



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES  
REGION V

MORGANTOWN RESEARCH CENTER

P. O. BOX 880  
COLLINS FERRY ROAD  
MORGANTOWN, WEST VIRGINIA

May 4, 1961

Memorandum

To: William E. Eckard, Assistant Chief, Morgantown  
Petroleum Research Laboratory

From: William M. Nabors, Petroleum and Natural Gas Engineer,  
Morgantown Petroleum Research Laboratory

Subject: Coring operation at the Eastern Interior Oil Company's  
Well No. 2-A on the W. B. Wright farm in the Spruce  
Creek Field near Newburn, West Virginia. (Reservoir  
Evaluation Well No. 3)

The following information is for record:

Company - Eastern Interior Oil Company  
Well location and number -  
State - West Virginia  
County - Ritchie  
District - Union  
Field - Spruce Creek  
Farm - W. B. Wright  
Well No. - 2-A  
Rig floor elevation - 1130.7

Reference datum

Coring operation - rig floor  
Logging operation - rig floor  
Top of rig floor to ground level - 1.67'  
Depth of 10-3/4 inch csg. - 245'  
Depth of 8-5/8 inch csg. - 1125'  
Interval cored (4" core)  
2015.67 - 2128.02  
2256.33 - 2351.62  
2424.55 - 2444.20  
T. D. 8 inch hole (reamed) - 2424.55  
T. D. cored hole - 2444.20  
T. D. when logged (after cave) - 2427

1975.19  
1319.60  
-  
155.59

Interval cored:

Run	From	To	Total	Recovery	Percent
1	2015.67	2034.09	18.42	18.00	
2	2034.09	2052.55	18.46	18.02	
3	2052.55	2072.38	19.83	20.1	
4	2072.38	2091.25	18.87	18.74	
5	2091.25	2108.67	17.42	17.68	
6	2108.67	2128.02	19.35	19.0	
			<u>112.35</u>	<u>111.54</u>	<u>99.28</u>
7	2256.33	2275.53	19.20	17.4	
8	2275.53	2292.21	16.68	14.8	
9	2292.21	2309.45	17.24	19.16	
10	2309.45	2328.31	18.86	19.3	
11	2328.31	2347.62	19.31	20.0	
12	2347.62	2351.62	4.0	2.5	
			<u>95.29</u>	<u>93.16</u>	<u>97.77</u>
13	2424.55	2444.20	19.65	19.15	
14	2444.20	-----	-----	.50	
			<u>19.65</u>	<u>19.65</u>	<u>100</u>

Total cored - 226.29  
 Total recovered - 224.35  
 Total percent recovered - 99.14

Remarks:

Run made before No. 1 run, barrel partially plugged, circulation pressure too high (700-900 p.s.i.), pulled out to clean barrel.

- Run 1 - Rate of penetration slow time - 8 hrs., 40 min.
- Run 2 - Rate of penetration slow time - 6 hrs., 11 min.
- Run 3 - Rate of penetration moderate time - 4 hrs., 3 min.
- Run 4 - Rate of penetration slow time - 7 hrs., 15 min.
- Run 5 - Rate of penetration moderate time - 3 hrs., 23 min.
- Run 6 - Rate of penetration slow time - 6 hrs., 35 min.
- Run 7 - Rate of penetration slow time - 5 hrs., 54 min.
- Run 8 - Rate of penetration fast time - 2 hrs., 10 min.
- Run 9 - Rate of penetration fast time - 2 hrs., 30 min.
- Run 10 - Rate of penetration moderate time - 3 hrs., 5 min.
- Run 11 - Rate of penetration moderate time - 4 hrs., 23 min.
- Run 12 - Rate of penetration slow, pulled out after 4.0' as depth was below best interval of Weir ss. time - 2 hrs., 17 min.
- Run 13 - Rate of penetration in shale 30 min/ft  
 Rate of penetration in sandstone 4-1/2 min/ft  
 Time - 5 hrs., 22 min.

**Sample Case Analysis  
As of May 3, 1961**

See

**Inventory Appraisal Well #9  
Big Lion, Big Injun, Wild, and Lucas Wells, U. S. Wright Well 2-A,  
Eastern Lubricator Oil Company, Spence Creek Field  
Union District, Madison County, N. Va.**

Sample No.	Depth, ft.	Permeability, md.		Porosity, percent, bulk volume	Subsidence		Oil content, ml/1000 cc.	Water content, ml/1000 cc.	Equivalent Chlorides, mg.
		Horizontal	Vertical		Oil	Water			
17	2016.00	3/ - 0.1	-0.1	3.0	16.5	23.5	60.0	54	
27	2019.00	-	-	1.0	3.4	37.5	30.1	29	
37	2023.75	-	-	-	-	-	-	-	-
47	2027.50	-	-	-	-	-	-	-	-
57	2032.00	-	-	1.3	3.3	15.0	61.0	16	
67	2036.40	-	-	1.1	3.0	26.7	3.3	79	
109	2038.00	-	-	2.9	3.9	25.6	65.5	57	204,000
120	2039.00	-	-	2.0	12.3	22.2	65.5	46	309,000
77	2044.00	-	-	1.0	60.0	30.5	7.7	52	402,000
157	2041.50	-	-	4.0	43.0	16.5	40.5	61	
87	2048.15	-	-	1.5	-	-	-	-	-
126	2043.00	-	-	4.5	-	-	-	-	-
205	2046.00	-	-	2.0	1.3	20.0	60.5	57	273,000
134	2072.00	-	-	4.4	2.3	20.0	41.0	147	209,000
77	2072.54	-	-	0.7	12.1	20.0	20.9	196	250,000
155	2073.00	0.1	0.1	4.5	61.6	20.4	-	215	236,000
123	2074.00	-	-	6.9	9.0	40.6	41.6	240	190,000
111	2075.00	-	-	2.5	9.6	20.0	20.4	210	233,000
120	2076.00	-	-	0.2	14.2	51.0	24.0	196	211,000
119	2077.00	-	-	0.4	15.9	57.1	67.0	242	211,000

✓ Grade oil properties: See Supplemental Sheet.  
3/ - Indicates "Less than."

Sample No.	Depth, ft.	Dissolved O <sub>2</sub> , ml. Horizontal Vertical		Density, gm/cm <sup>3</sup> at 15°C	Subsidence, mm		0.1 comb., ml/gm. H <sub>2</sub> O	Water content, %/gm. H <sub>2</sub> O	Hydrated Chlorides, %	
		0.1	0.1		0.1	0.1				
110	2077.50	0.1	0.1	10.9	7.6	27.3	64.9	65	233	208,000
117	2076.00	-0.1	-0.1	6.3	14.4	43.8	20.8	75	231	208,000
117	2087.00	-	-	0	-	-	-	-	-	201,000
116	2086.00	-	-	1.2	-	-	-	-	-	246,000
115	2089.00	-	-	2.1	-	-	-	-	-	209,000
114	2079.00	-	-	2.8	-	-	-	-	-	149,000
117	2079.42	-	-	15.0	4.8	26.9	20.3	56	431	212,000
113	2089.25	-	-	12.0	2.2	28.3	29.3	20	257	194,000
112	2088.00	-	-	20.0	4.8	26.9	68.3	76	433	187,000
111	2083.00	0.1	0.1	17.0	24.0	46.8	28.4	206	616	208,000
107	2082.50	0.9	1.0	19.0	26.3	28.9	24.6	204	571	207,000
110	2083.50	1.0	0.8	19.0	28.7	28.8	23.3	475	504	207,000
108	2086.00	0.9	0.7	20.1	29.9	24.7	23.4	621	546	208,000
117	2086.35	1.0	0.9	21.6	23.3	21.1	28.4	502	522	203,000
107	2087.00	1.2	1.0	20.6	26.0	21.8	28.2	573	508	193,000
106	2088.00	1.2	1.3	24.0	23.0	28.4	28.6	616	508	198,000
105	2089.00	1.4	1.3	22.4	21.9	28.3	28.8	504	561	207,000
104	2089.70	1.3	1.2	22.8	29.3	21.1	29.4	544	574	207,000
107	2089.70	0.7	1.1	22.6	28.8	28.7	48.3	544	523	208,000
103	2101.00	1.2	0.8	22.6	25.0	24.8	48.2	616	433	208,000
102	2102.00	1.2	0.8	22.6	23.2	24.8	48.2	577	544	204,000
117	2102.55	1.5	1.6	22.4	23.2	24.3	25.3	577	477	211,000
101	2103.00	1.5	1.5	22.7	26.2	25.9	48.9	611	479	82,000
100	2104.00	1.6	1.6	22.9	26.0	27.0	28.0	621	526	204,000
99	2105.00	1.8	1.6	24.9	29.1	27.4	43.3	508	479	214,000
98	2106.00	1.7	1.1	26.9	28.4	27.3	44.3	499	508	112,000
1	2107.00	1.5	1.4	28.6	22.6	28.6	44.8	509	304	248,000
107	2107.50	1.3	1.3	21.4	21.3	22.3	46.2	507	425	248,000
96	2108.00	4.9	2.6	28.0	22.4	22.3	46.2	424	206	216,000
95	2109.00	2.1	2.3	22.9	26.3	24.7	46.9	524	206	215,000
94	2110.00	1.5	1.2	15.5	26.3	24.6	46.1	523	206	215,000
177	2110.25	0.7	0.6	22.1	26.2	26.0	26.2	543	361	215,000
93	2111.00	1.5	0.8	22.3	26.1	26.1	26.4	574	364	215,000
92	2112.00	1.5	1.0	20.2	26.1	26.1	26.4	574	364	215,000
107	2112.55	1.0	1.0	20.2	26.1	26.1	26.4	574	364	215,000

Sample No.	Depth, ft.	Permeability, md.		Porosity, %		Subsidence, mm		Oil content, ml/gross ft.	Water content, ml/gross ft.	Equivalent Chlorides, mg/g
		Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical			
91	2113.00	1.0	0.2	19.1	24.5	34.4	41.1	363	309	185,000
90	2114.00	1.6	1.0	21.6	35.5	39.0	35.5	395	406	225,000
89	2115.00	.5	.5	18.9	29.1	29.7	44.2	295	293	196,000
157	2115.70	.9	.1	15.8	44.8	51.5	2.7	348	620	244,000
88	2116.77	.5	.1	15.6	26.2	30.1	43.6	310	304	204,000
150	2079.0	.6	.6	7.7	46.2	18.7	35.1	376	112	204,000
207	2079.05	.1	.1	6.9	46.0	39.8	14.2	214	102	185,000
217	2083.3	.7	.7	6.5	35.5	30.7	25.8	178	195	175,000
151	2084.05	.1	.1	6.2	41.4	32.6	26.0	199	157	185,000
152	2085.75	.1	.1	5.9	29.7	47.7	22.6	155	210	175,000
208	2086.25	.1	.1	4.9	28.6	42.2	25.2	150	170	150,000
153	2088.7	.1	.1	3.4	42.5	39.3	18.2	156	101	90,000
154	2091.0	.1	.1	3.9	28.5	27.7	40.8	170	195	161,000
155	2093.55	.1	.1	7.2	43.1	31.6	25.3	200	161	167,000
217	2093.55	.1	.1	6.6	28.4	31.2	20.4	200	167	167,000
247	2096.15	.1	.1	7.2	28.4	26.5	45.1	150	147	167,000
156	2098.9	.1	.1	2.9	37.2	31.9	20.9	147	206	167,000
217	2100.25	.5	.5	7.2						
157	2100.75	.1	.1	4.5						
158	2107.4	.1	.1	2.1						
159	2111.05	.1	.1	1.6						
207	2011.05	.1	.1	.3						
160	2112.5	.1	.1	3.0	19.4	24.0	2.6	41	335	142,000
217	2113.6	.1	.1	2.1	34.8	34.1	11.1	161	250	176,000
161	2105.15	.1	.1	6.0	6.1	30.7	63.2	25	177	268,000
162	2117.6	.1	.1	7.4		99.1	.9		200	180,000
207	2119.47	.1	.1	3.6						
163	2119.7	.1	.1	3.0						
207	2102.05	.1	.1	3.4						
164	2103.9	.1	.1	7.5	29.8	47.2	23.6	171	276	212,000
207	2107.45	.1	.1	6.0	31.4	29.1	39.5	147	136	155,000
165	2108.3	.1	.1							
166	2109.2	.1	.1	4.7	12.8	70.5	16.7	46	256	179,000
167	2108.3	.1	.1	4.0	33.6	22.9	43.3	102	123	246,000
207	2103.61	.1	.1	7.0						
168	2104.24	.1	.1	5.6						
207	2107.43	.1	.1							



GENERAL DATA

Crude oil properties:

Formation -- Big Line	Viscosity: 9.31 cp. at 70°F Specific Gravity: .808 at 60°F Deg. A.P.I.: 43.68 at 60°F
Roamer, Big Injun, and Big Line	Viscosity: 3.28 cp. at 70°F Specific Gravity: .799 at 60°F Deg. A.P.I.: 45.60 at 60°F
Roamer and Big Injun	Viscosity: 3.28 cp. at 70°F Specific Gravity: .799 at 60°F Deg. A.P.I.: 45.60 at 60°F
Weir	Viscosity: 3.04 cp. at 70°F Specific Gravity: .802 at 60°F Deg. A.P.I.: 44.93 at 60°F
Roamer	Viscosity: 6.76 cp. at 70°F Specific Gravity: .819 at 60°F Deg. A.P.I.: 41.37 at 60°F
Roams	Viscosity: 9.94 cp. at 70°F Specific Gravity: .816 at 60°F Deg. A.P.I.: 41.91 at 60°F

Properties of Injection Fluid

Density	6.95 lbs./gal.
Viscosity	73.6 centipoise (through Oswald Funnel)
pH	7.00 (Rockman pH meter)
Fluid Loss	4.45 ml. in 30 min. at 100 p.s.i.
$k_{20}$	1.53 cm <sup>2</sup> -d <sup>2</sup> /h at 72°F
$k_{60}$	1.05 cm <sup>2</sup> -d <sup>2</sup> /h at 72°F
$k_{80}$	1.64 cm <sup>2</sup> -d <sup>2</sup> /h at 72°F
$k_{20}$ at 200	1.40 cm <sup>2</sup> -d <sup>2</sup> /h at 77.5°F

Levels to Above Seals

Surface elevation (feet) - 1,130.7

Source of Information →	Summ. Bottom Log	Summ. Well Log
Top Big Line	1,977	
Bottom Big Line	2,046	
Top Roamer	2,046	2,046
Bottom Roamer	2,082	
Top Big Injun	2,084	2,085
Bottom Big Injun	2,119	2,117
Top Squaw	2,181	
Bottom Squaw	2,204	
Top Weir	2,272	2,273
Bottom Weir	2,350	
Top Roams	2,433.5	2,433.5
Bottom Roams		2,446

July 10, 1961

Spectrochemical Analyses of Core Samples

1.785  
CaCO<sub>3</sub>

→ 2.0915  
MgCO<sub>3</sub>

Per Cent

2064.1-2070.7'  
2070.7-2071.8'  
2071.8-2078.5'  
2078.5-2080.2'  
2109.0'

Lab. No.	McCord No.	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	Fe <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	CO <sub>2</sub>	MgO
X-690	01	41.3	2.1	37.5	.72	.10	16.0	1.4
X-691	2	39.9	1.5	34.3	.86	.10	20.0	2.4
X-692	3	40.7	1.5	29.6	1.04	.10	21.6	4.64
X-693	4	39.4	1.2	34.8	.50	.10	21.6	1.37
X-694	5	26.4	1.5	29.8	2.00	1.41	30.9	6.39

53.4

13.1