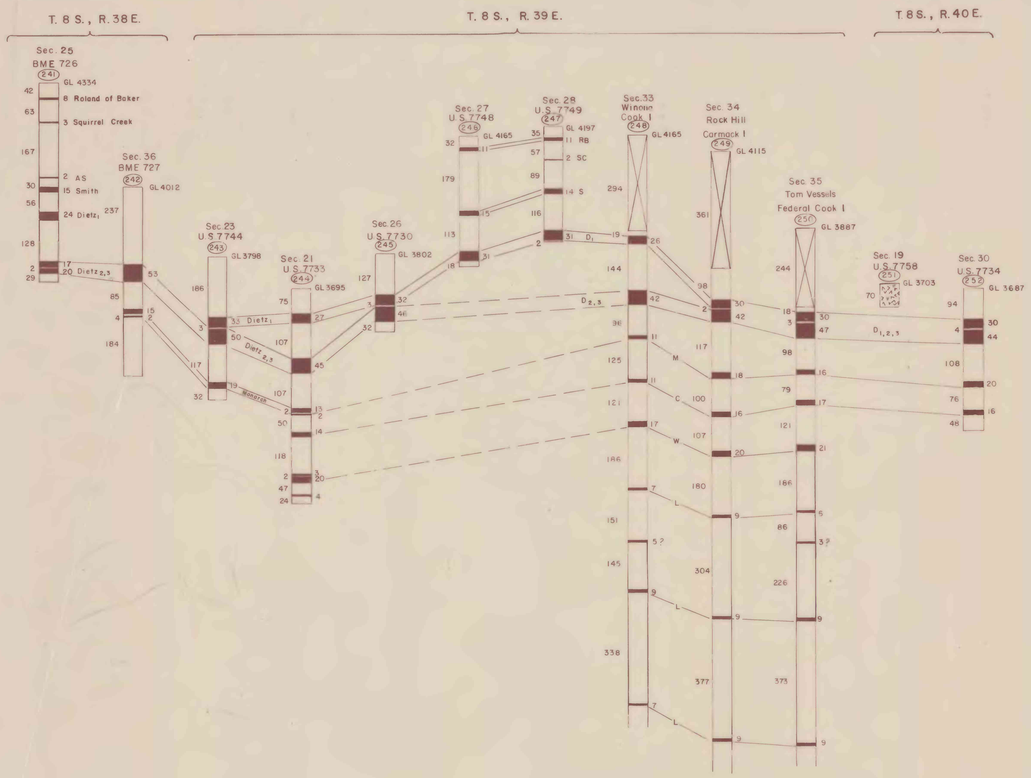
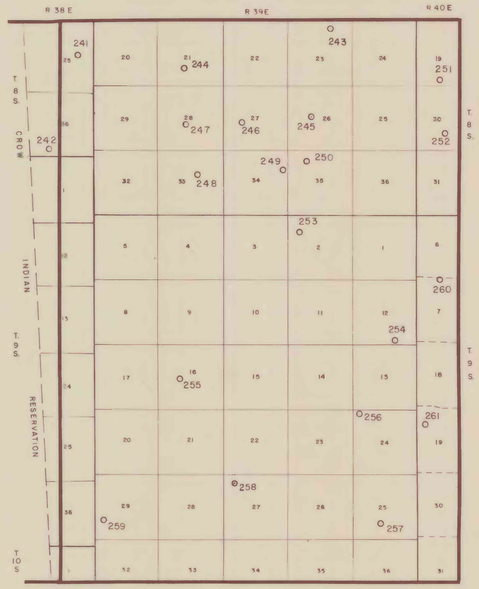
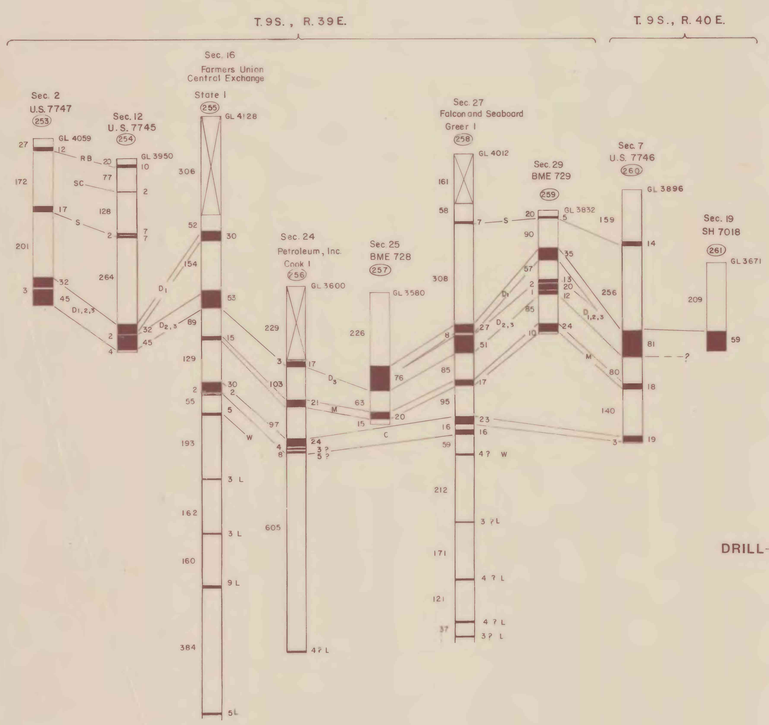
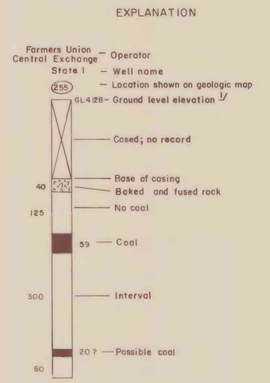


DRILL-HOLE LOCATIONS





EXPLANATION



1/ Elevation given on geophysical logs may not agree with elevation estimated from topographic map (given here)

All measurements in feet; to convert to meters, multiply by 0.3048.

SCALE
Meters Feet

DRILL-HOLES

GENERALIZED COAL INDEX

Table 1.--Coal analyses of drill-core samples from coal beds in the Pearl School quadrangle and easternmost part of the Bar V Ranch quadrangle, Big Horn County, Montana

[Data compiled from Matson and Blumer (1973, table 3) and U.S. Geological Survey and Montana Bureau of Mines and Geology (1973). Type of analysis: A, air-dried; B, air-dried; C, moisture free; D, moisture and ash free; ----, no data]

Drill-hole No.	Index No. of coal section	Sample depth (ft)	Coal bed name	USGS and MBMG Lab Nos.	Type of analysis	Proximate analysis (percent): Moisture	Volatile matter	Fixed carbon	Ash	Ultimate analysis (percent): Sulfur	Sulfur forms (percent): Sulfate	Pyritic	Organic	Heating value (Btu/lb)
SM-7032	17	28-36	Roland of Baker	205	A	34.090	24.607	27.130	14.174	0.196	0.015	0.058	0.123	6,608
					B	----	----	----	----	----	----	----	----	----
					C	----	37.334	41.162	21.505	.297	.022	.088	.187	10,026
					D	----	47.582	52.418	----	.378	.028	.112	.238	12,773
SM-7033	15	38-46	--do--	206	A	29.750	31.200	38.450	4.601	.259	.008	.079	.172	8,082
					B	----	----	----	----	----	----	----	----	----
					C	----	44.412	49.029	6.549	.369	.011	.113	.246	11,506
					D	----	47.525	52.475	----	.395	.012	.120	.263	12,316
SM-7033	15	46-48	--do--	207	A	30.050	28.709	34.573	6.667	.278	.008	.077	.193	7,816
					B	----	----	----	----	----	----	----	----	----
					C	----	41.043	49.426	9.532	.398	.011	.110	.276	11,241
					D	----	45.367	54.633	----	.440	.012	.122	.305	12,431
SM-7034	14	35-42	--do--	208	A	30.520	29.108	37.100	3.272	.624	.015	.169	.439	7,988
					B	----	----	----	----	----	----	----	----	----
					C	----	41.895	53.396	4.709	.898	.022	.244	.632	11,508
					D	----	43.965	56.035	----	.942	.023	.256	.663	12,077
SM-7034	14	42-46	--do--	209	A	28.560	31.124	36.808	3.508	.292	.000	.073	.219	8,265
					B	----	----	----	----	----	----	----	----	----
					C	----	43.567	51.523	4.910	.409	.000	.102	.307	11,569
					D	----	45.816	54.184	----	.430	.000	.108	.323	12,166
SM-7035	21	35-45	--do--	210	A	28.710	30.578	37.753	2.959	.198	.016	.063	.119	8,286
					B	----	----	----	----	----	----	----	----	----
					C	----	42.892	52.957	4.150	.277	.022	.089	.166	11,624
					D	----	44.479	55.251	----	.289	.023	.093	.174	12,127
SM-7036	19	30-33	--do--	211	A	36.710	28.155	31.887	3.248	.163	.007	.064	.092	7,225
					B	----	----	----	----	----	----	----	----	----
					C	----	44.486	50.382	5.133	.258	.011	.101	.146	11,416
					D	----	46.892	53.108	----	.272	.012	.107	.154	12,034
SM-7036	19	33-36	--do--	212	A	31.730	28.152	34.426	5.692	.344	.015	.090	.239	7,462
					B	----	----	----	----	----	----	----	----	----
					C	----	41.226	50.427	8.337	.503	.022	.131	.350	10,930
					D	----	44.987	55.013	----	.549	.024	.143	.382	11,924
SM-7018	261	215-218	Dietz 1	190	A	20.590	34.109	39.641	5.660	.283	.000	.034	.249	9,850
					B	----	----	----	----	----	----	----	----	----
					C	----	42.953	49.919	7.128	.357	.000	.043	.314	12,405
					D	----	46.250	53.750	----	.384	.000	.047	.338	13,357
BME-727	241	240-247	Dietz 2, 3	462	A	25.910	31.619	39.608	.863	.304	.008	.055	.242	9,305
					B	5.030	40.530	50.770	3.670	.380	.010	.070	.300	11,927
					C	----	42.677	53.459	3.864	.411	.011	.074	.326	12,559
					D	----	44.392	55.608	----	.427	.011	.077	.340	13,064
BME-728	257	231-232	Dietz 1	463	A	21.730	32.589	41.585	4.096	.246	.008	.016	.222	9,768
					B	4.650	39.700	50.680	4.990	.300	.010	.020	.270	11,899
					C	----	41.636	52.131	5.233	.315	.010	.021	.283	12,479
					D	----	43.935	56.065	----	.332	.011	.022	.299	13,168
BME-729	259	116-127	--do--	464	A	24.040	30.836	41.243	3.881	.250	.018	.040	.194	9,306
					B	5.850	38.220	51.120	4.810	.310	.020	.050	.240	11,535
					C	----	40.595	54.296	5.109	.329	.021	.053	.255	12,252
					D	----	42.780	57.220	----	.347	.022	.056	.269	12,911
BME-729	259	127-137	--do--	465	A	25.150	30.514	41.409	2.927	.231	.016	.032	.183	9,212
					B	5.880	38.370	52.070	3.680	.290	.020	.040	.230	11,584
					C	----	40.767	55.323	3.910	.308	.021	.042	.244	12,308
					D	----	42.426	57.574	----	.321	.022	.044	.254	12,808
BME-729	259	137-140	--do--	466	A	25.300	29.200	39.298	6.201	.642	.024	.079	.539	8,705
					B 1	5.680	36.870	49.600	7.850	.810	.030	.100	.680	10,992
					C	----	39.090	52.608	8.302	.859	.032	.106	.721	11,654
					D	----	42.429	57.371	----	.937	.035	.116	.786	12,709

Table 2.--Chemical analyses of ash from drill-core samples of coal beds in the Pearl School quadrangle and the easternmost part of the Bar V Ranch quadrangle, Big Horn County, Montana

[----, no data]

Drill-hole No.	Index No. of coal section	Sample depth (ft)	USGS and MBMG Lab Nos.	Coal bed name	Percent ash, and major-oxide composition of ash (percent): Ash	SiO_2	Al_2O_3	Na_2O	K_2O	CaO	MgO	P_2O_5	Fe_2O_3	SO_3	TiO_2
Analyses by Montana Bureau of Mines and Geology[1]															
SM-7032	17	28- 36	205	Roland of Baker	55.9	20	0.4	2.5	7.3	3.7	.0.6	4.1	4	0.7
SM-7033	15	38- 48	206-207	--do-------	----	23.4	15.8	.9	.5	26.6	8	1.1	8.3	13.4	.6
SM-7034	14	35- 46	208-209	--do-------	----	22.6	15.8	1.4	.3	23.9	8.3	1.2	7.2	19.8	.7
SM-7035	21	35- 45	210	--do-------	----	21.5	11.7	2.2	.2	28.5	11.1	.9	7.7	13.1	.7
SM-7036	19	30- 36	211-212	--do-------	----	18.1	16.6	.3	.2	27.6	10	1.6	8.8	14	.6
SM-7018	261	215-218	190	Dietz 1	----	42	16.6	6.4	.5	13.7	2.5	1	3.5	8.4	2.2
Analyses by U.S. Geological Survey and Montana Bureau of Mines and Geology (1973)[2]															
BME-727	241	240-247	D160666	Dietz 2,3	3.25	16	13	2.3	.6	24	8.7	.2	4.1	20	----
BME-728	257	231-232	D160667	Dietz 1	4.56	37	10	6.1	.3	16	3.3	.3	4.2	12	----
BME-729	259	116-127	D160668	--do-------	4.56	41	10	1.8	.3	18	9.3	.7	3.9	13	----
BME-729	259	127-137	D160669	--do-------	3.43	14	14	1.9	.4	23	12.3	4.4	5.5	16	----
BME-729	259	137-140	D160670	--do-------	7.12	25	18	.9	1.3	11	5.7	3.8	4.1	16	----

[1]Laurence A. Wegelin, chemist in charge of coal analysis (Matson and Blumer, 1973).
[2]Analysts: F. J. Aruscavage, Jr., E. J. Fennelly, J. C. Hamilton, A. W. Hubert, A. E. Hubert, Claude Huffman, Jr., V. M. Merritt, R. T. Millard, Jr., John Moreland, H. C. Neimm, E. L. Rahill, V. E. Show, J. A. Thomas, J. H. Turner, J. S. Wahlberg, and F. N. Ward; coordinated by Vermon E. Swanson and Claude Huffman, Jr.

Table 3.--Trace element analyses of coal and ash from drill-core samples of coal beds in the Pearl School quadrangle and the easternmost part of the Bar V Ranch quadrangle, Big Horn County, Mont.

[Analyses by U.S. Geological Survey, Denver, Colo. (U.S. Geol. Survey and Montana Bureau of Mines and Geology, 1973). Analysts identified in table 2. --, no data; <, less than. Results of six-step spectrographic analyses are based on their identity with geometric brackets whose boundaries are 1.2, 0.83, 0.56, 0.38, 0.26, 0.18, 0.12, and so forth, and are reported arbitrarily as midpoints of these brackets, 1, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, respectively. A reported value's precision is approximately plus-or-minus one bracket at 68 percent, or two brackets at 95 percent confidence. Approximate visual lower limits of detection are: Be, 0.0001; La, 0.003; Mo, 0.0003; Sn, 0.001; Ce, 0.015; Ga, 0.001. Some anomalously high trace-element values, for example 1,660 parts per million lead, and some high barium values may be due to drill-pipe or drilling-fluid contamination]

Drill-hole No.	Index No. of coal section	Sample depth (ft)	Lab No.	Coal bed name	A. Quantitative analyses (ppm) for 13 trace elements: Coal: As	F	Hg	Sb	Se	Te	Tl	U	Ash: Cd	Cu	Li	Pb	Zn
BME-727	241	240-247	D160666	Dietz 2,3	2	10	0.037	4.7	<0.1	<0.02	<0.2	<0.2	<1	420	50	545	175
BME-728	257	231-232	D160667	Dietz 1,2,3	3	10	.051	19.1	<.1	.02	<.2	.4	<1	605	93	1,660	195
BME-729	259	116-127	D160668	Dietz 1	1	30	.044	3.8	.2	<.02	<.2	<.2	<1	245	31	300	83
BME-729	259	127-137	D160669	--do--------	1	20	.03	1.9	<.1	<.02	<.2	<.2	<1	180	28	195	93
BME-729	259	137-140	D160670	--do--------	3	30	.106	1.8	.6	#<.02	<.2	1.2	1.5	145	44	120	240
					B. Semiquantitative six-step spectrographic analyses (ppm) for trace elements: B	Ba	Be	Co	Cr	Ga	Ge	La	Mn	Mo	Nb	Ni	Sc
BME-727	241	240-247	D160666	Dietz 2,3	1,000	5,000	--	20	70	30	--	--	500	100	--	20	30
BME-728	257	231-232	D160667	Dietz 1	700	10,000	--	15	50	30	--	--	500	200	20	20	30
BME-729	259	116-127	D160668	--do--------	700	7,000	--	15	50	20	--	--	100	50	20	15	15
BME-729	259	127-137	D160669	--do--------	700	10,000	--	15	50	30	--	--	150	30	--	15	15
BME-729	259	137-140	D160670	--do--------	300	7,000	3	15	70	30	--	70	100	50	--	70	15

Drill-hole No.	Sn	Sr	Ti	V	Y	Yb	Zr
BME-727	20	15,000	5,000	300	30	3	150
BME-728	20	7,000	5,000	150	30	3	200
BME-729	--	5,000	5,000	150	30	3	200
BME-729	--	7,000	3,000	150	20	2	100
BME-729	--	3,000	3,000	150	50	3	100

GEOLOGIC MAP AND COAL SECTIONS OF THE PEARL SCHOOL QUADRANGLE AND THE EASTERNMOST PART OF THE BAR V RANCH QUADRANGLE, BIG HORN COUNTY, MONTANA

By
Gary L. Galyardt and F. N. Murray

1981