

beds. The Interlake is variably eroded, but everywhere affected by the great pre-Devonian unconformity.

- L. M. FUZESY, Saskatchewan Department of Mineral Resources, Regina, Saskatchewan
Problems in Correlation of Mississippian Strata in Southeastern Saskatchewan

The area examined is located in the northern part of the Williston Basin in southeastern Saskatchewan. The lithology and stratigraphy of the Mississippian strata of this area (excluding the Bakken formation) are discussed. Emphasis is given to the clarification of correlation problems which exist in certain parts of the succession. For the purpose of illustration, subcrop maps, cross-sections and isopach maps of the various Mississippian units are presented.

The Mississippian strata consist mainly of limestone and dolomites with several interbedded evaporite beds in the upper part of the succession. At the present time these Mississippian rocks are the most important oil-producing strata in Saskatchewan. The oil reservoirs occur in porous limestones or dolomites. Reservoir cap-rocks may be divided into 3 distinct categories—(1) those crested by primary evaporites in the normal Mississippian succession; (2) those caused by secondary infilling of normally porous and permeable rocks by anhydrite and dolomite, giving rise to dense non-porous layers at the erosion surface; (3) those formed by the argillaceous beds of the overlying Watrous formation of Jura-Triassic age. Combinations of these types of caprocks occur in certain locations.

- A. J. GOSAR, Belco Petroleum Corporation, Big Piney, Wyoming
Stratigraphic and Structural Traps in Big Piney-La Barge Area, Wyoming

The Big Piney gas and oil field, located in T. 26-30 N., R. 112-114 W., Lincoln and Sublette counties, Wyoming, lies within the Green River Basin, east of the north-south trend of the Wyoming Range. Oil and gas are contained in lenticular and blanket sands ranging in ages from Tertiary to Jurassic, namely, Wasatch, Mesa-verde, Baxter, Frontier, Muddy, and Nugget formations.

Drilling in this area began with the discovery of oil by the Wyoming Reserve Petroleum Corporation, from the Wasatch (Almy) sediments at the La Barge oil field in 1924. Promotional drilling ventures continued off and on until oil was discovered in the Mesaverde formation at North La Barge field by Circle Oil Company in 1930. Wyoming Petroleum Corporation's Budd No. 1, after a blow-out in 1938, stimulated an unpredicted lease play in the immediate area. With the advent of a pipeline for natural gas, development drilling programs were initiated by major and independent oil companies in 1954.

Variations in sedimentation, off shore bars, and thickness changes to the northeast, and south, provide updip gas and oil reservoirs in Wasatch sediments. Alphabetic nomenclature has been ascribed to various sands within this Wasatch section. Mesaverde sediments, although widespread, are not only influenced by an unconformity and faulting, but also by facies changes not unlike the overlying Wasatch sediments.

Consistent with the overlying Mesaverde and Wasatch sediments, the Baxter formation contains varying shaly sand conditions which, coupled with imbricate thrust faulting, further complicate subsurface studies adjacent to the Darby-La Barge thrust complex. Commercial gas zones have been defined at and adjacent to La Barge oil field. The Frontier formation is delineated

into subthrust and overthrust members by the steep attitude of the La Barge thrust fault. Five benches are defined in the Second Frontier, four of which are lenticular in outline. The Second Bench of the Second Frontier provides the only true blanket sand in this entire interval.

Muddy production appears to be controlled by variable sand conditions and permeability barriers. To date only two isolated productive areas have been defined.

Nugget sediments are undoubtedly widespread through the Big Piney-La Barge area. Oil accumulation at Tip Top and Hogsback is structurally controlled but complicated in part by minor thrust faults.

Deeper Phosphoria, Tensleep, and Madison horizons have not been penetrated east of the Darby-La Barge thrust complex.

- H. L. HALBERTSMA and F. L. STAPLIN, Imperial Oil Limited, Calgary, Alberta
Mississippian-Pennsylvanian Boundary from Peace River Area to Williston Basin

For many years the age and correlation of late Paleozoic (post Meramecian) strata in the eastern Rocky Mountains and plains of western Canada and the northwestern United States have been difficult to establish, because the stratigraphy is complicated by at least three major angular unconformities. These occur at the Mississippian-Pennsylvanian boundary, the Pennsylvanian-Permian boundary and the Permian-Triassic boundary. The most controversial has been the one at the Mississippian-Pennsylvanian boundary, until Willis (1959) established it at the Heath (Big Snowy Group)-Tyler contact. In Alberta (Peace River area) the Mississippian-Pennsylvanian boundary was found to be at the Golata-Kiskatinaw contact. The Golata formation is very likely correlative with part of the Big Snowy Group; the Kiskatinaw formation is believed to be the age equivalent of the Tyler formation. Fossil determinations have confirmed these lithological correlations.

To link equivalent formations from Peace River to Montana, the front ranges of the Rocky Mountains were included in the study. The Ethington formation (Mississippian Chester) here correlates with the Big Snowy Group and with the Golata formation. The Tunnel Mountain formation (Lower Pennsylvanian) is equivalent to the Tyler-Amsden (Kiskatinaw-Taylor Flat in Peace River) interval. A map showing the eastern edges of the Chesterian and Lower Pennsylvanian, cross sections through critical areas, and a nomenclature chart are included.

- C. W. HENDEL, Consulting Geologist, Salt Lake City, Utah
Wasatch Gas in Uinta Basin and Its Effect on Future Oil Exploration

Eight years after discovery of Redwash, Tertiary oil is being produced in significant amounts from only this one field. Lack of a dewaxing plant for high pour-point oil has discouraged prospecting the shallow south flank of the basin for the smaller Green River strat-traps. Standard of California Company markets Redwash oil through the Rangely pipeline, which can accept limited amounts of waxy crude. As a result, an impasse has existed: lack of market discourages exploration, and yet a large additional supply of oil is needed before a wax plant is feasible. The current gas exploration is a development which could help to end this impasse. Two near-commercial oil discoveries have been made already by wells scheduled as deeper tests to the Wasatch and Mesa Verde.

The 18-mile Wasatch gas trend may extend west or