

January 8, 1997  
NARRATIVE FOR  
HARDING COUNTY, SOUTH DAKOTA  
OIL & GAS DEVELOPMENT POTENTIAL MAP

INTRODUCTION

Harding County lies west of the Missouri River in the extreme northwestern corner of South Dakota. The topography in this county is primarily rolling hills coming off the Black Hills Uplift to the south. Geologically, Harding County is on the northeast flank of the Black Hills uplift and the southwestern flank of the Williston Basin. This is the most active county for oil and gas drilling in the South Dakota Resource Area with over 100 producing oil and gas wells.

OCCURRENCE POTENTIAL

All of Harding County is classified high oil & gas occurrence potential. Regional geologic mapping (Mallory, 1972, p. 56) indicates the county contains more than 5000 feet of sedimentary rocks. The type log for the county, from the Smokey Oil 24-19 Gruber well (T. 23 N., R. 8 E., Sec. 19), encountered 9436 feet of sedimentary rock and only reached the Ordovician Red River Formation. This is the same package of rocks which contain source beds and producing reservoirs in the adjacent Williston and Powder River Basins.

This county has been a target for oil and gas exploration for over 50 years (Rothrock, 1937). With the advent of computer modeling of the Cretaceous Shannon gas sands (Shurr et al., 1988), Harding County can be expected to experience at least as much activity in the next 15 years as in the previous 15 years.

DISCUSSION OF DEVELOPMENT POTENTIAL RATINGS

All of the active producing townships have been rated as high oil and gas development potential in Harding County. There are two main productive horizons in these townships: 1) the Cretaceous Shannon-Eagle natural gas producing interval in the vicinity of West Short Pine Hills, and 2) the Ordovician Red River oil producing region in the northwest part of the county.

Because exploration and development typically centers around traditional producing areas, these townships can expect a high amount of development activity over the next fifteen years, relative to the rest of the county. Based on this analysis, anywhere from 8 to 54 additional wells could be drilled in each of these townships, with numerous producers expected in the next fifteen years.

The rest of Harding County is classified moderate development potential because of the numerous wells that have encountered sub-commercial gas shows in the Eagle and Shannon Formations and the presence of Red River oil in some scattered wells.

Wildcatting and limited development in the Eagle-Shannon interval and the Red River Formation may occur in this county in the next 15 years. This will involve anywhere from one to seven wildcat wells being drilled per township. Should a major discovery be found in any of these townships, that particular township will experience additional drilling activity.

## REFERENCES CITED

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

Rothrock, E.P., 1937, Structural conditions in Harding County: South Dakota State Geological Survey Report of Investigations No. 28, 35 p.

Shurr, G.W., Nelson, C.L., and Jenkins, J.T., Jr., 1988, Prediction of sandstone geometry in the Upper Cretaceous Shannon Sandstone in the Northern Powder River Basin, in R.P.

Diedrich and others(eds.), Eastern Powder River Basin-Black Hills Guidebook: Wyoming Geological Association 39th Annual Field Conference, p.217-228.