



East edge of Wyodak-Anderson coal beds modified from: Dobbin, and Barnett, 1927, and Schell and Mowat, 1972. Coal drill-hole data in part from Montana Bureau of Mines and Geology working under U.S. Geological Survey grants: 14-08-0001-G-182, 14-08-0001-G-298, and 14-08-0001-G-384. Well data as of September 1, 1977.

STRUCTURE CONTOUR MAP

interpretation within an area contoured solely on one or the other of the datum

separation within an area covered solely on the order of the datum (Fig. 1). The distance between the datum and the first occurrence of an area of Wyckoff could be large, a line of heavy dots separates further occurrences of the Anderson and Wyckoff on the topographic map at the same scale. The distance between the datum and the first occurrence of the comparison of structures based on one datum with structures based at the other datum could be large, a line of heavy dots separates further occurrences of the comparison of structures based on one datum with structures based at the other datum. The distance between the two structural surfaces, and to exaggerate the structural irregularities, the distance between the two structural surfaces could be large, a line of heavy dots separates further occurrences of the distance between the two structural surfaces. The distance between the two structural surfaces, and to exaggerate the structural irregularities, the distance between the two structural surfaces could be large, a line of heavy dots separates further occurrences of the distance between the two structural surfaces. The distance between the two structural surfaces, and to exaggerate the structural irregularities, the distance between the two structural surfaces could be large, a line of heavy dots separates further occurrences of the distance between the two structural surfaces.

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structure contour lines. Those shown by heavy black lines also mark abrupt changes in the distribution, sequence, or thickness of coal beds and intercoal sediments as interpreted from closely spaced wells. The most prominent of these, the Rocky Creek fault, trends northwestward diagonally across the Rocky Butte dome and the south end of the Wild Horse depression and is shown on fence diagram A-I (fig. 1). This fault may extend well beyond its

ISOPACH MAP

hundred feet in a sense opposite that affecting the Felix coal bed as part of the Eocene Wasatch Formation is required to account for distribution of coal beds. An apparent reversal in sense of folding occurs in space (rather than time) elsewhere along the House Rock fault. Vertical stratigraphic separation of the contoured datum surface at Butte is as much as 400 ft with the southwest side up, whereas northwest of Rocky Butte about 200 ft of vertical separation with the side up is indicated. Stratigraphic separations do not necessarily negate fault slip; data are insufficient to determine actual fault Structure complexities also characterize other inferred faults. The Neill Butte fault bounding the northwest side of the small Neill Butte anticline between the Big Lost and Logans ranch faults is an example of a possible right-lateral strike-slip fault along the lineament.

GEOLOGIC IMPLICATIONS

From the structure contour and thickness data on these maps, it is concluded that (1) coal spalls and thickness variations are closely related to the structure, including both growth faults and broad folds; (2) intermittently during (and after) coal formations may have played localizing folds and in controlling patterns of deposition and erosion; and (3) pre-Wasatch structural activity was generally more intense than during Wasatch deposition.

Furthermore, the similarity of fault and lineament patterns in T₁ throughout the Powder River Basin with orientations of Precambrian thrusts in the crystalline basement of adjacent block uplifts, a recurrent Tertiary (and older?) growth faults and modern fracture patterns in the basin may be propagated from an underlying mosaic of different

Anderson coal bed is anomalously thin or absent in a narrow north-trending

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FIGURE 1.—FENCE DIAGRAM ACROSS HOUSE CREEK FAULT SHOWING DRILL HOLES A-I, TOTAL DEPTH (T. D.), AND COAL BEDS

FIGURE 2.—FENCE DIAGRAM ACROSS NEIL BUTTE FAULT SHOWING DRILL HOLES, J.R. TOTAL DEPTH (T.D.) FAULTS AND LINEA-

