GRAND JUNCTION GEOLOGICAL SOCIETY

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NOVEMBER MEETING

WEDNESDAY, NOVEMBER 20, 2019

Joint meeting with the CMU Geology Students
7:30 PM
Saccomanno Lecture Hall
(In the Wubben-Science Building)

Steve Cumella, Consultant
Ouray, Colorado

Will Speak On

"Mancos-Niobrara Petroleum System in the Piceance Basin"

Guests Are Always Welcome

Abstract on Next Page

Mancos-Niobrara Petroleum System in the Piceance Basin

The Mancos is a thick marine shale interval that contains highly mature organic-rich intervals that have generated sufficient hydrocarbons to saturate not only reservoir intervals in the Mancos, but to also contribute significant gas to the overlying Mesaverde. Recent horizontal drilling has resulted in prolific wells with EURs over 15 BCF in some of the latest wells. The most prolific wells are in the dry-gas window, where liquids from the originally oil-prone source rock have been cracked to methane. The cracking of liquids to gas has resulted in very high formation pressures, with pressure gradients as high as 0.9 psi/ft. An anomalous resistivity reversal helps to define the transition from wet to dry gas. Thousands of feet of overburden have been exhumed from the area in the last 10 my, and temperature and pressure of the Mancos-Niobrara has been affected. The following hypothetical scenario illustrates a possible result of exhumation. Simplistically, if 4000 ft of overburden is removed from an area that had 6000 psi at 10,000 ft before exhumation, the pressure gradient changes from 0.6 psi/ft to 1.0 psi/ft if the system was tightly sealed. When pressure gradients reach lithostatic pressures, upward gas escape along fracture and fault zones is likely, allowing late-stage charging of shallower formations.

Steve Cumella biography

Steve Cumella is a consulting geologist in Ouray, Colorado. He received his bachelors and masters in geology at University of Texas at Austin and started his career with Chevron in 1981. Steve worked the Piceance Basin and other Rocky Mountain basins at Barrett Resources, Williams, Bill Barrett Corporation, and Endeavour International. He was awarded Rocky Mountain Association of Geologists' Outstanding Scientist Award in 2005 and AAPG's Robert H. Dott, Sr. Memorial Award for Best Special Publication in 2010. He was an AAPG Distinguished Lecturer in 2011. He is past executive editor of the Mountain Geologist and was president of the Grand Junction Geological Society in 1991. Steve has authored several publications, given numerous presentations, and led several fieldtrips.