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## Basin-Center Gas or Subtle Conventional Traps?

**T**ight gas plays are an important gas resource in many Rocky Mountain basins and basin-center gas (BCG) models have been proposed to characterize much of this resource. Recent drilling and 3D seismic results require modifications of the currently accepted BCG models that were first introduced over 25 years ago. Several tight gas plays in the Greater Green River Basin in southern Wyoming are reviewed to illustrate inconsistencies with the prevalent BCG models. The key to future exploration success in the Rocky Mountain region is recognizing the subtle conventional stratigraphic and structural controls of these tight gas plays.

Current BCG models depict a relatively uniform pressure seal separating conventional traps with associated down-dip water from “unconventional” traps characterized by anomalous reservoir pressure and lack of associated water. These models have led to the misconception of predicting commercial basin-wide gas deposits below a given structural elevation or thermal maturation depth that can lead to predicting overstated reserves and overly optimistic drilling success rates.

New subsurface data have revealed inconsistencies with the established BCG models (presence of down-dip water, subtle fault traps, fracture and stratigraphic controls, etc.). More contemporary BCG models invoke a “sweet spot” concept to highlight the need to identify areas of improved reservoir quality to increase the probability of economically successful results. More recent studies of BCG plays reveal that the primary trap controls are better described as conventional, although subtle, stratigraphic and structural traps. ■

### Biographical Sketch

WAYNE CAMP is currently exploration supervisor for Anadarko Petroleum Corporation’s Western States Division (Cretaceous Exploration Group), responsible for exploration activities within Anadarko’s extensive land grant holdings in southwest Wyoming. Wayne has 25 years’ industry experience, 23 with Anadarko, and has worked a



wide variety of exploration and development projects including the Rocky Mountains, West Texas, Gulf of Mexico, and Mid-Continent in the U.S and China, Indonesia, India, and Algeria internationally. His experience with Rocky Mountain unconventional reservoirs began in 1999 with Anadarko’s Helper (Uinta basin, Utah) and County Line (Powder River basin, Wyoming) coalbed methane fields. His current focus is Cretaceous tight gas reservoirs in the Greater Green River basin of Wyoming.

Wayne has previously presented his work to the HGS on the Wilburton gas field in the Arkoma basin, Oklahoma, and Mahogany subsalt field in the Gulf of Mexico. Wayne and coauthor Don McGuire were awarded “best paper” for their paper titled “Mahogany field, a subsalt legend: a tale of technology, timing and tenacity, offshore Gulf of Mexico” published in the October 1997 HGS *Bulletin*. His current paper was originally presented in May at the AAPG Annual Meeting in Salt Lake City.

Wayne received a MS degree in geology from Colorado State University, Fort Collins, Colorado, in 1979 and a BA degree in Geology from State University College at Oneonta, New York, in 1976. He is a member of AAPG, GSA, RMAG, and Sigma Xi.

He is married, has two daughters, and lives in Kingwood, Texas.