



EXHIBIT

PERMEABILITY VS. POROSITY

Pennzoil
 J. B. Casto #108
 Permit #1184
 Clay County, WV
 4701501184
 Injun Sandstone

(WV Tight Formation Committee)

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

WENZOIL COMPANY
J. H. CASTO NO. 108 WELL
GRANLY'S CREEK FIELD
CLAY COUNTY, WEST VIRGINIA

DATE: 10-18-76
FILE NO: 3602-255
ENGINEER: AHTWAIE

1184

SVP. PERM. TO AIR MD. POSOSITY
NO. DEPTH MAXIMUM 90 DEG VERT. GEX. FLD.

BIG INJUN FORMATION

1	1865.5-66.5	Keener	0.3	0.3	<0.1	9.4
2	1866.5-67.5		0.6	0.6	<0.1	6.7
3	1867.5-68.5		0.8	0.7	<0.1	11.9
4	1868.5-69.5		6.4	8.3	7.1	8.6
5	1869.5-70.5		1.7	1.7	0.3	11.2
6	1870.5-71.5		3.7	3.7	1.1	14.3
7	1871.5-72.5		2.4	1.4	<0.1	11.3
8	1872.5-73.5	Pocano	2.1	2.0	<0.1	15.0
9	1873.5-74.5	Big Injun	1.7	1.5	0.2	15.7
10	1874.5-75.5		3.9	3.7	0.3	16.8
11	1875.5-76.5		2.3	2.1	0.1	16.4
12	1876.5-77.5		4.4	4.4	3.4	17.8
13	1877.5-78.5		5.6	5.3	4.3	18.5
14	1878.5-79.5		3.8	3.8	2.6	17.6
15	1879.5-80.5		8.0	7.7	8.5	19.0
16	1880.5-81.5		7.2	7.1	7.5	18.2
17	1881.5-82.5		5.9	5.8	3.5	17.9
18	1882.5-83.5		4.0	3.8	3.5	20.2
19	1883.5-84.5		6.3	6.3	6.2	18.8
20	1884.5-85.5		5.2	5.1	5.7	19.2
21	1885.5-86.5		3.2	3.1	1.7	18.0
22	1886.5-87.5		3.4	3.1	2.2	18.1
23	1887.5-88.5		4.8	4.7	5.1	18.8
24	1888.5-89.5		2.8	2.6	1.6	18.2
25	1889.5-90.5		3.3	3.3	2.3	17.5
26	1890.5-91.5		3.0	2.9	1.4	17.7
27	1891.5-92.5		2.4	2.5	1.6	17.5
28	1892.5-93.5		2.1	2.1	1.5	17.1
29	1893.5-94.5		2.2	2.0	1.6	16.6
30	1894.5-95.5		0.6	0.5	<0.1	12.5
31	1895.5-96.5		1.0	0.3	<0.1	15.0
32	1896.5-97.5		0.2	0.1	<0.1	8.5
33	1897.5-98.5		0.2	0.1	<0.1	12.7

SQUAW SAND FORMATION

34	1931.0-32.0		1.3	1.2	<0.1	13.9
36	1932.0-33.0		0.2	0.2	0.3	15.0
37	1933.0-34.0		1.3	1.3	0.4	15.2
38	1934.0-35.0		2.0	2.0	0.9	16.2
39	1935.0-36.0		2.5	2.5	0.4	15.7
40	1936.0-37.0		1.6	1.4	<0.1	14.1
41	1937.0-38.0		1.5	1.3	<0.1	12.3
42	1938.0-39.0		1.6	1.3	<0.1	12.9
43	1939.0-40.0		2.1	1.5	<0.1	5.4
44	1940.0-41.0		0.4	0.2	<0.1	10.5
45	1941.0-42.0		0.2	0.2	<0.1	10.3
46	1942.0-43.0		0.2	0.2	<0.1	11.1
47	1943.0-44.0		2.1	1.4	<0.1	5.4
48	1944.0-45.0		0.2	0.1	<0.1	1.2
49	1945.0-46.0		2.6	2.0	<0.1	1.2
50	1946.0-47.0		0.8	0.7	0.1	13.9
51	1947.0-48.0		0.5	0.5	<0.1	10.2
52	1948.0-49.0		0.8	0.5	<0.1	12.5
53	1949.0-50.0		1.1	1.0	<0.1	15.8
54	1950.0-51.0		2.8	1.7	0.2	15.3
55	1951.0-52.0		0.8	0.7	<0.1	8.3
56	1952.0-53.0		2.0	1.4	0.5	15.7
57	1953.0-54.0		0.6	0.5	0.1	12.8
58	1954.0-55.0		0.4	0.4	<0.1	14.0