

GEOLOGICAL REPORT

on

WELLS SPRINGS AREA

by

Carl J. Schilling

(1933)

In accordance with your instructions, I have personally made a special examination of the area surrounding Wells Springs, and particularly that part lying within your holdings, namely: Sections Nos. 16, 20, 21, 28 and 29, Township 2 North, Range 25, E.W.M., and in which your gas well is located.

I wish to report the following:

INTRODUCTION.

The geological structure, together with the occurrence of a producing gas well; the proper reservoirs for the encasement of oil and gas; the adequate and proper formations existing, - and being on the general trend of an already commercially producing gas field, have attracted attention to this area for a number of years.

LOCATION

The Wells Springs Area is located in Morrow County, Oregon, in the north eastern part of the State, near Ione and Heppner, and about fifty miles west of Pendleton, (as indicated on the State map attached) . This map indicates the proximity of good roads to the property, as well as the commercial outlet for gas in the immediate vicinity. The farm roads leading from the main highway are sufficiently good to permit trucking to the well at all times of the year.

TOPOGRAPHY

A broad anticline with three domes is indicated by the rock structures and surface elevations as extending northeast from Ione, a distance of 10 or 12 miles, while the South, Ione Butte appears to be located just at the junction of a long narrow fold extending for 25 miles or more to the northwest.

In this general anticlinal structure are three distinct domal structures (see Topographical map), Ella Butte, Ione Butte and Saddle Butte.

Ella Butte has a few rock exposures and its structure can only be deciphered from surface indication. It is evidently an uplift and the showings of gas along its course strongly suggest that it is a true dome.

Lone Butte shows the steepest dipping beds seen anywhere in the district and dips of 10 degrees can be seen on the north side. It is certainly a true dome.

Saddle Butte also is a true domal structure and fairly pronounced dips can be seen in the canyon which cuts it.

ACTUAL OCCURRENCE OF GAS.

In three localities, all on Ella Butte, are actual occurrences of gas seepage:-

First: At Wells Springs (see map) there has been a constant flow of gas, sufficient to satisfy the demands of the farmhouse on the property, since its completion some eighteen months ago. The gas is piped some 600 feet from an improvised tank, being used for cooking, heating, and lighting. This is in spite of the fact that there is a 325 foot column of water in the well. The log of the well shows the water at 180 feet and the gas at 325 feet. The history of this well is unique, in that it was located in a syncline against a fault, as will be evident to any oil man, by examining the contours of the enlarged section taken from the U. S. Topographical map. The writer has inscribed the fault. This location was certain to produce a flow of water. It is not too much to prophesy that this well, in spite of its location, would make a million and a half cubic feet of gas per day, with a proper water shutoff. This in itself with the small towns in the immediate vicinity, would make a very profitable enterprise.

Second: Zink's Well, drilled to a considerable depth, some years ago, (exact depth not known), yields a small flow of gas. This well is located in Section 24, or about the center of the line between 24 and 25, T. 24 N. 1 N.

Third: About 2 miles northeast of #2, a small dug well several years ago produced considerable gas. It is long since filled up by wash down the gulch. (No gas can be observed here now).

GEOLOGY.

It is the consensus of opinion of leading geologists as well as competent paleontologists that the territory east of The Dalles is defined as a marine basin of the Cretaceous and Jurassic age; fossils found in the Blue Mountains to the east of this property enabling this determination to be made. I might specifically mention Professor Condron and P. M. Handy, the latter having been associate geologist with the State College at Pullman, Washington, who passed favorably on this property in October, 1924, and to whom I am indebted for material embodied in this report.

Having determined the geological period to which this territory belongs, we are led to arrive at certain conclusions by comparison, namely: The large producing fields of Wyoming are of a corresponding age, - the proper structural conditions are evident, - gas actually exists in quantity - Benton County (Rattlesnake Hill dome,) Washington, is in the same marine basin.

A brief summary of operations in the Rattlesnake disclose that there are eighteen wells completed to an average depth of 700 feet; the production varying from 250,000 feet in the 4 inch holes to 5,000,000 feet in the eight inch holes. The Northwestern Natural Gas Corporation is now serving four small towns, Sunnyside, Prosser, Grandview, and Mabton, with lines contemplated to Yakima and Walla Walla.

A reliable test on this gas showed from 3 to 7 pints gasoline per thousand feet - hence it is wet and a good indicator of oil below. We could not expect much of a showing of gasoline in the Wells Springs well from the fact that the 325 feet column of water would absorb the gasoline content; however, the burning test gives every indication that it is wet.

SUMMARY

There is every reason to believe that gas in commercial quantity exists within the area covered by this report, and at a shallow depth. While the presence of oil is more or less a speculation, gas should be very profitable.

In conclusion, I will say that your property has so many splendid features, such as transportation, good roads, paved boulevards, accessibility to towns from a marketing standpoint, with the fact that gas is encountered at shallow depth - that your efforts should be very successful.

Respectfully Submitted;

(signed) Carl J. Schilling

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ANALYSIS OF GAS
from
EASTERN OREGON WELLS SPRINGS STRUCTURE.

| | % by volume |
|-------------------------|-------------|
| Carbon dioxide | None |
| Oxygen | 2.0 |
| Nitrogen | 7.8 |
| Methane | 91.0 |
| Ethane | None |
| B.T.U's per cu.ft. 1204 | |

Analysis by Washington State College
B.T.U's by Stahl