

28' of 30 L&S
58' of 25
295' of 15

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Havenstrite Oil Company's No. 11X - 21H Ute Trail well drilled in the NW1/4, NW1/4, NW1/4 of Sec. 21, T. 10S., R. 22 E., Uintah County, Utah

Derrick floor elevation 5187 feet

| Sample number | | Run No. | Yield of product | | | | Specific gravity | | Properties of spent shale | Remarks |
|---------------|-----------|---------|------------------|-------|------------|--------------|------------------|---------------------|---------------------------|---------|
| | | | Weight percent | | Gas + loss | Gal. per ton | | of oil at 60/60° F. | | |
| Laramie | Their | | Oil | Water | | Spent shale | | | Oil | Water |
| SBR58-3131-3 | 1100-1130 | | | | | | none | | | |
| SBR58-3134 | 1130-1140 | | | | | | trace | | | |
| SBR58-3135-42 | 1140-1220 | | | | | | none | | | |
| SBR58-3143-4 | 1220-1240 | | | | | | trace | | | |
| SBR58-3145-6 | 1240-1260 | | | | | | none | | | |
| SBR58-3147-8 | 1260-1280 | | | | | | trace | | | |
| SBR58-3149-50 | 1280-1300 | | | | | | b | | | |
| SBR58-3151 | 1300-1310 | 55127 | 1.8 | 0.4 | 97.0 | 0.8 | 4.7a | 0.8 | | none |
| SBR58-3152 | 1310-1320 | 55128 | 2.9 | .2 | 96.2 | .7 | 7.5 | .6 | 0.927 | none |
| SBR58-3153 | 1320-1330 | 55129 | 2.1 | .2 | 96.9 | .8 | 5.3 | .6 | .927 | none |
| SBR58-3154 | 1330-1340 | 55130 | 2.1 | .2 | 96.9 | .8 | 5.5 | .4 | .926 | none |
| SBR58-3155 | 1340-1350 | 55131 | 2.6 | .2 | 96.3 | .9 | 6.5 | .5 | .937 | none |
| SBR58-3156 | 1350-1360 | 55132 | 1.8 | .2 | 97.0 | 1.0 | 4.7a | .5 | | none |
| SBR58-3157 | 1360-1370 | 55133 | 1.9 | .3 | 96.6 | 1.2 | 4.7a | .8 | | none |
| SBR58-3158 | 1370-1380 | 55134 | 2.5 | .2 | 95.9 | 1.4 | 6.4 | .6 | .920 | none |
| SBR58-3159 | 1380-1390 | 55135 | 1.9 | .3 | 96.7 | 1.1 | 4.8a | .7 | | none |
| SBR58-3160 | 1390-1400 | 55136 | 2.6 | .3 | 96.6 | .5 | 6.7 | .7 | .935 | none |
| SBR58-3161 | 1400-1410 | 55137 | 2.3 | .5 | 96.7 | .5 | 5.9 | 1.2 | .925 | none |
| SBR58-3162 | 1410-1420 | 55138 | 2.8 | .5 | 96.0 | .7 | 7.1 | 1.2 | .934 | none |
| SBR58-3163 | 1420-1430 | 55139 | 2.3 | .4 | 96.8 | .5 | 6.0 | .8 | .925 | none |
| SBR58-3164 | 1430-1440 | 55140 | 4.0 | .4 | 94.7 | .9 | 10.4 | 1.0 | .919 | none |
| SBR58-3165 | 1440-1450 | 55141 | 6.3 | .5 | 91.9 | 1.3 | 16.4 | 1.1 | .925 | none |
| SBR58-3166 | 1450-1460 | 55142 | 5.5 | .4 | 93.0 | 1.1 | 14.3 | .8 | .928 | none |
| SBR58-3167 | 1460-1470 | 55143 | 2.8 | .2 | 96.0 | 1.0 | 7.4 | .5 | .927 | none |
| SBR58-3168 | 1470-1480 | 55144 | 6.6 | .4 | 91.5 | 1.5 | 17.2 | .8 | .921 | none |
| SBR58-3169 | 1480-1490 | 55145 | 1.7 | .3 | 97.5 | .5 | 4.3a | .7 | | none |
| SBR58-3170 | 1490-1500 | 55146 | 2.3 | .2 | 96.7 | .8 | 5.9 | .5 | .925 | none |
| SBR58-3171 | 1500-1510 | 55147 | 4.0 | .2 | 94.8 | 1.0 | 10.2 | .6 | .926 | none |
| SBR58-3172 | 1510-1520 | 55148 | 3.6 | .2 | 95.3 | .9 | 9.1 | .6 | .934 | none |
| SBR58-3173 | 1520-1530 | 55149 | 3.5 | .3 | 95.3 | .9 | 9.1 | .6 | .931 | none |

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

Drill cutting samples received August 16, 1957; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Havenstrite Oil Company's No. 11X - 21H Ute Trail well drilled in the NW1/4, NW1/4, NW1/4
of Sec. 21, T. 10S., R. 22 E., Uintah County, Utah

Derrick floor elevation 5187 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 | | |
| Laramie | Their | | Oil | Water | | | | | | Oil | Water |
| SER58-3174 | 1530-1540 | 55150 | 3.7 | 0.2 | 95.1 | 1.0 | 9.7 | 0.4 | 0.925 | none | |
| SER58-3175 | 1540-1550 | 55151 | 3.8 | .2 | 95.0 | 1.0 | 9.8 | .6 | .933 | none | |
| SER58-3176 | 1550-1560 | 55152 | 3.8 | .1 | 95.2 | .9 | 9.9 | .2 | .933 | none | |
| SER58-3177 | 1560-1570 | 55153 | 3.8 | .2 | 95.1 | .9 | 9.8 | .5 | .930 | none | |
| SER58-3178 | 1570-1580 | 55154 | 4.1 | .1 | 94.8 | 1.0 | 10.6 | .2 | .930 | none | |
| SER58-3179 | 1580-1590 | 55155 | 3.0 | .2 | 95.9 | .9 | 7.8 | .5 | .931 | none | |
| SER58-3180 | 1590-1600 | 55156 | 2.4 | .2 | 96.7 | .7 | 6.1 | .5 | .934 | none | |
| SER58-3181 | 1600-1610 | 55157 | 2.2 | .3 | 96.8 | .7 | 5.7 | .7 | .935 | none | |
| SER58-3182 | 1610-1620 | 55158 | 2.8 | .3 | 96.0 | .9 | 7.1 | .7 | .935 | none | |
| SER58-3183 | 1620-1630 | 55159 | 3.1 | .2 | 95.9 | .8 | 7.9 | .6 | .937 | none | |
| SER58-3184 | 1630-1640 | 55160 | 3.5 | .3 | 95.2 | 1.0 | 9.1 | .6 | .933 | none | |
| SER58-3185 | 1640-1650 | 55161 | 3.5 | .4 | 95.4 | .7 | 9.3 | .8 | .931 | none | |
| SER58-3186 | 1650-1660 | 55162 | 4.1 | .3 | 94.8 | .8 | 10.7 | .6 | .925 | none | |
| SER58-3187 | 1660-1670 | 55163 | 4.1 | .3 | 94.4 | 1.2 | 10.6 | .7 | .925 | none | |
| SER58-3188 | 1670-1680 | 55164 | 4.7 | .3 | 93.6 | 1.4 | 12.1 | .7 | .931 | none | |
| SER58-3189 | 1680-1690 | 55165 | 5.0 | .4 | 93.3 | 1.3 | 12.8 | 1.0 | .926 | none | |
| SER58-3190 | 1690-1700 | 55166 | 5.5 | .4 | 92.8 | 1.3 | 14.3 | 1.0 | .921 | none | |
| SER58-3191 | 1700-1710 | 55167 | 5.3 | .4 | 93.0 | 1.3 | 13.7 | 1.1 | .922 | none | |
| SER58-3192 | 1710-1720 | 55168 | 4.5 | .4 | 94.0 | 1.1 | 11.6 | 1.1 | .918 | none | |
| SER58-3193 | 1720-1730 | 55169 | 4.0 | .6 | 94.1 | 1.3 | 10.4 | 1.4 | .921 | none | |
| SER58-3194 | 1730-1740 | 55170 | 4.2 | .4 | 94.2 | 1.2 | 10.8 | 1.1 | .925 | none | |
| SER58-3195 | 1740-1750 | 55171 | 3.2 | .6 | 95.3 | .9 | 8.3 | 1.4 | .923 | none | |
| SER58-3196 | 1750-1760 | 55172 | 3.8 | .5 | 94.6 | 1.1 | 9.4 | 1.2 | .925 | none | |
| SER58-3197 | 1760-1770 | 55173 | 3.7 | .6 | 94.6 | 1.1 | 9.6 | 1.3 | .923 | none | |
| SER58-3198 | 1770-1780 | 55174 | 4.3 | .6 | 94.0 | 1.1 | 11.1 | 1.3 | .932 | none | |
| SER58-3199 | 1780-1790 | 55175 | 4.2 | .4 | 94.0 | 1.4 | 10.9 | 1.0 | .934 | none | |
| SER58-3200 | 1790-1800 | 55176 | 4.7 | .4 | 93.7 | 1.2 | 12.3 | .8 | .924 | none | |
| SER58-3201 | 1800-1810 | 55177 | 5.6 | .3 | 92.8 | 1.3 | 14.4 | .8 | .926 | none | |
| SER58-3202 | 1810-1820 | 55178 | 4.9 | .3 | 93.2 | 1.6 | 12.7 | .7 | .927 | none | |
| SER58-3203 | 1820-1830 | 55179 | 6.9 | .4 | 90.9 | 1.8 | 17.9 | 1.0 | .923 | none | |

Drill cutting samples received August 16, 1957; assays made on air-dried samples.

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Havenstrite Oil Company's No. 11X - 21H Ute Trail well drilled in the NW1/4, NW1/4, NW1/4
of Sec. 21, T. 10S., R. 22 E., Uintah County, Utah

Derrick floor elevation 5187 feet

| | | | 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 | | | |
| SER58-3204 | 1830-1840 | 55180 | 6.6 | 0.3 | 91.2 | 1.9 | 17.3 | 0.7 | 0.917 | none | |
| SER58-3205 | 1840-1850 | 55181 | 5.6 | .4 | 92.4 | 1.6 | 14.8 | .8 | .915 | none | |
| SER58-3206 | 1850-1860 | 55182 | 5.2 | .5 | 92.8 | 1.5 | 13.7 | 1.2 | .917 | none | |
| SER58-3207 | 1860-1870 | 55183 | 7.8 | .5 | 90.0 | 1.7 | 20.5 | 1.2 | .910 | none | |
| SER58-3208 | 1870-1880 | 55184 | 7.3 | .3 | 90.7 | 1.7 | 19.1 | .8 | .912 | none | 58' of 25 |
| SER58-3209 | 1880-1890 | 55185 | 14.5 | .5 | 82.1 | 2.9 | 38.4 | 1.2 | .906 | medium | 28' of 30 |
| SER58-3210 | 1890-1900 | 55186 | 9.6 | .4 | 87.9 | 2.1 | 25.5 | 1.0 | .904 | slight | |
| SER58-3211 | 1900-1910 | 55187 | 9.5 | .4 | 88.1 | 2.0 | 25.2 | 1.0 | .903 | slight | |
| SER58-3212 | 1910-1920 | 55188 | 7.7 | .5 | 90.0 | 1.8 | 20.4 | 1.1 | .906 | none | 29' of 15 |
| SER58-3213 | 1920-1930 | 55189 | 7.1 | .6 | 90.5 | 1.8 | 18.5 | 1.4 | .919 | none | |
| SER58-3214 | 1930-1940 | 55190 | 4.2 | .6 | 93.5 | 1.7 | 11.0 | 1.3 | .918 | none | |
| SER58-3215 | 1940-1950 | 55191 | 2.6 | .6 | 95.7 | 1.1 | 6.8 | 1.4 | .924 | none | |
| SER58-3216 | 1950-1960 | 55192 | 1.6 | .9 | 97.0 | .5 | 4.0a | 2.2 | | none | |
| SER58-3217 | 1960-1970 | 55193 | .7 | .4 | 98.6 | .3 | 1.8a | .8 | | none | |
| SER58-3218 | 1970-1980 | 55194 | .7 | .4 | 98.5 | .4 | 1.7a | 1.1 | | none | |
| SER58-3219 | 1980-1990 | 55195 | .4 | .8 | 98.4 | .4 | .9a | 2.0 | | none | |
| SER58-3220 | 1990-2000 | 55196 | .5 | 1.0 | 98.2 | .3 | 1.2a | 2.4 | | none | |
| SER58-3221 | 2000-2010 | 55197 | 1.8 | 1.3 | 96.1 | .8 | 4.4a | 3.1 | | none | |
| SER58-3222 | 2010-2020 | 55198 | 6.2 | .9 | 91.6 | 1.3 | 16.5 | 2.2 | .907 | none | |
| SER58-3223 | 2020-2030 | 55199 | 3.9 | 1.0 | 94.0 | 1.1 | 10.4 | 2.4 | .913 | none | |
| SER58-3224 | 2030-2040 | 55201 | 4.2 | .7 | 94.1 | 1.0 | 11.2 | 1.7 | .906 | none | |
| SER58-3225 | 2040-2050 | 55202 | 5.5 | .6 | 92.5 | 1.4 | 14.5 | 1.6 | .911 | none | |
| SER58-3226 | 2050-2060 | 55203 | 5.7 | 1.2 | 91.9 | 1.2 | 14.9 | 3.0 | .911 | none | |
| SER58-3227 | 2060-2070 | 55204 | 4.6 | .9 | 93.6 | .9 | 12.1 | 2.2 | .913 | none | |
| SER58-3228 | 2070-2080 | 55205 | 1.3 | 1.7 | 96.6 | .4 | 3.3a | 4.1 | | none | |

a. - specific gravity estimated due to insufficient oil.

Drill cutting samples received August 16, 1957; assays made on air-dried samples.

Petroleum and Oil Shale Experiment Station, Laramie, Wyoming, Illustration No. SBR-2348P

April 10, 1958

OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Havenstrite Oil Company's No. 11X - 21H Ute Trail well drilled in the NW1/4, NW1/4, NW1/4
of Sec. 21, T. 10S., R. 22 E., Uintah County, Utah

Derrick floor elevation 5187 feet

| Sample number | | Run No. | Yield of product | | | | 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 | |
| SBR58-3229 | 2080-2090 | 55206 | 2.7 | 1.0 | 95.5 | .8 | 6.9 | 2.4 | 0.925 | none | |
| SBR58-3230 | 2090-2100 | 55207 | 4.3 | 1.4 | 93.4 | .9 | 11.0 | 3.5 | .923 | none | |
| SBR58-3231 | 2100-2110 | 55208 | 2.6 | 1.3 | 95.5 | .6 | 6.7 | 3.1 | .916 | none | |
| SBR58-3232 | 2110-2120 | 55209 | .7 | 1.7 | 97.0 | .6 | 1.8a | 4.1 | | none | |
| SBR58-3233 | 2120-2130 | 55210 | .7 | 2.1 | 96.8 | .4 | 1.7a | 5.0 | | none | |
| SBR58-3234 | 2130-2140 | 55211 | .6 | 1.1 | 97.7 | .6 | 1.5a | 2.6 | | none | |
| SBR58-3235 | 2140-2150 | 55212 | .6 | 1.9 | 96.9 | .6 | 1.4a | 4.6 | | none | |
| SBR58-3236 | 2150-2160 | 55213 | .7 | 2.7 | 95.9 | .7 | 1.7a | 6.5 | | none | |
| SBR58-3237 | 2160-2170 | 55214 | 3.6 | 2.0 | 93.3 | 1.1 | 9.3 | 4.8 | .917 | none | |
| SBR58-3238 | 2170-2180 | 55215 | 1.8 | 1.9 | 95.2 | 1.1 | 4.5a | 4.6 | | none | |
| SBR58-3239 | 2180-2190 | 55216 | 3.8 | 1.8 | 93.2 | 1.2 | 10.0 | 4.3 | .919 | none | |
| SBR58-3240 | 2190-2200 | 55217 | 3.8 | 2.7 | 92.0 | 1.5 | 9.9 | 6.5 | .921 | none | |
| SBR58-3241 | 2200-2210 | 55218 | 2.2 | 1.8 | 95.3 | .7 | 5.7 | 4.3 | .916 | none | |
| SBR58-3242 | 2210-2220 | 55219 | 2.6 | 1.0 | 95.6 | .8 | 6.8 | 2.4 | .906 | none | |
| SBR58-3243 | 2220-2230 | 55220 | 1.8 | .6 | 97.0 | .6 | 4.6a | 1.3 | | none | |
| SBR58-3244 | 2230-2240 | 55221 | 2.0 | 1.5 | 95.7 | .8 | 5.3 | 3.5 | .904 | none | |
| SBR58-3245 | 2240-2250 | 55222 | 1.8 | .6 | 96.6 | 1.0 | 4.4a | 1.6 | | none | |
| SBR58-3246 | 2250-2260 | 55223 | 1.6 | 1.1 | 96.5 | .8 | 4.0a | 2.6 | | none | |
| SBR58-3247 | 2260-2270 | 55224 | .8 | 2.0 | 96.6 | .6 | 1.9a | 4.8 | | none | |
| SBR58-3248 | 2270-2280 | 55225 | 1.2 | 1.4 | 96.5 | .9 | 3.0a | 3.4 | | none | |
| SBR58-3249 | 2280-2290 | 55226 | 3.5 | 1.1 | 94.3 | 1.1 | 9.3 | 2.6 | .899 | none | |
| SBR58-3250 | 2290-2300 | 55227 | 3.4 | 1.6 | 93.9 | 1.1 | 9.0 | 3.8 | .909 | none | |
| SBR58-3251 | 2300-2310 | 55228 | 3.4 | 2.3 | 93.1 | 1.2 | 9.0 | 5.4 | .908 | none | |
| SBR58-3252 | 2310-2320 | 55229 | 4.3 | 2.4 | 92.1 | 1.2 | 11.3 | 5.8 | .908 | none | |
| SBR58-3253 | 2320-2330 | 55230 | 3.6 | 2.4 | 93.0 | 1.0 | 9.6 | 5.6 | .901 | none | |
| SBR58-3254 | 2330-2340 | 55231 | 2.4 | 1.2 | 95.6 | .8 | 6.5 | 2.9 | .899 | none | |
| SBR58-3255 | 2340-2350 | 55232 | 1.6 | 1.0 | 96.7 | .7 | 4.1a | 2.4 | | none | |
| SBR58-3256 | 2350-2360 | | | | | | b | | | | |
| SBR58-3257-60 | 2360-2400 | | | | | | none | | | | |
| SBR58-3261-2 | 2400-2420 | | | | | | trace | | | | |

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

Drill cutting samples received August 16, 1957; assays made on air-dried samples.

OIL-SHALF ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Havenstrite Oil Company's No. 11X - 21H Ute Trail well drilled in the NW1/4, NW1/4, NW1/4
of Sec. 21, T. 10S., R. 22 E., Uintah County, Utah

Derrick floor elevation 5187 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 | | |
| Laramie | Thair | | Oil | Water | | | | | Oil | Water | |
| SER58-3263 | 2420-2430 | 55233 | 1.1 | 2.9 | 95.0 | 1.0 | 2.8a | 7.0 | | none | |
| SER58-3264 | 2430-2440 | 55234 | 3.1 | 2.0 | 93.9 | 1.0 | 8.1 | 4.8 | 0.903 | none | |
| SER58-3265 | 2440-2450 | 55235 | 1.8 | 1.7 | 95.3 | 1.2 | 4.6a | 4.1 | | none | |
| SER58-3266 | 2450-2460 | 55236 | 2.7 | 1.7 | 94.8 | .8 | 7.1 | 4.1 | .893 | none | |
| SER58-3267 | 2460-2470 | 55237 | 4.4 | 1.6 | 92.8 | 1.2 | 11.7 | 3.8 | .902 | none | |
| SER58-3268 | 2470-2480 | 55238 | 2.2 | 1.3 | 95.4 | 1.1 | 5.9 | 3.1 | .907 | none | |
| SER58-3269 | 2480-2490 | 55239 | 2.2 | 1.1 | 96.1 | .6 | 5.6 | 2.6 | .920 | none | |
| SER58-3270 | 2490-2500 | 55240 | 1.0 | 1.8 | 96.4 | .8 | 2.5a | 4.2 | | none | |
| SER58-3271 | 2500-2510 | 55241 | 2.1 | 1.9 | 95.3 | .7 | 5.5 | 4.6 | .908 | none | |
| SER58-3272 | 2510-2520 | | | | | | c | | | | |
| SER58-3273-4 | 2520-2540 | | | | | | trace | | | | |
| SER58-3275 | 2540-2550 | | | | | | none | | | | |
| SER58-3276 | 2550-2560 | | | | | | b | | | | |
| SER58-3277-8 | 2560-2580 | | | | | | none | | | | |
| SER58-3279 | 2580-2590 | | | | | | b | | | | |
| SER58-3280-4 | 2590-2640 | | | | | | none | | | | |
| SER58-3285 | 2640-2650 | | | | | | b | | | | |
| SER58-3286 | 2650-2660 | | | | | | trace | | | | |
| SER58-3287-93 | 2660-2730 | | | | | | none | | | | |
| SER58-3294 | 2730-2740 | | | | | | trace | | | | |
| SER58-3295-315 | 2740-2950 | | | | | | none | | | | |
| SER58-3316 | 2950-2960 | 55242 | 1.5 | 2.1 | 95.8 | .6 | 3.8a | 5.2 | | none | |
| SER58-3317 | 2960-2970 | 55243 | 4.3 | 1.6 | 93.1 | 1.0 | 11.2 | 4.0 | .906 | none | |
| SER58-3318 | 2970-2980 | 55244 | 1.4 | .9 | 97.1 | .6 | 3.6a | 2.2 | | none | |
| SER58-3319 | 2980-2990 | | | | | | trace | | | | |
| SER58-3320 | 2990-3000 | | | | | | 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 August 16, 1957; assays made on air-dried samples.

Petroleum and Oil Shale Experiment Station, Laramie, Wyoming, Illustration No. SER-2350P

April 10, 1958