# Petroleum Geology of the Bakken Formation Williston Basin, North Dakota and Montana

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#### INTRODUCTION

The Bakken Formation is a relatively thin unit and is limited in areal distribution to the deeper part of the Williston Basin (Fig. 1). In spite of its insignificant volume when compared with that of the total sedimentary section, the unit is undoubtably one of the most important when considered in relation to the presence of oil and gas. Organic-rich shales in the Bakken have been documented as excellent petroleum source-rocks (Dow, 1974; Williams, 1974) and are believed to have generated the tremendously large volumes of oil found in reservoirs somewhat distantly located above and below the unit. Produc-

tion has been established within the Bakken itself, and considerable remaining exploration potential may exist within the elusive fracture-type reservoirs which characterize the unit. Since the Bakken is relatively isolated by seemingly impervious overlying and underlying lithologies and is the only source-rock within several thousand feet of vertical stratigraphic section, studies of its hydrocarbon-generation (maturity) pattern, associated physical changes and fluid pressure phenomena, and its relation to known reservoirs and accumulations may be of value in deciphering mechanisms and routes of migration and in adding a factor of predictability to the overall science of petroleum geology.

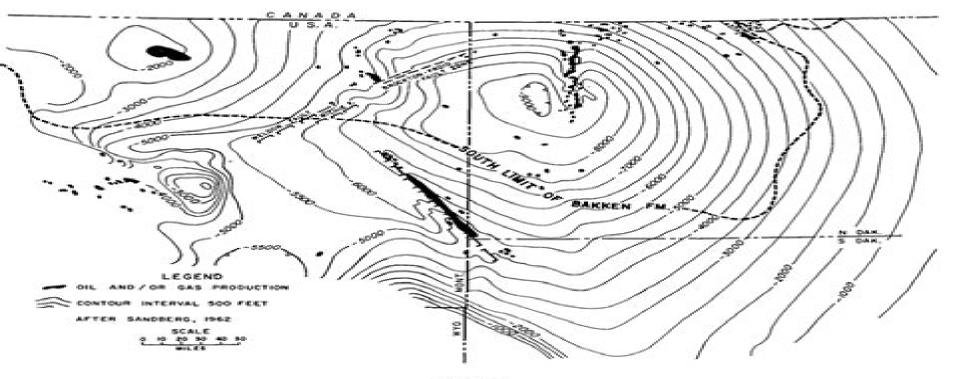


FIGURE 1

Williston basin, United States of America with structure contours on base of Mississippian strata and limit of Bakken Formation.

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## **Montana Geol Society 1978 Williston Basi**

R. A. Rahmani, R. M. Flores

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Stratigraphic Systems Glenn S. Visher, 1999-12-08 Suitable as a primary text for undergraduate courses in sedimentology and stratigraphy BOOK JACKET Water-resources Investigations Report ,1997 Studies in Abnormal Pressures W.H. Fertl, R.E. Chapman, R.F. Hotz, 1994-02-01 When Fertls first book Abnormal Formation Pressures was published by Elsevier in 1976 the topic was relatively new in book form In the years that followed his book became the standard work for petroleum engineers and drillers The list of major petroleum provinces with abnormally high pore pressures has grown steadily over the years and with it has grown our knowledge and experience There have also been technological advances A new book was required but no longer could the topic be covered adequately by one person The problems of abnormally high formation pressures encountered in the subsurface while drilling for petroleum are very diverse involving geologists geophysicists reservoir engineers drilling engineers and borehole logging engineers. The acute anticipation of such pressures before drilling has become possible with modern technology This book treats these developments and covers the following topics world occurrences the geology of abnormal pore pressures and the background theory reservoir engineering aspects of abnormally pressured reservoirs detection of abnormal pressures by geophysical methods before drilling and during drilling and their evaluation after drilling It examines the special problems of shallow hazards from shallow abnormal pressures and relief well engineering to control blowouts It also examines the generation of abnormal pressures from hydrocarbon generation in the Rocky Mountains and the distribution of abnormal pressures in south Louisiana USA The topics are examined from a practical point of view with a theoretical background There is a glossary of terms and a relevant practical conversion table Both SI units and the conventional US oil industry units are used

Saline-water Contamination in Quaternary Deposits and the Poplar River, East Poplar Oil Field, Northeastern Montana Joanna N. Thamke, Steven D. Craigg, 1997 Geochemistry in Petroleum Exploration Douglas W. Waples, 2013-12-01 This book is intended primarily as a textbook for geolo gists engaged in petroleum exploration Its purpose is to introduce the reader to organic geochemistry and to show how to apply geochemistry advantageously in an exploration program I have made the explicit assumption that most readers will have a sound background in geology but far less knowledge of or interest in chemistry Be cause there is no need for an exploration geologist to be an expert in organic chemistry the amount of chemistry used in the book is rather modest It is however often important for a geologist to understand some basic vocab ulary The emphasis in this book is on applications of geo \_chemistry to hydrocarbon exploration Most of the analytical techniques are discussed only briefly because although a geologist should know what a gas chro matograph is he or she is unlikely to be asked to repair one If more detailed knowledge does prove necessary a laboratory is the proper place to learn The strengths and weaknesses of the various analytical techniques are discussed so that a geologist will be able to anticipate pitfalls cull bad data and choose an appropri ate analytical program On the job experience will

prove invaluable in converting the basic information from this text into a practical working knowledge **Water Resources** Policy Issues United States. Congress. Senate. Committee on Environment and Public Works. Subcommittee on Water The Regional Aquifer System Underlying the Northern Great Plains in Parts of Montana, North Resources, 1981 Dakota, South Dakota, and Wyoming--summary Joe S. Downey, George A. Dinwiddie, 1988 The Economic Geology of the Williston Basin, 1978 Conference papers on the economic geology of the Williston basin Perspectives on the Eastern Margin of the Cretaceous Western Interior Basin George W. Shurr, Greg A. Ludvigson, Richard H. Hammond, 1994 Contains papers on cretaceous rocks in the northern Rocky Mountains the Great Plains region the Gulf Coastal Plain of eastern Alabama and southwestern Minnesota the Dakota formation evolutionary and paleological implications of fossil plants from Fifth International Williston Basin Symposium Clarence Gustav the lower cretaceous Chevenne sandstone and fau Carlson, James Ellis Christopher, North Dakota Geological Society, Saskatchewan Geological Society, 1987 U.S. Geological Survey Bulletin Lucy McCartan, Robert Ahlberg Loney, David A. Brew, Margaret A. Bradshaw, 1983 U.S. Geological U.S. Geological Survey Professional Paper, 1994 Survey Bulletin ,1983 Exploration Stratigraphy Glenn S. **Bedrock Geology of** Visher, 1990 Geology of the Black Hills, South Dakota and Wyoming Fredrick J. Rich, 1985 the Lake Agassiz Region ,1957 Geology of the Bighorn Basin Wyoming Geological Association, 1983 Miscellaneous Series - North Dakota Geological Survey ,1996 **Sedimentology of Coal and Coal-Bearing** Sequences R. A. Rahmani, R. M. Flores, 2009-04-15 The recent increase in the search for coal has initiated a dramatic growth in sedimentological research on the origin formation and environment of coal deposition. This publication is concerned with perhaps the most important field of coal research that of coal environments This subject involves many interrelated disciplines including the sedimentology petrology geochemistry palaeobotany and palaeogeography of coal deposits In the past workers in these fields have operated independently and only recently have their research efforts been integrated to provide a more comprehensive understanding of coal depositional environments Bibliography and Index of Geology

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