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PROMISING PLACES FOR OIL IN MOFFAT COUNTY, COLORADO.

Examinations made by Government Geologists.

Early in August, 1923, high-grade oil was encountered in a well drilled by the Texas Production Co. on an anticlinal fold known as the Hamilton dome, about 13 miles south of Craig, in Moffat County, Colo. The oil was found at a depth of about 2,020 feet in beds that lie about 3,000 feet below the top of the Mancos shale, and its presence there was not suspected, for the beds that seem to hold the most promise for oil lie near the base of the Mancos shale, 2,200 to 2,500 feet deeper. The possible amount and value of the oil is not yet known, but even if the oil found is not sufficient in quantity to be of commercial value its occurrence naturally inspires hope that oil in greater quantity may be found in deeper beds, both in the Hamilton dome and in other anticlines in Moffat County.

Parts of Moffat County were mapped during the summers of 1921 and 1922 by a party of the Geological Survey, Department of the Interior, under the direction of J. D. Sears, who is now preparing a report on the area. This report shows that about 5 miles southwest of Hamilton dome there is another dome which in some respects is even more attractive than Hamilton dome as a place to search for oil, and that these two domes are apparently more favorable for oil than any other anticlinal folds in the area studied by Mr. Sears' party.

Shale and Sandstone that may Contain Oil.

The Mancos shale, of Upper Cretaceous age, caps both the Hamilton dome and the Seeping Spring Gulch dome, as the dome 5 miles southwest of Hamilton dome is called. This shale is about 5,300 feet thick. The greater part of it is an almost homogeneous mass of marine shale, which when weathered dry is light gray or drab, but when moist, as it is when it is taken from a drilling well, is dark gray or bluish gray. A dark platy shale, 175 to 200 feet thick, which contains an abundance of scales and other remains of fish, occurs in the basal part of the formation. This fish-scale-bearing member may correspond to the Moway shale, which yields oil at several places in Wyoming. At one place in Moffat County oil was found in joints and between the laminae of this fish-scale-bearing member. Above this member is a sandy zone which at some places includes a bed of sandstone. It has been suggested that this zone corresponds to the Frontier formation, which is the most productive oil-bearing formation in Wyoming.

In the vicinity of the Hamilton and the Seeping Spring Gulch domes a thick lens of sandstone (the Morapos sandstone member of unpublished report by E. T. Hancock) lies about 800 feet below the top of the Mancos shale. This sandstone, which forms a conspicuous escarpment, has been removed by erosion from the crests of both these domes. Beneath the Mancos shale lies the Dakota sandstone, also of Upper Cretaceous age. This sandstone, where it was observed at various outcrops in Moffat County, ranges in thickness from 170 to 250 feet. Its lowest member consists of black chert pebble conglomerate and conglomeratic sandstone. Above this is a somewhat variable ledge of thin sandstone, with which is associated a clayey shale that is at many places greenish or purplish. The uppermost member of the Dakota includes white sugary sandstone, quartzite, and conglomeratic sandstone. At some places the conglomerate at the base of the Dakota sandstone is heavily saturated with oil.

The Mancos shale and the Dakota sandstone are the formations that are most likely to yield oil in the Hamilton and Seeping Spring Gulch domes, but oil may possibly occur in the Nugget sandstone, of Jurassic age, which can be reached by very deep drilling.

Coal Beds Available for the Use of Drillers.

Immediately upon the Mancos shale, covering parts of the flanks of the Hamilton and Seeping Spring Gulch domes, lie the strata of the Mesaverde group (Upper Cretaceous), which in this region have been divided by Hancock into the Iles formation, comprising the basal 1,350 feet of Mesaverde beds, and the Williams Fork formation, which is about 1,600 feet thick. Both these formations contain alternating beds of sandstone and shale and some coal. The thickest beds of coal, however, are in the Williams Fork formation, and this fact is of interest to the oil operator, for this coal is an easily accessible and almost inexhaustible source of fuel.

Hamilton dome.

The Hamilton dome is in the south-central part of T. 5 N., R. 91 W., and the north-central part of T. 4 N., R. 91 W. The center of the dome is almost at the southeast corner of section 33, T. 5 N., R. 91 W. The town of Craig, which is the terminus of the Denver and Salt Lake Railroad, is about 13 miles distant from the dome by auto road. Water for drilling can probably be had from either Morapos Creek or Williams Fork by a pipe line 1 to 4 miles long. The coal beds of the Mesaverde formation are easily accessible.

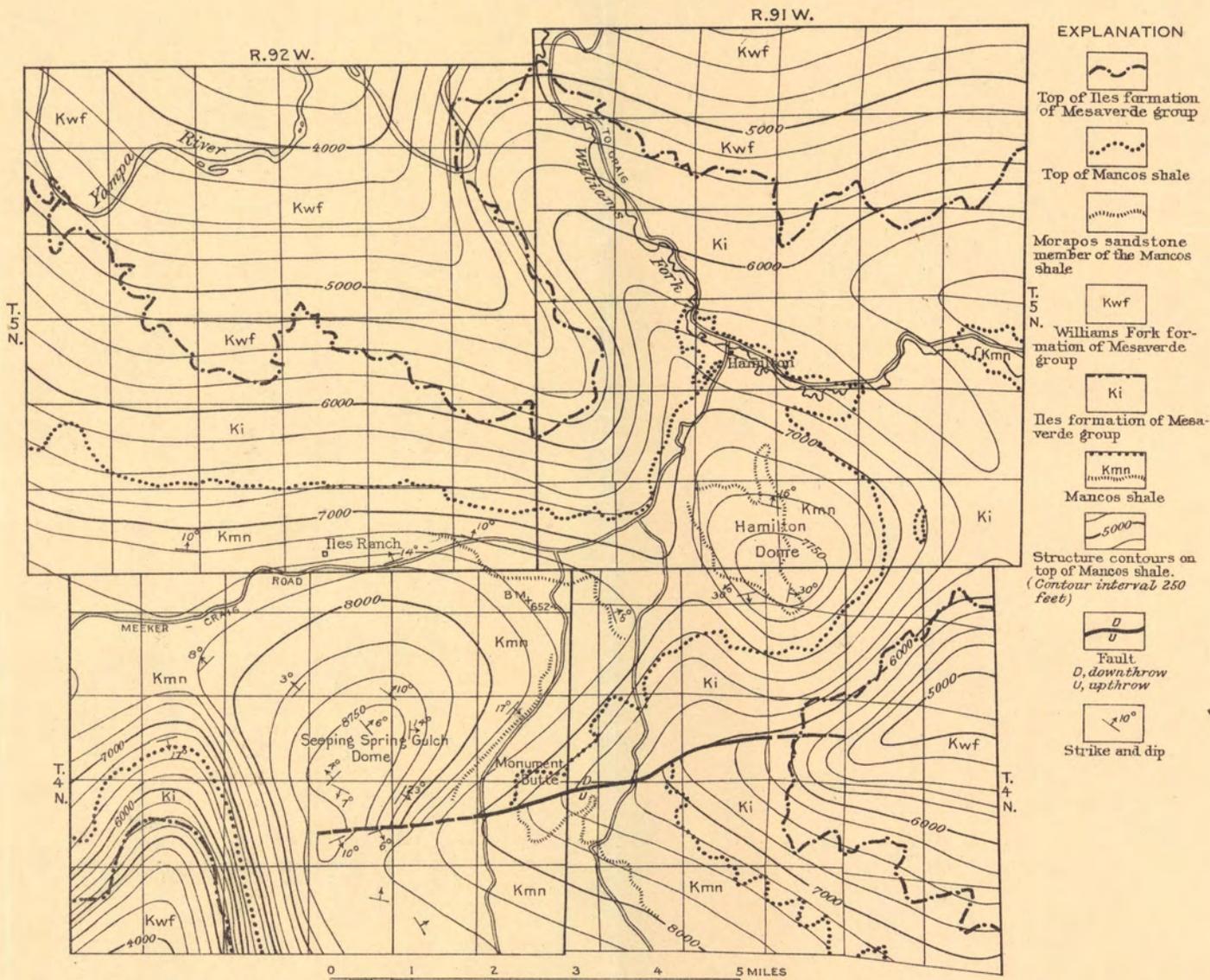
The Hamilton dome has a closure of about 800 feet. It is on the south end of the long Williams Fork anticline, and appears to be by far the most promising part of that anticline. The showing of oil found in the well now being drilled by the Texas Production Co. was found below the center of the Mancos shale at a horizon where so far as is known, no oil has yet been found elsewhere in Colorado or Wyoming. The oil in the Rangely oil field also is obtained from the Mancos shale, but apparently from a horizon higher in the formation than the oil found in the Hamilton dome. No sandstone suitable to serve as a reservoir for oil has been observed above the sandy zone that lies about 250 feet above the base of the formation and which should therefore lie about 4,150 feet below the surface at the center of the Hamilton dome. The most promising sand appears to be the Dakota, which should be found at a depth of about 4,400 feet below the surface.

Seeping Spring Gulch dome.

The Seeping Spring Gulch dome is near the center of T. 4 N., R. 92 W. Its highest part, structurally, is in secs. 22, 23, and 27 of this township. It is about 18 miles by auto road from Craig.

This dome is on the Axial Basin anticline, not far from its southeast end, and it appears to be by far the most promising part of the fold. In fact the combination of structural conditions and deep erosion of the Mancos shale over the top of the anticline make this dome the most inviting structural feature to the prospector in the part of Moffat County mapped by Mr. Sears' party. The closure is probably about 300 feet, although it may be more. The Dakota sandstone should not lie more than 3,000 feet below the surface under the center of this dome, and the Nugget sandstone, of Jurassic age, should lie less than 1,000 feet deeper.

Water for use in drilling would probably have to be piped from either Milk or Morapos Creek by a pipe line 2 to 4 miles long. An abundant supply of fuel can be obtained from the Mesaverde coal beds nearby.



MAP SHOWING GEOLOGIC STRUCTURE OF HAMILTON AND SEEPING SPRING GULCH DOMES AND VICINITY, MOFFATT COUNTY, COLO.