

APRIL 18, 1989
NARRATIVE FOR
HANSON, MCCOOK, MINNEHAHA AND MOODY COUNTIES, SOUTH DAKOTA
OIL AND GAS DEVELOPMENT POTENTIAL MAP

INTRODUCTION:

This four county area is located in the southeastern part of the state, and east of the Missouri River. The topography is open grasslands with isolated rolling hills and hummocky geomorphology. All of the four county area is underlain by the structurally high Pre-Cambrian Sioux Quartzite Ridge. This west trending structural arch is composed of Pre-Cambrian granites and Sioux Quartzite. The outcrop and subcrop of the quartzite mapped by Darton (1951), delineates the contact between the thin Cretaceous rocks and this Pre-Cambrian basement high. The entire four county area is mantled by recent to Pleistocene gravel, with thickness to 400 feet.

There has been no oil or gas drilling in this four county area. There are no Indian lands within the four county area.

OCCURRENCE POTENTIAL:

All four counties have low and very low to unknown occurrence potential lands. All townships within or adjacent to the outcrop and subcrop of the Sioux Quartzite are classified as very low to unknown occurrence potential. This is based on the lack of any sedimentary package that would contain source and reservoir rocks, and lack of exploration data. All townships outside the influence of the outcrop or subcrop of the Sioux Quartzite are classified as low occurrence potential. This is based on the presence of very thin Cretaceous age rocks which contain limited source and reservoir rocks, and the lack of exploration data.

There is no type log for this four county area.

DEVELOPMENT POTENTIAL:

Hanson and Moody Counties have both low and very low to unknown development potential lands. All townships in these two counties where the Cretaceous rocks are outside the influence of the subcrop or outcrop of the Sioux Quartzite are classified as low development potential. This is based on the presence of thin Cretaceous rocks of less than 2,000 feet (Mallory, 1972), and the lack of exploration data or established production.

All lands in McCook and Minnehaha Counties and the remaining lands in Hanson and Moody Counties are classified as very low to unknown development potential. The very low to unknown development potential lands in all four counties are townships that are inside or adjacent to the subcrop or outcrop of the Sioux Quartzite. This classification is

based on: 1) the lack of a sedimentary package to provide source and reservoir rocks (Mallory, 1972); 2) the lack of exploration data and established production.

Based on the geologic setting of the area, it is expected that this four county area will have a low level of surface disturbance due to oil and gas exploration in the next 15 years.

REFERENCE CITED

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

Mallory, W. W., (ed.) 1972, Geologic atlas of the Rocky Mountain Region: Rocky Mountain Association of Geologists, p.56.