Base from U.S. Geological Survey
Joes Valley Reservoir, 1988; Mahogany Point, 1976; Red Point, 1979

Geology and faults from E. M. Spieker (1931), and E. G. Ellis and J. R. Frank (1981)

MAP SHOWING LOCATION OF DRILL HOLES, MEASURED SECTIONS, AND STRUCTURE CONTOURS

DISCUSSION

COAL ZONES

The Hiawatha coal bed (Spieker, 1931) in the Trail Mountain (T. 18 S., R. 7 E.) and East Mountain areas (T. 17 S., R. 8 E.) is stratigraphically equivalent to the Axel Anderson coal zone of Sanchez and Brown (1983) in the Rock Canyon area, which is located immediately south of the study area. The Hiawatha coal bed will here be referred to as the Axel Anderson coal zone to correspond with the 1983 study (fig. 1). The zone is situated directly above or on top of the Star Point Sandstone in the map area. The coal beds range in thickness from as little as 12 in. (30 cm) in drill hole USGS–60 (T. 18 S., R. 6 E., sec. 14) to as much as 16 feet 6 in. (5 m) in section E49 (T. 17 S., R. 7 E., sec. 27). The Axel Anderson coal zone appears to be thickest and most persistent in the northern part of the Trail Mountain and East Mountain areas. It is currently being mined by Utah Power and Light Company at the Deseret mine (T. 17 S., R. 7 E., sec. 26) and the Trail Mountain mine (T. 17 S., R. 6 E., sec. 25).

The Blind Canyon coal bed (Spieker, 1931) will here be referred to as the Blind Canyon coal zone because the coal beds are laterally discontinuous and (or) bifurcate. Stratigraphically, this coal zone is from 60 to 80 ft (18 to 24 m) above the top of the Star Point Sandstone. The individual coal beds attain thicknesses of 15 ft 4 in. (4.7 m) in measured section S270 (T. 17 S., R. 7 E., sec. 11), and are as thin as 1 ft 6 in. (0.46 m) in measured section E50 (T. 17 S., R. 7 E., sec. 22). The coal beds thicker than 3 ft (.9 m) are restricted to the eastern part of East Mountain. The coal zone is currently being mined by Utah Power & Light Company at the Deer Creek mine (T. 17 S., R. 7 E., sec. 11), Deseret mine (T. 17 S., R. 7 E., sec. 22), and Wilburg mine (T. 17 S., R. 7 E., sec. 27).

The Bear Canyon coal bed (Spieker, 1931) will here be referred to as the Bear Canyon coal zone because the coal beds are laterally discontinuous and (or) bifurcate. This coal zone occurs in the southern part of the East Mountain area and is very thin and (or) discontinuous in the Trail Mountain area and the North Horn Mountain area to the south. It is from 120 ft (37 m) to 130 ft (40 m) above the Star Point Sandstone. The coal beds range in thickness from 2 ft 4 in. (0.7 m) in drill hole USGS–47 (T. 17 S., R. 7 E., sec. 33), to 14 ft 4 in. (4.4 m) in drill hole USGS–45 (T. 17 S., R. 7 E., sec. 29).

COAL RESOURCES

The total identified coal resources in the Trail Mountain and East Mountain areas of the Wasatch Plateau coal field are 556.2 million short tons (504.6 million metric tons; see table 1). Reserve base resources, which include coal beds greater than 28 in. (71 cm) thick and overlain by less than 1,000 ft (305 m) of overburden, total 109.4 million short tons (99.2 million metric tons). More than half of the coal resources, in beds greater than 42 in. (1 m) thick, are overlain by 1,000 to 2,000 ft (305 to 610 m) of overburden and total to 290.4 million short tons (263.5 million metric tons).

The coal-bearing sequence, which is approximately 1,000 ft (305 m) thick, is included in the lower part of the Upper Cretaceous Blackhawk Formation. The entire resource area lies within the Manti-La Sal National Forest. All coal beds are included in zones because of lateral discontinuities (pinch outs) and bifurcations. Some coal beds occur as localized lenses that cannot be correlated, and they are placed in the "other coal beds" category in the resource analysis (table 1). Although the resources were tabulated by zone, they were calculated by individual coal bed, according to the coal classification system of the U.S. Bureau of Mines and U.S. Geological Survey (1976). All resources are classed as "Identified" and are in the Demonstrated and Inferred classes of geologic assurance. Demonstrated coal resources were estimated to extend not more than 0.75 mi (1.2 km) from the point of measurement on the outcrop or from a drill hole. Inferred coal resources were estimated to extend from 0.75 to 3.0 mi (1.2 to 4.8 km) from the point of measurement. As further exploratory drilling is done in the area, more coal will undoubtedly be found and the figures will need to be revised upward.

COAL ANALYSES

Average coal analyses for two coal zones in the Red Point quadrangle are reported by Doelling (1972). The rank of the coal from the two zones is high volatile B bituminous as calculated from the ASTM (1977) parr formula for moisture, and mineral-matter-free coal. The analyses are presented in table 2.

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MAP EXPLANATION

CONTACT—Between Star Point Sandstone and overlying Blackhawk Formation

NORMAL FAULT—Dashed where approximately located. U, upthrown side; D, downthrown side

STRUCTURE CONTOURS—Drawn on top of Star Point Sandstone. Dashed where approximately located. Contour interval 100 feet

UGMS–3 7350 — DRILL HOLE—Drilled by the U.S. Geological Survey (USGS) and Utah Geological and Mineral Survey (UGMS). Elevation at top of Star Point Sandstone shown in feet

E115 — MEASURED SECTION—S, from Spieker (1931); M, from Muldoon and others (1981); E, from Ellis and Frank (1981); J, from Johnson (1978); RP, from authors

Table 1.—Identified resources of bituminous coal in the Upper Cretaceous Blackhawk Formation, Trail Mountain and East Mountain areas of the Wasatch Plateau coal field, Manti 30′ x 60′ quadrangle, Emery County, Utah, as of November 1981

[In millions of short tons. Totals rounded to 3 significant figures; coal assumed to weigh 1,800 tons per acre foot; 1 short ton = 0.9072 metric ton; 1 ft = 0.3048 m; 1 in. = 2.54 cm. Leaders (---) indicate no resources]

Location			Coal under less than 1000 ft of overburden						Coal overlain by more than 1000 ft of overburden					
			Demonstrated			Inferred			Demonstrated			Inferred		
	Township (South)	Range (East)	Thickness of coal bed, in inches 14–28	28–42	>42	Thickness of coal bed, in inches 14–28	28–42	>42	Thickness of coal bed, in inches 14–28	28–42	>42	Thickness of coal bed, in inches 14–28	28–42	>42	Total
Axel Anderson coal zone															
	17	6	0.6	0.6	23.4	---	---	---	2.6	4.3	17.6	---	---	52.1	101.4
	17	7	0.3	0.6	49.9	---	---	---	1.7	2.1	21.6	---	---	167.1	238.3
	18	6	0.8	1.2	1.7	---	---	---	0.8	---	---	---	---	2.2	6.7
	18	7	1.0	---	3.9	---	---	---	0.8	---	---	---	---	---	5.7
Axel Anderson coal zone totals			2.7	2.4	78.9	---	---	---	5.9	6.4	39.2	---	---	216.4	352.1
Blind Canyon coal zone															
	17	6	2.0	0.8	1.7	---	---	---	2.3	0.7	0.2	---	---	---	7.7
	17	7	1.2	1.3	2.0	---	---	---	4.4	1.2	1.3	---	---	74.0	85.4
	18	6	0.6	1.0	---	---	---	---	2.3	0.1	---	---	---	---	4.0
	18	7	0.6	---	---	---	---	---	1.1	0.4	---	---	---	---	2.1
Blind Canyon coal zone totals			4.4	3.1	3.7	---	---	---	10.1	2.4	1.5	---	---	74.0	99.2
Bear Canyon coal zone															
	17	6	1.8	---	---	---	---	---	1.5	---	---	---	---	---	3.3
	17	7	0.1	0.9	4.5	---	---	---	2.5	4.0	19.7	---	---	---	31.7
	18	6	2.0	1.0	---	---	---	---	2.9	0.7	1.6	---	---	---	8.2
	18	7	0.4	---	---	---	---	---	0.1	0.3	5.0	---	---	---	6.0
Bear Canyon coal zone totals			4.3	1.9	4.5	---	---	---	7.0	5.0	26.3	---	---	---	47.2
Other coal beds															
	17	6	1.8	0.1	0.1	---	---	---	5.0	3.5	4.2	---	---	---	14.7
	17	7	1.6	3.6	7.6	---	---	---	4.1	2.0	5.9	---	---	---	24.8
	18	6	3.8	1.4	1.0	---	---	---	7.8	1.3	---	---	---	---	15.3
	18	7	1.0	0.4	0.5	---	---	---	0.6	---	---	---	---	---	2.5
Other coal bed totals			8.2	5.7	9.2	---	---	---	17.5	6.8	10.1	---	---	---	57.3
Grand totals			19.6	13.1	96.3	---	---	---	40.5	21.0	75.1	---	---	290.4	556.2

Table 2.—Average coal analyses, Red Point quadrangle
[All values are in percent except Btu/lb]

	Number of analyses	As received (percent) Average	Range
Blind Canyon coal zone (Blind Canyon coal bed of Spieker, 1931)			
Moisture	108	5.1	1.2– 8.0
Volatile matter	100	42.5	36.5–45.6
Fixed carbon	100	44.8	37.5–48.4
Ash	104	7.4	4.0–18.3
Sulfur	93	0.52	0.4– 1.1
Heat of combustion (Btu/lb)	104	12,803	10,800–13,353
Axel Anderson coal zone (Hiawatha coal bed of Spieker, 1931)			
Moisture	46	5.5	2.0–11.4
Volatile matter	40	41.2	37.4–44.7
Fixed carbon	40	44.8	35.1–48.1
Ash	43	8.2	4.4–11.2
Sulfur	43	0.67	0.31– 1.5
Heat of combustion (Btu/lb)	40	12,448	11,660–13,274

INDEX MAP OF THE MANTI 30′ x 60′ QUADRANGLE, SHOWING THE CENTRAL PART OF THE WASATCH PLATEAU COAL FIELD, UTAH. Pattern indicates area of this report

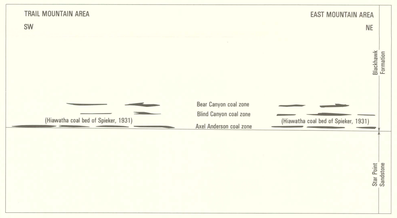

Figure 1.—DIAGRAMMATIC SECTION, SHOWING THE STRATIGRAPHIC RELATIONSHIP BETWEEN THE STAR POINT SANDSTONE AND THE BLACKHAWK FORMATION. Coal bed names in parentheses are used locally

STRATIGRAPHIC FRAMEWORK AND COAL RESOURCES OF THE UPPER CRETACEOUS BLACKHAWK FORMATION IN THE TRAIL MOUNTAIN AND EAST MOUNTAIN AREAS OF THE WASATCH PLATEAU COAL FIELD, MANTI 30′ x 60′ QUADRANGLE, EMERY COUNTY, UTAH

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