

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Brewer et al. Corehole No. 9-1 drilled in C SW1/4 NE1/4 (1980 feet S/N 1980 feet W/E)
of sec 9, T 13 S, R 24 E, Uintah County, Utah

Surface Elevation 6,497 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60°F	Properties of spent shale		Remarks	
			Weight percent		Spent shale	Gas + loss		Gal per ton			Tendency to coke
			Oil	Water				Oil ^{1/}	Water		
Laramie	Their										
SBR64-11267	0.0- 1.0	1858	1.9	2.5	94.7	0.9	4.9a	6.0	None		
SBR64-11268	1.0- 2.0	1859	2.4	2.4	94.6	.6	6.3	5.6	0.923	None	
SBR64-11269	2.0- 3.0	1860	2.6	2.4	94.1	.9	6.6	5.9	.930	None	
SBR64-11270	3.0- 4.0	1861	2.5	2.4	94.3	.8	6.6	5.6	.921	None	
SBR64-11271	4.0- 5.0	1862	2.6	2.1	94.4	.9	6.6	5.0	.924	None	
SBR64-11272	5.0- 6.0	1863	3.0	2.5	93.7	.8	7.8	5.9	.928	None	
SBR64-11273	6.0- 7.0	1864	2.1	2.8	94.4	.7	5.5	6.7	.930	None	
SBR64-11274	7.0- 8.0	1865	2.9	2.8	93.5	.8	7.6	6.6	.927	None	
SBR64-11275	8.0- 9.0	1866	3.5	1.7	93.9	.9	9.2a	4.0	None	None	
SBR64-11276	9.0-10.0	1867	2.8	1.8	94.4	1.0	7.4	4.3	.924	None	
SBR64-11277	10.0-11.0	1868	1.0	1.2	96.7	1.1	2.6a	2.9	None	None	
SBR64-11278	11.0-12.0	1869	2.3	1.9	95.2	.6	6.0	4.6	.919	None	
SBR64-11279	12.0-13.4	1870	2.3	1.6	95.6	.5	5.9	3.8	.925	None	
SBR64-11280	13.4-14.5	1871	2.1	2.0	95.1	.8	5.3	4.9	.924	None	
SBR64-11281	14.5-15.5	1872	2.7	2.0	94.3	1.0	7.0	4.9	.921	None	
SBR64-11282	15.5-16.5	1873	5.6	1.7	91.4	1.3	14.6	4.1	.921	None	
SBR64-11283	16.5-17.5	1874	3.3	2.2	93.8	.7	8.6	5.2	.922	None	
SBR64-11284	17.5-19.0	1875	3.8	1.6	93.9	.7	9.8	3.8	.922	None	
SBR64-11285	19.0-20.7	1876	4.9	2.2	91.8	1.1	12.8	5.3	.921	None	
SBR64-11286	20.7-22.2	1877	5.1	1.2	92.5	1.2	13.3	2.9	.921	None	
SBR64-11287	22.2-23.3	1878	3.2	.9	95.1	.8	8.2	2.0	.931	None	
SBR64-11288	23.3-24.5	1879	2.4	.9	96.0	.7	6.0	2.2	.932	None	
SBR64-11289	24.5-25.5	1880	3.2	.9	95.0	.9	8.2	2.0	.939	None	
SBR64-11290	25.5-26.6	1881	4.2	.7	94.1	1.0	10.8	1.8	.926	None	
SBR64-11291	26.6-27.6	1882	1.9	1.0	96.7	.4	4.9a	2.5	None	None	
SBR64-11292	27.6-28.6	1883	2.4	.9	96.0	.7	6.1	2.2	.931	None	
SBR64-11293	28.6-29.6	1884	2.5	.7	96.0	.8	6.4	1.7	.929	None	
SBR64-11294	29.6-30.7	1885	1.9	.9	96.7	.5	4.9	2.2	.928	None	
SBR64-11295	30.7-32.0	1886	3.8	.3	94.7	1.2	9.7	.8	.926	None	
SBR64-11296	32.0-33.0	1887	2.9	.7	95.8	.6	7.5	1.6	.926	None	

See footnotes at end of table.

Core samples received November 20, 1964; Assays made on air-dried samples

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Samples from Brewer et al. Corehole No. 9-1 (con.)

Sample number		Run No.	Yield of product						Specific gravity of oil at 60°/60°F	Properties of spent shale		Remarks
			Weight percent		Spent shale	Gas + loss	Gal per ton			Tendency to coke		
Laramie	Their		Oil	Water					Oil ^{1/}		Water	
SBR64-11297	33.0-34.5	1888	3.6	1.2	94.5	0.7	9.3	2.9	0.928	None		
SBR64-11298	34.5-35.6	1889	12.4	1.4	84.1	2.1	31.9	3.4	.929	None		
SBR64-11299	35.6-37.0	1890	3.9	1.0	94.0	1.1	10.2	2.4	.929	None		
SBR64-11300	37.0-38.0	1891	4.5	1.2	93.4	.9	11.5	2.9	.931	None		
SBR64-11301	38.0-39.2	1892	4.4	1.2	93.4	1.0	11.4	2.8	.929	None		
SBR64-11302	39.2-40.2	1893	5.1	1.2	92.7	1.0	13.3	2.8	.927	None		
SBR64-11303	40.2-40.8	1894	17.2	2.2	77.5	3.1	44.6	5.3	.925	Slight		
SBR64-11304	40.8-41.8	1895	6.5	1.2	90.8	1.5	16.9	2.9	.920	None		
SBR64-11305	41.8-42.7	1896	5.7	.9	92.2	1.2	14.8	2.2	.919	None		
SBR64-11306	42.7-43.4	1897	5.0	1.0	92.7	1.3	13.1	2.4	.918	None		
SBR64-11307	43.4-44.3	1898	17.0	2.1	77.9	3.0	44.4	5.0	.918	Slight		
SBR64-11308	44.3-45.3	1899	5.4	1.0	92.3	1.3	14.1	2.4	.924	None		
SBR64-11309	45.3-46.3	1900	1.9	.9	96.5	.7	4.9a	2.2		None		
SBR64-11310	46.3-47.3	1901	1.5	1.0	96.8	.7	3.9a	2.4		None		
SBR64-11311	47.3-48.9	1902	1.1	.5	97.8	.6	2.8a	1.2		None		
SBR64-11312	48.9-49.9	1903	2.8	.7	95.2	1.3	7.1	1.7	.937	None		
SBR64-11313	49.9-50.9	1904	.9	.3	97.5	1.3	2.4a	.7		None		
SBR64-11314	50.9-52.0	1905	1.2	.9	97.1	.8	3.2a	2.0		None		
SBR64-11315	52.0-53.0	1906	.7	.5	98.7	.1	1.8a	1.2		None		
SBR64-11316	53.0-54.0	1907	.6	.4	98.6	.4	1.5a	1.1		None		
SBR64-11317	54.0-55.0	1908	1.0	.4	98.2	.4	2.5a	1.1		None		
SBR64-11318	55.0-56.0	1909	4.2	.9	93.7	1.2	10.9	2.3	.916	None		
SBR64-11319	56.0-57.0	1910	4.2	.7	94.1	1.0	10.8	1.7	.920	None		
SBR64-11320	57.0-58.3	1911	11.0	1.4	85.6	2.0	28.4	3.4	.923	None		
SBR64-11321	58.3-59.3	1912	5.3	1.1	92.4	1.2	13.6	2.6	.925	None		
SBR64-11322	59.3-60.3	1913	5.0	.9	92.8	1.3	13.0	2.0	.925	None		
SBR64-11323	60.3-61.8	1914	3.3	.8	95.0	.9	8.7	1.8	.925	None		
SBR64-11324	61.8-62.6	1915	7.0	1.2	90.4	1.4	18.1	2.9	.926	None		
SBR64-11325	62.6-63.7	1918	12.9	1.0	83.8	2.3	33.5	2.4	.922	None		
SBR64-11326	63.7-65.3	1919	9.8	.5	87.5	2.2	25.7	1.3	.913	None		

See footnotes at end of table.

Core samples received November 20, 1964; Assays made on air-dried samples

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Samples from Brewer et al. Corehole No. 9-1 (con.)

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60°F	Properties of spent shale		Remarks	
			Weight percent		Spent shale	Gas + loss		Gal per ton			Tendency to coke
Laramie	Their		Oil	Water					Oil	Water	
SBR64-11327	65.3-66.7	1920	18.4	1.0	77.3	3.3	48.9	2.3	0.905	Slight	
SBR64-11328	66.7-67.7	1921	9.4	.6	88.4	1.6	24.9	1.4	.900	None	
SBR64-11329	67.7-69.2	1922	6.5	.5	90.8	2.2	16.9	1.3	.917	None	
SBR64-11330	69.2-70.5	1923	3.9	.6	94.3	1.2	10.1	1.3	.925	None	
SBR64-11331	70.5-71.6	1924	8.2	.6	89.5	1.7	21.1	1.6	.926	None	
SBR64-11332	71.6-72.6	1925	4.7	.4	93.6	1.3	12.1	1.1	.925	None	
SBR64-11333	72.6-73.6	1926	4.0	.5	94.4	1.1	10.3	1.2	.925	None	
SBR64-11334	73.6-74.6	1927	4.1	.6	94.4	.9	10.6	1.4	.925	None	
SBR64-11335	74.6-75.0	1928	5.2	3.4	90.4	1.0	13.6	8.0	.922	None	Mahogany marker
SBR64-11336	75.0-76.4	1929	3.7	.5	94.8	1.0	9.6	1.2	.923	None	
SBR64-11337	76.4-77.6	1930	3.0	.3	95.9	.8	7.8	.8	.918	None	
SBR64-11338	77.6-78.6	1931	4.4	.9	93.8	.9	11.6	2.2	.918	None	
SBR64-11339	78.6-79.2	1932	7.2	.7	91.2	.9	18.9	1.7	.913	None	
SBR64-11340	79.2-80.4	1933	18.4	2.1	76.8	2.7	48.0	5.0	.920	Medium	
SBR64-11341	80.4-81.6	1934	9.3	1.6	86.8	2.3	24.4	3.8	.914	None	
SBR64-11342	81.6-82.6	1935	7.2	1.0	90.2	1.6	19.1	2.4	.905	None	
SBR64-11343	82.6-83.5	1936	8.3	1.2	88.7	1.8	21.9	2.9	.907	None	
SBR64-11344	83.5-84.7	1937	8.1	1.5	88.4	2.0	21.1	3.6	.917	None	
SBR64-11345	84.7-86.4	1938	6.1	1.3	90.9	1.7	15.8	3.1	.922	None	
SBR64-11346	86.4-87.0	1939	11.1	1.3	84.8	2.8	29.2	3.0	.913	None	
SBR64-11347	87.0-88.6	1940	13.6	1.0	82.0	3.4	35.8	2.4	.915	Slight	
SBR64-11348	88.6-89.4	1941	10.8	1.3	85.6	2.3	28.1	3.1	.920	Slight	
SBR64-11349	89.4-90.6	1942	12.8	.6	84.2	2.4	34.0	1.4	.902	Slight	
SBR64-11350	90.6-91.8	1943	19.6	.9	75.6	3.9	51.4	2.3	.913	Slight	
SBR64-11351	91.8-92.8	1944	8.0	.6	89.3	2.1	20.8	1.4	.922	None	
SBR64-11352	92.8-94.3	1945	6.6	1.2	90.2	2.0	17.2	2.9	.915	None	
SBR64-11353	94.3-95.3	1946	13.0	1.2	83.1	2.7	33.8	2.9	.919	Slight	
SBR64-11354	95.3-96.4	1947	6.0	1.3	90.9	1.8	15.7	3.1	.921	None	
SBR64-11355	96.4-97.8	1948	6.2	.9	91.1	1.8	16.0	2.2	.920	None	
SBR64-11356	97.8-98.7	1949	20.8	1.3	74.0	3.9	54.5	3.1	.916	Slight	

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Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60°F	Properties of spent shale		Remarks	
			Weight percent		Spent shale	Gas + loss		Gal per ton	Tendency to coke		
Laramie	Their		Oil	Water							Oil ^{1/}
SBR64-11357	98.7-99.3	1950	14.6	1.5	80.5	3.4	39.1	3.5	0.896	Slight	
SBR64-11358	99.3-100.0	1951	20.8	1.4	73.8	4.0	54.6	3.5	.913	Slight	
SBR64-11359	100.0-101.7	1952	8.3	1.0	88.5	2.2	22.4	2.3	.890	None	
SBR64-11360	101.7-102.7	1953	13.6	1.2	81.1	4.1	36.2	2.9	.901	Slight	
SBR64-11361	102.7-103.7	1954	6.2	.4	92.3	1.1	16.3	1.0	.910	None	
SBR64-11362	103.7-104.9	1955	5.3	.3	92.8	1.6	13.8	.8	.916	None	
SBR64-11363	104.9-106.2	1956	15.3	.9	80.6	3.2	39.9	2.0	.921	Slight	
SBR64-11364	106.2-107.2	1957	4.8	.7	93.1	1.4	12.6	1.6	.917	None	
SBR64-11365	107.2-108.4	1958	3.0	.2	95.4	1.4	7.8	.5	.924	None	
SBR64-11366	108.4-109.4	1959	6.3	.4	91.6	1.7	16.7	1.0	.909	None	
SBR64-11367	109.4-110.4	1960	12.6	.8	84.3	2.3	33.1	2.0	.911	None	
SBR64-11368	110.4-111.4	1961	11.0	.3	86.3	2.4	29.4	.7	.894	None	
SBR64-11369	111.4-112.4	1962	8.2	.4	89.8	1.6	21.5	1.1	.909	None	
SBR64-11370	112.4-113.4	1963	11.3	.6	86.0	2.1	30.1	1.3	.902	None	
SBR64-11371	113.4-114.4	1964	6.8	.5	90.9	1.8	17.9	1.2	.910	None	
SBR64-11372	114.4-115.4	1965	4.2	.3	94.4	1.1	10.9	.7	.920	None	
SBR64-11373	115.4-116.4	1966	2.7	.2	96.0	1.1	6.9	.5	.928	None	
SBR64-11374	116.4-117.6	1967	4.8	.4	93.3	1.5	12.5	1.1	.919	None	
SBR64-11375	117.6-118.4	1968	11.9	.7	85.1	2.3	30.8	1.7	.925	None	
SBR64-11376	118.4-119.2	1969	4.0	.7	94.1	1.2	10.5	1.7	.925	None	
SBR64-11377	119.2-120.3	1970	2.5	.6	95.9	1.0	6.4	1.4	.926	None	
SBR64-11378	120.3-121.4	1971	1.2	.4	97.9	.5	3.2a	.8		None	
SBR64-11379	121.4-122.4	1972	2.2	.2	96.6	1.0	5.7	.6	.915	None	
SBR64-11380	122.4-123.5	1973	5.9	.8	91.6	1.7	15.4	1.9	.911	None	
SBR64-11381	123.5-124.7	1974	1.3	1.6	96.2	.9	3.5a	3.8		None	
SBR64-11382	124.7-126.1	1975	9.7	.9	87.0	2.4	25.2	2.0	.923	None	
SBR64-11383	126.1-127.1	1976	2.4	.4	95.6	1.6	6.3	1.0	.919	None	
SBR64-11384	127.1-128.1	1977	2.4	.3	96.1	1.2	6.3	.8	.902	None	
SBR64-11385	128.1-129.3	1978	9.9	1.1	87.4	1.6	25.7	2.6	.920	None	
SBR64-11386	129.3-130.5	1979	1.2	.5	97.8	.5	3.2a	1.1		None	

See footnotes at end of table.

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			Weight percent				Gal per ton			Tendency to coke		
			Oil	Water	Spent shale	Gas + loss	Oil ^{1/}	Water				
Laramie	Their											
SBR64-11387	130.5-131.5	1980	4.7	0.8	93.4	1.1	12.2	2.0	0.922	None		
SBR64-11388	131.5-132.5	1981	1.7	2.1	96.0	.2	4.5a	5.0		None		
SBR64-11389	132.5-133.4	1982	4.9	1.6	92.8	.7	12.7	3.8	.918	None		
SBR64-11390	133.4-134.7	1983	1.2	.3	96.4	2.1	3.0a	.8		None		
SBR64-11391	134.7-135.7	1984	2.1	.3	96.5	1.1	5.5	.7	.925	None		
SBR64-11392	135.7-137.1	1985	3.9	.1	94.7	1.3	10.0	.4	.928	None	Tar impregnated	
SBR64-11393	137.1-138.4	1986	.5	.2	98.3	1.0	1.2a	.6		None		
SBR64-11394	138.4-139.3	1987	7.4	.9	89.8	1.9	19.4	2.2	.917	None		
SBR64-11395	139.3-140.8	1988	2.6	.4	95.8	1.2	6.8	1.1	.919	None		
SBR64-11396	140.8-141.7	1989	6.3	.7	91.1	1.9	16.7	1.7	.902	None		
SBR64-11397	141.7-143.3	1990	2.7	.3	96.5	.5	7.0	.8	.913	None		
SBR64-11398	143.3-144.0	1991	3.1	.5	95.5	.9	8.1	1.2	.915	None		
SBR64-11399	144.0-145.0	1992	.9	.8	96.6	1.7	2.4a	1.8		None		
SBR64-11400	145.0-146.0	1993	1.8	.4	97.2	.6	4.8a	1.0		None		
SBR64-11401	146.0-147.3	1994	1.9	1.0	96.0	1.1	5.0a	2.3		None		
SBR64-11402	147.3-148.3	1995	1.5	1.7	96.2	.6	4.0a	4.0		None		
SBR64-11403	148.3-149.3	1996	1.4	.9	97.1	.6	3.8a	2.2		None		
SBR64-11404	149.3-149.8	1997	.0	.8	98.9	.3	No oil	1.8		None		
SBR64-11405	149.8-150.8	1998	2.2	.6	96.4	.8	5.8	1.3	.910	None		
SBR64-11406	150.8-152.1	1999	5.4	2.0	91.5	1.1	14.3	4.8	.912	None		
SBR64-11407	152.1-153.9	2000	.3	1.9	97.5	.3	.7a	4.6		None		
SBR64-11408	153.9-155.1	2001	1.8	1.0	96.8	.4	4.7a	2.4		None		
SBR64-11409	155.1-156.3	2002	.4	1.0	98.0	.6	1.0a	2.4		None		
SBR64-11410	156.3-157.1	2003	9.8	1.3	87.4	1.5	25.2	3.1	.929	None		
SBR64-11411	157.1-158.2	2004	6.5	.2	92.5	.8	16.9	.4	.923	None	Tar impregnated	
SBR64-11412	158.2-158.5	2005	4.4	1.1	93.2	1.3	11.0	2.6	.946	None		
SBR64-11413	158.5-159.2	2006	2.7	.3	96.3	.7	7.0	.6	.924	None	Tar impregnated	
SBR64-11414	159.2-160.3	2007	.0	.6	99.0	.4	No oil	1.3		None		
SBR64-11415	160.3-161.1	2008	6.0	.1	93.2	.7	15.7	.2	.919	Slight	Tar impregnated	
SBR64-11416	161.1-162.4	2009	3.2	.2	96.2	.4	8.1	.5	.929	None		

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		Weight percent		Spent shale	Gas + loss	Oil ^{1/}	Water			
Laramie	Their	Oil	Water							
SBR64-	162.4-163.6									Barren rock not sampled
SBR64-11417	163.6-164.5	5.7	0.1	93.7	0.5	14.7	0.2	0.924	None	Tar impregnated
SBR64-	164.5-166.7									Barren rock not sampled
SBR64-11418	166.7-168.0	3.7	.0	95.6	.7	9.6	.0	.922	None	Tar impregnated
SBR64-	168.0-168.8									Barren rock not sampled
SBR64-11419	168.8-171.7	6.2	.1	92.4	1.3	16.1	.4	.922	Slight	Tar impregnated
SBR64-11420	171.7-174.6	6.9	.2	92.4	.5	18.0	.5	.921	Slight	Tar impregnated
SBR64-11421	174.6-176.7	10.8	.1	88.5	.6	28.2	.4	.915	Heavy	Tar impregnated
SBR64-11422	176.7-179.1	6.9	.2	92.0	.9	18.0	.5	.920	Slight	Tar impregnated
SBR64-	179.1-200.5									Barren rock not sampled
SBR64-11423	200.5-201.5	2.8	.0	96.3	.9	7.4	.0	.920	None	Tar impregnated
SBR64-11424	201.5-202.9	2.5	.1	97.2	.2	6.4	.2	.929	None	Tar impregnated
SBR64-11425	202.9-204.0	1.4	.0	97.9	.7	3.7a	.0		None	Tar impregnated
SBR64-11426	204.0-206.0	2.0	.4	97.2	.4	5.2a	1.0		None	Tar impregnated
SBR64-11427	206.0-208.0	1.9	.1	97.8	.2	4.8a	.2		None	Tar impregnated
SBR64-	208.0-221.2									Barren rock not sampled
SBR64-11428	221.2-222.1	.9	.2	98.5	.4	2.4a	.4		None	Tar impregnated
SBR64-11429	222.1-224.4	1.9	.4	97.3	.4	5.0a	1.0		None	Tar impregnated
SBR64-11430	224.4-225.8	2.9	.2	96.5	.4	7.4	.5	.929	None	Tar impregnated
SBR64-11431	225.8-228.1	4.4	.1	95.0	.5	11.4	.2	.930	None	Tar impregnated
SBR64-	228.1-232.0									Barren rock not sampled
SBR64-11432	232.0-234.0	3.3	.2	95.9	.6	8.5	.6	.929	None	Tar impregnated
SBR64-	234.0-236.0									Barren rock not sampled

^{1/} "a"--indicates specific gravity estimated as 0.92.

Core samples received November 20, 1964; Assays made on air-dried samples