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U.S. Geological Survey Publications on Western Tight Gas Reservoirs

Compiled by

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SUMMARY

This bibliography includes reports published from 1977 through August 1985. In 1977 the U.S. Geological Survey (USGS), in cooperation with the U.S. Department of Energy's, (DOE), Western Gas Sand Research Program, initiated a geological program to identify and characterize natural gas resources in low-permeability (tight) reservoirs in the Rocky Mountain region. These reservoirs are present at depths of less than 2,000 ft (610 m) to greater than 20,000 ft (6,100 m).

The rock units with the best potential for gas production from tight reservoirs are of Tertiary and Cretaceous age. Most of the work has been concentrated on marine sandstone, siltstone, and chalk reservoirs in the northern Great Plains, marine and fluvial sandstone in the Greater Green River Basin of Wyoming and Colorado, and marine and fluvial sandstone in the Piceance Creek Basin in Colorado, and fluvial sandstone reservoirs in the Uinta Basin Utah.

A wide variety of methods are being used to resolve resource assessment and recovery technology problems. These methods include surface and subsurface stratigraphic studies, paleoenvironmental interpretation, micropaleontologic analysis, organic geochemical and thermal maturation studies, origin of gases, subsurface-pressure mapping, and core-to-well-log correlation, analysis of regional, natural-fracture trends, and vertical-seismic profile studies. The reservoir rocks are being characterized using optical petrography, scanning electron microscopy, X-ray diffraction, and electron probe. Other studies include analysis of stable isotopes of oxygen and carbon, fission-track annealing, and fluid inclusion analysis.

Only published reports readily available to the public are included in this report. Additional unpublished administrative reports have been prepared for DOE and DOE contractors. Where appropriate, USGS researchers have incorporated administrative report information into later published studies.

These studies cover a broad range of research from basic research on gas origin and migration to applied studies of production potential of reservoirs in individual wells. The early research included construction of regional well-log cross sections. These sections provide a basic stratigraphic framework for individual areas and basins. Most of these sections include drill-stem test and other well-test data so that the gas-bearing reservoirs can be seen in vertical and areal dimensions.

For the convenience of the reader, the publications listed in this report have been indexed by general categories of (1) authors, (2) states, (3) geologic basins, (4) cross sections, (5) maps (6) studies of gas origin and migration, (7) reservoir or mineralogic studies, and (8) other reports of a regional or specific topical nature. In order to minimize the size and expense of this report, extensive cross indexing was not used. For example, Rocky Mountain regional reports are listed under "other" and not under all the individual states and basins.

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Cross Sections

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