



FOUR CORNERS GEOLOGICAL SOCIETY NEWSLETTER

September 2008

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Four Corners Geological Society

September Meeting and Presentation

DATE: Friday, September 19, 2008

SPEAKER: Ronald F. Broadhead, NM Bureau of Geology and Mineral Resources, Socorro, NM

TOPIC: Remaining Oil and Natural Gas Resources of New Mexico

PLACE: Best Western Riverwalk, 700 Scott Ave, Farmington, NM, 87401 (505) 327-5221

AGENDA:

5:30 PM- Social Hour – Riverwalk Restaurant

6:30 PM- Dinner – **Top Sirloin or Tequila Lime Chicken w/choice of potato, soup & salad bar**

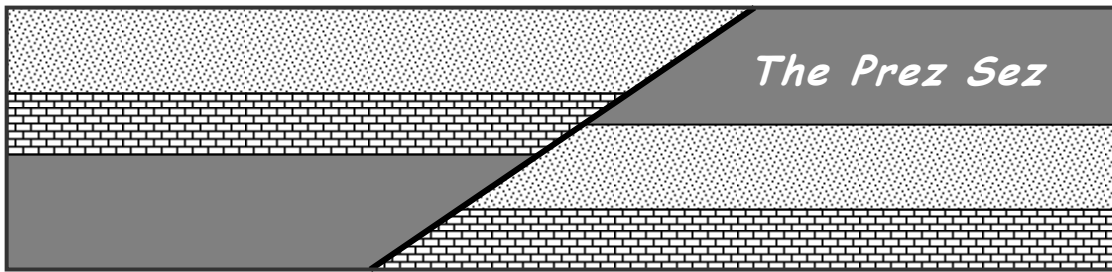
7:30 PM- Presentation

COSTS: \$20.00 per person (dinner and talk), \$2.00 per person (talk only), student's free (talk only).

Reservations for this months meeting and presentation should be made by Wednesday, Sept. 17.

Contact: Jim Hornbeck – email:jhorngeo@yahoo.com phone: (505) 326.2401 (office)





Greetings and welcome back to the FCGS! I hope your summer was as enjoyable as mine. I spent three months experiencing the scenery and recreational opportunities of Western Canada and Idaho, and I am looking forward to assuming the "responsibilities of office"!

Since our last meeting in May, more progress has been made on updating our website, so check out the new look, and help us sell some society publications. As many of you know, FCGS will be the host society for the 2010 AAPG Rocky Mountain Section annual meeting in Durango, and the steering committee is busy organizing the program and assigning responsibilities. Scott and Daphne White hosted a well-attended annual picnic, and the horseshoe tournament raised over \$400 for FLC students research projects. Rob Blair won the tournament, and added another knife to his growing collection (possibly because I wasn't there).

Jim Hornbeck has been working to put together this year's speaker program, which gets off to a great start in Farmington with Dr. Ron Broadhead from New Mexico State in Las Cruces. I look forward to seeing you there.

Chip



REMAINING OIL AND NATURAL GAS RESOURCES OF NEW MEXICO

Ronald F. Broadhead
New Mexico Bureau of Geology and Mineral Resources
A Division of New Mexico Tech
Socorro, NM 87801

ABSTRACT

New Mexico has produced 5.5 billion bbls of crude oil and 62 trillion cubic ft³ of natural gas since production of these resources began in the 1920's. During 2006, 60 million bbls oil and 1.5 trillion ft³ gas were produced in New Mexico. Available estimates of undiscovered resources indicate a minimum of 1.48 billion bbls oil and between 68 and 89 trillion ft³ gas remain to be produced in the state. That is between 32 and 45 years of production for natural gas and 22 years of production for crude oil at present rates of production. In the case of oil, especially, this is a minimum figure because of the limitations involved in estimating an unknown resource that can be neither seen nor measured directly.

The Reserve Life Index (the ratio of proved reserves to annual production) has been relatively stable for the past two decades at approximately 12 years for natural gas and 10 years for oil. The stability of the Reserve Life Indices of oil and gas indicates that new, previously unproven resources are being discovered and brought into production at a rate that replaces production and that the volume of these resources has been chronically underestimated. In the case of gas, this is due chiefly to the discovery and development of coalbed methane whose contribution to annual New Mexico production has grown from 0% in 1987 to 38% in 1996 and still provides more than 30% of the state's gas production today.

Peak oil generation in New Mexico was attained in 1969 when 129 million bbls oil were extracted. From 1970, until 1982, New Mexico entered a Hubbert-type decline

of approximately 5 percent per year. However, after 1982, oil production in the state deviated from a Hubbert-type decline. Decline was arrested after 1982. Finite increases in statewide oil production are associated with a waterflood of the Vacuum San Andres Grayburg reservoir in the early 1980's and redevelopment of the Dagger Draw Upper Pennsylvanian reservoirs in early to mid-1990's. Amelioration of a Hubbert-type decline is also associated with discovery of the Brushy Canyon reservoirs of Eddy County in the late 1980's and early 1990's; production from the Brushy Canyon trend increased from 1 percent of New Mexico's oil production in 1980 to 12 percent in 1992, replacing waning production from reservoirs that had seen much earlier discovery. These examples brought into production oil resources that had previously been either neglected or unrecognized.

Oil and natural gas production are dependent upon continued exploration and drilling. Work by the Potential Gas Committee indicates that approximately one-half of our current domestic oil and gas production is obtained from wells that have been drilled within the last five years. That is, if exploration and drilling were to cease today, oil and gas production would decrease to approximately one-half of their current levels in five years and one-quarter of their current levels in ten years.

Significant volumes of crude oil and natural gas remain to be produced in New Mexico. Most of the existing resource base is not in proved reserves in known oil and gas fields. Rather, it occurs as undiscovered resources that will only be found and produced through application of sophisticated exploration and development methodologies and concepts and, ultimately, drilling. Production of oil and gas will decline rapidly unless new reserves of oil and gas are discovered, developed, produced, and added to the diverse sources that have historically contributed to the state's production base bringing into play resources not previously or presently recognized.

VITA – Ron Broadhead

Ron Broadhead received his B.S. in Geology from New Mexico Tech and his M.S. in Geology from the University of Cincinnati. He worked for Cities Service Oil Company in Tulsa and Oklahoma City and has been with the New Mexico Bureau of Geology (formerly Mines) and Mineral Resources (a Division of New Mexico Tech) since 1981 where he is presently Principal Petroleum Geologist and teaches subsurface and petroleum geology at New Mexico Tech. At the Bureau, major research projects have included the gas-productive Abo redbeds; the New Mexico petroleum source rock

project; subsurface and petroleum geology of the Tucumcari and Estancia Basins; petroleum geology of the Sin Nombre and Chupadera Mesa areas; helium rich gases of New Mexico and oil and gas resources at the WIPP site; and, in conjunction with the University of Texas, analyses of major oil reservoirs in the Permian Basin. Most recently, he has worked on the stratigraphy and petroleum geology of Mississippian strata in the Permian Basin, and natural gas in north-central New Mexico.



General Announcements/News from other Geo-Societies

Thanks to the following 2008 Horseshoe Tournament contributors who raised \$400.00 to benefit the Geology Scholarship Program at Fort Lewis College.

Rob Blair (Winner)
Bob Owen (Runner-Up)
Luke Titus
Jeff Carey
David Greenwood
Paul Spear
Bruce Black
David Walker
Jerrie Krause
Kim and Dan Gerhardt (\$40)
Gary Gianniny
Jim Hornbeck
Tim Gibbons
Tom Staatz
Bill Thurston
Dr. Bowman
Mary Lee Gillam
Scott White (\$40)

ATTENTION FCGS MEMBERS & FRIENDS!!

The Four Corners Geological Society Website is now UP and RUNNING and Much Improved!

CHECK IT OUT @ www.fourcornersgeologicalsociety.org

* Online **Bookstore** is fully functional *

* **Pay your Dues or make a Donation online** *

Please send us photos for the Photo Album (check it out) and announcements for the Announcements pages.

Your help and comments are very much appreciated. Send to: tcasey@djsimmons.com

Wyoming Geological Association Tooke Mudlog Collection

The Wyoming Geological Association has mudlogs in the Rocky Mountain areas of Wyoming, Colorado and Utah that have been scanned. We are in the process of scanning other areas with the help of industry that contribute towards this project with their financial contributions. If you would like to see what is available please use our database located on our website at www.wyogeo.org and click on Mudlogs. The logs cost \$12.50 each and can be emailed to you if the log is small enough. Deeper well depths or several logs will require CD or DVD media for an additional fee. For more information contact Mary at info@wyogeo.org or call 307-237-0027.

Advertising rates for the Four Corners Geological Society newsletter:

Full Page Ad (7½" x 9½") \$100/mo. or \$1000/yr. Half Page Ad (7½" x 4½") \$50/mo. or \$500/yr.
¼ Page Ad (3½" x 4½") \$25/mo. or \$250/yr. Business Card (3½" x 2") \$10/mo. or 100/yr.

Odd sizes are \$3.50 per column inch per month, minimum \$10.00

For more information, please contact the FCGS Treasurer. Proceeds will go toward the further development of the Society (i.e., offset meeting costs, publications, etc.).

Four Corners Geological Society

P.O. Box 1501, Durango, CO 81302

www.fourcornersgeologicalsociety.org

2008-09 Officers

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