A geologic and economic appraisal was made of the oil potential of the Williston Basin of Montana, North Dakota and South Dakota. The major producing intervals investigated were the Ordovician, Devonian and Mississippian.

Data for the appraisal came from field and drilling statistics and geologic studies of more than eighty producing oil fields.

An extrapolated oil production decline curve was first constructed for a theoretical "average" producing well for each field. From this an estimated economic return was calculated which included cost of drilling and discounting for royalty, taxes, etc. No considerations were made for exploration and land acquisition costs.

The estimated returns, after posting on Williston Basin geologic maps, showed the relative geologic and economic factors of the major Ordovician, Devonian and Mississippian production within the basin and where the best economic returns might be expected.

**Ordovician:** The best present-day economic returns, ranging from $2.50 to $3.50 per dollar invested, are found on the northwestern flank of the basin in Sheridan and Roosevelt Counties, Montana. Traps in this area are generally small structural closures with stratigraphic help from secondary dolomitization. Fairly deep drilling depths of 10,000 to 12,500 feet, however, are detrimental to the economics. Multiple pay potential, on the other hand, is a favorable factor for the area.

**Devonian:** The best economic returns of $9.00 to $15.00 per dollar invested are present in the extreme northwestern portion of the basin in Roosevelt County, Montana. Traps here are structural closures resulting from differential solution of the Devonian Prairie salt. Drilling depths are moderate ranging from 7000 to 8000 feet.

**Mississippian:** This is the most rewarding production in the Williston Basin. Returns of $10.00 to $20.00 per invested dollar can be made in the northeastern portion in Renville, Bottineau and Ward Counties, North Dakota. Traps in this region are primarily stratigraphic pinchouts or truncations with an occasional structural assist. Pay depth is less than 5000 feet which is a very favorable economic factor.