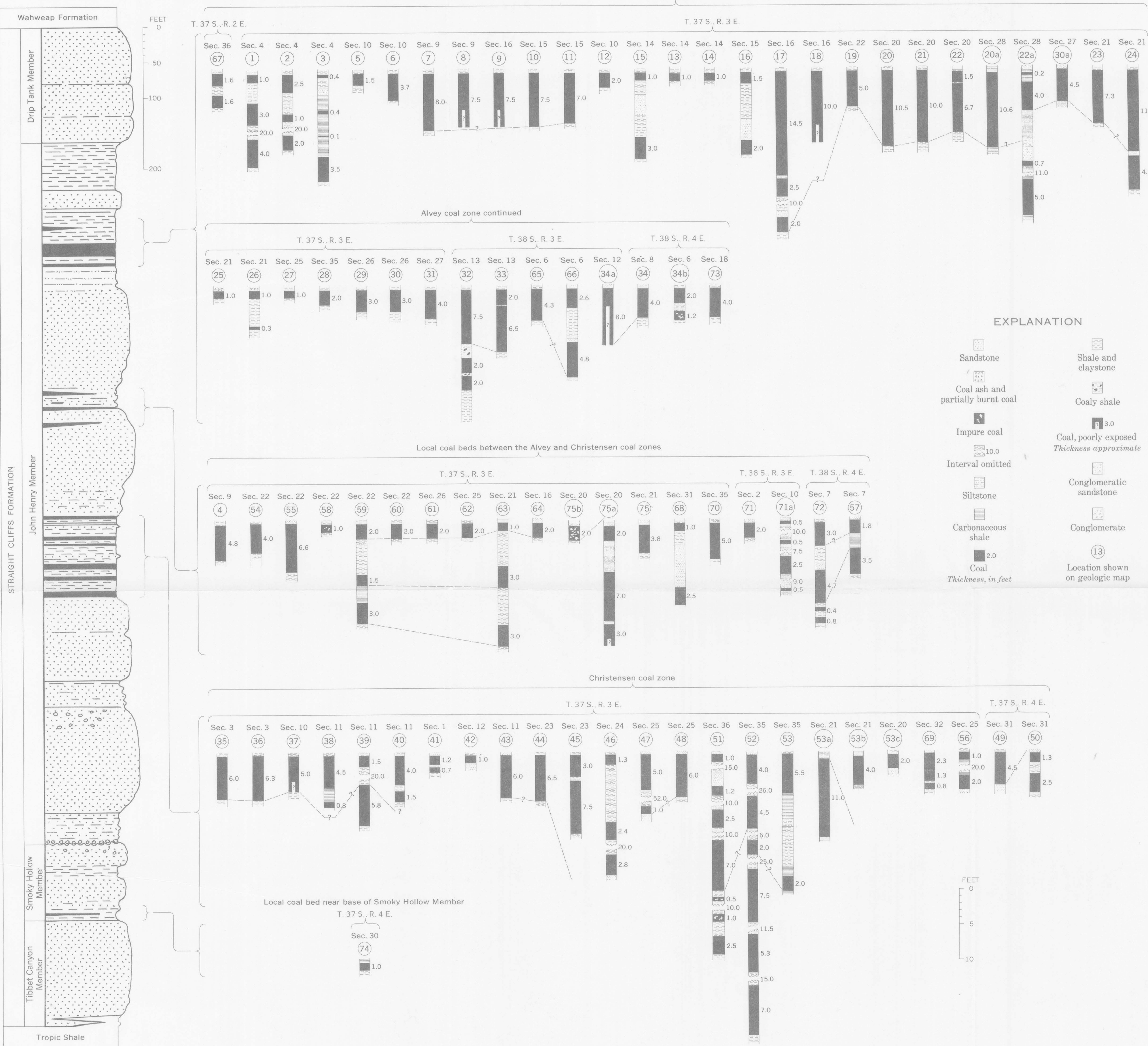


GENERALIZED
SECTION



COAL SECTIONS

ECONOMIC GEOLOGY

The quadrangle was mapped as part of the U.S. Geological Survey program of classifying and evaluating mineral lands in the public domain. Resources of economic interest are coal and oil and gas.

COAL

A summary of data pertaining to the coal deposits of the entire Kaiparowits coal field is given by Doelling (1970). Coal beds in the Carcass Canyon quadrangle are almost entirely in the John Henry Member of the Straight Cliffs Formation. The lowermost coal zone, the Christensen, is about 600-700 feet above the base of the Straight Cliffs Formation, and the uppermost coal zone, the Alvey, is about 1,080-1,130 feet above the base. Local coal beds occur between the Christensen and Alvey coal zones, but the continuity is poor and the beds cannot be traced for as much as a mile. Outcrops in the quadrangle are poorly exposed, and coal beds are generally concealed by slope wash and overhanging blocks of sandstone and talus. Because of this, coal beds and zones probably extend farther than shown on the geologic map. Individual coal beds are generally lenticular, grade laterally into carbonaceous shale, and in a few places interfinger with sandstone that was deposited along a beach. Marine oyster beds occur both below and above coal beds, indicating many fluctuations of the shoreline. The strand line during deposition of the Alvey coal zone trended about N. 20° W., and field observations indicate that both the Alvey and Christensen coal zones are more persistent in a north-westerly direction. The coal was deposited in a lagoonal-type environment, and coal beds are less continuous perpendicular to the strand line. In the northeastern part of the quadrangle (secs. 7, 18, and 19, T. 37 S., R. 4 E.) most of the beds in the John Henry Member are of marine origin, and almost no coal was deposited.

Coal beds have burned over large areas in the southwestern part of the quadrangle, resulting in large areas of pink and red baked rocks over at least 10 square miles. Near the actual site of burning, the rock in places became molten and moved like lava in small areas. Coal ash and clinker occur

near the actual burn site but are generally obscured by talus consisting of baked shale, which is hard and platy and covers most of the slope area. Many landslides and collapse blocks were formed as a result of the coal burning. Hundreds of feet above these burned-out coal beds, large fractures cut the thick sandstone blocks that have settled near the edge of cliffs. Despite this intense burning, drilling in the Smoky Mountain area to the south has shown that back of the cliffs about 1,000 feet the coal is still unburned.

Coal beds are indicated on the geologic map and are shown in the coal sections (sheet 2) where observed; however, because of the lenticular nature of the coal, only the thicker coal beds are extended any distance from an outcrop. In general, the symbol or line showing a coal bed on the geologic map represents a single bed, but on steep slopes and cliff faces it may represent an interval containing two or more coal beds.

The Christensen coal zone is thickest in Right Hand Collet Canyon at coal section 52 where five beds total more than 28 feet of coal. The local beds between the Christensen and Alvey zones are generally thin and discontinuous except for the coal bed in coal section 75a that is 7 feet thick and the coal in section 55 that is 6.6 feet thick. The Alvey coal zone contains coal beds more than 10 feet thick that are reasonably continuous in coal sections 17, 18, 20, 21, and 20a. In coal sections 7-11 a coal bed at least 7 feet thick is continuous for more than 2 miles.

Quality.—No mines or prospects exist in the quadrangle, and no surface coal samples were collected for analyses; however, Doelling (1968, p. 14) listed 14 coal analyses from surface samples in the Carcass Canyon quadrangle that compare favorably with analyses of the Alvey and Christensen zones in mines 5-7 miles to the north. According to Doelling (1968, p. 17), coal samples were collected by digging 6 inches to 1 foot into the outcrop. These samples on a dry, as-received basis have a heat value ranging from 9,811 to 11,234 British thermal units and contain 42.0-50.5 percent volatile matter and 38.8-51.7 percent fixed carbon.

Resources.—Reserves of coal were not calculated for individual beds within a coal zone because of the limited exposures, the lenticular nature of the coal, and the lack of

subsurface data. Total resources were estimated by adding the average thicknesses of coal in each zone in beds more than 4 feet thick and multiplying by the average weight of 1,770 tons per acre-foot for subbituminous coal; beds below 2,000 feet of overburden were not considered. The Carcass Canyon quadrangle contains about 700 million tons of total coal resources.

OIL AND GAS

No oil and gas test holes are in the quadrangle; however, if hydrodynamic forces from the north are similar here to those in the Upper Valley field, it is possible, even with the absence of closure, that some oil could be trapped in a small structure such as the Relishan anticline.

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GENERALIZED COLUMNAR SECTION



GEOLOGIC MAP AND COAL RESOURCES OF THE CARCASS CANYON QUADRANGLE,
GARFIELD AND KANE COUNTIES, UTAH

By
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