

Regional Update

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Petroleum Technology
Transfer Council (PTTC)
South Midcontinent Region

New Workshops Examine Waterfloods, Hartshorne Sands and Coalbed Methane

Oklahoma Geological Survey
Regional Lead Organization
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PTTC Program Manager
Director, OGS

After the successful series of workshops on Fluvial-Dominated Deltaic Reservoirs ended last year, the Oklahoma Geological Survey and the PTTC South Midcontinent Region began work on several new meetings that will be of interest to many operators in this two-state area. In addition, for those who missed the FDD meetings, or would like a refresher course, these are being offered—without the basic geology introduction—as half-day courses sponsored by the OGS, PTTC, and Oklahoma City Geological Society. Check the calendar inside for more specifics on these meetings.

Mary K. Banken
PTTC Computer-System Mgt.
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Waterflood Workshop

A one-day workshop entitled *Geologic Considerations of Waterflooding* will be presented both June 10 and 11, at the Francis Tuttle Vo-Tech in Oklahoma City. This workshop is geared toward acquainting geologists and engineers with the hazards that can jeopardize the potential success of a waterflood candidate. The program will address:

David P. Brown, GIS
User Technical Support
Michael B. Earls, MWC
Education Coordinator
Connie G. Smith, OGS
Information, Newsletter Editor
Michelle J. Summers, OGS
Workshop Coordinator
Jane L. Weber, OGS
Computer Facility Supervisor

- √ determining reservoir data
- √ deciphering production data
- √ determining and isopaching net pay
- √ sand geometry boundaries
- √ coring and core results
- √ distinguishing natural and induced fractures
- √ water supply evaluation
- √ permitting

Oklahoma Geological Survey
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This workshop will be especially important for regional producers, many of whom are on a limited budget, and are producing oil from old fields in an era of depressed prices.

405/325-3031 800/330-3996
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Kurt Rottmann, a consultant based in Oklahoma City, is the coordinator of the program and principal presenter. Kurt was involved in several of the FDD meetings, and has contributed to a number of other PTTC projects. Assisting him at this presentation will be David R. Crutchfield, consulting

Internet address
<<http://www.ou.edu/special/ogs-pttc>>

(see "Workshops" page 4)

SPOTLIGHT ON: *Well-Log Software*

Application programs related to well logs have been popular recently at the South Midcontinent's Resource Center. One company has been working with **Neuralog's Digitizing System for Logs** to digitize full-scale logs while another company has been applying GeoGraphix's **QLA2** to evaluate digital log files.

With the particular equipment available at the Resource Center's Computer Lab, digitizing is a two-step process: turning a paper log into electronic form with a scanner and then tracing the resulting image on screen to create a digital log file. Scanning is accomplished with **Neuralog's NDS FaxScan** software and a Muratec 56 FaxScanner. Then **Neuralog's NDS/Log** software is employed to automatically or manually trace and convert the scanned raster image to a vector image.

Wyatt Pritchard, Technical Analyst with Security DBS, came to the Resource Center to generate digital log files in this manner. Back in his office, he used those files in a customized Terra Sciences program to predict lithology. From the rock strength associated with each lithologic unit predicted, he was able to suggest appropriate drill bits to use at different depths. Pritchard says this approach is a useful tool in areas where offset drilling is being considered.

Not all companies have access to paper logs, however. Unigas Corporation started with digital Log ASCII Standard (LAS) files. Using GeoGraphix's **QLA2**, they converted the files to Log Binary Standard (LBS) format. Then, still working within **QLA2**, they prepared

various crossplots of log data, including the familiar Pickett plot of porosity vs. resistivity. By analyzing the crossplots, they were able to identify patterns related to pay zone evaluation or reservoir structure. Finally, they generated hardcopy "well logs" from the digital data.

In addition to the software packages discussed above, the Resource Center has other application programs that use vectorized LAS format files to analyze and interpret well logs. **PfEFFER (Petrofacies Evaluation of Formations for Engineering Reservoirs)** is a program developed by the Kansas Geological Survey that is built on an Excel spreadsheet. Based on the classic Archie equations, it uses the pattern of data points on crossplots to extend traditional log analysis results of porosity and water saturation into productivity, water-cut, and permeability. **LESA (Log Evaluation System Analysis)** is a log evaluation program from Resource Information Services, Ltd. A working demo version may be downloaded electronically for free from <http://www.ris-usa.com/ris>. **IES Program** is useful for interpreting older wireline logs where only spontaneous potential and deep induction curves are available. It offers a technique for calculating relative proportions of three lithologies, porosity, and water saturation.

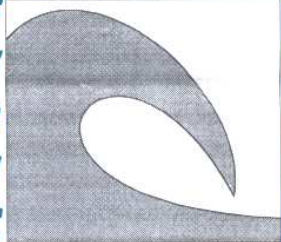
To use or inspect any of the log-related software at the Computer Lab, contact Jane Weber at 405-360-2886, 405-325-3031, or 800-330-3996, or email her at jlweber@ou.edu.

Entire Series of FDD Publications Now Available from OGS

If you missed any of the publications that were presented with the workshops on Fluvial-Dominated Deltaic Reservoirs, the entire series is now in print and available from the OGS. The books are: SP95-1, *The Morrow Play*; SP95-3, *The Booch Play*; SP96-1, *The Layton and Osage-Layton Play*; SP96-2, *The Skinner and Prue Plays*; SP97-1, *The Red Fork Play*; SP97-3, *The Tonkawa Play*; SP97-5, *The Cleveland and Peru Plays*; and SP97-6, *The Bartlesville Play*.

Each book and the enclosed maps are \$6, plus \$1.20 postage in the U.S. Get yours from OGS Publication Sales by calling 405/360-2886; e-mailing ogssales@ou.edu; purchasing at 1218-B W. Rock Creek Rd. in Norman, or by mail from 100 E. Boyd, Rm. N-131, Norman, OK 73019.

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Find PTTC on the Web:

South Midcontinent
<http://www.ou.edu/special/ogs-pttc>

National Office
<http://www.pttc.org>

New Core Catalog Available on Paper or Disk

The new *Petroleum Core Catalog* for the OGS lists core material, contained in an estimated 79,235 boxes, from more than 4,100 wells drilled in Oklahoma. The information now is available either as an oversized paperbound book or as digital data available on a computer diskette. Officially published as Special Publication 98-1, the core catalog sells for \$10 in either the paper or disk format.

The catalog is part of the Natural Resources Information System (NRIS) of Oklahoma, which is a group of interrelated data bases providing a wide

range of information on Oklahoma's oil and gas resources. The volume contains the following types of data: township, range, and section; location, county, well operator, well name and number, formation name, depth interval, diameter, and condition.

SP98-1 is 212 pages, and costs \$10, plus an additional \$2 if mailed. The data set on diskettes also costs \$10. For the book, contact the OGS at the address and phone numbers on the cover. For the diskette, contact Jane Weber at 405/360-2886.

Upcoming Events

May

- 5/2-6 Forum on Geology of Industrial Minerals, Norman, *OGS
- 5/13 GIS Day at the Capitol; Oklahoma City
- 5/14 Petroleum Industry Trade Fair; Ardmore, *MWC
- 5/26 Arkansas Oil and Gas Commission, Public Hearing; Hot Springs, AR

June

- 6/10-11 Waterflood Workshop, 1-day session, presented each day; Francis Tuttle Vo-Tech, Oklahoma City, *OGS
- 6/21-24 Interstate Oil and Gas Compact Commission; Overland Park, Kansas
- 6/25 Red Fork Workshop, Home Builders Association of Greater Oklahoma, Oklahoma City, *OGS and Oklahoma City Geological Society
- 6/30 Arkansas Oil and Gas Commission, Public Hearing; Russellville, AR

July

- 7/28 Arkansas Oil and Gas Commission, Public Hearing; Hot Springs, AR

August

- 8/25 Arkansas Oil and Gas Commission, Public Hearing; El Dorado, AR

September

- 9/22 Arkansas Oil and Gas Commission, Public Hearing; Hot Springs, AR
- 9/30 Hartshorne Workshop, Francis Tuttle Vo-Tech, Oklahoma City, *OGS

October

- 10/15 Petroleum Industry Trade Fair, Norman, *MWC,

November

- 11/4 Hartshorne Workshop, Indian Capitol Area Vo-Tech, Muskogee, *OGS
- 11/11-12 Hartshorne Field Trip, Muskogee, *OGS

*OGS=Oklahoma Geological Survey, 405/325-3031 or 800/330-3996

*MWC=Marginal Wells Commission, 405/366-8688; 800-390-0460

*OIPA=Oklahoma Independent Petroleum Association, 405/942-2334

Workshops—continued
petroleum reservoir engineer, and Saleem Nizami, APEC, Inc., both of Oklahoma City.

"Today's economic climate and trend toward downsizing forces companies to require geologists and engineers to familiarize themselves with subjects other than their own specialty," Rottmann said. "The OGS recognizes this scenario."

To register, contact the OGS at the address or telephone numbers given on the front cover.

Hartshorne Workshop

Scheduled for September 30

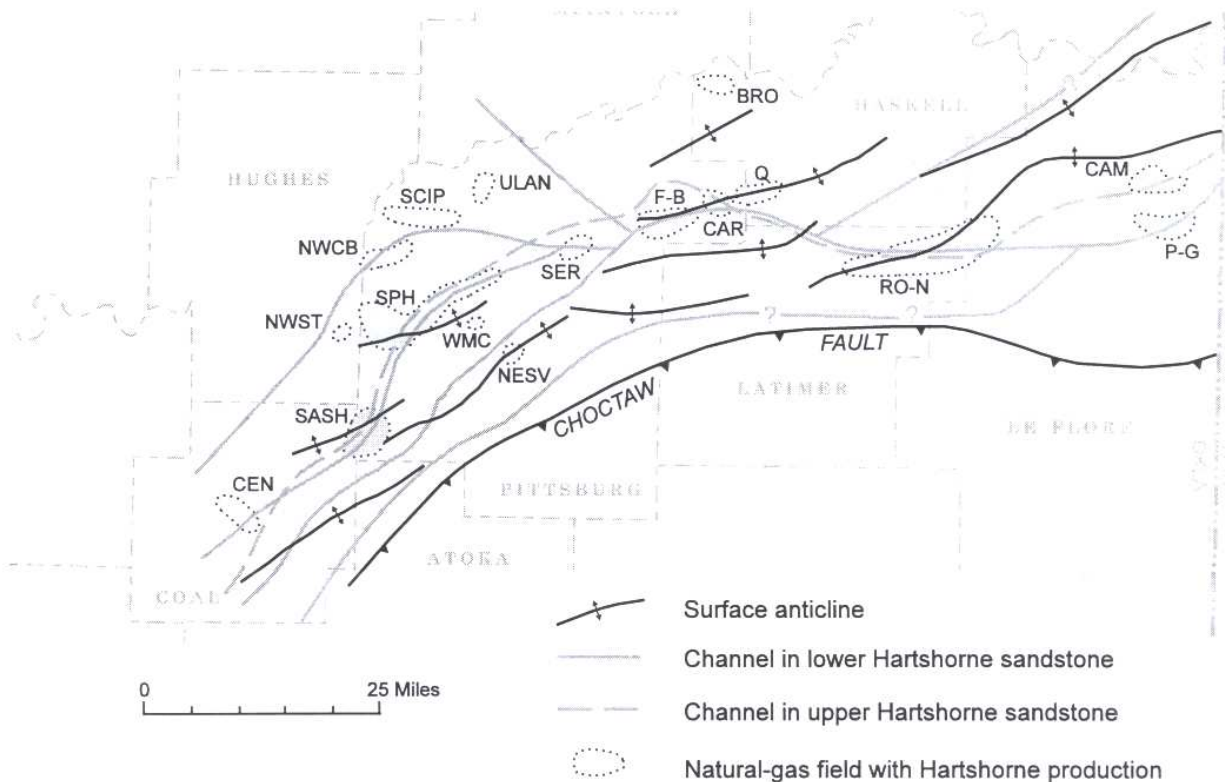
and November 4, a one-day workshop on the Hartshorne sands and coal beds in eastern Oklahoma already is well into the development stage. A two-day optional field trip that supplements the workshop is scheduled for November 11–12 in southeastern Oklahoma. This meeting is exciting because the presenters will look at coal geology and related coalbed methane issues in addition to the sands, and will conduct a 2-day field trip that promises to be an outstanding event.

Rick Andrews, OGS geologist and one of the main presenters in the FDD series, is excited about this meeting and the subjects it will

cover.

"Brian Cardott, the OGS coal geologist and geochemist, will present some outstanding work on coalbed methane, and the field trip will let us look at some outcrops that illustrate typical depositional environments of the Hartshorne sands and coals. We also are planning some guest lecturers that will tie this work into industry activity, and take us on into Arkansas with these topics," Andrews said.

More detailed information will be presented about this meeting in the next newsletter, or you can contact the OGS at the address, phone numbers, or web site listed on the front cover of this issue.



Map of Hartshorne Workshop area. Map shows: (1) major surface anticlines (black lines with divergent arrows) (from Arbenz, 1989, pl. 8); (2) major distributary channels in the Hartshorne Formation (lower Hartshorne sandstone = solid gray line; upper Hartshorne sandstone = dashed gray line) (from Houseknecht and others, 1983, fig. 12); and (3) gas fields with Hartshorne production (patterned areas) (from Burchfield, 1985).

Abbreviations for gas fields: CEN, Centrahoma; SASH,

South Ashland and Ashland; NWST, Northwest Stuart; SPH, South Pine Hollow; WMC, West McAlester; NESV, Northeast Savanna; NWCB, Northwest Cabaniss; SCIP, Scipio and Northwest Scipio; ULAN, Ulan; SER, Southeast Reams; F-B, Featherston-Blocker; BRO, Brooken; CAR, Carney; Q, Quinton; RO-N, Red Oak-Norris; CAM, Cameron; P-G, Poteau-Gilmore. (Map from OGS Guidebook 30, *Stratigraphy and Resources of the Krebs Group (Desmoinesian), South-Central Arkoma Basin, Oklahoma*)