

GEOLOGICAL AND STRUCTURAL CONDITIONS IN THE UNION OIL AND GAS FIELD

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Location. The above mentioned gas and oil field is located in section 31 in Pike County and in sections 1, 6, and 36 in towns 1 north and in 1 south in range 9 west and in 10 west in Gibson County, Indiana.

STRATIGRAPHIC CONDITIONS OF THE FIELD

The formations which are represented in the area include formations ranging in age from the Pleistocene to the Mississippian.

Pleistocene and Post-Pleistocene Formations. The rock materials which have been assigned to these divisions by the writer consist of clays, sands and gravels. The thickness of such deposits in the area varies from a few feet to as much as one hundred feet.

Pennsylvanian Formations. The Pennsylvanian formations underlie the Pleistocene formations. They consist of clays, shales, sandstones, limestones and beds of coal. The total thickness of the Pennsylvanian group in the Union field is as much as 1,000 feet.

The Mansfield sandstone which forms the basal member of the Pennsylvanian group in the area lies uncomfortably upon the eroded surface of the rocks of Mississippian age. In thickness the Mansfield varies from 150 to 250 feet within the Union field. The Mansfield sandstone is of coarser texture, usually, and may be distinguished from the finer textured sandstones of the Chester divisions which lie below it.

The Mansfield sandstone in many parts of Indiana contains one or more beds of coal but in the Union area no beds of coal were recorded in the logs of the wells drilled.

The Brazil group of formations which lies above the Mansfield contains in many parts of the Indiana coal-bearing area the Lower Block, Upper Block, Minshall and Number II coal beds but in the Union area no coal beds were recorded by the drillers for this group of formations.

The Staunton group of formations usually contains coals which are indicated as coals Numbers III, IIIa, and IV. Coals III and IIIa are often thin and in many places in Indiana are not present but Coal IV is usually present. None of these coals were recorded by the drillers in the Union area.

The Petersburg group, which is apparently the most important group in the Union area, contains coal beds Numbers V, VI and VII. These three beds have a total thickness of twenty-one feet. These coals are included in the Allegheny division of the Pennsylvanian system.

The interval between Coal VII and Coal VI in the Union area is 117 feet. The interval between Coal VI and Coal V is 140 feet which

is greater interval than that which exists between these coals in the northern part of Indiana.

Coal V has thickness of ten feet and lies 320 feet below the surface in the Union area. Coal VI has a thickness of five feet and lies 320 feet below the surface. Coal VII has a thickness of six feet and lies 197 feet below the surface in the Union area.

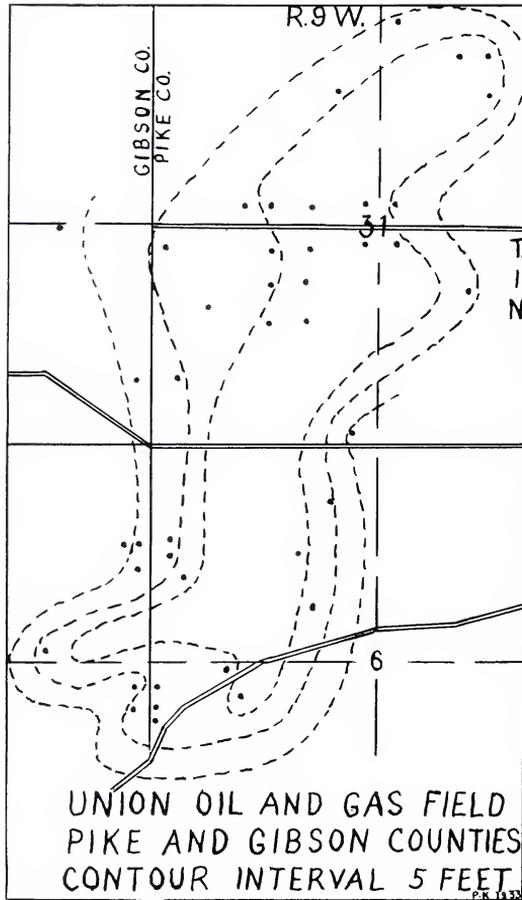


Fig. 1.

STRATIGRAPHIC COLUMN IN THE UNION AREA
Pleistocene and Post-Pleistocene Formations

Soil	1 foot
Clay, yellow, soft.....	19 feet
Sandy clay, hard (hardpan).....	8 feet

Pennsylvanian Formations

Shale, light, soft.....	20 feet
Sandstone, light, broken.....	12 feet
Shale, dark, soft.....	55 feet

Sandstone, light, soft.....	13 feet
Shale, dark, soft.....	7 feet
Shale, light, soft.....	10 feet
Sandstone, light, hard.....	15 feet
Shale, dark, soft.....	37 feet
Coal.....	6 feet
Shale, dark, soft.....	8 feet
Shale, light, soft.....	19 feet
Shale, sandy, light, soft.....	45 feet
Sandstone, gray, hard.....	15 feet
Shale, dark, soft.....	18 feet
Limestone, brown, hard.....	6 feet
Shale, dark, soft.....	6 feet
Coal.....	5 feet
Sandstone.....	10 feet
Shale.....	20 feet
Limestone, hard, white.....	5 feet
Shale.....	25 feet
Limestone, white, hard.....	6 feet
Shale, light, soft.....	44 feet
Shale, brown, soft.....	15 feet
Shale, dark, soft.....	15 feet
Coal.....	10 feet
Shale, dark soft.....	10 feet
Limestone, light, medium sandy.....	10 feet
Shale, light, soft.....	20 feet
Limestone, light, hard.....	3 feet
Shale, dark, soft.....	52 feet
Limestone, gray, hard.....	3 feet
Shale, light, soft.....	7 feet
Limestone, medium, soft.....	5 feet
Shale, light, soft.....	20 feet
Clay, white, soft.....	5 feet
Shale, dark, soft.....	60 feet
Shale, light, soft.....	80 feet
Sandstone, gray, hard.....	10 feet
Shale, light, soft.....	35 feet
Sandstone, medium soft, light.....	55 feet
Shale, light.....	5 feet
Sandstone (water).....	35 feet
Shale, light, soft.....	20 feet
Sandstone, light.....	20 feet
Sandstone, dark.....	90 feet
Sandstone, white.....	20 feet
Shale.....	5 feet

The Chester Formations (Mississippian)

The Chester formations rest beneath the strata of Pennsylvanian age in the Union area. The strata include a series of limestones, shales, and sandstones as follows:

Shale, light, soft.....	5 feet
Limestone	5 feet
Shale	10 feet
Sandstone, hard at bottom.....	63 feet
Shale, dark.....	22 feet
Limestone, gray, hard.....	12 feet
Shale, light.....	18 feet
Limestone	5 feet
Shale	5 feet
Limestone, sandy.....	5 feet
Shale, light.....	15 feet
Red rock.....	3 feet
Shale, light.....	7 feet
Sandstone, gray	23 feet
Shale, dark.....	13 feet
Limestone	14 feet
Shale	15 feet
Sandstone	15 feet
Shale	6 feet
Sand and oil.....	12 feet
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Total depth.....	1,323 feet

STRUCTURAL CONDITIONS IN THE UNION FIELD

In order to determine the structural conditions in the Union field a thin brown limestone was used as a key horizon. This limestone was easily recognized in the well cuttings and since the limestone did not vary greatly in thickness throughout the field either the top or the bottom of the limestone could be used as a datum plane. The limestone is probably one in the Golconda formation of the Chester series.

The structural conditions may be due to the compaction of soft sediments or to folding of the rocks. In order to determine definitely the type of structural conditions in the area it will be necessary to drill a number of wells along the axis of the anticline as it is now outlined. The structural conditions may exist as they have been outlined on the structural map or they may consist of a series of small anticlines and synclines occupying the axis of the general anticline. Future drilling will determine definitely the structural conditions of the axis of the anticline as outlined on the structural map.

Members of the field party were: James Organ, Robert Grosjean, George Whitlatch, and Joseph Holm. Mr. Paul Kerr assisted in the preparation of the structural map.

