

APRIL 13, 1989  
NARRATIVE FOR  
BENNETT, MELLETTE, SHANNON, TODD, WASHABAUGH, COUNTIES, SOUTH  
DAKOTA  
OIL AND GAS DEVELOPMENT POTENTIAL MAP

INTRODUCTION:

These five counties are located along the south central state line between South Dakota and Nebraska. The northern county lines are partially controlled by the Cheyenne and White Rivers and Pennington County, with Fall River County to the west and Tripp County to the east. Bennett and Mellette Counties are the only counties that are classified in this report. Shannon and Washabaugh are part of the Pine Ridge Indian Reservation, and Todd County is the Rosebud Indian Reservation. Indian lands are not classified in this report.

The five county areas are comprised of rolling hills and open grasslands with the major drainage occurring in a northward direction.

On a regional scale this five county area is on the hinge line between the Williston Basin to the north and the Kennedy Basin to the south. This structural trend is created by a Pre-Cambrian basement high that extends in an east-west direction across the state, and the Cambridge Arch that extends from Nebraska in a northwest direction into Fall River County and influences the southern part of Shannon County (Steece, 1961). The majority of the area is covered by the Miocene White River Formation and the Oligocene Arikaree Formation. The sedimentary package from the surface through the Cretaceous and Paleozoic section increases thickness southward into Nebraska.

The total drilling activity for Bennett and Mellette Counties is limited to six wells, two of which were drilled in the past 15 years. Currently there are no producing wells within the five county area.

The type log for this area is the #1 Farley, sec. 10, T. 36 N., R. 35 W.. This well was drilled in 1983. It spudded in the Cretaceous Arikaree Formation, and reached the Pre-Cambrian at a drilling depth of 4370 feet.

OCCURRENCE POTENTIAL:

Both Bennett and Mellette Counties are classified as moderate potential occurrence. These counties have between 2,000 and 5,000 feet of Cretaceous and Paleozoic rocks (Mallory, 1972) There is no established production, therefore, a moderate occurrence potential is assigned to these counties.

### DEVELOPMENT POTENTIAL:

All of Bennett and Mellette Counties are classified moderate development potential. They are known to contain a complete sedimentary package of Paleozoic and Cretaceous age rocks. Due to the lack of production, they are considered as moderate development potential. Bennett County has had only 3 wells ever drilled, with one of those in the past 15 years. Mellette County also only has had three wells ever drilled and with one of them in the past 15 years. Future activity for both counties is expected to be the same for the next 15 years with only one or two wells being drilled per county.

## REFERENCES CITED

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

Steece, F. V., 1961, Pre-Cambrian surface of South Dakota: South Dakota Geological Survey, Mineral Resource Investigation Map, No. 2, scale: 1 inch = 30 miles.