Jonah Field: Case Study of a Tight-Gas Fluvial Reservoir

The discovery of a giant natural gas field within a mature petroleum province is a significant event. Understanding the factors that control such an accumulation is important if the oil and gas industry is to continue to develop natural gas resources. Jonah field, in the Greater Green River basin of southwest Wyoming, is the largest natural gas discovery in the onshore United States in the last 10-15 years with recoverable reserves ranging from 8 to 15 tcf natural gas. Since beginning widespread field development in August 1992, Jonah has produced approximately 1 tcf gas, 10.3 million barrels of oil, and 3.7 million barrels of water. Field production is still increasing with daily production presently at 666 MMCFGPD, 5800 BOPD, and 4000 BWPD from approximately 600 wells. Active drilling continues within the field as operators consider widespread downspacing.

By virtue of being a tight-gas field, Jonah is, in many respects, nontraditional. Recent assessments of natural gas potential, for both the U.S. and the world, strongly suggest that most future gas resources will come from low-permeability sandstones in the deeper portions of sedimentary basins, and from fields that will undoubtedly share characteristics with Jonah. The subtle structure, the low-permeability nature of the reservoir, the challenging petrophysics, and the environmental sensitivity surrounding Jonah may foreshadow what explorationists have to look forward to as the demand for natural gas increases, not only in the United States, but throughout the world.

This volume brings together previously unpublished material on Jonah field and attempts to integrate all aspects including geology, geophysics, reservoir engineering, drilling and completion, and regulatory affairs. As such, this volume is a definitive collection that provides a truly integrated perspective of this giant field.