

OIL SHALE ASSAY  
for  
GULF MINERAL RESOURCES COMPANY

BZ-37

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

PAGE NO. 1

GULF MINERAL RESOURCES CO.  
 BZ-37

FORMATION :  
 DLG. FLUID :  
 LOCATION :  
 STATE : UTAH

DATE : 9-5-83  
 FILE NO. : 3808-0S-604B  
 ANALYSTS : JM MH  
 ELEVATION:

**OIL SHALE ASSAY**  
 ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT. %	WATER GAL/TON	WATER WT. %	OIL GRAV.	SHALE WT. %	GAS PLUS LOSS WT. %	TENDENCY TO COKE
1	21.8 - 23.0	6.0	2.3	7.8	3.3	0.919	93.3	1.2	NIL (NONE)
2	23.0 - 24.0	6.0	2.3	8.0	3.3	0.921	93.3	1.0	NIL (NONE)
3	24.0 - 25.0	5.9	2.2	8.5	3.6	0.921	93.0	1.2	NIL (NONE)
4	25.0 - 26.0	3.4	1.3	8.5	3.5	0.918	94.3	0.9	NIL (NONE)
5	26.0 - 27.0	11.7	4.5	6.3	2.6	0.916	91.8	1.1	NIL (NONE)
6	27.0 - 28.0	8.5	3.2	6.8	2.8	0.911	93.1	0.8	NIL (NONE)
7	28.0 - 29.0	10.1	3.8	5.0	2.1	0.910	93.4	0.6	NIL (NONE)
8	29.0 - 30.0	23.2	8.9	6.5	2.7	0.920	86.5	1.9	NIL (NONE)
9	30.0 - 31.0	12.1	4.7	5.3	2.2	0.922	91.9	1.2	NIL (NONE)
10	31.0 - 32.0	11.5	4.4	6.5	2.7	0.923	91.4	1.5	NIL (NONE)
11	32.0 - 33.0	17.0	6.4	6.9	2.9	0.908	88.6	2.1	NIL (NONE)
12	33.0 - 34.0	21.7	8.3	5.9	2.5	0.913	87.0	2.3	NIL (NONE)
13	34.0 - 35.0	14.5	5.5	6.1	2.6	0.912	90.3	1.7	NIL (NONE)
14	35.0 - 36.0	25.7	9.7	7.9	3.3	0.909	83.9	3.1	NIL (NONE)
15	36.0 - 37.0	5.6	2.2	6.3	2.6	0.924	94.7	0.6	NIL (NONE)
16	37.0 - 38.0	4.1	1.6	7.1	3.0	0.924	94.5	0.9	NIL (NONE)
17	38.0 - 39.0	3.7	1.4	8.8	3.7	0.918	94.2	0.7	NIL (NONE)
18	39.0 - 40.0	2.5	1.0	8.5	3.6	0.919	94.5	1.0	NIL (NONE)
19	40.0 - 41.0	5.9	2.3	8.4	3.5	0.921	92.7	1.6	NIL (NONE)
20	41.0 - 42.0	4.3	1.7	5.2	2.2	0.919	93.9	2.3	NIL (NONE)
21	42.0 - 43.0	3.3	1.3	8.3	3.5	0.919	93.4	1.9	NIL (NONE)
22	43.0 - 44.0	1.7	0.6	8.2	3.4	0.919	94.0	2.0	NIL (NONE)
23	44.0 - 45.0	1.5	0.6	7.0	2.9	0.919	94.6	1.9	NIL (NONE)
24	45.0 - 46.0	11.8	4.5	8.5	3.6	0.909	89.3	2.7	NIL (NONE)
25	46.0 - 47.0	10.2	3.9	6.7	2.8	0.907	90.7	2.6	NIL (NONE)
26	47.0 - 48.0	21.8	8.3	9.0	3.7	0.909	86.1	1.9	NIL (NONE)
27	48.0 - 49.0	14.6	5.5	6.5	2.7	0.911	90.3	1.4	NIL (NONE)

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

PAGE NO. 2

GULF MINERAL RESOURCES CO.  
 BZ-37

FORMATION :  
 DLG. FLUID :  
 LOCATION :  
 STATE : UTAH

DATE : 9-5-83  
 FILE NO. : 3808-OS-604B  
 ANALYSTS : JM MH  
 ELEVATION:

OIL SHALE ASSAY  
 ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT.%	WATER GAL/TON	WATER WT.%	OIL GRAV.	SHALE WT.%	GAS PLUS LOSS WT.%	TENDENCY TO COKE
28	49.0 - 50.0	10.5	4.0	6.4	2.7	0.917	91.3	2.0	NIL (NONE)
29	50.0 - 51.0	9.8	3.7	7.1	3.0	0.912	91.7	1.6	NIL (NONE)
30	51.0 - 52.0	17.1	6.5	7.2	3.0	0.915	88.4	2.0	NIL (NONE)
31	52.0 - 53.0	26.3	10.0	5.5	2.3	0.909	84.3	3.4	NIL (NONE)
32	53.0 - 54.0	22.8	8.6	6.4	2.7	0.903	86.1	2.7	NIL (NONE)
33	54.0 - 55.0	40.6	15.3	6.9	2.9	0.901	78.2	3.7	NIL (NONE)
34	55.0 - 56.0	22.0	8.2	5.3	2.2	0.898	86.4	3.1	NIL (NONE)
35	56.0 - 57.0	16.0	6.1	9.2	3.8	0.908	88.3	1.8	NIL (NONE)
36	57.0 - 58.0	10.0	3.9	5.2	2.2	0.924	92.0	1.9	NIL (NONE)
37	58.0 - 59.0	12.0	4.6	5.3	2.2	0.910	90.4	2.9	NIL (NONE)
38	59.0 - 60.0	18.2	6.9	4.6	1.9	0.912	88.8	2.3	NIL (NONE)
39	60.0 - 61.0	8.7	3.3	4.4	1.9	0.924	92.8	2.0	NIL (NONE)
40	61.0 - 62.0	11.4	4.3	5.4	2.2	0.910	91.2	2.3	NIL (NONE)
41	62.0 - 63.0	7.5	2.9	8.6	3.6	0.914	90.2	3.3	NIL (NONE)
42	63.0 - 64.0	9.2	3.5	5.6	2.3	0.908	91.9	2.3	NIL (NONE)
43	64.0 - 65.0	7.8	3.0	4.2	1.7	0.909	93.2	2.2	NIL (NONE)
44	65.0 - 66.0	10.7	4.0	4.6	1.9	0.904	91.2	2.9	NIL (NONE)
45	66.0 - 67.0	10.0	3.8	3.2	1.3	0.909	92.7	2.2	NIL (NONE)
46	67.0 - 68.0	18.0	6.8	4.8	2.0	0.905	89.2	2.0	NIL (NONE)
47	68.0 - 69.0	30.9	11.7	8.1	3.4	0.907	82.1	2.9	NIL (NONE)
48	69.0 - 70.0	19.9	7.5	5.7	2.4	0.897	88.2	1.9	NIL (NONE)
49	70.0 - 71.0	15.4	5.8	6.2	2.6	0.901	90.1	1.5	NIL (NONE)
50	71.0 - 72.0	32.5	12.3	5.6	2.3	0.906	83.2	2.2	NIL (NONE)
51	72.0 - 73.0	35.9	13.4	6.5	2.7	0.898	81.5	2.3	NIL (NONE)
52	73.0 - 74.0	54.4	20.2	11.0	4.6	0.891	70.8	4.4	SLIGHT
53	74.0 - 75.0	68.3	25.7	15.2	6.3	0.901	57.5	10.4	MEDIUM
54	75.0 - 76.0	72.3	27.0	13.3	5.5	0.896	59.5	7.9	MEDIUM

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

PAGE NO. 3

GULF MINERAL RESOURCES CO.  
 RZ-37

FORMATION :  
 DLG. FLUID :  
 LOCATION :  
 STATE : UTAH

DATE : 9-5-83  
 FILE NO. : 3808-OS-604B  
 ANALYSTS : JM MH  
 ELEVATION:

OIL SHALE ASSAY  
 ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT.%	WATER GAL/TON	WATER WT.%	OIL GRAV.	SHALE WT.%	GAS PLUS LOSS WT.%	TENDENCY TO COKE
55	76.0 - 77.0	51.2	19.0	10.1	4.2	0.892	72.2	4.6	NIL (NONE)
56	77.0 - 78.0	41.2	15.5	8.6	3.6	0.900	77.8	3.1	NIL (NONE)
57	78.0 - 79.0	36.3	13.8	7.8	3.2	0.909	79.9	3.2	NIL (NONE)
58	79.0 - 80.0	15.6	6.0	5.1	2.1	0.920	90.3	1.6	NIL (NONE)
59	80.0 - 81.0	17.6	6.7	6.8	2.9	0.911	88.4	2.1	NIL (NONE)
60	81.0 - 82.0	34.9	13.2	5.9	2.5	0.908	80.3	4.0	NIL (NONE)
61	82.0 - 83.0	14.0	5.3	6.3	2.6	0.910	89.0	3.1	NIL (NONE)
62	83.0 - 84.0	47.0	17.7	8.7	3.6	0.904	74.0	4.7	NIL (NONE)
63	84.0 - 85.0	39.4	14.8	9.8	4.1	0.902	75.9	5.2	NIL (NONE)
64	85.0 - 86.0	22.0	8.2	6.9	2.9	0.896	85.3	3.6	NIL (NONE)
65	86.0 - 87.0	20.8	7.8	6.9	2.9	0.893	84.5	4.9	NIL (NONE)
66	87.0 - 88.0	23.1	8.7	7.0	2.9	0.902	86.2	2.2	NIL (NONE)
67	88.0 - 89.0	14.5	5.5	5.4	2.3	0.911	90.8	1.4	NIL (NONE)
68	89.0 - 90.0	19.3	7.3	5.9	2.5	0.913	88.0	2.2	NIL (NONE)
69	90.0 - 91.0	36.6	14.0	6.1	2.6	0.917	79.6	3.8	NIL (NONE)
70	91.0 - 92.0	8.4	3.2	4.7	1.9	0.915	93.1	1.7	NIL (NONE)
71	92.0 - 93.0	11.3	4.3	4.5	1.9	0.913	91.9	2.0	NIL (NONE)
72	93.0 - 94.0	27.7	10.5	5.8	2.4	0.909	84.6	2.5	NIL (NONE)
73	94.0 - 95.0	33.9	12.6	3.8	1.6	0.890	83.2	2.6	NIL (NONE)
74	95.0 - 96.0	22.1	8.2	3.2	1.3	0.894	88.4	2.1	NIL (NONE)
75	96.0 - 97.0	22.3	8.4	5.3	2.2	0.897	87.1	2.4	NIL (NONE)
76	97.0 - 98.0	24.7	9.2	4.8	2.0	0.894	86.1	2.7	NIL (NONE)
77	98.0 - 99.0	12.5	4.7	5.3	2.2	0.910	90.5	2.5	NIL (NONE)
78	99.0 - 0.0	8.6	3.3	4.3	1.8	0.915	93.1	1.8	NIL (NONE)
79	100.0 - 1.0	9.8	3.8	4.7	2.0	0.919	92.6	1.7	NIL (NONE)
90	101.0 - 2.0	23.7	9.0	4.5	1.9	0.906	85.1	4.0	NIL (NONE)
81	102.0 - 3.0	7.4	2.8	4.3	1.8	0.912	92.3	3.1	NIL (NONE)

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

PAGE NO. 4

GULF MINERAL RESOURCES CO.  
BZ-37

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 9-5-83  
FILE NO. : 3808-OS-604B  
ANALYSTS : JM MH  
ELEVATION:

OIL SHALE ASSAY  
ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT.%	WATER GAL/TON	WATER WT.%	OIL GRAV.	SHALE WT.%	GAS PLUS LOSS WT.%	TENDENCY TO COKE
82	103.0 - 4.0	4.9	1.9	4.0	1.7	0.917	95.2	1.3	NIL (NONE)
83	104.0 - 5.0	3.6	1.4	5.2	2.2	0.917	96.0	0.4	NIL (NONE)
84	105.0 - 6.0	9.2	3.5	4.8	2.0	0.907	92.6	2.0	NIL (NONE)
85	106.0 - 7.0	8.3	3.2	6.1	2.5	0.910	93.1	1.2	NIL (NONE)
86	107.0 - 8.0	20.5	7.8	6.0	2.5	0.915	86.8	2.8	NIL (NONE)
87	108.0 - 9.0	11.0	4.2	4.3	1.8	0.915	91.7	2.3	NIL (NONE)
88	109.0 - 10.0	9.1	3.5	4.3	1.8	0.915	93.0	1.8	NIL (NONE)
89	110.0 - 11.0	16.2	6.2	6.2	2.6	0.919	88.3	2.9	NIL (NONE)
90	111.0 - 12.0	2.0	0.8	5.1	2.1	0.919	96.0	1.2	NIL (NONE)
91	112.0 - 13.0	7.2	2.8	4.6	1.9	0.920	93.6	1.7	NIL (NONE)
92	113.0 - 14.0	9.2	3.5	10.7	4.4	0.925	90.6	1.4	NIL (NONE)
93	114.0 - 15.0	4.6	1.8	15.6	6.5	0.933	89.6	2.1	NIL (NONE)
94	115.0 - 16.0	3.0	1.2	4.8	2.0	0.933	95.4	1.4	NIL (NONE)
95	116.0 - 17.0	2.9	1.1	5.5	2.3	0.924	94.3	2.3	NIL (NONE)
96	117.0 - 18.0	5.0	1.9	3.1	1.3	0.921	96.0	0.8	NIL (NONE)
97	118.0 - 19.0	3.9	1.5	3.7	1.5	0.924	96.2	0.8	NIL (NONE)
98	119.0 - 20.0	2.2	0.9	2.9	1.2	0.924	96.0	2.0	NIL (NONE)
99	120.0 - 21.0	2.0	0.8	3.4	1.4	0.924	95.9	1.9	NIL (NONE)
100	121.0 - 22.0	7.6	2.9	4.0	1.7	0.909	92.8	2.7	NIL (NONE)
101	122.0 - 23.0	1.2	0.5	4.6	1.9	0.924	96.2	1.4	NIL (NONE)
102	123.0 - 24.0	2.8	1.1	5.0	2.1	0.916	95.7	1.2	NIL (NONE)
103	124.0 - 25.0	7.4	2.8	9.1	3.8	0.914	92.5	0.9	NIL (NONE)
104	125.0 - 26.0	11.3	4.3	3.7	1.5	0.902	92.6	1.7	NIL (NONE)
105	126.0 - 27.0	3.0	1.2	1.6	0.7	0.924	94.0	4.2	NIL (NONE)
106	127.0 - 28.0	12.8	4.8	5.3	2.2	0.899	90.7	2.4	NIL (NONE)
107	128.0 - 29.0	8.8	3.3	5.1	2.1	0.895	92.7	1.9	NIL (NONE)
108	129.0 - 30.0	6.9	2.6	4.1	1.7	0.907	93.6	2.1	NIL (NONE)

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
DALLAS, TEXAS

PAGE NO. 5

GULF MINERAL RESOURCES CO.  
BZ-37

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 9-5-83  
FILE NO. : 3808-OS-604B  
ANALYSTS : JM MH  
ELEVATION:

OIL SHALE ASSAY  
ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT.%	WATER GAL/TON	WATER WT.%	OIL GRAV.	SHALE WT.%	GAS PLUS LOSS WT.%	TENDENCY TO COKE
109	130.0 - 31.0	9.6	3.6	4.0	1.7	0.898	92.1	2.6	NIL (NONE)
110	131.0 - 32.0	5.1	1.9	3.2	1.3	0.907	95.4	1.4	NIL (NONE)
111	132.0 - 33.0	5.1	1.9	4.2	1.8	0.905	94.4	1.9	NIL (NONE)
112	133.0 - 34.0	5.2	2.0	7.7	3.2	0.914	94.1	0.8	NIL (NONE)
113	134.0 - 35.0	5.5	2.1	5.9	2.4	0.915	93.9	1.5	NIL (NONE)
114	135.0 - 36.0	4.8	1.8	7.2	3.0	0.911	93.1	2.1	NIL (NONE)
115	136.0 - 37.0	5.3	2.0	6.8	2.8	0.911	93.2	1.9	NIL (NONE)
116	137.0 - 38.0	4.1	1.5	5.6	2.3	0.894	94.5	1.7	NIL (NONE)
117	138.0 - 39.0	2.8	1.1	8.4	3.5	0.924	93.6	1.8	NIL (NONE)
118	139.0 - 40.0	7.3	2.7	4.1	1.7	0.900	93.2	2.3	NIL (NONE)
119	140.0 - 41.0	13.5	5.0	8.0	3.4	0.892	89.0	2.6	NIL (NONE)
120	141.0 - 42.0	9.0	3.4	8.5	3.6	0.905	90.4	2.6	NIL (NONE)
121	142.0 - 43.0	7.3	2.8	4.4	1.8	0.925	93.2	2.1	NIL (NONE)
122	143.0 - 44.0	3.3	1.3	3.9	1.6	0.925	95.2	1.9	NIL (NONE)
123	144.0 - 45.0	19.5	7.4	2.6	1.1	0.909	87.8	3.7	NIL (NONE)
124	145.0 - 46.0	19.2	7.3	2.5	1.0	0.909	90.4	1.3	NIL (NONE)
125	146.0 - 47.0	2.6	1.0	7.1	3.0	0.910	95.5	0.5	NIL (NONE)
126	147.0 - 48.0	0.8	0.3	8.1	3.4	0.909	95.3	1.0	NIL (NONE)
127	148.0 - 49.0	0.2	0.1	4.1	1.7	0.924	97.4	0.8	NIL (NONE)
128	149.0 - 50.0	2.8	1.1	3.8	1.6	0.924	96.1	1.2	NIL (NONE)
129	150.0 - 51.0	0.3	0.1	6.3	2.6	0.924	96.0	1.3	NIL (NONE)
130	151.0 - 52.0	5.9	2.2	4.0	1.7	0.911	94.9	1.2	NIL (NONE)
131	152.0 - 53.0	1.0	0.4	9.0	3.7	0.919	94.7	1.1	NIL (NONE)
132	153.0 - 54.0	6.6	2.5	2.6	1.1	0.924	94.8	1.6	NIL (NONE)
133	154.0 - 55.0	7.6	2.9	2.0	0.8	0.923	94.6	1.7	NIL (NONE)
134	155.0 - 56.0	3.6	1.4	4.0	1.7	0.923	95.5	1.4	NIL (NONE)
135	156.0 - 57.0	3.7	1.4	6.4	2.7	0.923	94.6	1.3	NIL (NONE)

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or land in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

PAGE NO. 6

GULF MINERAL RESOURCES CO.  
BZ-37

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 9-5-83  
FILE NO. : 3808-OS-604B  
ANALYSTS : JM MH  
ELEVATION:

OIL SHALE ASSAY  
ASTM D 3904-80

SAMPLE NO.	DEPTH	OIL GAL/TON	OIL WT. %	WATER GAL/TON	WATER WT. %	OIL GRAV.	SHALE WT. %	GAS PLUS LOSS WT. %	TENDENCY TO COKE
136	157.0 - 58.0	4.5	1.7	7.2	3.0	0.923	92.7	2.6	NIL (NONE)
137	158.0 - 59.0	6.4	2.4	4.3	1.8	0.923	94.5	1.3	NIL (NONE)
138	159.0 - 60.0	4.1	1.6	4.4	1.8	0.923	94.8	1.7	NIL (NONE)
139	160.0 - 61.0	4.5	1.7	5.8	2.4	0.923	94.4	1.4	NIL (NONE)
140	161.0 - 62.0	5.3	2.1	3.6	1.5	0.923	95.2	1.2	NIL (NONE)
141	162.0 - 63.0	5.3	2.0	3.3	1.4	0.922	94.5	2.2	NIL (NONE)
142	163.0 - 64.0	7.2	2.8	3.4	1.4	0.922	94.1	1.7	NIL (NONE)
143	164.0 - 65.0	6.7	2.6	5.0	2.1	0.923	93.4	2.0	NIL (NONE)
144	165.0 - 66.0	10.8	4.2	1.6	0.7	0.924	93.3	1.8	NIL (NONE)
145	166.0 - 67.0	7.4	2.8	9.0	3.8	0.919	92.6	0.8	NIL (NONE)
146	167.0 - 68.0	4.0	1.5	7.9	3.3	0.922	93.6	1.6	NIL (NONE)
147	168.0 - 69.0	6.8	2.6	8.0	3.3	0.924	91.9	2.2	NIL (NONE)
148	169.0 - 70.0	3.5	1.3	10.3	4.3	0.922	93.5	0.9	NIL (NONE)
149	170.0 - 71.0	8.2	3.2	1.9	0.8	0.919	94.9	1.2	NIL (NONE)

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.