	1994.0-95.0	28.0*	4.7*	<0.1*	13.1	25.3	33.2	2.66	Sd, silty	135,400
18	1995.0-96.0	0.1	0.1	0.1	8.6	23.9	34.3	2.65	Sd, silty	173,200
19	1996.0-97.0+	1.3	3.4	0.5	4.7	22.1	38.7	2.65	Sd, silty	115,500
20	1997.0-98.0	0.9	0.9	0.8	7.2	23.1	35.7	2.66	Sd, silty	176,700
	1998.0-99.0								Not received	
21	1999.0-00.0	0.1	0.1	0.4	5.1	20.4	38.5	2.66	Sd, silty	196,500
22	2000.0-01.0	0.2	0.2	0.2	6.0	20.6	33.7	2.65	Sd, silty	139,000
23	2001.0-02.0	0.3	0.3	0.2	5.6	15.2	35.7	2.66	Sd, silty	93,600
24	2002.0-03.0	2.9	2.8	0.4	6.3	15.9	40.0	2.67	Sd, shy, lmy	127,000
25	2003.0-04.0	14.1-	16.0	5.0	10.2	18.9	34.0	2.66	Sd, silty, shy	44,480
26	2004.0-05.0	<0.1	<0.1	<0.1	5.4	15.2	51.7	2.67	Sd, silty, lmy	158,900
27	2005.0-06.0	5.5	5.9	0.6	17.5	11.5	57.5	2.70	Sd, lmy	192,100
28	2006.0-07.0	9.3	10.0	6.0	15.1	10.7	50.0	2.67	Sd, lmy	88,860
29	2007.0-08.0+	31.6-	69.5	2.5	17.0	14.3	49.6	2.65	Sd	55,260
30	2008.0-09.0	6.4	5.3	6.1	18.3	10.8	57.7	2.69	Sd, silty, lmy	48,470
31	2009.0-10.0	0.8	0.8	0.5	16.8	17.7	47.7	2.69	Sd, silty, shy, lmy	72,820
32	2010.0-11.0	1.2	1.2	0.2	16.4	17.2	48.5	2.68	Sd, silty, lmy	172,100
33	2011.0-12.0	1.2	0.7	0.2	17.2	14.3	48.1	2.68	Sd, silty, lmy	161,500
34	2012.0-13.0	0.4	0.5	0.3	14.7	14.1	63.0	2.73	Sd, silty, lmy	262,800
35	2013.0-14.0	2.1	2.2	2.1	18.8	13.6	57.3	2.68	Sd, silty, shy, lmy	188,100
36	2014.0-15.0	4.8	4.8	4.5	19.3	10.9	58.2	2.68	Sd, silty, lmy	187,900
37	2015.0-16.0	5.4	5.2	5.0	18.5	10.8	57.4	2.68	Sd, silty, lmy	190,700
38	2016.0-17.0	10.1-	10.2	9.7	19.4	9.2	59.1	2.67	Sd, silty, lmy	45,380
39	2017.0-18.0	8.1	8.4	7.3	19.8	9.3	61.1	2.68	Sd, silty, lmy	56,380

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CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY, MILLIDARCYS			POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		GRAIN DENS.	SAMPLE DESCRIPTION AND REMARKS	NaCl ppm
		N-S	E-W	VERT		OIL	TOTAL WATER			
40	2018.0-19.0	4.1	4.1	3.4	18.1	10.1	60.2	2.69	Sd, silty, lmy	203,80
41	2019.0-20.0	2.6	2.5	1.8	17.9	17.3	51.9	2.70	Sd, silty, lmy	265,70
42	2020.0-21.0	1.0	1.0	0.7	17.5	17.0	53.9	2.71	Sd, silty, shy, lmy	323,10
43	2021.0-22.0	0.2	0.2	0.1	16.9	15.8	64.2	2.72	Sd, silty, shy, lmy	231,90
44	2022.0-23.0	0.1	0.1	<0.1	15.7	15.1	62.0	2.74	Sd, silty, shy, lmy	225,60
45	2023.0-24.0	0.1	0.1	<0.1	14.6	14.2	63.8	2.75	Sd, silty, shy, lmy	321,10
46	2024.0-25.0	<0.1	<0.1	<0.1	14.6	20.3	58.7	2.79	Sd, dol, silty, shy	371,40
47	2025.0-26.0	<0.1	<0.1	<0.1	14.1	19.8	61.1	2.78	Sd, dol, silty, shy	370,00
48	2026.0-27.0	<0.1	<0.1	<0.1	9.1	16.7	72.3	2.81	Dol, sdy, silty, shy	446,40
49	2027.0-28.0	<0.1	0.1	<0.1	9.8	17.0	64.9	2.83	Dol, sdy, silty, shy	467,40

CONVENTIONAL ANALYSIS

50	2028.0-29.0		0.3		17.0	8.5	57.6		Sd, silty, shy	138,10
51	2029.0-30.0		0.3		10.3	10.5	51.3		Sd, silty, shy	394,30

WHOLE-CORE ANALYSIS

52	2030.0-31.0	<0.1	<0.1	<0.1	13.8	19.5	54.1	2.71	Sd, silty, lmy	267,60
53	2031.0-31.5+	0.3	0.3	<0.1	4.6	2.5	56.8	2.78	Sd, dol, shy, lmy	378,50
	2031.5-59.0								Not received	
54	2059.0-60.0+	0.7	0.4	<0.1	4.6	2.5	57.9	2.70	Sd, silty, lmy	188,20
55	2060.0-61.0+	0.4	0.8	<0.1	14.3	5.7	31.8	2.66	Sd, silty, shy	72,13
56	2061.0-62.0+	0.5	0.8	<0.1	15.0	5.7	30.6	2.67	Sd, silty, lmy	53,04
57	2062.0-63.0+	0.7	2.3	<0.1	14.2	11.7	31.6	2.65	Sd, silty	114,40
58	2053.0-64.0+	0.1	0.2	<0.1	14.0	12.4	31.8	2.65	Sd, silty	119,30
59	2064.0-65.0+	0.3	0.3	<0.1	14.8	12.8	30.0	2.67	Sd, silty, lmy	78,73
60	2065.0-66.0+	1.0	0.5	<0.1	14.6	12.2	31.7	2.65	Sd, silty	97,27
61	2066.0-67.0+	0.3	0.2	<0.1	13.8	11.6	33.0	2.65	Sd, silty	83,68

+ DENOTES HORIZONTAL CRACK
* DENOTES PLUG PERMEABILITY

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

CORE SUMMARY

COMPANY ERDA, MORGANTOWN ENERGY RESEARCH CENTER
 WELL COLUMBIA GAS TRANSMISSION CORPORATION' GERRY WELL NO. 20274
 PAGE 4 OF 4 FILE 3402-8355

<u>DEPTH</u>	<u>PERMEABILITY</u>			<u>POROSITY</u>	<u>SATURATION</u>		<u>PRODUCTIVITY</u>	<u>COMMENTS</u>
	<u>MAXIMUM</u>	<u>90 DEGREES</u>	<u>VERTICAL</u>		<u>OIL</u>	<u>WATER</u>		
1978-2005	1.9	1.5	0.6	7.2	14.8	49.3		
2005-2022	5.6	7.8	3.4	17.6	13.2	55.6		
2022-2067	0.2	0.4	0.1	13.7	13.4	47.9		

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CORE LABORATORIES, INC.
 Petroleum Reservoir Engineering
 DALLAS, TEXAS

File 3402-8355 Page No. 3

Well COLUMBIA GAS TRANSMISSION
 CORPORATIONS' GERRY WELL
 NO. 20274

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH FEET	Permeability, Millidarcy's					
		N-S	N30°E	N60°E	E-W	E30°S	E60°S
6	1983-84	6.8	6.6	7.1	7.4	7.7	7.2
8	1985-86	0.3	0.2	0.2	0.2	0.3	0.3
14	1991-92	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19	1996-97+	1.3	1.9	2.7	3.4	0.8	0.8
24	2002-03	2.9	3.0	3.5	2.8	2.6	2.7
30	2008-09	6.4	6.0	6.2	6.2	6.2	5.6
35	2013-14	2.1	2.1	2.1	2.2	2.2	2.2
40	2018-19	4.1	4.1	4.1	4.1	4.0	4.0
45	2023-24	0.1	0.1	0.1	0.1	<0.1	0.1

+ DENOTES HORIZONTAL CRACK