

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) drilled in NE1/4SE1/4 2,180 feet N/S and 1,981 feet W/E of sec. 23, T. 10 S., R. 18 E., Uintah County, Utah

0' of 30
0' of 25
80± of 15

Elevation 5234 RB

mahogany marker 3464'

mahogany marks 3464'		Yield of product						Specific gravity of oil at 60°/60° F.		Properties of spent shale		Remarks
Sample number		Run No.	Weight percent		Spent shale	Gas + loss	Gal. per ton		Tendency to coke			
Laramie	Their		Oil	Water			Oil	Water				
SBR61-6075-80	363-420						No oil					
SBR61-6081	420-430						b					
SBR61-6082-83	430-450						c					
SBR61-6084-87	450-490						b					
SBR61-6088	490-500	74150	1.9	2.1	95.1	0.9	4.9a	5.0		None		
SBR61-6089	500-510						b					
SBR61-6090-93	510-550						c					
SBR61-6094	550-560						b					
SBR61-6095-6100	560-620						c					
SBR61-6103	660-670						c					
SBR61-6104	670-680	74151	.5	2.2	96.7	.6	1.2a	5.3		None		
SBR61-6105	680-690	74152	1.3	2.3	95.6	.8	3.4a	5.5		None		
SBR61-6106	690-700	74153	1.3	2.3	95.3	1.1	3.3a	5.6		None		
SBR61-6107	700-710	74154	.9	2.1	96.2	.8	2.2a	5.0		None		
SBR61-6108	710-720	74155	1.2	1.7	96.5	.6	3.0a	4.1		None		
SBR61-6109	720-730	74156	1.6	2.0	95.3	1.1	4.2a	4.8		None		
SBR61-6110	730-740	74157	1.6	2.2	95.2	1.0	4.3a	5.3		None		
SBR61-6111	740-750	74158	.7	2.0	96.6	.7	1.9a	4.8		None		
SBR61-6112	750-760	74159	1.8	2.2	94.9	1.1	4.8a	5.3		None		
SBR61-6113	760-770	74160	2.0	1.9	95.0	1.1	5.3a	4.6		None		
SBR61-6114	770-780	74161	1.8	1.8	95.3	1.1	4.8a	4.3		None		
SBR61-6115	780-790	74162	2.1	2.0	94.8	1.1	5.4a	4.8		None		
SBR61-6116	790-800	74163	2.2	1.9	94.9	1.0	6.0	4.6	0.897	None		
SBR61-6117	800-810	74164	2.8	1.9	94.1	1.2	7.4	4.6	.908	None		
SBR61-6118	810-820	74165	2.8	2.1	94.1	1.0	7.6	5.0	.900	None		
SBR61-6119	820-830	74166	2.8	3.0	94.0	.2	7.4	7.2	.897	None		
SBR61-6120	830-840	74167	1.5	1.9	95.6	1.0	4.0a	4.6		None		
SBR61-6121	840-850	74168	1.8	2.0	95.2	1.0	4.7a	4.8		None		
SBR61-6122	850-860	74169	1.9	2.0	95.5	.6	4.9a	4.8		None		
SBR61-6123	860-870	74170	1.3	1.3	95.9	1.5	3.4a	3.1		None		

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale; c - more than 1.0 but less than 3.0 gallons of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Handel No. 1 well (Uteland Butte well 4) (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	Thair		Oil	Water					Oil	Water	
SBR61-6124	870-880	74171	1.2	2.0	96.3	0.5	3.1a	4.8		None	
SBR61-6125	880-890	74172	1.4	1.9	96.0	.7	3.6a	4.6		None	
SBR61-6126	890-900	74173	1.0	1.5	97.0	.5	2.5a	3.6		None	
SBR61-6127	900-910	74174	1.3	2.5	95.6	.6	3.5a	6.0		None	
SBR61-6128	910-920	74175	1.4	2.4	95.1	1.1	3.6a	5.8		None	
SBR61-6129	920-930	74176	1.2	1.3	96.8	.7	3.1a	3.1		None	
SBR61-6130	930-940	74177	1.1	1.7	96.7	.5	2.9a	4.1		None	
SBR61-6131	940-950	74178	1.2	1.7	96.4	.7	3.0a	4.1		None	
SBR61-6132	950-960	74179	1.6	1.7	96.0	.7	4.1a	4.1		None	
SBR61-6133	960-970	74180	1.6	1.7	95.9	.8	4.1a	4.1		None	
SBR61-6134	970-980	74181	1.2	3.0	95.3	.5	3.2a	7.2		None	
SBR61-6135	980-990	74182	1.2	1.7	96.2	.9	3.0a	4.1		None	
SBR61-6136	990-1000	74183	.8	2.2	96.3	.7	2.2a	5.3		None	
SBR61-6137	1000-1010	74184	.8	2.3	96.5	.4	2.8a	5.5		None	
SBR61-6138	1010-1020	74185	1.6	2.1	95.8	.5	4.1a	5.0		None	
SBR61-6139	1020-1030	74186	1.4	1.7	96.3	.6	3.8a	4.1		None	
SBR61-6140	1030-1040	74187	1.2	2.0	96.2	.6	3.1a	4.8		None	
SBR61-6141	1040-1050	74188	1.2	1.5	96.8	.5	3.1a	3.6		None	
SBR61-6142	1050-1060	74189	1.2	1.5	96.7	.6	3.1a	3.6		None	
SBR61-6143	1060-1070	74190	1.0	1.8	96.7	.5	2.5a	4.3		None	
SBR61-6144	1070-1080	74191	1.9	2.0	95.1	1.0	5.0a	4.8		None	
SBR61-6145	1080-1090	74192	1.2	1.9	96.3	.6	3.2a	4.5		None	
SBR61-6146	1090-1100	74193	1.3	1.2	97.1	.4	3.3a	2.9		None	
SBR61-6147	1100-1110	74194	1.6	1.6	96.2	.6	4.3a	3.8		None	
SBR61-6148	1110-1120	74195	1.5	1.3	96.9	.3	3.9a	3.1		None	
SBR61-6149	1120-1130	74196	1.5	1.9	96.0	.6	3.8a	4.5		None	
SBR61-6150	1130-1140	74197	1.7	1.4	96.3	.6	4.4a	3.4		None	
SBR61-6151	1140-1150	74198	2.0	1.6	95.5	.9	5.1a	3.8		None	
SBR61-6152	1150-1160	74199	1.6	1.3	96.7	.4	4.2a	3.1		None	
SBR61-6153	1160-1170	74200	1.8	1.2	96.4	.6	4.6a	2.9		None	

a - Specific gravity estimated due to insufficient oil.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (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	
SBR61-6154	1170-1180	74201	3.2	1.5	94.5	0.8	8.4	3.6	0.908	None	
SBR61-6155	1180-1190	74202	2.6	1.7	94.9	.8	6.8	4.1	.922	None	
SBR61-6156	1190-1200	74203	1.7	1.6	96.0	.7	4.5a	3.8		None	
SBR61-6157	1200-1210	74204	2.0	1.3	96.3	.4	5.1a	3.2		None	
SBR61-6158	1210-1220	74205	2.6	1.5	95.3	.5	6.9	3.6	.917	None	
SBR61-6159	1220-1230	74206	.8	1.2	97.6	.4	2.2a	2.9		None	
SBR61-6160-63	1230-1270						c				
SBR61-6164-66	1270-1300						No oil				
SBR61-6167	1300-1310						b				
SBR61-6168	1310-1320	74207	1.1	1.8	96.3	.8	2.9a	4.3		None	
SBR61-6169	1320-1330	74208	1.6	1.6	96.2	.6	4.2a	3.8		None	
SBR61-6170	1330-1340	74209	2.1	1.5	95.6	.8	5.3a	3.6		None	
SBR61-6171	1340-1350	74210	2.4	1.1	95.7	.8	6.1	2.6	.925	None	
SBR61-6172	1350-1360	74211	2.7	.9	95.4	1.0	7.0	2.2	.929	None	
SBR61-6173	1360-1370	74212	3.1	.7	95.1	1.1	8.0	1.8	.926	None	
SBR61-6174	1370-1380	74213	3.0	.7	95.3	1.0	7.7	1.8	.926	None	
SBR61-6175	1380-1390	74214	2.5	1.0	95.9	.6	6.4	2.4	.925	None	
SBR61-6176	1390-1400	74215	2.8	.9	95.5	.8	7.3	2.0	.925	None	
SBR61-6177	1400-1410	74216	2.8	.8	95.5	.9	7.1	2.0	.925	None	
SBR61-6178	1410-1420	74217	2.8	.8	95.7	.7	7.3	1.9	.924	None	
SBR61-6179	1420-1430	74218	2.9	.8	95.3	1.0	7.5	2.0	.925	None	
SBR61-6180	1430-1440	74219	2.4	1.0	95.7	.9	6.1	2.4	.923	None	
SBR61-6181	1440-1450	74220	2.3	1.0	95.9	.8	5.9	2.5	.923	None	
SBR61-6182	1450-1460	74221	3.1	1.0	95.0	.9	8.0	2.4	.923	None	
SBR61-6183	1460-1470	74222	2.8	1.0	95.4	.8	7.1	2.4	.924	None	
SBR61-6184	1470-1480	74223	2.5	1.2	95.4	.9	6.4	2.9	.920	None	
SBR61-6185	1480-1490	74224	3.1	1.0	95.0	.9	8.1	2.4	.916	None	
SBR61-6186	1490-1500	74225	2.8	1.0	95.4	.8	7.3	2.4	.919	None	
SBR61-6187	1500-1510	74226	4.3	.8	93.5	1.4	11.1	2.0	.923	None	
SBR61-6188	1510-1520	74227	4.5	.5	94.0	1.0	11.7	1.2	.926	None	

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale; c - more than 1.0 but less than 3.0 gallons of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (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		
Laramie	Their		Oil	Water					Oil	Water	
SBR61-6189	1520-1530	74228	4.9	1.1	93.0	1.0	12.9	2.6	0.912	None	
SBR61-6190	1530-1540	74229	5.6	.9	92.0	1.5	14.7	2.3	.910	None	
SBR61-6191	1540-1550	74230	3.6	1.2	94.4	.8	9.6	2.9	.908	None	
SBR61-6192	1550-1560	74231	2.6	1.2	95.4	.8	6.9	2.9	.915	None	
SBR61-6193	1560-1570	74232	3.0	1.2	95.0	.8	8.0	2.9	.914	None	
SBR61-6194	1570-1580	74233	3.0	1.3	95.0	.7	7.9	3.1	.913	None	
SBR61-6195	1580-1590	74234	3.3	1.2	94.8	.7	8.6	2.9	.914	None	
SBR61-6196	1590-1600	74235	2.9	1.4	94.9	.8	7.5	3.4	.913	None	
SBR61-6197	1600-1610	74236	2.6	1.6	95.0	.8	6.9	3.8	.913	None	
SBR61-6198	1610-1620	74237	1.1	2.0	95.9	1.0	2.8a	4.8		None	
SBR61-6199	1620-1630	74238	2.6	1.5	95.0	.9	6.9	3.6	.915	None	
SBR61-6200	1640-1650	74239	2.7	1.7	94.3	1.3	7.1	4.1	.919	None	
SBR61-6201	1650-1660	74240	3.2	1.5	94.2	1.1	8.2	3.6	.924	None	
SBR61-6202	1660-1670	74241	3.6	1.4	93.8	1.2	9.4	3.4	.924	None	
SBR61-6203	1670-1680	74242	3.6	1.1	94.0	1.3	9.4	2.6	.927	None	
SBR61-6204	1680-1690	74243	3.1	1.3	94.5	1.1	8.1	3.1	.912	None	
SBR61-6205	1690-1700	74244	2.2	1.9	94.9	1.0	5.7	4.6	.911	None	
SBR61-6206	1700-1710	74245	3.0	1.4	94.5	1.1	7.8	3.4	.917	None	
SBR61-6207	1710-1720	74246	3.3	1.1	94.3	1.3	8.7	2.5	.909	None	
SBR61-6208	1720-1730	74247	6.7	1.0	90.1	2.2	17.8	2.4	.909	None	
SBR61-6209	1730-1740	74248	4.7	.8	92.9	1.6	12.3	2.0	.916	None	
SBR61-6210	1740-1750	74249	4.3	.8	93.4	1.5	11.3	1.9	.909	None	
SBR61-6211	1750-1760	74250	4.9	1.1	92.3	1.7	13.0	2.5	.903	None	
SBR61-6212	1760-1770	74251	7.2	.9	90.1	1.8	19.2	2.2	.904	None	
SBR61-6213	1770-1780	74252	4.5	.9	93.0	1.6	12.1	2.0	.903	None	
SBR61-6214	1780-1790	74253	3.9	.9	93.7	1.5	10.4	2.2	.904	None	
SBR61-6215	1790-1800	74254	4.6	1.0	93.0	1.4	12.1	2.4	.905	None	
SBR61-6216	1800-1810	74255	1.6	1.2	96.2	1.0	4.1a	2.9		None	
SBR61-6217	1810-1820	74256	.5	2.1	96.6	.8	1.4a	5.0		None	
SBR61-6218	1820-1830	74257	1.0	1.6	96.5	.9	2.7a	3.8		None	

a - Specific gravity estimated due to insufficient oil.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (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	
SBR61-6219	1830-1840	74258	0.7	1.2	97.3	0.8	1.8a	2.9		None	
SBR61-6220	1840-1850	74259	1.5	1.3	96.0	1.2	4.0a	3.1		None	
SBR61-6221	1850-1860	74260	.2	.4	98.4	1.0	.6a	1.0		None	
SBR61-6222-23	1860-1880						b				
SBR61-6224	1880-1890	74261	2.0	1.4	95.0	1.6	5.2a	3.4		None	
SBR61-6225	1890-1900	74262	2.8	1.3	94.3	1.6	7.3	3.1	0.903	None	
SBR61-6226	1900-1910	74263	2.9	1.6	95.3	.2	7.6	3.8	.899	None	
SBR61-6227	1910-1920	74264	3.1	1.9	94.0	1.0	8.2	4.5	.906	None	
SBR61-6228	1920-1930	74265	2.4	1.0	96.0	.6	6.4	2.4	.902	None	
SBR61-6229	1930-1940	74266	1.2	.8	97.5	.5	3.2a	1.9		None	
SBR61-6230	1940-1950						b				
SBR61-6231	1950-1960	74267	1.1	1.0	97.5	.4	3.0a	2.3		None	
SBR61-6232-33	1960-1980						b				
SBR61-6234-36	1980-2010						Trace				
SBR61-6247	2010-2020						b				
SBR61-6248	2020-2030						Trace				
SBR61-6249-51	2030-2060						c				
SBR61-6252	2060-2070						b				
SBR61-6253-55	2070-2100						c				
SBR61-6256	2100-2110	74268	1.0	1.6	97.0	.4	2.6a	3.8		None	
SBR61-6257	2110-2120	74269	1.2	1.9	96.3	.6	3.1a	4.6		None	
SBR61-6258	2120-2130	74270	1.2	1.8	96.6	.4	3.2a	4.3		None	
SBR61-6259	2130-2140	74271	1.2	1.5	96.9	.4	3.1a	3.6		None	
SBR61-6260	2140-2150	74272	.9	1.4	97.3	.4	2.4a	3.4		None	
SBR61-6261	2150-2160	74273	1.1	1.2	97.0	.7	2.9a	2.9		None	
SBR61-6262	2160-2170	74274	1.2	1.5	96.7	.6	3.0a	3.6		None	
SBR61-6263	2170-2180	74275	.9	1.8	96.5	.8	2.3a	4.3		None	
SBR61-6264	2180-2190	74276	.8	1.3	97.5	.4	2.1a	3.1		None	
SBR61-6265	2190-2200						c				
SBR61-6266	2200-2210						Trace				

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale; c - More than 1.0 but less than 3.0 gallons of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (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
SBR61-6267	2210-2220						b				
SBR61-6268	2220-2230	74277	0.9	2.1	96.7	0.3	2.3a	5.0		None	
SBR61-6269	2230-2240	74278	1.5	1.1	97.1	.3	3.8a	2.6		None	
SBR61-6270	2240-2250	74279	1.4	1.5	96.6	.5	3.5a	3.6		None	
SBR61-6271	2250-2260	74280	1.3	1.5	96.8	.4	3.4a	3.6		None	
SBR61-6272	2260-2270	74281	.9	1.0	97.6	.5	2.3a	2.4		None	
SBR61-6273-75	2270-2300						Trace				
SBR61-6276-77	2300-2320						No oil				
SBR61-6278-79	2320-2340						c				
SBR61-6280-81	2340-2360						No oil				
SBR61-6282-83	2360-2380						Trace				
SBR61-6284-89	2380-2440						No oil				
SBR61-6290	2440-2450						Trace				
SBR61-6291	2450-2460	74282	1.7	1.5	96.2	.6	4.4a	3.6		None	
SBR61-6292	2460-2470	74283	2.8	1.5	94.9	.8	7.4	3.6	0.899	None	
SBR61-6293	2470-2480	74284	2.0	1.3	96.1	.6	5.2a	3.1		None	
SBR61-6294	2480-2490	74285	.8	1.1	97.5	.6	2.0a	2.6		None	
SBR61-6295	2490-2500						c				
SBR61-6296-98	2500-2530						Trace				
SBR61-6299	2530-2540						b				
SBR61-6300	2540-2550						c				
SBR61-6301	2550-2560						Trace				
SBR61-6302-03	2560-2580						b				
SBR61-6304-05	2580-2600						Trace				
SBR61-6306	2600-2610						No oil				
SBR61-6307-08	2610-2630						Trace				
SBR61-6309-23	2630-2780						No oil				
SBR61-6324-25	2780-2800						Trace				
SBR61-6326-40	2800-2950						No oil				
SBR61-6341	2950-2960						Trace				

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale; c - more than 1.0 but less than 3.0 gallons of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (Con.)

Sample number		Run No.	Yield of product				Gal. per ton		Specific gravity of oil at 60°/60° F.	Properties of spent shale Tendency to coke	Remarks
			Weight percent		Spent shale	Gas + loss					
Laramie	Their		Oil	Water					Oil	Water	
SBR61-6342-47	2960-3020						No oil				
SBR61-6348	3020-3030						b				
SBR61-6349-51	3030-3060						No oil				
SBR61-6352	3070-3080						c				
SBR61-6353	3080-3090						b				
SBR61-6354-57	3090-3130						Trace				
SBR61-6358-60	3130-3160						No oil				
SBR61-6361	3160-3170						Trace				
SBR61-6362-65	3170-3210						No oil				
SBR61-6366	3210-3220						b				
SBR61-6367-73	3220-3290						No oil				
SBR61-6374	3290-3300						b				
SBR61-6375-77	3300-3330						No oil				
SBR61-6378	3330-3340						b				
SBR61-6379-6402	3340-3580						No oil				
SBR61-6403	3580-3590						b				
SBR61-6404	3590-3600						No oil				
SBR61-6405	3600-3610						Trace				
SBR61-6406-08	3610-3640						b				
SBR61-6409	3640-3650						Trace				
SBR61-6410	3650-3660						No oil				
SBR61-6411	3660-3670						Trace				
SBR61-6412-13	3670-3690						No oil				
SBR61-6414	3690-3700						b				
SBR61-6415-28	3700-3840						No oil				
SBR61-6429-30	3840-3860						b				
SBR61-6431	3860-3870	74286	1.2	1.9	96.1	0.8	3.0a	4.6		None	
SBR61-6432	3870-3880	74287	2.2	2.0	95.2	.6	5.9	4.8	0.881	None	
SBR61-6433	3880-3890	74288	2.7	2.0	94.6	.7	7.3	4.8	.883	None	
SBR61-6434	3890-3900	74289	2.0	1.8	95.6	.6	5.1	4.3	.883	None	

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale; c - more than 1.0 but less than 3.0 gallons of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Phillips Petroleum Company's Hendel No. 1 well (Uteland Butte well 4) (Con.)

Sample number		Run No.	Yield of product				Gal. per ton		Specific gravity of oil at 60°/60° F.	Properties of spent shale Tendency to coke	Remarks
Laramie	Their		Weight percent		Spent shale	Gas + loss	Oil	Water			
SBR61-6435	3900-3910	74290	0.7	1.6	97.2	0.5	1.7a	3.8		None	
SBR61-6436	3920-3930						Trace				
SBR61-6437-38	3930-3950						No oil				
SBR61-6439	3950-3960						Trace				
SBR61-6440	3960-3970						b				
SBR61-6441	3970-3980						Trace				
SBR61-6442-43	3980-4000						No oil				
SBR61-6444-45	4000-4020						Trace				
SBR61-6446	4020-4030						b				
SBR61-6447	4030-4040	74291	1.8	2.0	95.3	.9	4.7a	4.8		None	
SBR61-6448	4040-4050	74292	2.5	1.6	95.0	.9	6.7	4.0	0.887	None	
SBR61-6449	4050-4060	74293	1.1	2.3	96.2	.4	2.8a	5.5		None	
SBR61-6450-52	4060-4090						b				
SBR61-6453-56	4090-4130						Trace				
SBR61-6457-77	4130-4340						No oil				
SBR61-6478	4340-4350						b				

a - Specific gravity estimated due to insufficient oil; b - less than 1.0 gallon of oil per ton of shale.

Drill cutting samples received March 29, 1961; assays made on air-dried samples.

Laramie Petroleum Research Center, Laramie, Wyoming. Illustration No. SBR-3498P Sheet No. 8 of 8 sheets August 10, 1961