

OIL SHALE ASSAY  
for  
GULF MINERAL RESOURCES COMPANY

BZ-36

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

PAGE NO. 1

GULF MINERAL RESOURCES CO.  
**BZ-36**

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 8-25-83  
FILE NO. : 3808-DS-604A  
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	552.1 - 53.0	14.4	5.5	5.8	2.4	0.912	89.3	2.7	NIL (NONE)
2	553.0 - 54.0	26.7	10.2	7.6	3.2	0.915	83.0	3.6	NIL (NONE)
3	554.0 - 55.0	13.5	5.2	5.6	2.3	0.923	90.1	2.4	NIL (NONE)
4	555.0 - 56.0	11.9	4.5	5.5	2.3	0.915	90.9	2.3	NIL (NONE)
5	556.0 - 57.0	12.0	4.6	5.9	2.5	0.914	91.0	1.9	NIL (NONE)
6	557.0 - 58.0	12.8	4.9	6.8	2.8	0.919	89.3	2.9	NIL (NONE)
7	558.0 - 59.0	15.3	5.8	6.3	2.6	0.902	88.9	2.7	NIL (NONE)
8	559.0 - 60.0	24.4	9.3	5.9	2.5	0.915	84.0	4.3	NIL (NONE)
9	560.0 - 61.0	12.4	4.7	5.1	2.1	0.918	89.0	4.2	NIL (NONE)
10	561.0 - 62.0	23.0	8.8	6.1	2.6	0.919	83.3	5.4	NIL (NONE)
11	562.0 - 63.0	24.0	9.2	4.4	1.8	0.915	84.6	4.4	NIL (NONE)
12	563.0 - 64.0	5.1	2.0	6.3	2.6	0.935	93.2	2.2	NIL (NONE)
13	564.0 - 65.0	2.6	1.0	9.0	3.8	0.933	91.8	3.4	NIL (NONE)
14	565.0 - 66.0	2.6	1.0	13.3	5.5	0.933	91.1	2.4	NIL (NONE)
15	566.0 - 67.0	1.8	0.7	13.0	5.4	0.933	91.4	2.4	NIL (NONE)
16	567.0 - 68.0	6.1	2.4	13.1	5.5	0.931	89.8	2.4	NIL (NONE)
17	568.0 - 69.0	2.7	1.0	12.2	5.1	0.933	91.1	2.7	NIL (NONE)
18	569.0 - 70.0	2.9	1.1	8.5	3.6	0.933	93.1	2.2	NIL (NONE)
19	570.0 - 71.0	1.2	0.5	12.5	5.2	0.933	92.4	1.9	NIL (NONE)
20	571.0 - 72.0	0.9	0.3	9.5	4.0	0.933	93.8	1.9	NIL (NONE)
21	572.0 - 73.0	3.7	1.5	6.7	2.8	0.933	94.6	1.1	NIL (NONE)
22	573.0 - 74.0	11.8	4.5	6.1	2.5	0.906	91.0	2.0	NIL (NONE)
23	574.0 - 75.0	13.5	5.1	5.1	2.1	0.907	90.4	2.4	NIL (NONE)
24	575.0 - 76.0	18.1	6.8	5.4	2.2	0.904	88.6	2.4	NIL (NONE)
25	576.0 - 77.0	32.3	12.1	6.0	2.5	0.901	82.4	3.0	NIL (NONE)
26	577.0 - 78.0	14.8	5.6	5.5	2.3	0.909	89.4	2.7	NIL (NONE)
27	578.0 - 79.0	12.0	4.5	4.3	1.8	0.901	91.4	2.3	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 sand in connection with which such report is used or relied upon.

GULF MINERAL RESOURCES CO.  
HZ-36

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 8-25-83  
FILE NO. : 3808-DS-604A  
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	579.0 - 80.0	10.2	3.9	5.6	2.3	0.918	92.1	1.7	NIL (NONE)
29	580.0 - 81.0	15.9	6.1	7.5	3.1	0.919	89.2	1.6	NIL (NONE)
30	581.0 - 82.0	24.9	9.5	6.7	2.8	0.917	85.5	2.2	NIL (NONE)
31	582.0 - 83.0	26.0	9.9	4.3	1.8	0.916	84.9	3.4	NIL (NONE)
32	583.0 - 84.0	26.7	10.1	5.1	2.1	0.904	84.4	3.4	NIL (NONE)
33	584.0 - 85.0	38.2	14.3	9.8	4.1	0.898	77.7	3.9	NIL (NONE)
34	585.0 - 86.0	29.7	11.1	7.0	2.9	0.900	82.6	3.3	NIL (NONE)
35	586.0 - 87.0	18.7	7.0	5.9	2.5	0.905	88.2	2.3	NIL (NONE)
36	587.0 - 88.0	14.8	5.6	6.1	2.6	0.913	89.0	2.8	NIL (NONE)
37	588.0 - 89.0	10.0	3.8	6.1	2.6	0.922	91.5	2.1	NIL (NONE)
38	589.0 - 90.0	19.5	7.4	5.4	2.2	0.909	87.9	2.5	NIL (NONE)
39	590.0 - 91.0	10.3	3.9	5.5	2.3	0.917	91.1	2.7	NIL (NONE)
40	591.0 - 92.0	10.9	4.2	5.0	2.1	0.919	90.7	3.0	NIL (NONE)
41	592.0 - 93.0	10.6	4.0	6.6	2.8	0.917	90.0	3.2	NIL (NONE)
42	593.0 - 94.0	12.7	4.9	7.4	3.1	0.917	89.2	2.8	NIL (NONE)
43	594.0 - 95.0	8.4	3.2	6.8	2.8	0.913	91.0	3.0	NIL (NONE)
44	595.0 - 96.0	8.3	3.1	8.4	3.5	0.906	90.8	2.6	NIL (NONE)
45	596.0 - 97.0	13.0	4.9	3.8	1.6	0.904	91.0	2.5	NIL (NONE)
46	597.0 - 98.0	21.7	8.2	8.1	3.4	0.903	86.2	2.3	NIL (NONE)
47	598.0 - 99.0	52.6	20.0	6.8	2.8	0.909	72.3	4.9	SLIGHT
48	599.0 - 0.0	24.6	9.4	7.5	3.1	0.911	83.0	4.5	NIL (NONE)
49	600.0 - 1.0	18.2	6.8	6.6	2.8	0.901	87.3	3.1	NIL (NONE)
50	601.0 - 2.0	17.4	6.6	6.6	2.7	0.901	87.0	3.7	NIL (NONE)
51	602.0 - 3.0	18.6	7.0	6.7	2.8	0.902	85.4	4.8	NIL (NONE)
52	603.0 - 4.0	13.0	4.9	6.9	2.9	0.909	89.8	2.4	NIL (NONE)
53	604.0 - 5.0	24.0	9.1	6.0	2.5	0.907	84.7	3.7	NIL (NONE)
54	605.0 - 6.0	30.5	11.6	7.4	3.1	0.909	81.8	3.5	NIL (NONE)

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

PAGE NO. 3

GULF MINERAL RESOURCES CO.  
BZ-36

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 8-25-83  
FILE NO. : 3808-05-604A  
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	606.0 - 7.0	28.0	10.6	6.1	2.6	0.903	82.9	4.0	NIL (NONE)
56	607.0 - 8.0	58.5	21.8	8.3	3.5	0.894	68.6	6.1	MEDIUM
57	608.0 - 9.0	75.3	28.3	8.8	3.7	0.900	62.1	6.0	HIGH
58	609.0 - 10.0	67.7	25.3	8.6	3.6	0.897	63.6	7.5	HIGH
59	610.0 - 11.0	54.0	20.4	10.0	4.2	0.905	71.8	3.7	NIL (NONE)
60	611.0 - 12.0	39.5	14.8	5.6	2.3	0.899	77.6	5.3	NIL (NONE)
61	612.0 - 13.0	48.6	18.5	6.5	2.7	0.914	73.6	5.2	NIL (NONE)
62	613.0 - 14.0	22.6	8.7	4.2	1.7	0.922	86.8	2.8	NIL (NONE)
63	614.0 - 15.0	17.2	6.6	5.7	2.4	0.917	88.7	2.3	NIL (NONE)
64	615.0 - 16.0	23.3	8.9	4.4	1.8	0.912	86.7	2.6	NIL (NONE)
65	616.0 - 17.0	29.3	11.2	4.5	1.9	0.914	84.1	2.8	NIL (NONE)
66	617.0 - 18.0	20.8	8.0	5.3	2.2	0.925	87.1	2.7	NIL (NONE)
67	618.0 - 19.0	15.0	5.7	6.2	2.6	0.915	89.5	2.2	NIL (NONE)
68	619.0 - 20.0	16.4	6.2	5.7	2.4	0.907	89.4	2.0	NIL (NONE)
69	620.0 - 21.0	47.1	17.7	5.7	2.4	0.900	76.6	3.4	NIL (NONE)
70	621.0 - 22.0	32.9	12.3	8.5	3.5	0.895	80.7	3.5	NIL (NONE)
71	622.0 - 23.0	36.8	13.7	5.1	2.1	0.894	80.1	4.0	NIL (NONE)
72	623.0 - 24.0	18.0	6.6	5.8	2.4	0.885	89.2	1.8	NIL (NONE)
73	624.0 - 25.0	18.9	7.0	6.0	2.5	0.883	88.5	2.1	NIL (NONE)
74	625.0 - 26.0	32.8	12.2	4.7	2.0	0.894	83.2	2.6	NIL (NONE)
75	626.0 - 27.0	13.5	5.1	7.5	3.1	0.909	89.9	1.9	NIL (NONE)
76	627.0 - 28.0	11.6	4.3	7.2	3.0	0.898	89.7	2.9	NIL (NONE)
77	628.0 - 29.0	25.3	9.6	7.3	3.1	0.906	84.1	3.3	NIL (NONE)
78	629.0 - 30.0	44.7	17.0	9.1	3.8	0.914	74.7	4.4	SLIGHT
79	630.0 - 31.0	15.9	6.1	5.8	2.4	0.911	88.6	2.9	NIL (NONE)
80	631.0 - 32.0	11.4	4.4	8.2	3.4	0.913	88.9	3.4	NIL (NONE)
81	632.0 - 33.0	18.1	6.9	7.9	3.3	0.917	87.2	2.6	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.

GULF MINERAL RESOURCES CO.  
BZ-36

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 8-25-83  
FILE NO. : 3808-QS-604A  
ANALYSTS : JMH/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	633.0 - 34.0	11.2	4.3	7.5	3.1	0.917	90.8	1.8	NIL (NONE)
83	634.0 - 35.0	16.7	6.3	6.2	2.6	0.909	88.6	2.5	NIL (NONE)
84	635.0 - 36.0	39.1	14.7	4.2	1.8	0.903	80.0	3.5	NIL (NONE)
85	636.0 - 37.0	32.8	12.2	4.1	1.7	0.891	83.4	2.7	NIL (NONE)
86	637.0 - 38.0	27.0	10.0	3.4	1.4	0.891	86.0	2.5	NIL (NONE)
87	638.0 - 39.0	21.8	8.2	4.2	1.7	0.904	87.6	2.5	NIL (NONE)
88	639.0 - 40.0	32.9	12.3	4.6	1.9	0.898	82.9	2.9	NIL (NONE)
89	640.0 - 41.0	26.4	9.8	3.8	1.6	0.894	86.3	2.2	NIL (NONE)
90	641.0 - 42.0	19.4	7.3	4.3	1.8	0.907	88.6	2.2	NIL (NONE)
91	642.0 - 43.0	12.9	4.9	7.8	3.3	0.916	89.4	2.4	NIL (NONE)
92	643.0 - 44.0	12.1	4.6	6.3	2.6	0.920	90.3	2.5	NIL (NONE)
93	644.0 - 45.0	16.7	6.4	5.9	2.5	0.917	88.9	2.2	NIL (NONE)
94	645.0 - 46.0	21.8	8.3	8.5	3.5	0.915	86.7	1.4	NIL (NONE)
95	646.0 - 47.0	12.7	4.9	4.2	1.8	0.921	91.7	1.7	NIL (NONE)
96	647.0 - 48.0	8.5	3.3	5.7	2.4	0.913	91.8	2.5	NIL (NONE)
97	648.0 - 49.0	7.5	2.9	8.6	3.6	0.918	91.8	1.7	NIL (NONE)
98	649.0 - 50.0	3.0	1.2	9.5	3.9	0.919	93.5	1.4	NIL (NONE)
99	650.0 - 51.0	4.6	1.8	7.9	3.3	0.925	93.0	2.0	NIL (NONE)
100	651.0 - 52.0	9.9	3.8	5.7	2.4	0.909	91.6	2.3	NIL (NONE)
101	652.0 - 53.0	20.0	7.5	3.0	1.2	0.900	88.1	3.2	NIL (NONE)
102	653.0 - 54.0	7.3	2.8	10.0	4.2	0.910	89.5	3.6	NIL (NONE)
103	654.0 - 55.0	10.5	4.0	4.4	1.8	0.917	91.8	2.4	NIL (NONE)
104	655.0 - 56.0	33.5	12.9	5.3	2.2	0.920	80.4	4.5	NIL (NONE)
105	656.0 - 57.0	12.4	4.7	4.0	1.7	0.912	90.3	3.3	NIL (NONE)
106	657.0 - 58.0	7.1	2.7	7.3	3.0	0.912	91.1	3.2	NIL (NONE)
107	658.0 - 59.0	6.1	2.3	9.1	3.8	0.904	91.3	2.6	NIL (NONE)
108	659.0 - 60.0	16.3	6.2	4.3	1.8	0.906	88.5	3.5	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-36

FORMATION :  
DLG. FLUID :  
LOCATION :  
STATE : UTAH

DATE : 8-25-83  
FILE NO. : 3808-OS-604A  
ANALYSTS : JMH/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	660.0 - 61.0	35.0	13.3	5.6	2.3	0.909	80.6	3.8	NIL (NONE)
110	661.0 - 61.8	19.5	7.5	4.1	1.7	0.919	88.0	2.8	NIL (NONE)