

APRIL 12, 1989
NARRATIVE FOR
LAWRENCE COUNTY, SOUTH DAKOTA
OIL AND GAS DEVELOPMENT POTENTIAL MAP

INTRODUCTION:

Lawrence is located along the western state line. Butte county is to the north, with Meade County forming the eastern line. Pennington County is to the south.

The south half of the county is mountainous and heavily timbered, being part of the South Dakota Black Hills. From the town of Spearfish, the geomorphology changes moving northward to rolling hills and small open plains.

The Tertiary age Black Hills Uplift to dominate the south half of the county. The central part of the county, is the northern part of the uplift. In this area are the exposed granites, and meta-sediments of Pre-Cambrian age mixed with Tertiary age volcanics (Darton, 1951). Along the flanks of the Pre- Cambrian rocks are the steeply dipping Paleozoic age rocks. The northern part of the county has Cretaceous age Belle Fourche and Mowry Shales at the surface with the basement rocks only a few thousand feet below surface.

Because of the influence of the Black Hills Uplift on the sedimentary package of Paleozoic and Cretaceous age rocks, only seven wells have ever been drilled in the entire county, two in the past 15 years. Those two wells were in the extreme northwest corner of the county.

There are no Indian lands within this county.

OCCURRENCE POTENTIAL:

Lawrence County has areas of low and very low to unknown occurrence potential. The very low to unknown lands are in the southeast corner of the county. These are areas in which only the Pre-Cambrian or Tertiary age volcanic rocks are exposed at the surface and with a lack of any sedimentary package to contain source rocks. The low occurrence potential lands are areas in contact with the Pre-Cambrian and Tertiary volcanics and exhibit a portion of a sedimentary package (i.e. parts of the Paleozoic section) but which lack thickness and drilling data.

A type log for the county is the #1 Weisman, sec. 30, T. 7 N., R. 4 E., The well was drilled in 1951, spudded in the Sundance and reached maximum depth in the Deadwood Formation. This well was plugged and abandoned.

DEVELOPMENT POTENTIAL:

Lawrence County has three areas that contain moderate, low and very low to unknown development potential lands. The very low to unknown lands comprise eight townships in the southeast corner of the county. They are areas in which only the Pre-Cambrian or Tertiary age volcanic rocks are exposed at the surface with a lack of any sedimentary package that contain source rocks. The low development potential lands are areas in contact with the Pre-Cambrian and Tertiary volcanics which exhibit a portion of a sedimentary package (i.e. parts of the Paleozoic section) but lack drilling data. These ten townships are in the central part of the county. The moderate development potential lands are areas that contain a sedimentary package (i.e. Paleozoic and Cretaceous age rocks), but due to the influence of the uplift and lack of drilling are classified as moderate. These eight townships are in the northern part of the county.

Only two wells in the past 15 years have been drilled in this county. There are no producing formations but some shows have been reported in the Minnelusa Formation. Future activity is expected to be the same and occurring most likely in the northwest corner of the county.

REFERENCE CITED

Darton, N. H., 1951, Geologic map of South Dakota: U. S. Geological Survey, scale 1:500,000