Workshops Feature NM Plays, Reservoirs

Lewis Shale

Two recent events held by the Southwest Regional Lead Organization of the Petroleum Technology Transfer Council (based at PRRC/NMT) showed that interest is high in the tight-gas reservoirs and underdeveloped plays of New Mexico.

On February 21, 2001, the SRLO hosted “The Lewis Shale, San Juan Basin: Approaches to Rocky Mountain Tight Shale Gas Plays,” in Albuquerque at the Albuquerque Hilton. Over 100 attendees were present, mostly from the oil and gas industry.

The speaker lineup featured industry experts Bob Bereskin, Glen Christiansen, Joe Frantz, and Hans Dube on reservoir characterization, completion optimization, and the economics of the Lewis shale. They also spoke on the application of their methodologies and techniques to other basins. Talks included the geology of the Lewis Shale, production strategies, other San Juan Basin plays and other Rocky Mountain possibilities, a log model for the Lewis, a methodology using various data to build practical forecasting tools for everyday use, and production results and future plans for Burlington’s Lewis Shale program. Brian Brister of the New Mexico Bureau of Geology and Mineral Resources moderated the panel discussion after the talks.

A special feature of the program included a core walk-through that presented core from two wells in the Lewis Shale. As this area is infrequently cored, these were of unusual interest to participants. Hundreds of feet of core from Lewis producing wells represented the range of lithofacies that were presented in the oral session. This core is invaluable for demonstrating that apparent poor-quality reservoir rock can be capable of commercial production. Cores were from a private collection and publicly accessible cores at the New Mexico Bureau of Geology and Mineral Resources.

SRLO Regional Coordinator Martha Cather reports, “Our objectives were to get the word out about the work that Burlington Resources and its partners did on the Lewis shale, to show people some methodologies to use in working the Lewis, and to suggest other similar targets that might be worked in similar ways. We also wanted to provide people who are interested in the Lewis and other shale gas plays a place to get together and network with each other. I think we succeeded on most levels.”

Underdeveloped Reservoirs

On April 5–7, 2001, the “Low Permeability and Underdeveloped Natural Gas Reservoirs of New Mexico” Conference and Field Trip was presented jointly by the NMBGMR and the SRLO of the PTTC. More than 90 people attended the April 5 meeting in Socorro, and 45 went on the field trip April 6–7.

Speakers included academic scientists as well as industry experts. Reservoirs presented included the Lewis Shale, the Mesaverde Sandstone, the Mancos Shale and the Dakota Sandstone in the San Juan Basin, and the Pecos Slope Abo, the Atoka Sandstone, and the Morrow Sandstone in SE New Mexico.

Other talks were about fracture recognition and classification and stimulation. The program also included a poster session and a core walk-through with cores from featured reservoirs supplied by Burlington Resources, Sandia National Laboratories, and the NMBGMR.

The field trip on April 6–7, though buffeted by rain, hail, wind, and snow, rewarded those who braved the elements in northern New Mexico with access to normally off-limits tribal land, some excellent outcrops, and interesting discussions about Dakota stratigraphy and structure.

John Somers of High Plains Petroleum in Boulder found the field trip very helpful for High Plains’ Dakota prospects in the San Juan Basin. Information gained on the field trip, including observation of fracture patterns and orientation, will help the company redevelop a Dakota field abandoned years ago, which now appears to contain significant recoverable oil. Somers said that what they learned on the field trip would totally change the company’s approach to the Dakota in that area.

A limited number of proceedings volumes are available for $25.00; please call the PRRC Publications Office at (505) 835-5406 or send a request via email to lizb@prrc.nmt.edu.

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First Waterdog Project Review Held in Hobbs

Producers, scientists, and members of the Lea County Water Users Association attended the first project review of the NPTO/DOE-sponsored project, “Modified Reverse Osmosis System for Treatment of Produced Water,” familiarly called the Waterdog project.

This project aims to create a low-cost clay membrane for modified reverse osmosis treatment of produced water. The final waste stream is to be reduced to a solid for easy disposal. Through these studies, researchers foresee a low-cost, feasible treatment for produced oilfield waters, which are very high in salts and a headache to dispose of. The ultimate product will be a mobile unit small enough to be mounted in a trailer so it can treat water in remote locations.

The review was held June 26 at New Mexico Junior College in Hobbs, New Mexico. Morning speakers featured John Ford of the National Petroleum Technology Office of the Department of Energy, who introduced the project and spoke on NPTO efforts with produced water. He was followed by Lea County officials and industry experts who presented aspects of water quality issues.

Lea County Manager Dennis Holmberg introduced the Lea County Management Plan. He gave the overall picture of Lea County’s efforts to develop and implement a 40-year water plan while protecting its nonreplenishable water supply.

Will Palmer of Read and Stevens spoke on development of a facility for Lea County capable of treating at least 150,000 bbl/d of produced water, converting it to usable water suitable for irrigation, recreation, and industrial use.

Ken Marsh, an expert on oilfield-produced water, talked about water disposal methods. Finally, Eddie Livingston of Livingston Associates presented his company’s successful pilot desalination plant in Alamogordo.

In the afternoon, Robert Lee, Project Manager, from the Petroleum Recovery Research Center at New Mexico Tech gave an overview of the Waterdog Project. Mike Whitworth, Principal Investigator, from the University of Missouri-Rolla discussed the advance the team has made over the past year, including:

- Construction of bench experimental apparatus
- Design, construction and testing of spiral-wound membranes
- Performance of dissolved solids precipitation experiments
- Progress on developing GIS produced water maps for San Juan and Permian Basins

The project team is also gathering data on the chemistry and quantity of produced water in the San Juan Basin area. Data analysis will allow researchers to design the experimental process for the actual water chemistry, and, importantly, to choose representative samples of actual produced waters to use for bench-scale testing.

Four patents from this project are currently under development. Program Manager Robert Lee comments, “we are optimistic, but the project is still in the research stage.”

For more information, contact Robert Lee at the PRRC, (505) 835-5408 or email lee@prrc.nmt.edu.

Workshops
The SWRLO hosted two successful workshops jointly with the NMBMGR and the PRRC in late winter and spring 2001. “The Lewis Shale, San Juan Basin: Approaches to Rocky Mountain Tight Shale Gas Plays,” and the “Low Permeability and Underdeveloped Natural Gas Reservoirs of New Mexico Conference and Field Trip” (see story on both, page 1). Many attendees at both these events attended earlier PTTC workshops, confirming the continuing popularity of this form of tech transfer. Attendees suggested future workshops on marginal wells, water production, and stimulation.

Other workshops co-sponsored by the SWRLO were “Optimization of Horizontal Drilling,” March 22 with the Texas–Permian Basin PTTC and the “Modified Reverse Osmosis” project review with PRRC on June 26 (story, page 2).

Fall and Spring 2002 workshops include wellbore management and spreadsheet applications in the southeast, and corrosion management issues in the San Juan basin. Please send your ideas for workshop topics to Martha Catharcat Martha@prrc.nmt.edu or call her at (505) 835-5685.

Advances
The Multiformat New Mexico Oil and Gas Well Database (MNMOGWDB) makes its debut this fall on CD. It provides basic well data on wells drilled for

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oil and gas in New Mexico from sources that include the New Mexico Oil Conservation Division, New Mexico Bureau of Geology and Mineral Resources and the New Mexico Petroleum Recovery Research Center. The data consists primarily of well location and identification information. It includes latitude and longitude information that allows its use in a variety of mapping programs. An estimated 80% of the oil and gas wells drilled in NM are now in the database. Future work will focus on adding additional wells and generating files preformatted for loading into commercial mapping programs commonly used by land managers, geologists and engineers.

The improved GO-TECH and PTTC websites are now online. The PTTC has redesigned its website to provide more consistency among all the regional lead organizations and for easier navigation. We think that you'll like the new look and easy interface. Both still reside at http://octane.nmt.edu.

As a mark of our progress, the PTTC FY00 Technical Progress Report notes that the SWRLO’s website logged 45,137 user sessions and 377,476 page views for FY2000, with usage steadily growing throughout the year. Our users continue to prove the importance of access to NM production data.

**Personnel**

Martha Cather has taken over as Section Head of the Industry Service and Outreach Group and Regional Coordinator of the SWRLO from Robert Emerly, who left the PRRC at the beginning of the year to start his own Internet business. Cather has over 15 years of experience in the oil and gas industry, and has been with ISOG as Outreach Coordinator since the group’s inception in 1997. She holds Bachelor’s and Master’s degrees in geology from the University of Texas, Austin.

ISOG has also added another team member. Shaojie (“Jenny”) Ma recently came on board as Database Programmer/Administrator for ISOG. She is in charge of design, maintenance, and administration for the databases at the GO-TECH website. She has a Master’s degree from New Mexico State University and a Bachelor’s degree from Liaoning University in Shenyang, PRC. She has extensive experience in database creation and management, having worked in several businesses in Albuquerque before joining the PRRC.
The PRRC is a state-supported center that conducts research designed to improve methods of recovering crude oil and natural gas and transfers petroleum technology to domestic oil producers. Funding for the PRRC comes from three sources: the State of New Mexico, the federal government (Department of Energy), and private industry.

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New Mexico Oil-Price History

Posted oil prices courtesy of Navajo Refining Co; oil stocks courtesy of the Oil and Gas Journal; spot oil prices taken from various sources.

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