



The Denver Well Logging Society

Chapter of the Society of Professional Well Log Analysts

Chapter News

September 1999, Volume 12 Number 1

An Improved Method For Estimating Oil Reserves In Oil-Water Transition Zones

John R. Fanchi and Richard L. Christiansen, Colorado School of Mines

The amount of recoverable oil in an oil-water transition zone depends on the distribution of oil saturation as a function of depth, and the relationship between initial oil saturation in the transition zone (Soitz) and residual oil saturation in the transition zone (Sortz). Traditionally, it is assumed that Sortz is the same as the residual oil saturation in the oil column (Sor) above the transition zone. However, data in the literature show that residual oil saturation depends on initial oil saturation. So, residual oil saturation in the transition zone (Sortz) should be a function of initial oil saturation in the transition zone (Soitz). The relationship between Sortz and Soitz is referred to as a trapped oil relationship.

The purpose of this talk is to discuss recent experimental corroboration of the trapped oil relationship and to demonstrate the impact of the trapped oil relationship on reserves determination in oil-water transition zones. The effect of the trapped oil relationship on reserves determination is shown in two ways: first, with an analytical model that shows the possible incremental benefit of including the trapped oil relation-

ship; and second, with an extended black oil simulation that incorporates the effects of relative permeabilities on reserves determination.

Biographical Sketches:

John R. Fanchi is a Professor in the Department of Petroleum Engineering at the Colorado School of Mines. His work in subsurface resource management has focused on reservoir model applications and simulator develop-

ment. He worked at Marathon Oil before joining Mines in 1998.

Richard L. Christiansen is an Associate Professor in the Department of Petroleum Engineering at the Colorado School of Mines. His research interests include fundamental experimental studies of fluid flow in porous media. He worked at Marathon Oil prior to joining Mines in 1990.

Meeting Information

First Meeting of the Season

When

Tuesday, September 21st, 1999
11:30 A.M. - 1:30 P.M.

Cost

\$15 per person

Where

Wynkoop Brewing Company
1634 18th St. (18th & Wynkoop)
Mercantile Room

Reservations

Reservations must be made by noon, Monday, September 22nd.
Call EliceWickham @
(303) 573-2781 or e-mail
SueCluff@Discovery-Group.com



President's Message

Phil Nelson

This year I will write short summaries of services and materials available to the Denver well logging community. These profiles will concentrate upon, but will not be limited to the membership. For this first issue, I have selected three enterprises which concentrate on supplying "old logs" to geologists and well log analysts.

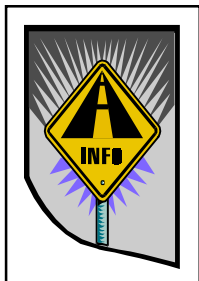
Energy Data Services (Dan Shier)

Dan's business establishes well log data bases for clients, overseeing the digitizing, performing quality checks, and then doing "data laundry". Dan uses the term data laundry to refer to such activities as normalization, depth shifting, conversion of old neutron units (cps, microrentgens, etc) to porosity units, and baselining of SP logs. Dan demonstrates the need for normalization in an article in the May-June 1997 Log Analyst titled "A comparison of log response between logging companies and different vintages of tools".

Dan's group also does petrophysical field studies for clients. They have developed a specialty of interpreting old logs.

The **DWLS Chapter News** is the newsletter of the Denver Well Logging Society and is published nine times per year, excluding June, July and August. Subscriptions are included with membership. Annual dues are \$5 for SPWLA members and \$10 for nonmembers. Advertising is welcome, as are articles and items of interest from the membership. Contact the Editor for information or address corrections.

Dan feels that digital techniques, proper normalization, and better modeling provide interpretations of old logs that are better than what was possible when the logs were originally acquired.



Dan can be reached via

eds@rockypine.com,
www.rockypine.com, and 303 271 1538.

Denver Earth Resources Library

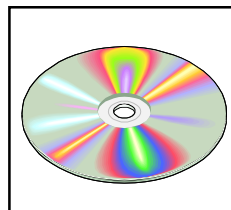
A bountiful source of well logs, production data, and other well information lies in the catacombs of the Denver Earth Resources Library (DERL) located in the Equitable Building at 730 17th Street (corner of Stout and 17th) in Denver. Originally founded by RMAG, DERL has since achieved its own separate identity and operates as a non-profit organization, sustained by donations and membership fees. Ample work space, copying facilities, and conference rooms are provided for members.

DERL provides complete coverage of wells in the Rocky Mountain states, along with partial coverage of the mid-continent, west coast, and Alaska. The collection is based upon donations from oil and gas companies. Most recently, the paper-copy well log collection has been supplemented by an extensive donation from Amoco. DERL also features a library collection of books, reports, maps, and periodicals, with emphasis on the Rocky Mountains and Mid-Continent

Regions. For information, call Kay Waller at 303 825 5614.

Center Line Data (Gary Sawkins)

After acquiring substantial experience in the digitizing business, Gary decided to devise some improvements in the technology. The outcome is a thriving digitizing business called Center Line Data, with offices in Lakewood (3000 Youngfield Street), Houston, and Calgary. Center Line's proprietary process is entirely computer-based, using raster scans of the well logs (the rats have been replaced by mice). The process greatly improves overall quality with no sacrifice in turn-around time or cost. Digital data are delivered to the customer electronically, diskettes, or cdrom, typically in las format.



Gary's firm also offers services in document scanning and

map digitizing, specializing in well-based data. Gary can be contacted at 303 235 0033, gsawkins@rmii.net., www.centerlinedata.com.

Up Coming Events

SPE Houston Oct 3 - 6th

New Officers

Congratulations to Leslie O'Conner and Dwight Peters, newly elected to VP Technology and Secretary treasurer.

Attendance Incentive!!

Attendees at the September luncheon will be rewarded by a free cdrom-of-the-month, selected by Phil Nelson.



The Denver Well Logging Society

Chapter of the Society of Professional Well Log Analysts

1999 - 2000 Application for Membership

_____ New Member

_____ Renewal

Member Name: _____

Job Title: _____

Mailing Address:

Street: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email Address: _____

Are you a National SPWLA member?

Yes: _____ Dues are \$5.00 (Dual Membership)

No: _____ Dues are \$10.00 (Local Member only)

Make cheque payable to the **Denver Well Logging Society** and send to:

DWLS
Attn: Dwight Peters
c/o Schlumberger Oilfield Services
6090 Greenwood Plaza Blvd.
Englewood, CO 80111

Do you have any suggestions for lunch topics?

Schlumberger

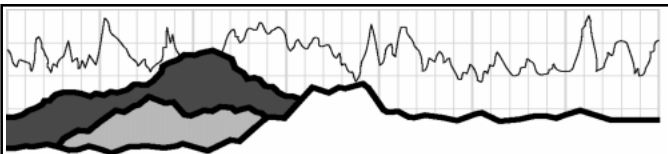
Reservoir Evaluation Denver Oilfield Services
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Teamwork & innovation to create value



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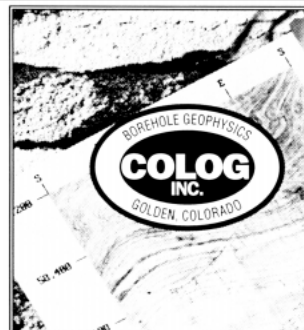
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