

HIAWATHA DOME AND NEARBY STRUCTURES.

Ever since the first oil development in the Rockies and the first geologists made their examinations, the Tertiary formations have been discarded as worthless to the oil man. In spite of the fact that several places were found where the Tertiary strata showed oil and gas seeps, the opinion of the early explorers that the Tertiary was barren, held.

In the stratigraphy of Wyoming's sedimentary strata, the older layers were laid down on the Archean rocks of the earth's core and on top of these was deposited the later formations that geologists now divide into the eras of the earth's existence since life appeared.

On the Silurian strata was laid the Devonian which is the deepest horizon that may hold petroleum in the Rocky Mountain Region. Some exploration of this Devonian horizon in northern Montana appear to bear out the theory advanced by some geologists that it is petroliferous, but no definite production has been found there as yet.

Laid down on top of the Devonian is the Carboniferous, the great oil bearing horizon of the eastern States and the south. Here in the Rockies it is rather thin compared to other regions and it contains the Embar and Tensleep sands of Wyoming, which are productive of black oil.

On top of the Carboniferous comes the greatest oil bearing horizon of the Rockies, the Cretaceous, (though there is a narrow layer of Jurrassic and Triassic between the Cretaceous and Carboniferous. The Cretaceous contains the famous Frontier sands of central Wyoming which are the Wall Creeks of Salt Creek, the Frontier sands of the Lost Soldier, the Torchlight and Peay of the Big Horn Basin and the upper producing sands of the Big Muddy.

In these sands the early geologists based their hopes of production and these hopes were well repaid in light grade oils that gushed from the wells in seemingly unlimited capacity in those days.

After Nature had laid down these strata, one upon the other, under salt seas and the waves and ocean currents had brought the debris of which they were made, She suddenly decided to change her methods entirely and the great oceans of salt water that formerly covered this region, flowed away and in their place came a fresh water sea, also conveying the debris of erosion and which laid down more strata on top of the Cretaceous. This was the great Tertiary era when the warm blooded mammals first made their appearance and gradually replaced the reptiles that had lived before in the Cretaceous.

As the oil man came to the Rockies, he remembered the advice of the early students of the geology of this region and shunned the Tertiary as he would the plague. Some, more venturesome than others however, planned to drill wells through this Tertiary overlay at certain points and try to strike the Cretaceous sands below. In doing so they found oil sometimes. Pilot Butte, Florence, Plunkett and LaBarge are examples.

Gradually the fear of the Tertiary wore down until at last the Meyers well was drilled on the Hiaswatha Dome in Moffat County, Colorado, on a Tertiary structure and this has started a general revision of ideas regarding Tertiary domes. The Meyers well came in a big gasser and proved conclusively that the Tertiary structures are well worth looking into as possible oil and gas structures.

The Hiaswatha Dome lies across the Wyoming and Colorado state line with its axis running northeast and southwest and having the greater area in Colorado. It lies mainly in Township 12, Range 100, in Sweetwater County, Wyoming and Moffat County, Colorado. It has a closure of 400 feet and a productive area estimated at 10 square miles.

The Meyers well found the pay at 2,030 feet and in a sand believed to be in the base of the Wasatch formation of the Tertiary. There are several such sands that are porous and of considerable thickness, ranging from a thin bed to hundreds of feet, in the base of the Tertiary.

While Wyoming will have only a part of the Hiawatha Dome, there are two other well defined structures in that area and lying wholly in the State that appear to be excellent prospective domes. These are the Canyon Dome and the Alkali Creek Dome, also the lower or south end of the great Baxter Basin anticline runs to within a few miles of the Hiawatha Dome, with its great possibilities that have been tested only on the northern end.

So far, the Meyers well has shown only a wet gas, as it is located well up on the Hiawatha Dome, there remains a good chance that oil will be found down the slope though this can only be proven by drilling. In case the Hiawatha Dome is found to contain gas only, oil could still be a possibility on the structures nearby.

THE OCCURRENCE OF OIL IN HIAWATHA DOME IN SWEETWATER COUNTY WYOMING

We have three great oil producing geological divisions in Wyoming: the top or upper division is called the Tertiary, the middle division is called the Cretaceous and the lower division is usually referred to as the Carboniferous. Up to a short time ago the geologists considered the Tertiary area barren of petroleum. Practically all of our light oil comes from the Cretaceous, and the Carboniferous strata produces black oils of asphaltic base in the main. For many years the geologists, in their prospecting for oil structures, paid no attention to the Tertiary anticlines and domes because it was believed that the Tertiary, being so recent, did not contain petroleum deposits. However, as the field became developed and the search for new structures grew, some wildcatting took place on some of these Tertiary structures and domes that are plentiful over the State. One of these happened to be the Hiawatha Dome, sometimes referred to as Vermillion Creek Dome, which is located on the line between Wyoming and Colorado in Sweetwater County, Wyoming and Moffat County, Colorado.

The exploration of the Hiawatha Dome resulted in the discovery of a considerable gas area there. So far no names have been given to the sands from which this gas comes. Some of the wells produced a very wet gas and, while the production of this field has been only gas on a commercial scale, at times there has been a rather large output of drip gasoline from these wells. This wetness of the gas would indicate that oil might be had in that vicinity.

As the pressure diminished slightly due to the production of the gas in some of the wells, a sharp watch was kept for any indication of oil, and recently three of the wells began to show oil. This crude is a light green paraffin base oil with a gravity of 41° and capable of being refined to all the usual oil products produced from a paraffine base oil.

So far the wells showing this oil have not been produced for the oil production, but have merely been shut in and held dormant for the time being.

At this time, one well is drilling in the Hiawatha Dome. The location of this well is east of the main development about six miles and the well is in Wyoming, less than a mile from the Colorado-Wyoming line. This well had a showing of oil and a small showing of gas but is not a commercial well at this time. However, it has not yet reached the main producing horizon of the field.

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