INTRODUCTION

In southwestern Wyoming and adjacent areas, thermally mature sedimentary rocks have generated oil and gas (map A). The purpose of this report is to describe the thermal maturity of rocks in the region by depicting the areal distribution, depth, and thickness of strata distinguished by specific values of vitrinite reflectance (percent R_o).

Reflectance values were determined from vitrinite in samples of shale and coal, which were obtained from outcrops and from boreholes drilled for oil and gas, as well as from the calorific value or heating value (BTU per lb) of samples of coal, which were obtained from outcrops, mines, and shallow boreholes (less than 650 ft deep). Approximately 350 samples of cores and cuttings from about 120 deep boreholes (table 1), and about 100 samples from near-surface localities were evaluated in this study. They were obtained from marine and nonmarine strata of Cretaceous age in the Cloverly Formation, Thermopolis Shale, Frontier Formation, Hilliard Shale, Mesaverde Group, Lewis Shale, Fox Hills Sandstone and Lance Formation, and from nonmarine rocks of Tertiary age in the Fort Union and Wasatch Formations.

Median reflectance values of 0.6 and 1.3 percent are emphasized in this report, because they generally define the maturity of rocks that have generated oil (informally called the "oil window"). Reflectance values of more than 0.7 percent characterize rocks that have generated gas. Maximum generation of gas generally begins when the R_o is about 1.3 percent.

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The thermal maturity of rocks at outcrops, in coal mines, and in shallow boreholes in and near the thrust belt of southwestern Wyoming was determined mainly from reports by Veatch (1907), Glass (1975), Schroeder (1976), M'Gonigle (1980), Wallem (1981), and McClurg and others (1983). Maturation values derived from coal samples from outcrops, mines, and shallow boreholes on the Rock Springs uplift were obtained from reports by Schultz (1910), Glass (1975), Roehler (1979a, 1979b; written commun., 1985), McClurg and others (1983), and R. W. Stanton (oral commun., 1985). The maturity of coal in the Great Divide basin was estimated from analyses listed by Masursky and Pipiringos (1959), Pipiringos (1961), and Masursky (1962). N. H. Bostick (written commun., 1984) supplied vitrinite reflectance values for coal from shallow boreholes on the west flank of the Washakie basin. On the east flank of the Washakie basin, maturation data from outcropping coal were reported by Ball and Stebinger (1910) and data from cores and cuttings of coal were supplied by C. S. V. Barclay (written commun., 1984).

VITRINITE REFLECTANCE VALUES AND ASSOCIATED SAMPLE DEPTHS

Vitrinite is the most common constituent of the coalified plant material in sedimentary rocks. Vitrinite reflectance is widely used to indicate the thermal maturity of sedimentary organic matter (Bostick, 1979; Stach and others, 1982), because it increases with increasing paleotemperature and depth. The reflectance (percent R_o) is determined generally from optical measurements of the reflectivity of vitrinite particles at random orientation in oil. For a rock sample, the reflectance of many vitrinite particles is measured and a median or mean reflectance value is calculated. Median reflectance values are herein assigned to all samples from deep boreholes (table 1) and to several samples from shallow boreholes and outcrops. For some of these samples, the population of measured reflectance values does not have a normal (Gaussian) distribution and has outliers. Medians were used in this investigation because they are an acceptable measure of central tendency under these conditions.

The vitrinite reflectance of most samples of coal from outcrops, mines, and shallow boreholes was estimated from reported calorific (heating) values. The relationship between the calorific (heating) value (BTU per lb) for dry, ash-free coal and the reflectance value from the constituent vitrinite is depicted on figure 1. Data for figure 1 were obtained from 68 samples from localities in Wyoming, Colorado, and Utah. Increasing R_o values generally correspond to increasing calorific values as shown on figure 1.

A plot of present depth (ft) versus median measured reflectance value (percent R_o) for about 350 samples, mainly cores from southwestern Wyoming and northwestern Colorado, shows that the percent R_o increases as the depth increases, in a nonlinear relationship. A plot of depth (ft) versus median measured reflectance value for the samples, on a logarithmic scale, is more linear (fig. 2). The correlation coefficient for these variables is about 0.80. The maturity data were obtained from samples that represent a diversity of lithologies, depositional environments, ages, structural settings, and current geothermal gradients in a large region. The effects of this diversity were confined by dividing the region into five structurally defined areas (fig. 3). These areas conform approximately to the Washakie and Sand Wash basins (T. 10–19 N., R. 90–98 W.), the Great Divide basin (T. 20–29 N., R. 90–98 W.), the Rock Springs uplift (T. 10–29 N., R. 99–107 W.), the Moxa arch (T. 12–19 N., R. 108–114 W.), and the northern part of the Green River Basin (T. 30–36 N., R. 108–114 W.). A regression equation for the relationship between depth and vitrinite reflectance was computed for each area. Plots of these data indicate that 9 of the 137 values from the northern Green River Basin, 2 of the 56 values from the Great Divide basin, and 1 of the 64 values from the Rock Springs uplift are anomalous (outliers) and, therefore, they were disregarded in recomputing the regression equations. Calculations from the selected data provided the following results: Washakie and Sand Wash basins (fig. 4), 40 samples, correlation coefficient of 0.92; Great Divide basin (fig. 5), 54 samples, correlation coefficient of 0.84; Rock Springs uplift (fig. 6), 63 samples, correlation coefficient of 0.82; Moxa arch (fig. 7), 56 samples, correlation coefficient of 0.83; and northern Green River Basin (fig. 8), 128 samples, correlation coefficient of 0.90. The slope of the regression line for each area and the data from the associated samples were used to extrapolate, for every sample, the depths of specified reflectance values and the reflectance values at specified depths. Where more than one sample was obtained from a single borehole and, consequently, more than one value for depth or percent R_o was extrapolated, the median of the extrapolated values was selected and assigned to the borehole locality.

Variations in the extrapolated values for a single borehole are caused ultimately by imprecision in the measured R_o values. Reported reflectance values for about the same depth in one borehole may vary because of slight differences in the type of organic matter; differences in analytical techniques; retardation of R_o caused by the presence of anomalous, indigenous, unmigrated bitumen; and the presence of reworked vitrinite. Moreover, since the thermal maturity of strata in the region increases gradually with depth, any rounded value for vitrinite reflectance is associated with a range of depths. Therefore, at boreholes that yielded only one sample, the extrapolated depth or the extrapolated percent R_o is approximate. At boreholes that yielded several samples, the several predicted values of depth or percent R_o are represented by a median value.

THERMAL MATURITY OF SURFACE ROCKS

The thermal maturity of surface rocks (map B) was determined: (1) by extrapolation of reflectance values from deep boreholes, using regression equations for depth and percent R_o; (2) from measured reflectance of vitrinite in shale and coal from shallow boreholes, mines, and outcrops; and (3) from estimated reflectance derived from calorific analyses of coal in shallow boreholes, mines, and outcrops.

From south to north in the thrust belt of Wyoming, the measured and estimated reflectance values for rocks at the surface range from less than 0.5 percent, near Evanston, to more than 1.9 percent, west of Big Piney, and to about 0.7 percent southwest of Bondurant. Wallem (1981) reported most of these data and concluded that the most mature rocks were once deeply buried beneath the Absaroka thrust plate.

Sparse data in the Green River Basin range from less than 0.3 percent R_o, in the northern part of the basin in areas east of Big Piney and La Barge and in the southern part of the basin, to more than 0.4 percent R_o near Big Piney and La Barge, near Moxa and Church Butte, and southeast of Pinedale. Beds at the surface, along parts of the crest of the Rock Springs uplift, apparently have maturity values greater than 0.5 percent R_o and possibly as much as 0.75 percent R_o. East of the Rock Springs uplift, the maturity ranges from less than 0.3 percent R_o, in most of the Great Divide and Washakie basins, to more than 0.5 percent R_o on the west flank of the Sierra Madre uplift, on the west side of the Hanna basin, and possibly in an area in the Great Divide basin.

DEPTHS TO THERMAL MATURITY OF 0.6 PERCENT R_o

The maturity value of 0.6 percent R_o commonly represents the threshold of the peak generation of oil in source rocks (Dow, 1977; Waples, 1980; J. G. Palacas and G. E. Claypool, oral commun., 1984). Depths to an R_o of 0.6 percent in southwestern Wyoming and adjoining areas (map C) were calculated from the data shown in table 1. These depths are less than 5,000 ft in the vicinity of Big Piney and La Barge, along the crest of the Rock Springs uplift, and on the east side of the Washakie basin. The extrapolated depths to 0.6 percent R_o are more than 8,000 ft in areas on the southwest flank of the Wind River Range, near the crest of the Moxa arch in the vicinity of Fontenelle, and in the southern part of the Green River Basin. Depths exceeding 8,000 ft are also indicated for areas in the southern part of the Great Divide basin, in the northwestern part of the Washakie basin, and in the Sand Wash basin.

DEPTHS TO THERMAL MATURITY OF 1.3 PERCENT R_o

The maturity value of 1.3 percent R_o commonly characterizes source rocks that are at the approximate end of peak generation of oil and at the approximate threshold of peak generation of gas. This reflectance value is extrapolated to depths of less than 12,000 ft along the crestline of the Moxa arch (map D), in the area of Big Piney and La Barge, and in the vicinity of Little America and Church Butte. Depths of less than 12,000 ft are also extrapolated for areas east of Fontenelle, on the Rock Springs uplift, and in the Great Divide, Washakie, and Sand Wash basins. Depths of more than 15,000 ft to 1.3 percent R_o are indicated in areas along the southwestern flank of the Wind River Range, in the southern part of the Green River Basin, and possibly in the northern part of the Washakie basin.

In southwestern Wyoming and adjoining areas, the strata that contain organic material and yield R_o values of 0.6–1.3 percent probably have generated oil and gas. If carbonaceous matter were uniformly distributed in the strata of the region, lateral changes in the thickness of rocks having R_o values of 0.6–1.3 percent might correspond to lateral changes in the amounts of generated hydrocarbons. Thicknesses of strata that yield values of 0.6–1.3 percent R_o were calculated for the five structurally defined areas in the region. These thicknesses are about 3,750 ft in the Great Divide basin, 5,710 ft in the Washakie basin, 7,035 ft in the Rock Springs uplift, 5,200 ft in the Moxa arch, and 6,810 ft in the northern part of the Green River Basin. Ignoring other factors, more hydrocarbons would have been generated in the area of the Rock Springs uplift, where the thickness of these strata is greatest.

RELATION OF GEOLOGIC STRUCTURE AND THERMAL MATURITY

Structural and thermal maturity profiles of strata in southwestern Wyoming, from the Sierra Madre uplift, south of Rawlins, to the Thrust Belt, in the vicinity of Kemmerer, are depicted on figure 9. Basins and uplifts in the region are indicated by a profile of the top of the Lower Cretaceous Mowry Shale. Data for this profile were obtained from logs of the boreholes listed in table 2. The thermal maturity of the rocks is shown by profiles of extrapolated 0.6 percent and 1.3 percent R_o values. Elevation of the 1.3 percent R_o value is apparently highest in the Moxa arch and the Rock Springs uplift and lowest in the Green River Basin and in the northeastern flank of the Washakie basin. Similarly, elevation of the 0.6 percent R_o value is highest in the Rock Springs uplift and lowest in the Green River and Washakie basins. Neither of the two profiles parallel the top of the Mowry Shale. This is weak evidence that the rocks reached their present maturity after most of the regional deformation. However, the calorific values (heating values) of shallow coal indicate that some reflectance values at the surface on the Rock Springs uplift are in the range of 0.45–0.75 percent (map B). The apparent maximum maturity of this coal does not agree with the extrapolated R_o values in the subsurface (fig. 9). Presumably, this conflict is a consequence of both insufficient samples from the subsurface and imprecision in determining vitrinite reflectance from the calorific value of the coal samples. Nevertheless, if the profile for 0.6 percent R_o is extended to the surface on the flanks of the Rock Springs uplift (fig. 9), it would nearly parallel the profile of the top of the Mowry Shale.

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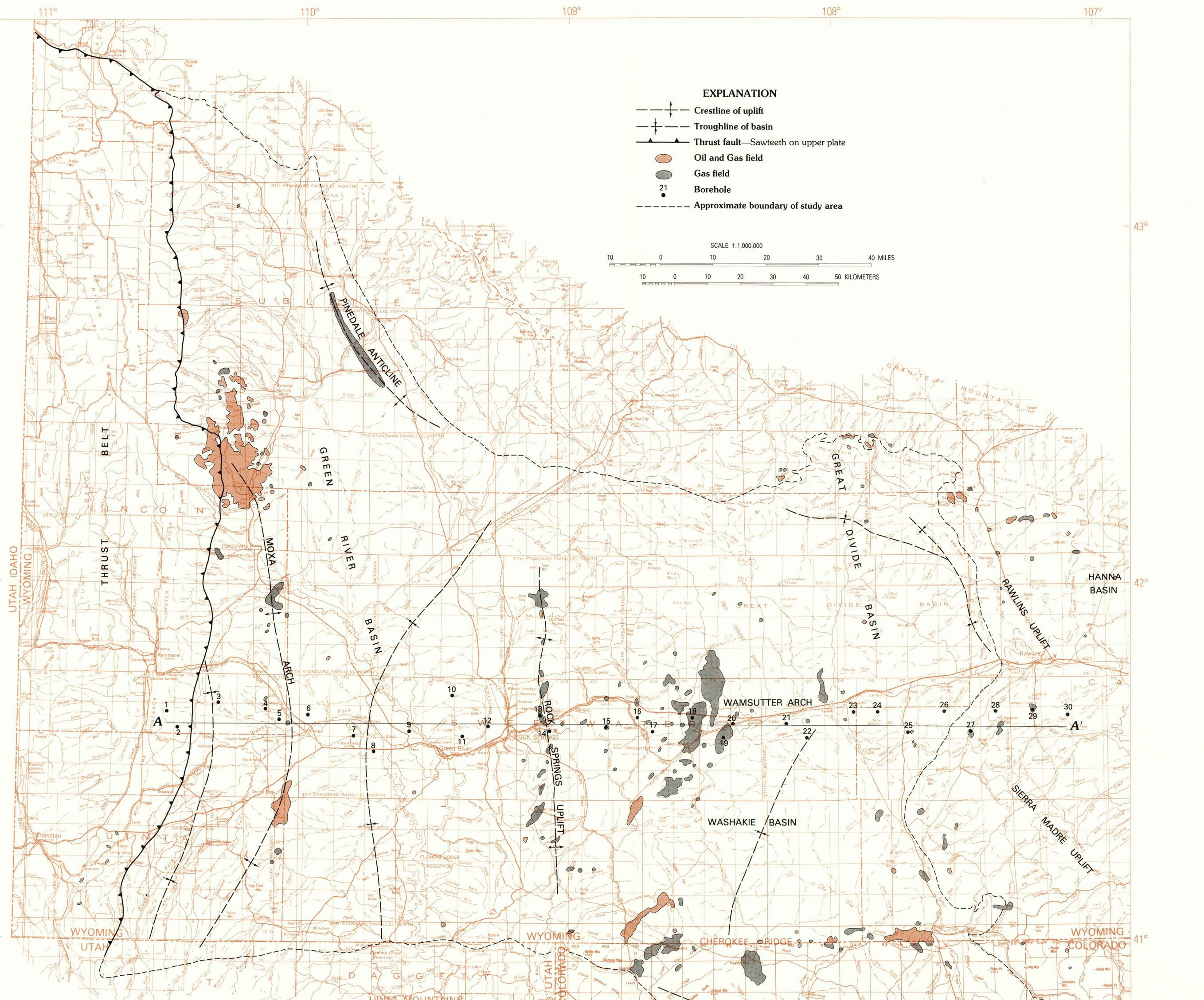
TABLE 1.—Localities and vitrinite reflectance values for samples from boreholes in southwestern Wyoming and adjoining areas, arranged according to townships
[Leader (—) indicates data unavailable; KB, kelly bushing; R_o, vitrinite reflectance]

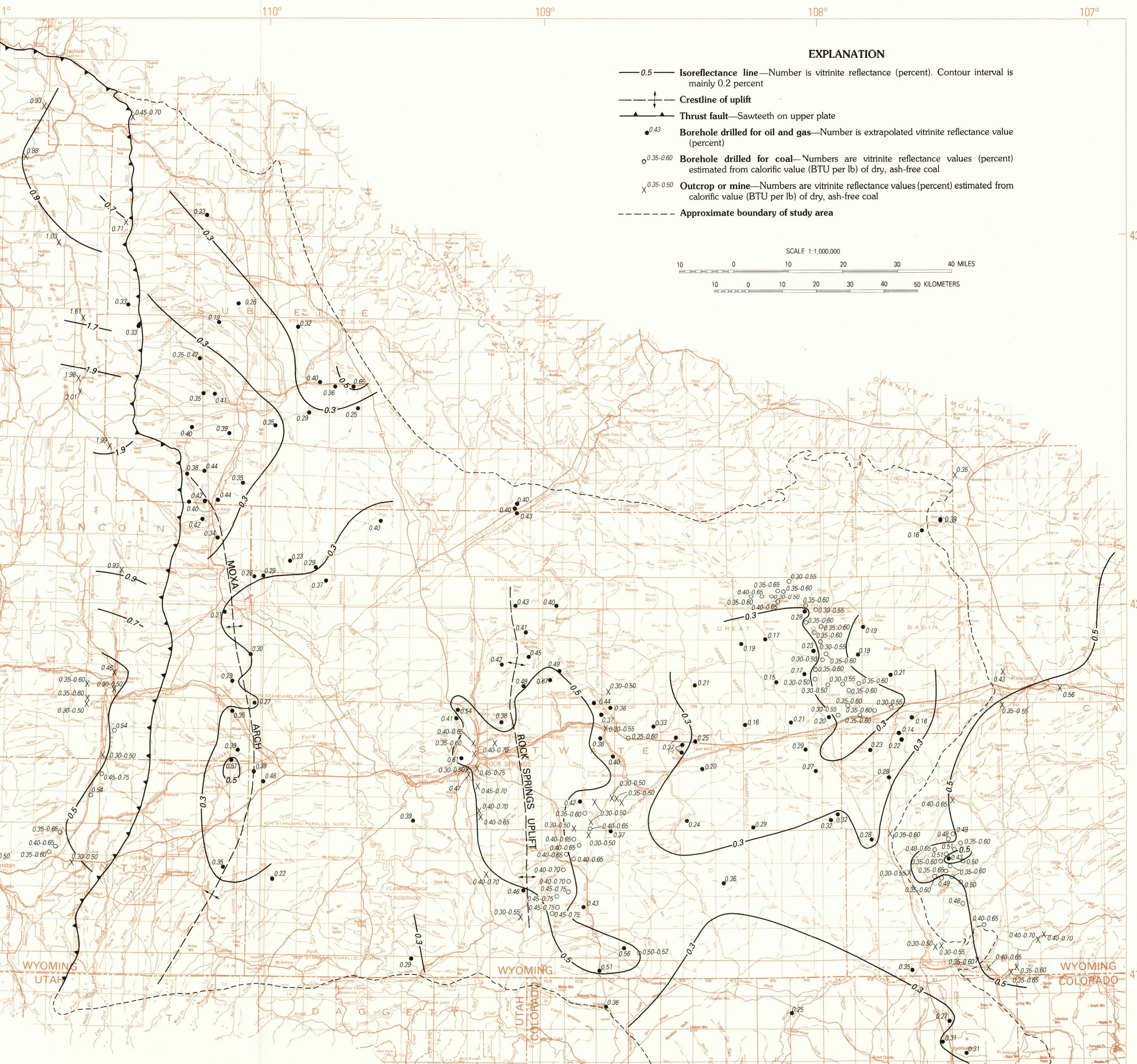
Operator	Lease name	Location Sec.	T.	R.	County	State	Elevation (KB, ft)	Sample type	Depth (ft)	R_o (percent)
Anadarko Production Co.	Johnson 1-28	28	10N.	90W.	Moffat	Colo.	7313	Core	4400.0	0.51
Tenneco Oil Co.	Mud Springs Federal 1	14	10N.	91W.	Moffat	Colo.	6795	Core	6508.5	.57
Do.	do.	14	10N.	91W.	Moffat	Colo.	6795	Core	6531.8	.72
Texas American Co.	Burnett Federal 25-5	25	11N.	91W.	Moffat	Colo.	—	Core	4239.0	.44
Do.	do.	25	11N.	91W.	Moffat	Colo.	—	Core	4337.0	.43
Anadarko Production Co.	Little Snake Unit 1	18	11N.	95W.	Moffat	Colo.	6007	Core	8229.0	.62
Do.	do.	18	11N.	95W.	Moffat	Colo.	6007	Core	8231.0	.64
Mountain Fuel Supply Co.	Sparks Ranch 1	8	11N.	101W.	Moffat	Colo.	6881	Cuttings	4864.0	.51
Do.	do.	8	11N.	101W.	Moffat	Colo.	6881	Cuttings	4905.0	.52
Do.	do.	8	11N.	101W.	Moffat	Colo.	6881	Cuttings	5109.0	.65
Do.	Sugar Loaf 1	9	11N.	101W.	Moffat	Colo.	7043	Core	7486.0	.52
Superior Oil Co.	Jons 1-A	7	12N.	91W.	Carbon	Wyo.	6292	Core	3057.4	.55
Do.	do.	7	12N.	91W.	Carbon	Wyo.	6292	Core	3446.2	.46
Mountain Fuel Supply Co.	Canyon Creek 27	16	12N.	101W.	Sweetwater	Wyo.	7171	Core	4834.0	.54
Do.	do.	16	12N.	101W.	Sweetwater	Wyo.	7171	Core	4886.0	.73
Forest Oil Corp.	Gov't. 1-3	3	12N.	107W.	Sweetwater	Wyo.	7026	Core	15498.0	.90
Jerry Chambers-Oil Producer	Kemmerer-Federal 1-13	13	14N.	102W.	Sweetwater	Wyo.	7165	Cuttings	3718.0	.56
Sundance Oil Co.	Big Piney Federal 1	24	14N.	119W.	Uinta	Wyo.	7387	Core	5280.0	.48
Koch Exploration Co.	Adobe Town Unit 1	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	8000.0	.90
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	10000.0	.93
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	11000.0	1.23
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	13000.0	1.61
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	15000.0	2.04
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	16000.0	2.34
Do.	do.	20	15N.	97W.	Sweetwater	Wyo.	6806	Cuttings	17000.0	2.35
Ensource Inc.	Britz-Federal 1-31	31	15N.	103W.	Sweetwater	Wyo.	7142	Core	4814.0	.49
Do.	Federal 2-31	31	15N.	103W.	Sweetwater	Wyo.	7181	Core	5213.0	.85
Woods Petroleum Corp.	Leo II Unit 1	20	15N.	111W.	Sweetwater	Wyo.	6687	Core	11856.0	.74
Mountain Fuel Supply Co.	Hank Hollow Unit 1	10	15N.	113W.	Uinta	Wyo.	6929	Core	12728.0	1.29
Amerada Petroleum Corp.	Deep Creek Unit 2	32	16N.	90W.	Carbon	Wyo.	7314	Core	2430.0	.57
Pan American Petroleum Corp.	Barrel Springs 3	11	16N.	93W.	Carbon	Wyo.	6658	Core	8403.0	.75
Do.	do.	11	16N.	93W.	Carbon	Wyo.	6658	Core	8417.0	.69
Mountain Fuel Supply Co.	Jack Knife Springs Unit 2	2	16N.	101W.	Sweetwater	Wyo.	7109	Core	5332.0	.60
Do.	do.	2	16N.	101W.	Sweetwater	Wyo.	7109	Core	6223.0	.54
Champlin Petroleum Corp.	Brady Deep Unit 29-D	11	16N.	101W.	Sweetwater	Wyo.	7156	Core	10778.0	.78
Amoco Production Co.	Champlin 336 Amoco-D1	13	17N.	94W.	Sweetwater	Wyo.	6566	Core	9622.0	.95
Ladd Petroleum Corp.	Federal 1-22-74	22	17N.	94W.	Sweetwater	Wyo.	6687	Core	10225.0	1.01
Amoco Production Co.	Emigrant Trail Unit 2	32	17N.	96W.	Sweetwater	Wyo.	7159	—	11217.5	1.01
Do.	do.	32	17N.	96W.	Sweetwater	Wyo.	7159	—	11359.0	1.04
Do.	do.	32	17N.	96W.	Sweetwater	Wyo.	7159	—	11389.0	1.04
Do.	do.	32	17N.	96W.	Sweetwater	Wyo.	7159	—	13752.0	1.59
Do.	do.	32	17N.	96W.	Sweetwater	Wyo.	7159	—	13754.0	1.54
Do.	Long Draw Unit 1	29	17N.	98W.	Sweetwater	Wyo.	6935	Core	8713.8	.63
Do.	do.	29	17N.	98W.	Sweetwater	Wyo.	6935	Core	8716.8	.64
K. D. Luff, Inc.	Amoco-Champlin-UPRR 2-1	1	17N.	102W.	Sweetwater	Wyo.	6872	Core	6391.4	.67
Do.		1	17N.	102W.	Sweetwater	Wyo.	6871	Core	6393.0	1.45
Colorado Oil and Gas Co.	Rye Grass 1-26	26	17N.	107W.	Sweetwater	Wyo.	7014	Core	9216.0	.77
Do.	do.	26	17N.	107W.	Sweetwater	Wyo.	7014	Core	9285.0	64
Do.	do.	26	17N.	107W.	Sweetwater	Wyo.	7014	Core	9358.0	.82
U. S. Geological Survey	Branch of Coal Resources	2	17N.	117W.	Uinta	Wyo.	—	Core	360.0	.54
Michigan-Wisconsin Pipeline Co.	Creston 1-9	9	18N.	92W.	Carbon	Wyo.	6965	Core	8816.0	.73
Do.	do.	9	18N.	92W.	Carbon	Wyo.	6965	Core	8817.0	.78
Amoco Production Co.	Champlin 337 Amoco 1	5	18N.	94W.	Sweetwater	Wyo.	6765	Core	9783.0	.81
Texaco Inc.	Table Rock Unit 22	2	18N.	98W.	Sweetwater	Wyo.	7044	Core	13920.5	.97
Amoco Production Co.	Champlin 358 C-1	19	18N.	111W.	Sweetwater	Wyo.	6407	Core	11978.0	1.61
Do.	Champlin 206 Amoco-B 1	11	18N.	112W.	Sweetwater	Wyo.	6365	Core	11537.0	1.25
Do.	Fillmore W-1	1	19N.	92W.	Carbon	Wyo.	7021	Core	10094.0	.67
Do.	do.	1	19N.	92W.	Carbon	Wyo.	7021	Core	10103.0	.72
Do.	Champlin 242 Amoco 1	13	19N.	93W.	Carbon	Wyo.	6979	Core	9461.0	.68
Do.	Desert Flats II 1	13	19N.	95W.	Sweetwater	Wyo.	6901	Core	9817.0	.95
Do.		13	19N.	95W.	Sweetwater	Wyo.	6901	Core	10049.0	.85
Forest Oil Corp.	Arch Unit 40-7-5	7	19N.	98W.	Sweetwater	Wyo.	6780	Core	4930.0	.62
Do.	UPRR Unit 1-9-G	9	19N.	98W.	Sweetwater	Wyo.	6802	Core	5757.0	.49
Do.	Arch Unit 9-18-2	18	19N.	98W.	Sweetwater	Wyo.	6758	Core	4903.0	.48
Do.	Arch Unit 60-1-6	1	19N.	99W.	Sweetwater	Wyo.	6990	Core	4302.0	.55
Do.		1	19N.	99W.	Sweetwater	Wyo.	6990	Core	4602.0	.68
Do.	Arch Unit 23-13-4	13	19N.	99W.	Sweetwater	Wyo.	6848	Core	4620.0	.49
K. D. Luff, Inc.	Amoco-Champlin 3-3	3	19N.	101W.	Sweetwater	Wyo.	6633	Core	6571.0	.61
Forest Oil Corp.	Overland Trail 25-1	25	19N.	101W.	Sweetwater	Wyo.	6705	Core	6921.0	.66
Amoco Production Co.	Amoco-Texas Oil and Gas 1	29	19N.	105W.	Sweetwater	Wyo.	6581	Core	12971.0	1.59
Marathon Oil Co.	Wilson Ranch Unit 5	20	19N.	112W.	Lincoln	Wyo.	6332	Core	11216.0	1.23
Amoco Production Co.	Champlin 186 Amoco-G 1	31	19N.	112W.	Lincoln	Wyo.	6332	Core	11933.0	1.71
U. S. Geological Survey	Branch of Coal Resources	4	19N.	116W.	Lincoln	Wyo.	—	Core	313.0	.54
Amoco Production Co.	Buck Draw Unit 2	17	20N.	91W.	Sweetwater	Wyo.	6853	Core	10235.8	.72
Do.	Champlin 345 Amoco-A 1	35	20N.	92W.	Sweetwater	Wyo.	7063	Core	8726.0	.49
Do.	Tierney Unit 1	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10330.8	.96
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10398.3	.99
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10425.3	.98
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10474.0	.89
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10493.0	.91
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10519.8	.91
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10575.0	1.01
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10597.0	.91
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10856.3	.97
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	10886.0	.93
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	11100.0	.94
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	11416.5	.96
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	11680.3	1.09
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	11724.0	1.18
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	11937.4	1.01
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	12045.3	1.12
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	12121.3	1.17
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	12439.0	1.20
Do.	do.	15	20N.	94W.	Sweetwater	Wyo.	6858	Core	12690.0	1.34
Do.	Champlin 441 Amoco-A 1	21	20N.	95W.	Sweetwater	Wyo.	6682	Core	9132.0	.79
Do.	do.	21	20N.	95W.	Sweetwater	Wyo.	6682	Core	9156.0	.83
Do.	do.	21	20N.	95W.	Sweetwater	Wyo.	6682	Core	9178.0	.77
Do.	do.	21	20N.	95W.	Sweetwater	Wyo.	6682	Core	9195.5	.72
Do.	do.	21	20N.	95W.	Sweetwater	Wyo.	6682	Core	9204.0	.83
Forest Oil Corp.	Gov't. 30-1	30	20N.	96W.	Sweetwater	Wyo.	6846	Core	7967.0	.52
K. D. Luff Inc.	Champlin 7-29	29	20N.	99W.	Sweetwater	Wyo.	7059	Core	3739.0	.48
Do.	do.	29	20N.	99W.	Sweetwater	Wyo.	7059	Core	9491.0	.59
Amoco Production Co.	Champlin 259 Amoco 1	1	20N.	101W.	Sweetwater	Wyo.	7018	Core	8641.0	.69
Do.	Champlin 172 Amoco B 1	15	20N.	101W.	Sweetwater	Wyo.	6822	Core	7911.0	.66
K. D. Luff Inc.	Amoco-Champlin 2-21 C	21	20N.	104W.	Sweetwater	Wyo.	6562	Core	4179.0	.52
Davis Oil Co.	Dines Unit 1	7	20N.	105W.	Sweetwater	Wyo.	6679	Core	12854.0	1.39
Do.	Dines Unit 2	18	20N.	105W.	Sweetwater	Wyo.	6763	Core	13112.0	1.08
C and K Petroleum, Inc.	Seven Mile Unit 13	2	20N.	112W.	Sweetwater	Wyo.	6441	Core	11324.0	.85
Do.	Chrisman and others 1	18	20N.	112W.	Lincoln	Wyo.	6453	Core	11110.8	1.03
Do.	do.	18	20N.	112W.	Lincoln	Wyo.	6453	Core	11173.5	1.15
Amoco Production Co.	Champlin 536 Amoco-A1	1	21N.	92W.	Sweetwater	Wyo.	6988	Core	12051.0	1.30
Do.	do.	1	21N.	92W.	Sweetwater	Wyo.	6988	Core	12054.5	1.12
Do.	do.	1	21N.	92W.	Sweetwater	Wyo.	6988	Core	12076.0	1.45
Do.	do.	1	21N.	92W.	Sweetwater	Wyo.	6988	Core	12125.0	1.10
Do.	Siberia Ridge Unit 7A	5	21N.	94W.	Sweetwater	Wyo.	6779	Core	10424.0	.79
Do.	Champlin 201-1	9	21N.	95W.	Sweetwater	Wyo.	6671	Core	9716.0	.75
Do.	do.	9	21N.	95W.	Sweetwater	Wyo.	6671	Core	9716.0	.50
Union Pacific Railroad Corp.	Desert Springs Unit 16	13	21N.	98W.	Sweetwater	Wyo.	6841	Core	5724.0	.48
Do.	do.	13	21N.	98W.	Sweetwater	Wyo.	6841	Core	5820.0	.52
Do.	Desert Springs Unit 15	25	21N.	98W.	Sweetwater	Wyo.	6793	Core	5468.0	.81
Amoco Production Co.	Champlin 195 1	35	21N.	101W.	Sweetwater	Wyo.	6703	Core	7998.6	.79
Do.	Champlin 231 Amoco 1	9	21N.	102W.	Sweetwater	Wyo.	7541	Core	7124.0	1.10
Do.	do.	9	21N.	102W.	Sweetwater	Wyo.	7541	Core	7296.0	1.18
K. D. Luff, Inc	Amoco Champlin 3-15	15	21N.	103W.	Sweetwater	Wyo.	7031	Core	5283.0	.87
Do.	do.	15	21N.	103W.	Sweetwater	Wyo.	7031	Core	5324.0	.56
Amoco Production Co.	Whiskey Buttes Unit 19	15	21N.	112W.	Lincoln	Wyo.	6563	Core	6834.0	.53
Do.	do.	15	21N.	112W.	Lincoln	Wyo.	6563	Core	11033.0	.95
Do.	Champlin 533 Amoco-A1	13	22N.	93W.	Sweetwater	Wyo.	6807	—	12395.0	1.17
Do.	do.	13	22N.	93W.	Sweetwater	Wyo.	6807	Core	12412.0	1.22
Pacific Transmission Supply Co.	Federal 3-10A	10	22N.	94W.	Sweetwater	Wyo.	6804	Core	11447.0	1.08
Do.	do.	10	22N.	94W.	Sweetwater	Wyo.	6804	—	11564.0	1.28
Do.	do.	10	22N.	94W.	Sweetwater	Wyo.	6804	Core	11606.0	1.27
Amoco Production Co.	Champlin 438 Amoco-A1	5	22N.	96W.	Sweetwater	Wyo.	6738	Core	9776.0	.80
Do.	do.	5	22N.	96W.	Sweetwater	Wyo.	6738	Core	9926.0	.82
K. D. Luff, Inc.	Amoco-Champlin 3-35	35	22N.	102W.	Sweetwater	Wyo.	7188	Core	7910.0	.88
Do.	Amoco-Champlin 1-23	23	22N.	103W.	Sweetwater	Wyo.	7126	Core	6991.0	.75
Do.	Amoco-Champlin 1-25	25	22N.	104W.	Sweetwater	Wyo.	7096	Core	6844.0	.79
Do.	do.	25	22N.	104W.	Sweetwater	Wyo.	7096	Core	6869.0	.61
Amoco Production Co.	Whiskey Buttes Unit 3	19	22N.	111W.	Sweetwater	Wyo.	6486	Core	10918.0	.92
Do.	Champlin 532 Amoco-A1	19	23N.	92W.	Sweetwater	Wyo.	6587	Core	13228.0	1.32
Energy Reserves Group, Inc.	Red Desert Unit 1-5	5	23N.	94W.	Sweetwater	Wyo.	6490	—	12214.0	1.67
Amoco Production Co.	Champlin 320 Amoco B1	31	23N.	95W.	Sweetwater	Wyo.	6575	Core	9937.0	.73
K. D. Luff, Inc	Amoco-Champlin 2-27	27	23N.	103W.	Sweetwater	Wyo.	7354	Core	7902.0	.74
Davis Oil Co.	Slate Creek-Federal 1	8	23N.	112W.	Lincoln	Wyo.	6583	Core	10537.0	.92
Woods Petroleum Corp.	Steamboat Mountain Unit 3	34	24N.	102W.	Sweetwater	Wyo.	7528	Core	6174.0	.65
Do.	do.	34	24N.	102W.	Sweetwater	Wyo.	7528	Core	6212.0	.61
Elf Aquataine Petroleum Co.	McBride 33-32	32	24N.	103W.	Sweetwater	Wyo.	7098	Core	9066.5	.83
General Petroleum Co	Unit 62A-9	9	24N.	109W.	Sweetwater	Wyo.	6634	Core	6242.0	.71
Do.	do.	9	24N.	109W.	Sweetwater	Wyo.	6634	Core	7138.0	.76
Do.	do.	9	24N.	109W.	Sweetwater	Wyo.	6634	Core	8384.0	.71
C and K Petroleum, Inc.	Lincoln Road 2	3	24N.	111W.	Sweetwater	Wyo.	6680	Core	9569.0	.81
Do.	do.	3	24N.	111W.	Sweetwater	Wyo.	6680	Core	9607.0	.72
Do.	Lincoln Road 4	5	24N.	111W.	Sweetwater	Wyo.	6696	Core	9307.5	.67
General Petroleum Co.	Unit 1	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	3998.0	.50
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	4019.0	.50
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6086.0	.50
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6105.0	.66
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6110.0	.69
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6738.0	.60
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6749.0	.57
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6788.0	.63
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	6812.0	.68
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7757.0	.58
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7771.0	.53
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7800.0	.61
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7813.0	.56
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7883.0	.56
Do.	do.	28	25N.	109W.	Sweetwater	Wyo.	6807	Core	7905.0	.55
Energetics Inc.	Federal 32-22	22	25N.	110W.	Sweetwater	Wyo.	6895	Core	5293.0	.40
Sinclair Oil and Gas Corp.	Lost Soldier-A OW-4	10	26N.	90W.	Sweetwater	Wyo.	6867	Core	681.7	.43
Amoco Production Co.	Champlin 528	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12012.0	.99
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12035.0	.91
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12041.0	.95
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12078.0	.85
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12091.0	.97
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12095.0	.93
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12107.0	1.01
Do.	do.	19	26N.	90W.	Sweetwater	Wyo.	7329	Core	12123.0	.96
Rainbow Resources Co.	Pacific Creek-Federal 1-3	3	26N.	103W.	Sweetwater	Wyo.	7000	Core	12717.5	1.04
Do.	do.	3	26N.	103W.	Sweetwater	Wyo.	7000	Core	12731.0	1.06
Do.	do.	3	26N.	103W.	Sweetwater	Wyo.	7000	Core	13468.0	1.20
Do.	do.	3	26N.	103W.	Sweetwater	Wyo.	7000	Core	13491.8	1.26
Forest Oil Corp.	Jonah Gulch 1	9	26N.	107W.	Sweetwater	Wyo.	6677	Core	10133.0	.84
Pacific Transmission Supply Co.	Buck 42-32	32	26N.	112W.	Lincoln	Wyo.	6555	Core	7850.0	.75
Belco Petroleum Corp.	Green River Bend Unit 42	13	26N.	113W.	Lincoln	Wyo.	6675	Core	7443.9	.90
Do.	do.	13	26N.	113W.	Lincoln	Wyo.	6675	Core	7444.0	.89
Superior Oil Co.	Pacific Creek Unit 1	27	27N.	103W.	Sublette	Wyo.	7085	Core	6646.0	.90
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	7778.0	.19
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	8392.0	.55
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	9819.0	.90
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	18639.0	1.58
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	18960.0	1.60
Do.	do.	27	27N.	103W.	Sublette	Wyo.	7085	Core	19660.0	1.60
Rainbow Resources Co.	Federal-Pacific Creek 1-34	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	6495.0	.50
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	7880.0	.58
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	9950.0	.60
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	11695.0	.94
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	13050.0	1.04
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	15300.0	1.40
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	17950.0	1.95
Do.	do.	34	27N.	103W.	Sublette	Wyo.	7081	Cuttings	19368.0	1.95
Pan American Petroleum Corp.	USA Clark Oil and Refining 1	7	27N.	111W.	Sublette	Wyo.	6922	Core	4376.0	.55
Belco Petroleum Corp.	East Labarge Unit R-1	29	27N.	112W.	Sublette	Wyo.	6607	Core	2714.0	.58
Do.	Belfer Natural Gas 89	4	27N.	113W.	Sublette	Wyo.	8064	Core	1768.0	.45
Do.	BNG 37	33	27N.	113W.	Sublette	Wyo.	6918	Core	7718.1	.88
Do.	GRBU T-5	36	27N.	113W.	Sublette	Wyo.	6779	Core	2366.7	.54
Do.	GRBU 41	36	27N.	113W.	Sublette	Wyo.	6795	Core	6690.2	.81
Do.	do.	36	27N.	113W.	Sublette	Wyo.	6795	Core	7515.0	.94
Do.	GRBU Chimney Butte Unit 14	36	28N.	113W.	Sublette	Wyo.	7143	Core	7328.0	.93
Davis Oil Co.	Granite Wash Unit 1	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	7095.0	.49
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	8365.0	.68
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	10645.0	.79
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	11645.0	1.28
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	11705.0	1.39
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	12935.0	1.32
Do.	do.	16	29N.	110W.	Sublette	Wyo.	7018	Cuttings	16415.0	2.40
Belco Petroleum Corp.	Long Island Unit 1	25	29N.	112W.	Sublette	Wyo.	6934	Core	4409.4	.63
Do.	Long Island Unit 5	25	29N.	112W.	Sublette	Wyo.	7069	Core	5038.0	.63
Pan American Petroleum Corp.	Gov't. B-66	23	29N.	113W.	Sublette	Wyo.	7274	Core	3184.0	.55
American Hunter Exploration Co.	New Fork 2	2	30N.	108W.	Sublette	Wyo.	7282	Core	8469.0	1.42
Do.	do.	2	30N.	108W.	Sublette	Wyo.	7282	Core	8741.0	.70
Do.	do.	2	30N.	108W.	Sublette	Wyo.	7282	Core	9218.0	1.63
El Paso Natural Gas Corp.	Wagon Wheel 1	5	30N.	108W.	Sublette	Wyo.	7089	Core	5072.5	.45
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	7048.5	.66
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	7130.2	.72
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	7137.2	.70
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	7388.0	.73
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	7395.0	.75
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	8073.4	.78
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	8135.8	.76
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	8984.4	.86
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	10145.3	.94
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	10173.3	.92
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	11024.8	.92
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	11051.3	1.00
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	13097.3	1.21
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	13141.8	1.13
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	13198.0	1.14
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	14902.3	1.45
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	14914.1	1.47
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	14930.3	1.60
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	16068.5	1.63
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	16078.8	1.59
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	16101.9	1.60
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	17173.3	1.76
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	17960.0	2.04
Do.	do.	5	30N.	108W.	Sublette	Wyo.	7089	Core	17965.0	1.82
American Hunter Exploration Co.	New Fork 1	25	30N.	108W.	Sublette	Wyo.	7338	Core	7965.0	.52
Davis Oil Co.	West Pinedale-Federal G1	33	30N.	109W.	Sublette	Wyo.	7052	Cuttings	6735.0	.63
Do.	do.	33	30N.	109W.	Sublette	Wyo.	7052	Cuttings	7805.0	.61
Do.	do.	33	30N.	109W.	Sublette	Wyo.	7052	Cuttings	8805.0	.62
Do.	do.	33	30N.	109W.	Sublette	Wyo.	7052	Cuttings	11255.0	.83
Belco Petroleum Corp.	Star Corral Unit 13-19	19	30N.	112W.	Sublette	Wyo.	7081	Core	3507.2	.49
General Petroleum Co.	Bar Cross X 63-21	21	30N.	112W.	Sublette	Wyo.	7008	Core	4002.0	.80
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	5322.0	.73
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	5573.0	.64
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	5574.0	.68
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	6936.0	.71
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	6943.0	.78
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	6943.0	.70
Do.	do.	21	30N.	112W.	Sublette	Wyo.	7008	Core	6953.0	.83
American Hunter Exploration Co.	New Fork 4	35	31N.	109W.	Sublette	Wyo.	6945	Core	8531.0	1.63
Do.	do.	35	31N.	109W.	Sublette	Wyo.	6945	Core	10295.0	1.03
Do.	do.	35	31N.	109W.	Sublette	Wyo.	6945	Core	10316.0	.92
Belco Petroleum Corp.	Mason Unit K-2	13	31N.	113W.	Sublette	Wyo.	7301	Core	6705.0	.65
Do.	do.	13	31N.	113W.	Sublette	Wyo.	7301	Core	9388.0	1.00
Elf Aquitane Petroleum Co.	Gov't. 9-19	19	32N.	84W.	Natrona	Wyo.	6817	Core	7601.0	.53
Wexpro Co.	Mesa 1	7	32N.	109W.	Sublette	Wyo.	7524	Core	8721.0	1.70
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	8731.0	.74
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	8734.0	.74
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	8740.0	.75
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9143.0	.79
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	—	9156.3	.70
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9182.0	.91
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9202.0	1.46
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9210.0	1.71
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9660.0	.86
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9664.0	1.48
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	—	9697.0	.71
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9699.0	.75
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9723.0	.73
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9744.0	.69
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9753.0	.80
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9783.0	.69
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9784.0	.81
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9790.0	.95
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	9792.0	1.38
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	10506.0	.68
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	10511.0	.85
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	10547.0	.83
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	10565.0	.70
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	—	10572.0	.82
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11213.0	.75
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11225.0	.97
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11239.0	.83
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	—	11243.5	1.17
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11255.0	1.20
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11265.0	.91
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11891.0	.83
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11900.0	.84
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11917.0	.97
Do.	do.	7	32N.	109W.	Sublette	Wyo.	7524	Core	11958.0	1.10
Phillips Petroleum Corp.	Marbleton Unit 4	10	32N.	112W.	Sublette	Wyo.	7379	Core	11187.5	.53
Chandler and Simpson Co.	Mickelson Creek Unit 5	18	32N.	113W.	Sublette	Wyo.	8292	Core	4425.5	.49
Phillips Petroleum Corp.	Daniel Unit 1	21	33N.	111W.	Sublette	Wyo.	7307	Core	11083.0	.79
Do.	do.	21	33N.	111W.	Sublette	Wyo.	7307	Core	12495.0	.78
Pacific Transmission Supply Co.	Federal 24-19	19	33N.	114W.	Sublette	Wyo.	8171	Core	5111.1	.47
Do.	do.	19	33N.	114W.	Sublette	Wyo.	8171	Core	5141.3	.59
Do.	do.	19	33N.	114W.	Sublette	Wyo.	8171	Core	5196.4	.50
Do.	do.	19	33N.	114W.	Sublette	Wyo.	8171	Core	5249.8	.54
Do.	do.	19	33N.	114W.	Sublette	Wyo.	8171	Core	5281.6	.56
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	2155.0	.43
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	3050.0	.45
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	3850.0	.56
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Cuttings	4950.0	.46
Inexco Oil Co.	WASP	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	4950.0	.42
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	5955.0	.45
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Cuttings	5955.0	.56
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	6950.0	.47
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Cuttings	6950.0	.53
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Cuttings	7945.0	.42
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Cuttings	7945.0	.60
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	10490.0	1.59
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	11461.0	.95
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	11461.0	.84
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	11674.8	.98
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	11985.8	.96
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	11986.0	.88
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	12167.0	.90
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	12230.5	.91
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	12266.0	1.11
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	12366.2	.97
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	12432.5	1.13
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	12524.0	1.10
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	12524.2	1.13
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13027.6	1.15
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13261.6	1.13
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13317.6	1.15
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	13318.0	1.00
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	13381.5	1.21
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13409.2	1.11
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13491.5	1.13
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13737.9	1.16
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13797.7	1.21
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	13804.0	1.00
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	13804.8	1.24
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13884.2	1.21
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	13991.2	1.29
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14020.6	1.13
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14081.4	1.30
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14136.4	1.26
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14179.5	1.25
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14220.0	1.24
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14271.9	1.49
Inexco Oil Co.	WASP A-1	28	36N.	112W.	Sublette	Wyo.	7812	Core	14286.0	1.15
Belco Petroleum Corp.	Merna 3-28	28	36N.	112W.	Sublette	Wyo.	7815	Core	14286.0	1.48
Do.	do.	28	36N.	112W.	Sublette	Wyo.	7815	Core	14329.6	1.48

TABLE 2.—Description of boreholes shown on map A and figure 9

Borehole No.	Operator	Name	County	Location Sec.	T.	R.
1	Amoco Production Co.	Champlin 406 unit 1	Lincoln	11	19N.	116W.
2	Belco Petroleum Corp.	Hams Fork unit 2	do.	30	19N.	115W.
3	Amoco Production Co.	Champlin 262 Amoco B1	do.	33	20N.	114W.
4	Do.	Wilson Ranch 2	do.	1	19N.	113W.
5	Mountain Fuel Supply Co.	Bruff 2	do.	16	19N.	112W.
6	Wexpro Co.	Granger 1	Sweetwater	8	19N.	111W.
7	Amoco Production Co.	Champlin 157-Amoco 1	do.	35	19N.	110W.
8	Do.	Spider Creek 1	do.	16	18N.	109W.
9	Husky Oil Co.	Champlin Peru 11-27	do.	27	19N.	108W.
10	Miami Oil Producers, Inc.	East Peru 1	do.	24	20N.	107W.
11	Davis Oil Co.	Sue Federal 1	do.	32	19N.	106W.
12	Union Oil Co. of California	White Mountain unit 1-C-19	do.	19	19N.	105W.
13	Mountain Fuel Supply Co.	U.P.R.R. 4	do.	11	19N.	104W.
14	Do.	C. S. Hill 1	do.	30	19N.	103W.
15	True Oil Co.	Bartlett Federal 43-24	do.	24	19N.	102W.
16	Do.	Brown Federal 11-12	do.	12	19N.	101W.
17	Union Pacific Railroad Co.	U.P.R.R. 43-28	do.	28	19N.	100W.
18	Forest Oil Corp.	Arch unit 55-11-3	do.	11	19N.	99W.
19	Texaco Inc.	Table Rock 19	do.	35	19N.	98W.
20	Do.	Table Rock unit 44W-141	do.	18	19N.	97W.
21	Amoco Production Co.	Tipton 11 unit 1	do.	14	19N.	96W.
22	Do.	Champlin 257, Amoco "B" 1	do.	33	19N.	95W.
23	The Ohio Oil Co.	Wamsutter unit B-1	do	1	19N.	94W.
24	Marathon Oil Co.	Marathon Federal 1-2	Carbon	2	19N.	93W.
25	The Carter Oil Co.	Creston unit "A" 1	do.	26	19N.	92W.
26	Amoco Production Co.	Creston southeast unit 5	do.	1	19N.	91W.
27	Tenneco Oil Co.	U.S.A. Trowbridge 1	do.	26	19N.	90W.
28	Davis Oil Co.	Ram Canyon 1	do.	3	19N.	89W.
29	The Ohio Oil Co.	Government 4	do.	2	19N.	88W.
30	The California Co.	Government 1	do.	12	19N.	87W.



MAP A—OIL AND GAS FIELDS AND MAJOR STRUCTURAL FEATURES IN SOUTHWESTERN WYOMING AND NORTHWESTERN COLORADO



MAP B—MAP SHOWING THERMAL MATURITY, IN TERMS OF ESTIMATED VITRINITE REFLECTANCE (PERCENT R_0), OF STRATA AT GROUND SURFACE IN SOUTHWESTERN WYOMING AND NORTHWESTERN COLORADO

MAP C—DEPTHS TO MEDIAN VITRINITE REFLECTANCE VALUE OF 0.6 PERCENT IN SOUTHWESTERN WYOMING AND NORTHWESTERN COLORADO

MAP D—DEPTHS TO MEDIAN VITRINITE REFLECTANCE VALUE OF 1.3 PERCENT IN SOUTHWESTERN WYOMING AND NORTHWESTERN COLORADO

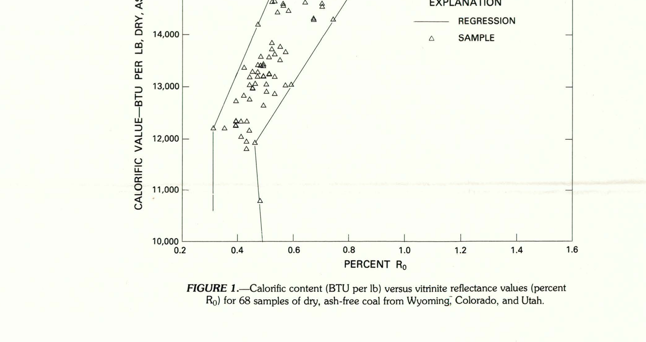


FIGURE 1.—Calorific content (BTU per lb) versus vitrinite reflectance values (percent R_0) for 68 samples of dry, ash-free coal from Wyoming, Colorado, and Utah.

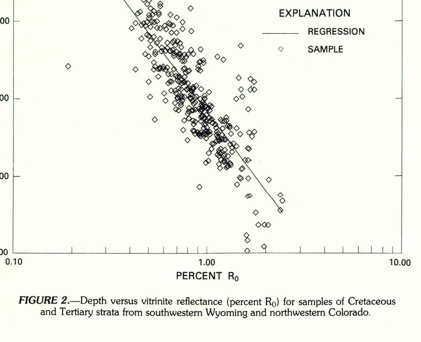


FIGURE 2.—Depth versus vitrinite reflectance (percent R_0) for samples of Cretaceous and Tertiary strata from southwestern Wyoming and northwestern Colorado.

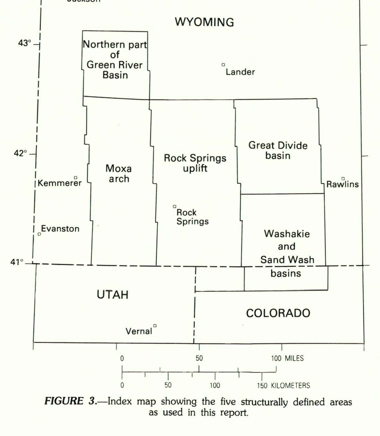


FIGURE 3.—Index map showing the five structurally defined areas as used in this report.

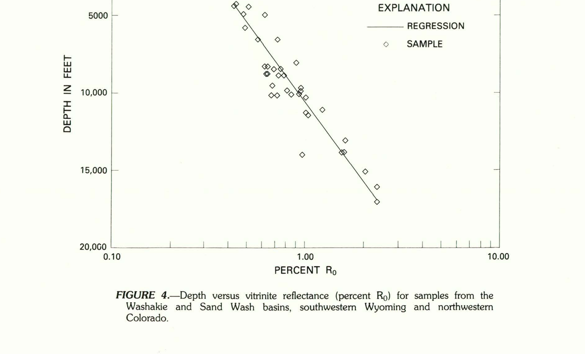


FIGURE 4.—Depth versus vitrinite reflectance (percent R_0) for samples from the Washakie and Sand Wash basins, southwestern Wyoming and northwestern Colorado.

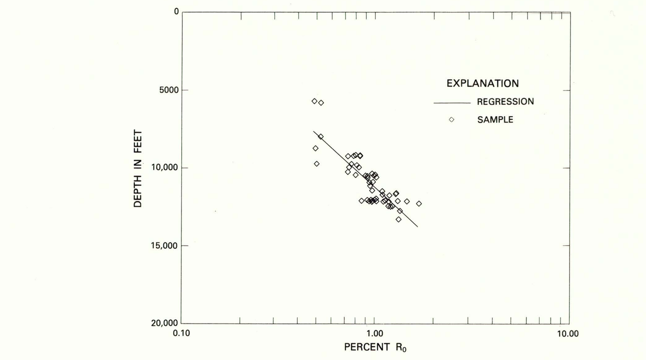


FIGURE 5.—Depth versus vitrinite reflectance (percent R_0) for samples from the Great Divide basin area, southwestern Wyoming.

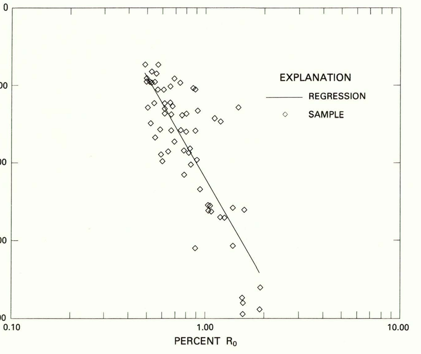


FIGURE 6.—Depth versus vitrinite reflectance (percent R_0) for samples from the Rock Springs uplift area, southwestern Wyoming.

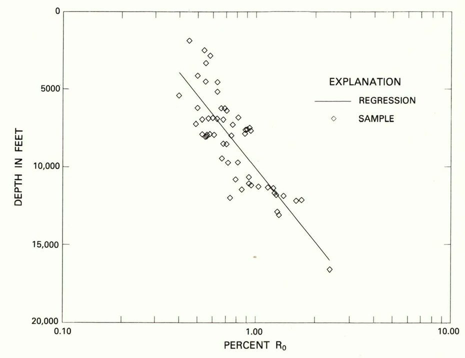


FIGURE 7.—Depth versus vitrinite reflectance (percent R_0) for samples from the Moxa arch area, southwestern Wyoming.

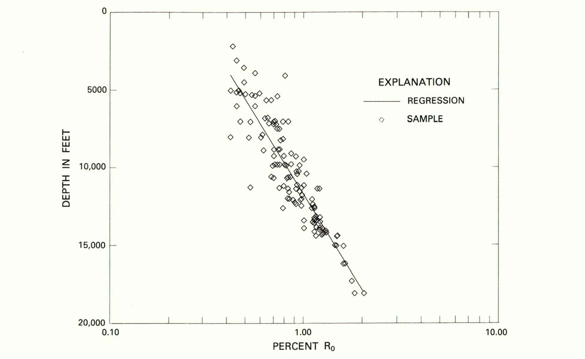


FIGURE 8.—Depth versus vitrinite reflectance (percent R_0) for samples from the northern part of the Green River Basin, southwestern Wyoming.

FIGURE 9.—Structural and thermal maturity profiles for southwestern Wyoming.

THERMAL MATURITY OF HYDROCARBON—BEARING FORMATIONS IN SOUTHWESTERN WYOMING AND NORTHWESTERN COLORADO

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