InSite

CWLS Magazine

December 2007 Issue 4 Volume 26

Inside this issue…

See how RECON's industry leading **HDD™ 132 samples per meter (40spf)** can identify all your zones

33 SAMPLES/ METER

RECON'S HDD™ LOG – 132 SAMPLES/ METER

Identify all your zones with RECON's HDD High Definition Data™.

Only from RECON.

"The HDD showed an increase in our reserves and it increased our confidence level at our chances of success!"

MICHAEL KUNERT
GEOLOGIST, VERO ENERGY INC.

RECON

HDD™ HIGH DEFINITION DATA

403-517-3266

www.reconpetro.com

InSite

CWLS Magazine December 2007

Issue 4 Volume 26

Co-Editors:
Tyler Maksymchuk & Kelly Skuce

Layout and Design:
Connections Desktop Publishing

Advertising:
Tyler Maksymchuk
(403) 261-1258
Tyler.Maksymchuk@
can.apachecorp.com

Proof Readers:
Robert Bercha, Kathy Chernipeski

Contributors:
Jeff Taylor, Greg Schlachter, Ingo Geldmacher, Jos Jonkers and Buckey Iams

The CWLS InSite is printed by Little Rock Document Services Ltd. of Calgary, Alberta, Canada four times annually which is included as a part of your yearly membership fees.

Table of Contents

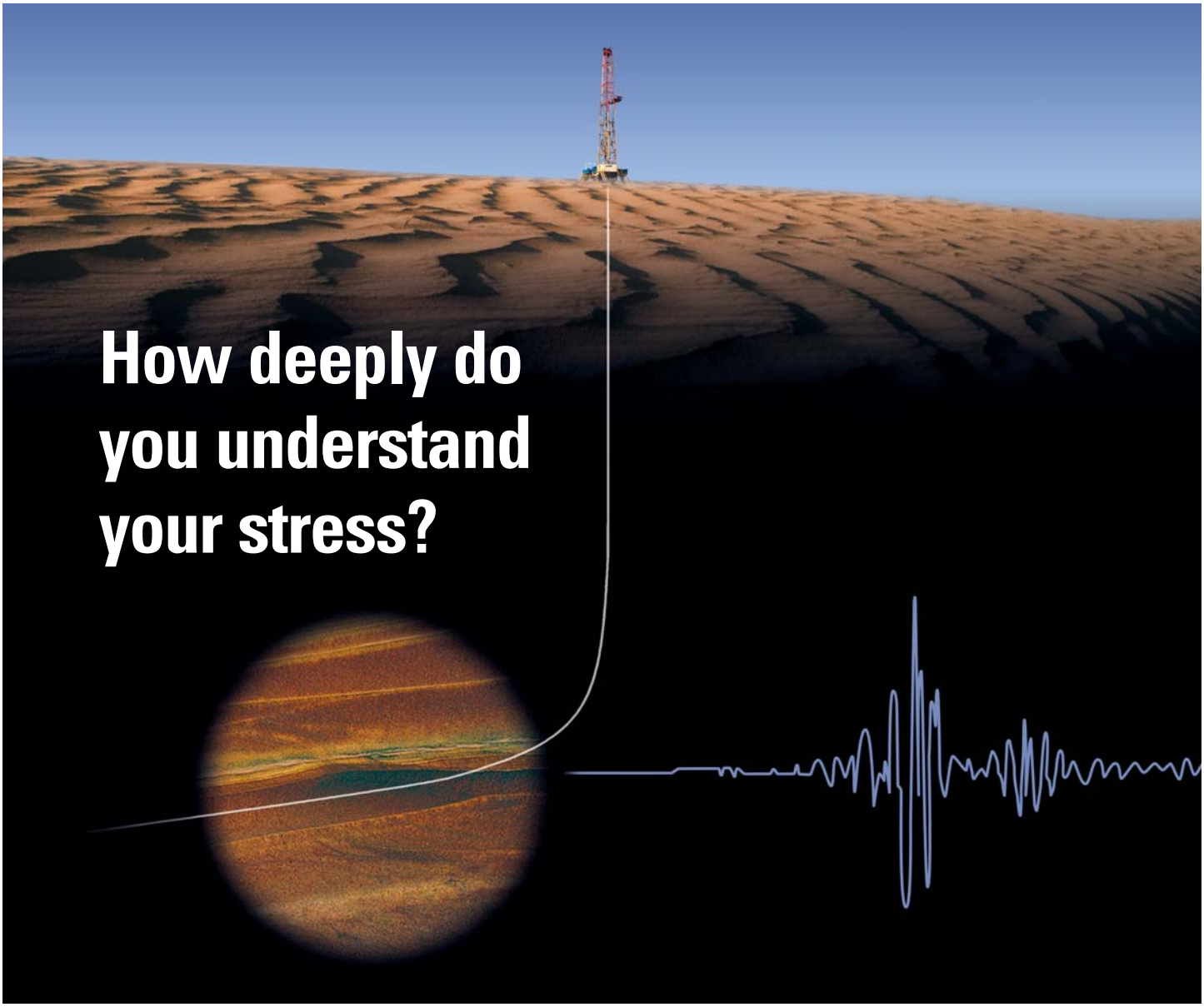
Cover Photos: *Overlooking the city Sanaa, Yemen*
Photo courtesty of Jeff Taylor

Barnett Shale outcrop in quarry near Llano, Texas
Photo courtesty of Kelly Skuce

If you have a photo that the CWLS can use on its next InSite cover please send a high resolution jpeg format version to Tyler.Maksymchuk@can.apachecorp.com or Kelly.S.Skuce@conocophillips.com. Include a short description of the photo with your submission.

The 2007 - 2008 CWLS Executive:

Front row (l - r): Greg Schlachter, Cindy Guan, Jeff Taylor, Kelly Skuce.
Back row (l - r): Roy Benteau, Peter Kubica, Vern Mathison, Tyler Maksymchuk, Gordon Uswak.



Deeper understanding

The new Sonic Scanner* acoustic scanning platform enables accurate measurement of the stress-dependent properties of rocks near the wellbore. Now you can make advanced acoustic measurements axially, azimuthally, and radially. The Sonic Scanner multiple depths of investigation, excellent waveform quality, and simple presentations all help to reduce the complexity of sonic logging, without compromising the depth of information.

Get the most comprehensive understanding of your rock, improve your fracture planning, sand control, and perforating design. See stress on a whole new level, with an extra dimension.

Understand your reservoir

*Mark of Schlumberger 06-FE-055 © 2005 Schlumberger

Sonic Scanner

(403) 509-4000

To find out more about Scanner* services visit www.slb.com/understand.

Schlumberger

President's Message

As I sit in a dark internet cafe/bar somewhere near Nassau, the Bahamas, fingers flying across the keyboard I reflect on the year that has come and now, almost gone. It's a tranquil beach setting here, Tina Turner is thumping out of the speakers and the beer is flowing. Somehow, this setting seems totally appropriate for what is most likely my last President's Message. Yes, the long arm of the CWLS Publication Co-Chairs Enforcement Committee have managed to wrest some time away from the sand, sea, sun and satisfaction that makes up most vacations – and this one too.

As I reflect on the year past, I am reminded about the many different cycles that affect our lives and our industry. The annual cycle of the CWLS Executive has almost finished its current lap and thanks to our increasing membership and the many volunteers, a new executive is ready in the wings to ride the ebb and flow of the next wave.

Vacation allusions aside, there are many other cycles that define our industry. Some cycles have a very long period and others, very short durations. For example:

- the decades it takes to bring capital intensive projects, such as a tar sand SAGD operation, online
- the even longer time it takes R&D efforts to result in field operational trials and on to practice
- the 4 year cycle of governments, their ministries and sometimes, policies
- the annual winter drilling and spring breakup events that define the planning of most drilling departments and drilling contractors
- the ever repeating monthly accounting cycle that the many service companies seem to live and die by
- the cyclic price variations of oil and gas that really takes the entire industry for its ride

Really, an endless number of cycles, all of which are different. For an industry that is made up of so many apparently independent parts, but totally dependent on all those parts, it really is incredible that operating within all these different cycles, it all seems to come together. Not always, but certainly, more often than not. This is actually quite amazing for me that the oil industry works so well even though it is made up of so many different components all operating on different cycles, with different agendas. We have an industry that is technically innovative, intensely competitive, occasionally rewarding and, unfortunately, largely misunderstood by the vast majority of the public. It works, and that is a real success for everyone, but it can, and needs to, work better.

This is our responsibility to address. When I say "our" I mean the people working in the Oil and Gas Industry, upstream and downstream. Our many industry societies and organizations must also be sensitive to the myriad of cycles and those people within these different cycles and the public's perception. It will be necessary to address this so we can attract and keep the talent necessary to keep this vibrant and vital industry healthy.

On to the last annual cycle (of this column) – Christmas and New Years. I wish the best for everyone, enjoy this edition of the InSite, when you come across one of the CWLS executives, thank them for their tireless efforts, and have a safe and happy holiday.

See you all at the AGM.

Jeff Taylor, P.Eng.
CWLS President

Editor's Note

Welcome to the last InSite of 2007. Due to a number of unforeseen circumstances there was a slight delay in its publication and circulation to the members.

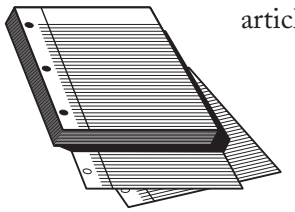
2007 was a year of change for most of us and 2008 will be no different. You may remember the Editor's note in the December, 2006 InSite. In that note we mentioned the Federal Government's changes to income trust taxation, the housing market cooling off, a decline in natural gas prices and companies cutting their drilling budgets. At that time trying to accurately predict some of the important events of 2007 would have been difficult at best if not impossible. The most significant event in 2007, from the point of view of Alberta's oil and gas industry, is the future increases in oil and gas royalties. It remains to be seen if these changes will provide the increased royalty revenue that the Alberta Government is predicting. In the meantime billions of dollars of investment have been re-directed to other projects outside of Alberta. As to what other unintended consequences may occur as a result of this, only the future will tell. With some proper planning and hopefully some luck the industry will get through this difficult time.

In this InSite we have one paper, and two important announcements. The paper is entitled "A through Casing Resistivity Field Study in Alberta". Although this paper was originally presented at and printed by the SPWLA, we felt that the content of the paper is such that CWLS members would find it beneficial. Although through casing electric logging has its roots back in the 1940's it has proved to be a difficult nut to crack. On the announcement front there are two events of significance to all CWLS members. These are the election of the new executive and the annual general meeting on February 19, 2008. This year the guest speaker at the AGM will be Jeff Macinnis (see page 9 for details).

Enjoy the InSite.

Tyler Maksymchuk and Kelly Skuce.
CWLS Publication Co-chairs

Call for Papers



The CWLS is always seeking materials for publication. We are seeking both full papers and short articles for the InSite Magazine. Please share your knowledge and observations with the rest of the membership/petrophysical community. Contact publications co-chairs Tyler Maksymchuk (Tyler.Maksymchuk@can.apachecorp.com) at (403) 261-1258 or Kelly Skuce (Kelly.S.Skuce@conocophillips.com) at (403) 260-1931

CWLS 2007 to 2008 Executive

President
Jeff Taylor
Nexen Inc.
801 - 7th Avenue SW
Calgary, AB T2P 3P7

403-699-4311 (Office)
403-612-8474 (Cellular)
jeff_taylor@nexeninc.com

Past President
Peter Kubica
Petro-Canada
150 - 6th Avenue SW
Calgary, AB T2P 3E3

403-296-4241 (Office)
403-296-5176 (Fax)
kubica@petro-canada.ca

Vice-President
Roy Benteau
EOG Resources
1300, 700 - 9th Avenue SW
Calgary, AB T2P 3V4

403-297-9191 (Office)
roy_benteau@eogresources.com

Secretary
Cindy Guan
Petro-Canada
150 - 6th Avenue SW
Calgary, AB T2P 3E3

403-296-5527 (Office)
cguan@petro-canada.ca

Treasurer
Vern Mathison
Weatherford
300, 333 - 5th Avenue SW
Calgary, AB T2P 3B6

403-298-3858 (Office)
vern.mathison@canada.weatherford.com

Publications Co-Chair
Tyler Maksymchuk,
Apache Canada Ltd.
#1000, 700 - 9th Avenue SW
Calgary, AB T2P 3V4

403-261-1258 (Office)
403-880-7386 (Cellular)
Tyler.Maksymchuk@can.apachecorp.com

Publications Co-Chair
Kelly Skuce
ConocoPhillips Canada
2100, Bow Valley Square 4
250 - 6th Avenue SW
Calgary, AB T2P 3H7

403-260-1931 (Office)
Kelly.S.Skuce@conocophillips.com

Membership Chair
Gordon Uswak
EnCana Corporation
150 - 9th Avenue SW
PO Box 2850
Calgary, AB T2P 2S5

403-645-3484 (Office)
403-620-1418 (Cellular)
403-645-2453 (Fax)
gordon.uswak@encana.com

Chair of Committees
Greg Schlachter
Schlumberger
525 - 3rd Avenue SW
Calgary, AB T2P 0G4

403-509-4240 (Office)
gschlachter@slb.com

As the Winch Turns

…no longer for this former wireline field engineer. That is what I was thinking this early morning as I sit at my desk on this very frigid January Monday. I have been somewhat spoiled this winter and perhaps last year as well, without too many bone chilling days here in the city. Today I contemplate my decision many years ago to pack in my hard hat, work boots and winter coveralls for the well-known business casual attire and the warmth of a fairly large office. Included is my choice of lattes, hot chocolate, coffee, tea or whatever is my fancy, from the coffee room down the hall.

My thoughts go out to not only the oil/gas staff who work day in, day out in the field in all kinds of weather, but to anyone who has to spend time to make a living (or not) outside on days like today. With the temperature -31 °C, and with the wind chill well under the -40 °C mark, is seems almost silly for anyone to be outside.

For almost 4 years I spent time working in the wilderness of Canada, from as far north as the Northwest Territories, to the beautiful southern windy hills of Pincher Creek. Although I got to see many beautiful places in my brief field career, I pat myself on the back for the decision I made in 2002 to leave a very interesting and satisfying lifestyle as a field engineer. The career of a wireline field engineer was more than a job, and anyone who has done that type of work, I believe, tells the same tales. Most will say you have to be a little off to live in your truck for numerous days at a time, drive for hundreds of hours in weather like to today just because dispatch needs your truck in High Level for 2:00 AM tomorrow. Once you are done that, then we could use you and your crew for the rest of the week in Estevan. Hearing the words "John was sick and we have no one to cover" over your cell phone after being up for 24 hours, makes me remember…of course he is, I should have known. In was a ton of fun and one learns alot about oneself in the challenges of such a career. The men and women that continue to do the work for us oil & gas operating companies in weather such as this or whatever time of the season, deserve a whole lot of credit for the hours, the time, and sense of humour each bring to the wellsite to do their jobs in days like these.

So, next time you need to pick up that phone to call someone for a truck to log the TD run of your latest well in some god-forsaken place in Northern BC, remember the frigid days when you were in the field and remember that obscene early phone call you got from Peter, "…you better start calling your operators, you boys are ready on arrival"

Stay warm.

Buckey Iams.

Message from Chair of Committees

One of the roles of Chair of Committees is to assist in the establishment of committees and report on their progress. As 2007 draws to a close it's a time to take stock of the achievements of just some of the volunteers working in the background on numerous committees. Their names aren't lit up in bright lights like executive members, but without their efforts we could not function as a living, breathing society.

I'd like to share with the CWLS membership the progress of the Student Liaison Committee. While the Student Liaison Committee is far from new, it now has a greatly expanded role for CWLS.

In the past the Student Liaison Committee consisted of one hard-working, lone sentry by the name of Louis Chabot. It was his role to promote CWLS at the graduate university level with the purpose of acquiring new CWLS member recruits and obtaining graduate level student scholarship applications. Since the study of petrophysics is often a subset of much broader studies, it can be difficult to find more than a few applicants for our thesis and published paper scholarships.

To assist Louis and expand on the role of the Student Liaison Committee, Chris Ayadiuno, Mike Siefert and myself have signed up. This committee's role has now been expanded to include student outreach objectives at the undergraduate level. We are in the process of networking with other societies with outreach programs in place such as the Canadian Federation of Earth Sciences, the Canadian Petroleum Discovery Centre, the Petroleum Human Resources Council of Canada and CSEG to name a few. We have made some measurable success by convincing John Nieto to give a presentation to the Mount Royal Joli Fou Geology Club at the urging of club president Crystle Zarich. We believe these sorts of presentations will encourage and inspire those who enter the work force to be aware of career paths involving petrophysics and supporting societies such as ours. The future of the CWLS lies in the recruitment of new members who will carry on the tradition.

The long-standing LAS Standard Committee consists of Jim Karst and Ken Heslop at the helm. Along with the help of many others over the years, they have succeeded in defining a LAS 3.0 standard which includes imaging data. The need for images to be archived in a standard format is ever-increasing, thanks to modern logging tool capabilities. A number of service and producing companies are early adopters of this technology and find the standard invaluable. The EUB has yet to adopt this standard but the more it is adopted voluntarily, the more likely the board will be convinced.

The stealthy Speaker Evaluation Committee has been reviewing our luncheon speakers since 1996. Current committee members are Robert Bercha, Jim Earley, John Gilroy, Mark Ducheck, Jim Jarvis and Larry Song. They attend the monthly luncheons and rate each talk based on criteria such as material content, graphics and audience reaction. At the end of the year this committee reviews the talks and decides who they feel should win the President's and Vice-President's award. They are present their findings to the CWLS Executive who invariably accept their recommendations. This committee's experience and impartiality is of great value to the CWLS to provide a subjective luncheon speaker review to the Executive.

This list of committees and people who contribute to them is by no means exhaustive, but provides some insight to our membership of the rewards of volunteerism. If you, as a member, have an idea for a new or expanded committee, or want to join an existing committee, feel free to contact me or another executive member.

With the invitation for CWLS to participate next year and every year in the CSPG CSEG CWLS Joint Convention our need for volunteers will increase. This is a good problem to have since this joint convention is an important source of exposure, recognition and revenue for this society. We are making it even easier for members to let us know you want to volunteer for CWLS with a check box on our web site. The check box is not a commitment, it only encourages us to give you a call when we have a need; to which you are free to decline or accept.

Greg Schlachter
Chair of Committees

New Members

Mike Gierach, Geoseis Inc.
Christopher Collom, Focus Energy Trust
Quan (Jenny) Fu, ConocoPhillips Canada
Harold Ryan, Chapman Petroleum Engineering Ltd.
Sean Kostenuk, Canadian Superior Energy
Muhammad Nadeem, Focus Energy Trust
Mike Regan, Hycal Energy Research Laboratories
Harry Cowan, Tristone Capital
Satyaki Ray, ConocoPhillips Canada
Christina Marier, Suncor Energy
Ron Gutiw, Paramount Resources Ltd.
Giselle LaBrie, Unconventional Gas Resources
Jasna Sovilj Legcevic
Rick McCain, SM Stoller
Nabil Belabbassi, Datalog

CWLS Annual General Meeting

Tuesday, February 19, 2008
Fairmont Palliser, Crystal Ballroom
5:00p.m. Reception – 6:00p.m. Meeting - 6:30p.m. Dinner
Single: $55.00 – Couple: $100.00 – Corporate(8): $400.00
Tickets at the CWLS office: 269-9366
Scotia Centre, 2200 - 700 - 2nd Street SW, Calgary

Guest Speaker:

JEFF MACINNIS

The Polar Passage and Eco-Challenge

Explorer, award-winning downhill skier, best-selling author and entrepreneur, Jeff MacInnis achieved a four-hundred-year-old impossible challenge when he led the first team to sail the Northwest Passage.

BOP stack, rig in Northern Alberta, Canada
Photo courtesy of Robert Bercha

Mud press used for extracting filtrate
Photo courtesy of Peter Kubica

A Through-Casing-Resistivity Field Trial in Alberta, Canada

Ingo M. Geldmacher, Jos Jonkers
Weatherford International, Ltd.

Abstract

Formation resistivity measurements through a metal casing allow the determination of water saturation of a (developed) hydrocarbon reservoir even in low porosity conditions where the use of pulsed neutron measurements is problematic.

In order to evaluate the performance of a newly designed through-casing resistivity tool a field trial was performed during the summer of 2005 in Alberta, Canada. The field test was conducted in different reservoir provinces throughout Alberta to cover varying field conditions. The age and condition of the test wells ranged from "newly drilled" to fifty-plus year-old producers. Formation resistivities also covered a wide range, from sub-1 Ohm*m formations to 100-plus Ohm*m producing horizons.

Measurements are stationary and typically performed at 1 meter (39.4 inches) intervals. The time of data acquisition per station depends on the condition of the casing, but ranges in the few minutes range, even for the worst encountered scaling damage. The instrument produces a table of data on the surface equipment computer screen which is immediately evaluated by the operator. The table contains (for each measurement location) depth, number of measurements at location, resistivity, potential measured from top and bottom electrode accentuation, the 1st and 2nd differences measured at this location, and casing resistance.

The instrument performed very well throughout the field trial period. A subsequent comparison of the resistivity data yielded an excellent agreement with open hole logging data. This paper will present the field trial results and data comparison with open-hole data, and discuss design and performance details of the instrument.

Introduction

Electric logging is the oldest and one of the most informative well logging technologies. Today a resistivity log is considered a "staple" for any borehole formation analysis.

Electric logging through a metal casing was considered as early as the 1940s (Stewart, 1945), but developments were hampered by the state of technology. There was simply no suitable electronic circuitry to measure the small signals which are encountered when metal casing is involved along the signal path. Around the same time there were also active developments in the former Soviet Union. Notably, the works by L.M. Alpin (1938) are referenced here. While theoretical developments were ongoing the realization of the measurement had to wait until the 1980s (Kaufmann, 1989; Vail, 1989). The improvements in electronic design, operational procedure and an increase in applications in maturing oil and gas fields sparked interest among major service companies and led to ever-improving tool development of through-casing resistivity technology. Essentially all current through-casing resistivity equipment used in the West dates its heritage to these principles.

In the early part of this decade development work was done to aid production testing in the oil and gas fields of Stavropol,

Continued on page 12…

A Through-Casing-Resistivity Field Trial … *continued from page 11*

Russia, and Western Siberia. The technological developments led to the hardware as it is used today.

Measurement

The through-casing resistivity instrument that was used is a five-electrode two-pole inverse lateral logging tool. Current emitting electrodes are at the top and bottom of the tool, while the measurement electrodes are placed in between at fixed separation. The currents return to an electrode at the surface. Measurement is stationary and typically performed at 1 meter (39.4 inches) intervals. The tool is of basic construction. Simplicity in the tool body and electrodes and some smart details in how casing contact is made (i.e., the hardened electrode points are "pulsed" upon contact to "hammer" their pinpoints through any muck on the casing wall) ensure good tool functionality.

An important issue is that the tool directly measures the 2nd difference, as opposed to calculating the value from 1st difference measurements. This 2nd difference is subsequently processed using a proprietary algorithm to obtain the formation resistivity. All calculations are performed in real time and can be checked on site.

The measurement results from the instrument are displayed as a table of data on the surface equipment computer screen which is immediately evaluated by the operator. The operator decides whether a set of values is "good" by individually judging the "continuity" of the measurement profile, e.g., two adjacent values should fall within 10 % of each other. If this criteria is not fulfilled there will be an additional measurement at the same tool position to confirm a new "trend". This process of operation is rather simple and relies on the operator's experience, but it works well and provides for good quality control before continuing with the next measurement.

The table contains (for each measurement location) depth, number of measurements at location, resistivity, potential measured from top and bottom electrode accentuation, the 1st and 2nd differences measured, and casing resistance.

The values in the table are almost the final data values before various calibration parameters are automatically applied to generate the final resistivity values.

Casing collars cause the instrument to read abnormally. When the operator notices this, the tool is moved slightly away from the collar to allow a "smooth" resistivity output. This results in a simple and effective way to eliminate this effect which is determined easily by the operator.

Another known artifact of through-casing measurements is the so-called casing-bottom effect. The closer the tool gets to the end of a casing (top or bottom of the well), the more a symmetric the current flow with respect to top and bottom electrode will be. The example wells in which the tool was run do not allow this claim to be verified.

Instrumentation

Equipment – The surface equipment needed for the through-casing resistivity tool consists of two interface panels: a high output DC power supply, and a laptop computer. The surface components are reasonably compact and can be set up in the recorder cab in approximately 10 minutes. A good ground contact is critical for the operation of this tool. The ideal situation is to have an adjacent well to use for grounding. If not available, the casing of the well being logged can be used. The down hole tool consists of an electronics section, a sonde section, and a sinker bar. These components are assembled prior to rig up. The sonde section consists of about 1.2 m of mechanical cables, hoses and electrical cables which connect the measurement and current emitting electrodes. A laboratory picture of the through-casing resistivity equipment is shown in Figure 1.

Calibration – A master calibration is required for the through-casing resistivity tool, which is performed at the shop using a section of casing. The master calibration requires about 3 hours per tool to complete. For field trials, each tool was calibrated using 139.7mm, 25.3 kg/m casing.

Figure 1: Through-casing resistivity equipment in the laboratory. In the foreground one can see the electronics cartridge. The background depicts the measurement electrodes.

Continued on page 13…

A Through-Casing-Resistivity Field Trial … *continued from page 12*

Measurement procedure – Data is acquired using stationary stop checks. The theoretical minimum time for one test is 3 minutes. One minute is required to hydraulically set the tool probes and two minutes are required to take the measurements. Performing a test is relatively straight forward. The tool probes are set, the electrodes are energized, and the measurements are taken. The operator performs a quality check on the results of the test before moving on to the next test. The tests are taken at 1 meter increments. Smaller increments can be used to increase the vertical resolution, but this increases the acquisition time. When testing, if the result of the test being performed is within 10% of the resistivity from the previous test, then the test is considered valid and the tool is moved to the next test depth. If the difference is more than 10%, then the test at that depth is repeated. The test is repeated at the depth until two results are within 10% of each other. With this methodology, the minimum average time spent per depth interval ranged from 3.6 to 6.4 minutes. The 3.6 minute minimum was achieved on a 14 m interval where no repeat samples were taken. The 3.6 minute sample translates into 0.27 m/min logging speed.

Test Well Results

All test well runs were performed on a standard logging unit with a seven-wire armored cable of some 4,000 m. Where open-hole data is available, the comparison with the through-casing logging data was made "after the fact", i.e., the data is collected in the field and only compared back at the field office.

Test Well No.1 – This well is located in Leduc-Woodbend, Alberta and penetrates the Devonian Dolomite reef with 10 to 13% average porosity. The well was drilled to a total depth of 1,643 m on April 19, 1949 and subsequently cased. The production casing (OD 139.7 mm, wall thickness 6.99-7.72 mm) runs from 596.8 m to 1,643.2 m. Maximum deviation is less than 2 degrees. There is no open-hole data available for this well. The logging results and casing resistance (RCASINGG) are shown in figure 2. Comparisons between two different tools (TCRG and TVR1G) as well as repeat comparison between different runs, i.e. 1G, 2G and 3G, over the bottom section are shown.

Test Well No.2 – This well is located in Big Stone, Alberta. The well was drilled to a depth of 2,510 m on June 15, 2005. The production casing (OD 139.7 mm, wall thickness 6.99-7.72 mm) runs from 596.8 m to 2,513 m. Maximum deviation is less than 5 degrees. This well was logged in different intervals to observe the instrument characterization in different formations. The upper interval from 1,265 m to 1,282 m encounters sand and shale of the Upper Cretaceous Belly River formation with porosities in the 12 to 18% range (Figure 3). The middle interval from 2,091 m to 2,107 m shows the Lower Cretaceous Viking formation of approximately 15% porosity (Figure 4). The bottom interval from 2,463 m to 2,478 m (Figure 5) shows a massive sandstone of the Glauconite formation of Lower Cretaceous age with porosities in the 20% range. For comparison, open hole data from the Simultaneous Triple Induction (STI) are available. The bottom interval shows a

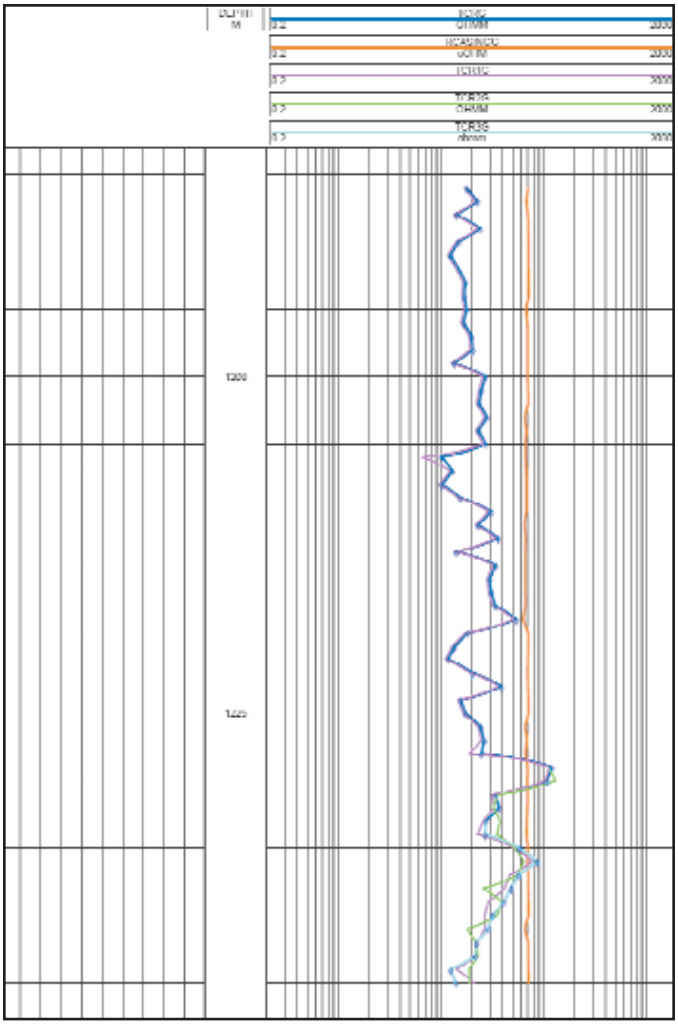


Figure 2: Logging results and casing resistance (RCASINGG) for test well No.1. Comparison of two different tools (TCRG and TVR1G) as well as repeat comparison between different runs, i.e., 1G, 2G and 3G, over the bottom section are shown.

Continued on page 14…

A Through-Casing-Resistivity Field Trial … *continued from page 13*

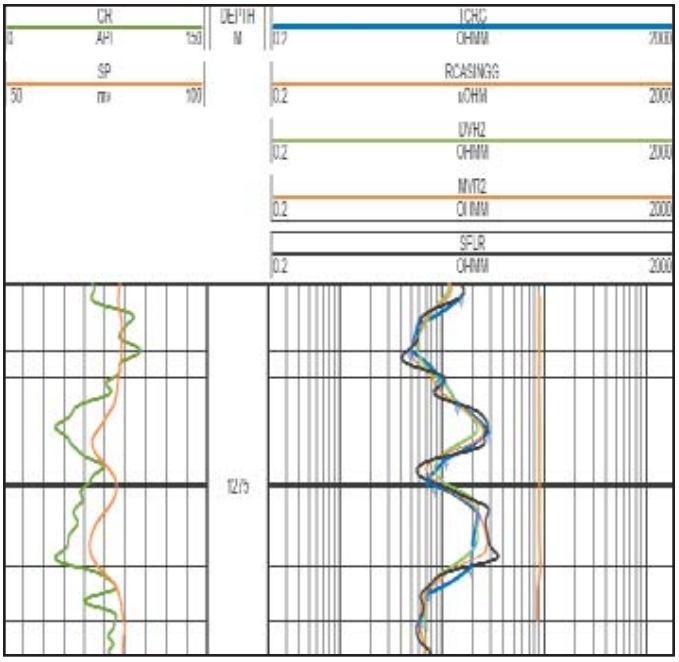


Figure 3: Logging results and casing resistance (RCASINGG) for the upper interval of test well No. 2. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

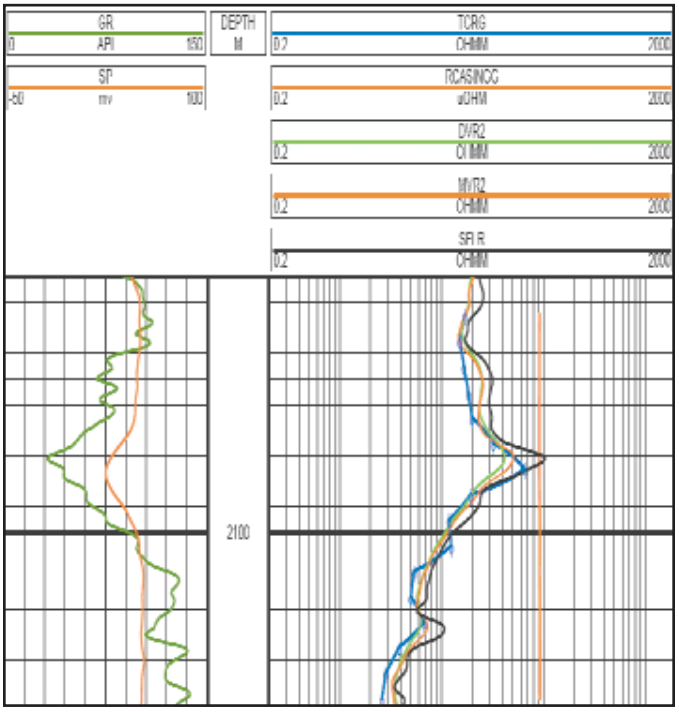


Figure 4: Logging results and casing resistance (RCASINGG) for the middle interval of test well No. 2. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

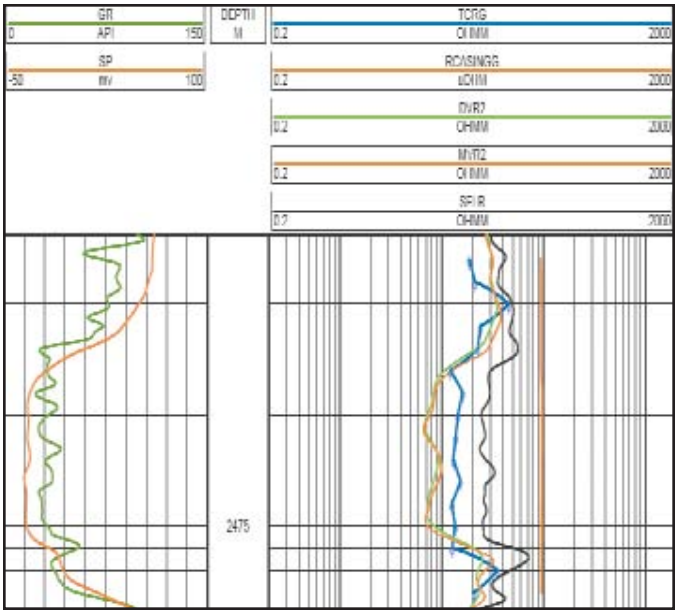


Figure 5: Logging results and casing resistance (RCASINGG) for the bottom interval of test well No. 2. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

shallow invaded zone with separation between deep (DVR2) and medium induction (MVR2) on the one hand, and shallow SFLR with higher resistivities on the other. The through-casing resistivity measured between the lower inductions and higher SFLR. The well was open-hole logged on June 15, 2005 and logged with the through-casing resistivity almost 2 weeks later, allowing for dissipation of the invasion to take place which has caused these resistivities to read differently.

Test Well No.3 – This well is located in Willesden Green, Alberta. The well was drilled to a depth of 2,310 m on June 4, 2005. The production casing (OD 139.7 mm, wall thickness 6.99-7.72 mm) runs from 502 m to 2,310 m. Maximum deviation is less than 20 degrees. Again, different portions of the well were logged. The deepest of the intervals logged is shown in Figure 6. The displayed interval covers the Lower Cretaceous calcite cemented sands of less than 10% porosity. A comparison of the resistivity curves from the STI and the through-casing resistivity shows that both instruments produce curves of similar shape and resistivity values.

Continued on page 15…

A Through-Casing-Resistivity Field Trial … *continued from page 14*

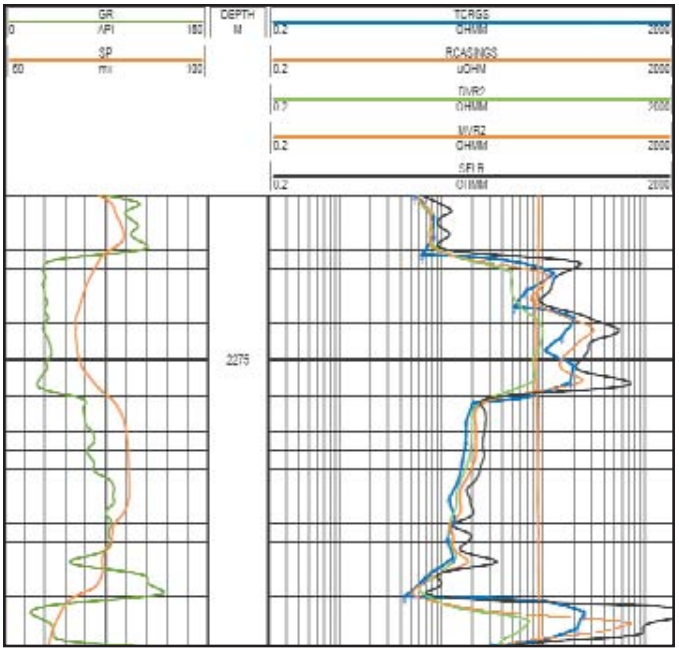


Figure 6: Logging results and casing resistance (RCASINGG) for the bottom interval of test well No. 3. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

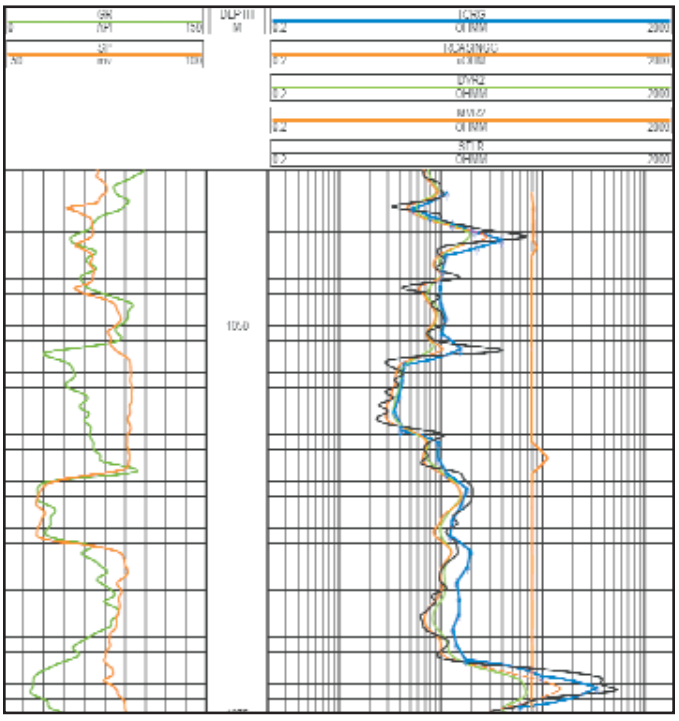


Figure 7: Logging results and casing resistance (RCASINGG) for the bottom interval of test well No. 4. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

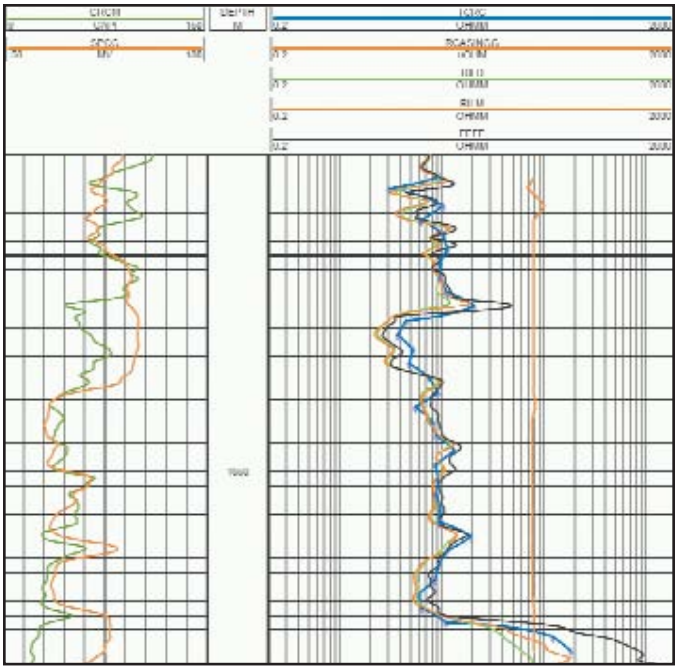


Figure 8: Logging results and casing resistance (RCASINGG) for the bottom interval of test well No. 5. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

Test Well No.4 – Numerous intervals were tested in this well, located in Bantry, Alberta. The well was drilled to a total depth of 1,099 m and cased with production casing (OD 127 mm, wall thickness 6.99-7.72 mm) on June 24, 2005. Maximum deviation is less than 17 degrees. The well encounters various formations with lithologies ranging from limestone, clay, coal and sandstone. The lower of the intervals tested is shown in Figure 7 and covers the Cretaceous Lower Mannville Sunburst Formation (22% porosity). For comparison, the induction and shallow SFLR are shown as well.

Test Well No.5 – The final test well was also located in Bantry, Alberta. The well was drilled to a total depth of 1,099 m and cased with production casing (OD 127 mm, wall thickness 6.99-7.72 mm) on May 29, 2005. Maximum deviation is less than 17 degrees. Two intervals were measured. The bottom interval between 1,062 m and 1,029 m consists of limestone, sandstone and shale sequence also in the Lower Mannville Sunburst Formation (22% porosity). A comparison of the logging data with induction measurements can be seen in Figure 8. The top interval between 1,018 m and 998 m

Continued on page 16…

A Through-Casing-Resistivity Field Trial … *continued from page 15*

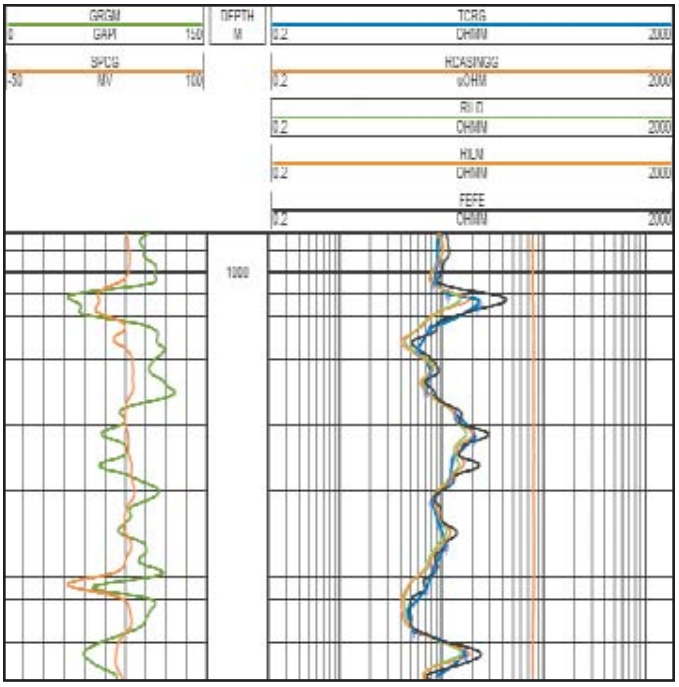


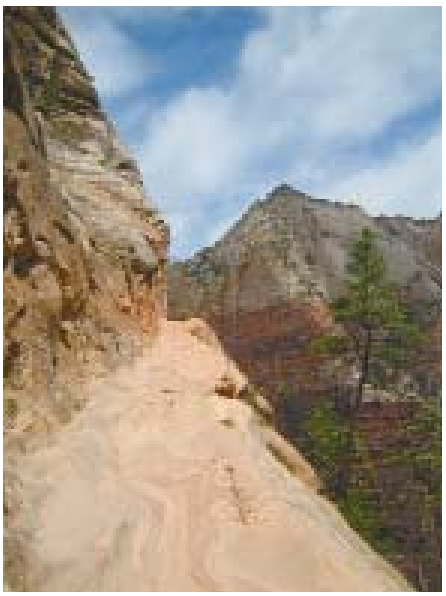
Figure 9: Logging results and casing resistance (RCASINGG) for the top interval of test well No. 5. The data are compared to open-hole data from the Simultaneous Triple Induction (STI) which consists of SFLR, MVR2, and DVR2.

includes a coal seam at 1001.5, as well as sand and shale layers of the Lower Mannville, and is shown in Figure 9. Open-hole data are shown for comparison.

Summary

Through-casing resistivity measurements were performed in a variety of environments, including different formation resistivities and casing status. When reviewing the data sets it becomes clear that the through-casing resistivity results provide a good match to the induction (STI) and shallow resistivities (SFLR). It was determined from these field tests that the results are viable and can be produced on a consistent basis. The repeat intervals between different runs and different tools match each other quite well giving confidence to the technology and the way it is acquired. Differences can be observed in invaded permeable zones that can be explained by the invasion process. Furthermore sample rate differences between the open hole logs (8 samples/meter) and the through-casing resistivity log (1 sample/meter) are apparent.

Continued on page 17…



Zion National Park, Utah
Photos courtesy of Mark Pfeifer

A Through-Casing-Resistivity Field Trial … *continued from page 16*

Acknowledgements

The authors gratefully acknowledge the support given by Weatherford International, Ltd. by allowing us to pursue and publish this paper. A special acknowledgment goes to Tal Olson, Brian Homer and Brent Schroter at Weatherford's Edmonton-based WISE (Wireline Interactive Support Engine) Center of Excellence who were instrumental in conducting the field trials.

References

Alpin, L.M., 1938, On the Theory of Electrical Imaging of Drill Holes, Moscow (in Russian).

Kaufman, A.A., 1989, Conductivity Determination in a Formation Having a Cased Well, U.S. Patent No. 4,796,186.

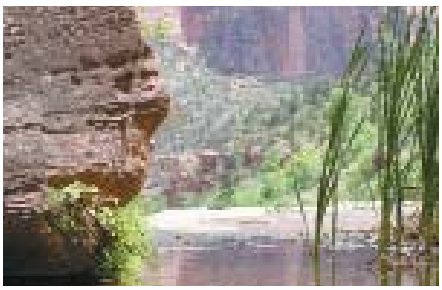
Stewart, W.H., 1945, Method and Apparatus for Determining Current Flow in Borehole Casing of the Like, U.S. Patent No. 2,371,658.

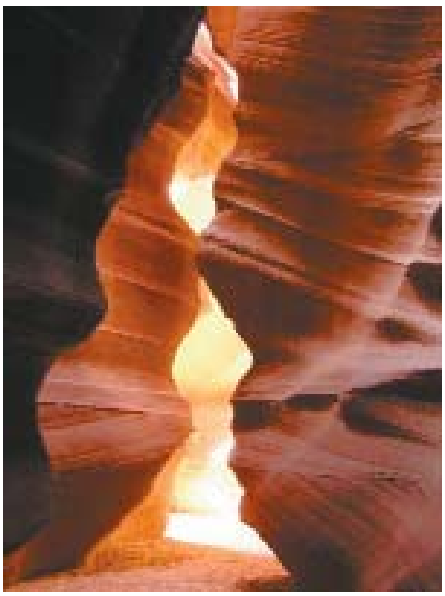
Vail, W.B., 1989, Methods and Apparatus for Measurement of the Resistivity of Geological Formations from within Cased Boreholes, U.S. Patent No. 4,820,989.

About the Authors

Ingo M. Geldmacher joined Weatherford International Ltd. in 2004. Prior to this he worked with other major Service, oil & gas and mining companies. He currently holds the position of Project Manager in the Wireline R&D department. While Ingo holds an M.Sc. in Geophysics, his B.Sc. in Geology and Mineralogy support his expertise in electromagnetics and formation evaluation. He holds five patents and has authored or co-authored more than 20 publications. Ingo is a member of the SPWLA, SEG and SPE.

Jos Jonkers is currently the Western Hemisphere Manager Engineering and Geoscience for Weatherford International Ltd. based in Calgary, Canada. After receiving an M.Sc. in Geomorphology from the University of Amsterdam, he joined Weatherford as a field engineer but soon transferred into the Engineering and Geoscience group where he has held various positions. Jos is a member of the SPWLA, SPE, AAPG, CWLS and CSPG.





Zion National Park, Utah
Photos courtesy of Mark Pfeifer

CWLS Privacy Policy Statement

To provide service to you, CWLS collects certain information, such as your address, telephone number(s), and other contact, demographic, and billing information. CWLS collects this information only by voluntary disclosure directly from you. CWLS requests such information through a variety of ways, including the Membership Application, product order forms, and event registrations. The information CWLS collects is intended to allow CWLS to process your transaction effectively and efficiently and to plan future programs and services to better serve you.

By completing a membership application form or logging onto the CWLS website, you agree to the terms of the Canadian Well Logging Society's (CWLS) Privacy Policy described below.

CWLS abides by the following principles regarding personal information we collect on our members and others in the course of our society's activities:

- CWLS is accountable for the personal information it possesses or controls.
- CWLS informs you the purpose for collection of your personal information before obtaining it.
- CWLS obtains your consent before collecting personal information from you and discloses your personal information only for purposes for which it has consent, or as permitted or required by law.
- CWLS keeps your personal information only as long as necessary to fulfill those purposes.
- CWLS works to maintain the accuracy of the personal information in its possession or control, to a degree commensurate with the purposes of collection.
- CWLS protects the privacy of personal information in its possession or control by using security safeguards appropriate to the sensitivity of the information.
- CWLS is open about the procedures it uses to manage personal information.
- CWLS responds on a timely basis to request from members or customers about their personal information which it possesses or controls.

How CWLS Uses Your Personal Information

Contact Information

The Membership Application Form requests individuals to provide contact information – address(es), phone number(s), and email address(es) – together with demographic information (e.g., employer, job title). CWLS uses the information to provide member services, such as the CWLS Journal, InSite newsletter and promotions of CWLS publications, CWLS meetings, and other CWLS information of potential interest to you.

CWLS also collects information from customers, both members and nonmembers, who request information or purchase products and services from CWLS. This information is collected on an order form, a meeting registration form, or otherwise, for the purpose of completing transactions.

Payment Information

CWLS collects payment information (such as a credit card number) for the purpose of completing transactions. CWLS does not disclose credit card or other financial information to any other individual or organization.

Use of Information by CWLS

Members and customers may elect to have CWLS use either or both their email address and a postal address for CWLS communications; but, an email address is required for the completion of certain transactions and provision of certain member services.

If you choose to restrict use of your information, you may not receive certain communications from CWLS that may be of interest to you.

Website-Specific Issues

Public Website

When you visit the CWLS.ORG public Web site, you can view the site anonymously and access information without revealing your identity. Our web server will record your IP/Internet address. However, this does not identify you personally and is only used for statistical information (i.e. number of visitors to site etc.).

Links: CWLS provides links to other organizations' websites. CWLS is not responsible for the content or privacy practices of these websites to which CWLS.ORG may link.

Continued on page 18…

CWLS Privacy Policy Statement ... *continued from page 17*

CWLS Member's Private Website

Protection of your Personal Information

The personal information that you provide in connection with registering yourself as a member with the CWLS is protected in several ways. Access by you to your Registration Information is available through a Password and UserID. We recommend that you do not divulge your password to anyone. In addition, your personal information resides on a secure server that only selected CWLS personnel and contractors have access to.

The CWLS does not publish on-line or share your personal information (i.e. home address, home phone number etc.) with any third parties.

Use of Cookies

When you visit the CWLS.ORG member's area, you must login and consequently, a "cookie" is used to track your session on-line. A cookie is a small amount of data that is transferred to your browser by a Web server and can only be read by the server that gave it to you. It functions as your identification card while logged in. It cannot be executed as code or deliver viruses.

Most browsers are initially set to accept cookies. You can set your browser to notify you when you receive a cookie, giving you the chance to decide whether or not to accept it. Users choosing not to accept cookies, however, will not be able to access the CWLS on-line member's area.

Secure Transactions

CWLS uses industry-standard measures to protect your submission of credit card information. Secure Sockets Layer (SSL) Technology encrypts transmitted information to make it very difficult for anyone other than intended recipients to decode the information. CWLS's implementation of SSL is authenticated by VeriSign.

The secure-transmission portion of CWLS's website is signified by:

- An unbroken key symbol or lock symbol at the bottom status bar of your browser.
- A URL address in your browser window preceded by "https".

Changing/Correcting Your Personal Information

CWLS members may change or correct their personal information online. Alternatively, they may also phone, fax or email the CWLS office to review or request changes to personal information.

If you have questions about CWLS's Privacy Policy or have concerns about privacy compliance with regard to your personal information, contact the CWLS Membership Chair.

Contacting CWLS Membership Service

Telephone: (403) 269-9366
Fax: (403) 269-2787

Postal address:
Canadian Well Logging Society
Scotia Centre
2200 - 700 - 2nd Street SW
Calgary, Alberta T2P 2W1

Electronic mail:
Membership Chair
Email: gordon.uswak@encana.com

Calgary Well Log Seminars 2008

by Professional Log Evaluation and W.D.M. (Bill) Smith P.Geol.

Register on line at Professionallog@cs.com or at 403 265-3544

UNDERSTANDING WELL LOGS
May 26

Calgary Petroleum Club, lunch included. This one day seminar is designed for Land, IT and non technical support staff who wish to have a qualitative understanding of well logs. Math content is minimal and no prior well log experience is needed. Candidates will learn to recognize obvious zones of interest and understand the importance of the basic log curves.

Fee is $450 + GST

BASIC WELL LOG SEMINAR
Jan 9-11, May 28-30, June 4-6, Oct 1-3

Calgary Petroleum Club. This popular seminar is intended as a refresher course and is also suitable for recently graduated geologists, engineers and technicians with some knowledge of well logs. A complete discussion of the qualitative and quantitative applications and the newest logs.

Fee $1,250 + GST

INTERMEDIATE WELL LOG SEMINAR
Jan 16-18, June 11-13, Oct 8-10

Calgary Petroleum Club. This seminar provides an in depth look at the relationships for well log analysis and includes a reconnaissance method for finding by passed zones, a module on shaly sand analysis, responses from the newest logs, through casing gas detection, and a section on Coal Bed Methane logging. CD provided with reservoir log plots for 80+ reservoirs. Designed for candidates who have used logs qualitatively and wish a refresher and update on quantitative applications.

Fee $1,450 + GST

Typical lease road in the Peavine-Dawson Field – January 2003. Photo courtesy of Robert Bercha.

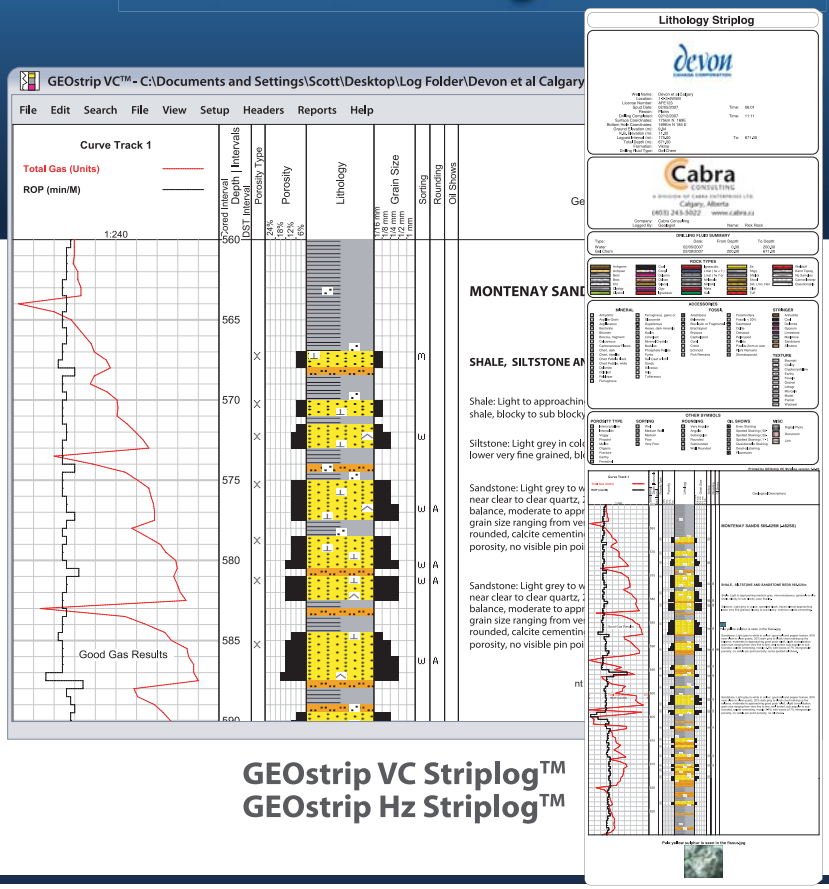
Your 1-Stop-Shop For All Your Geological Needs

GRS GEOLOGICAL RENTALS & SERVICES INC

GEOstrip Systems™

GEOstrip Systems™ is a new series of Lithology striplog software programs made for the wellsite geologist.

- Affordable
- Easy to Use Interface
- Reliable
- High Quality Software
- Customizable
- Free Viewer
- Striplog Investment Protection
- 24/7 Service & Support



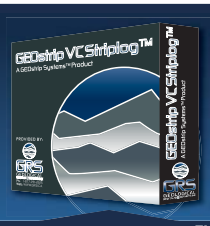
GEOstrip VC Striplog™
GEOstrip Hz Striplog™

SAMPLE Bags, Vials & Trays

GRS Inc. can provide Sample Bags, EUB & Company Vial Tray sets.

Bags & Trays may be ordered by phone or thru our Order Page on www.grsi.ca.

Order Online @ www.grsi.ca



GEOstrip Systems™

Laptop & Microscope Rentals

GEOkit Sales

Pelican Case Sales

Striplog Paper

Address: Bay #5, 2010 30th Ave. N.E. Calgary, AB. T2E 7K9

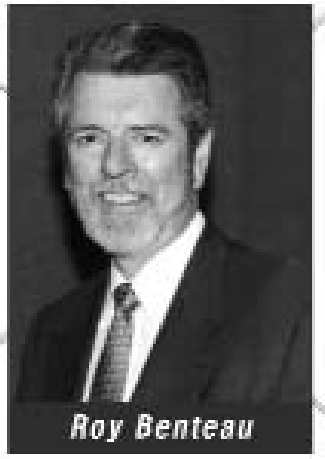
Work: 1-403-291-2621 **Toll Free:** 1-877-291-2625 **Fax:** 1-403-291-2616 **Web:** www.grsi.ca

Executive Nominations

2008 - 2009

(President)

(Acclaimed)



Roy Benteau

Roy has over 30 years in the petroleum industry, the last 5 years being spent with EOG Resources Canada in their Calgary office as a Petrophysical Specialist and recently as Coordinator of Shallow Gas Exploration. He started his career in Calgary's oil industry with Amoco Canada's exploration department in 1973.

Mr. Benteau held the position of Staff Geologist at Canterra Energy Ltd. in the Exploitation Geology Section functioning as Lead Geologist in the Eastern and Rainbow Districts. He also worked for a number of internationally-known petroleum engineering consulting firms

Mr. Benteau has published a number of technical papers dating back to 1976 and as recently as October 2007 that illustrate a diverse technical and geographic experience. Mr. Benteau was CWLS Co-Chair for the joint 2006 CSPG/CSEG/CWLS convention in Calgary and is the current Vice President of the Canadian Well Logging Society. In addition to the CWLS, he is a member of APEGGA, the SPWLA, AAPG, and the CSPG.

(Vice President)

Hanai Al-Khatib

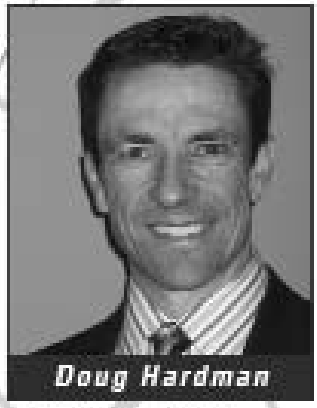
Hanai has a PhD degree in Petrography, Volcanology and Applied Geophysical logging from St. Petersburg Technical University 1996.

His main interests and expertise are in borehole image interpretation, structural analysis, stratigraphy and clastic sedimentology.

He has about 12 years experience in the oil and gas industry with operator and service companies.

Hanai worked two years as a geologist with Shell-Syria and ten years with Schlumberger in various locations including Syria and Russia.

Currently he is the geology supervisor for data service group of Schlumberger based in Calgary.



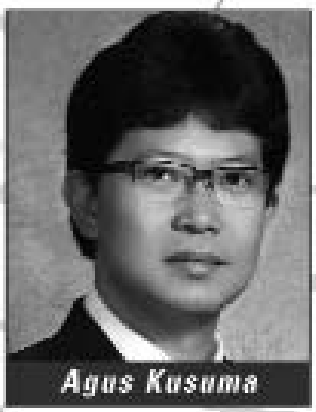
Doug Hardman

Doug Hardman is a Senior Petrophysicist with Petro-Canada currently working in the Oil Sands business unit where he leads a geoscience team.
Doug has a degree in Mechanical Engineering from Lakehead University in Thunder Bay and is registered as a Professional Engineer and Professional Geophysicist.

He started his oilfield career with Schlumberger of Canada, working as an open hole and cased hole field engineer in Red Deer, Alberta. His 14 years with Schlumberger included technical staff, sales and operational management positions in the U.S. and Canada. While working in the U.S., Doug was the Fort Worth Chapter President of the SPWLA.

Doug is a long time member of the CWLS and has been an active volunteer in technical conferences. Doug was awarded the CWLS Vice President Award for his talk on Stoneley permeability in 2005.
He is an active skier, and a volunteer ski instructor with the Canadian Disabled Ski Association.

(Secretary)



Agus Kusuma

Agus received his BSc with honours in Mechanical Engineering from Bandung Institute of Technology in 1988. has been working for Schlumberger since 1988.

He has held various responsibilities in Field Operations, Sales, Technical, and Management in many countries in Asia, Australia, Europe and North America before he transferred to Canada in 2001.

Currently, he is enrolled in the MSc in Management of Oil & Gas Industry in Heriot-Watt University and works as Wireline Sales Manager for Schlumberger.

Dave Ypma

Dave graduated from the University of Alberta with Chemical Engineering degree in 2000. This included coop stints with Syncrude, Husky's asphalt refinery in Lloydminster, and the University research department.

For the past seven years he has worked with Tucker Wireline, first as an open hole field engineer, then as a Technical Advisor. His current duties include writing tool manuals,testing and implementing new software, and designing experiments to improve new tools.
David has recently completed an Accounting Certificate with Distinction and received his PEng.
David served as the CWLS secretary in 2006-2007 and enjoyed his term.

(Publications Co-Chairs-Position 2)

Sugeng Pambudi

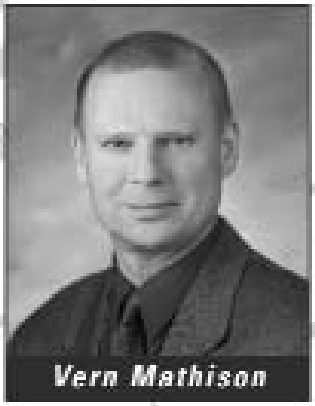
Sugeng Pambudi is currently working as technical sales representative for Swellfix, a technology venture company of Royal Dutch Shell. He has 18 years industry experience in wireline data acquisition working for a Schlumberger Wireline services through assignments in Asia Pacific, Middle East and Canada as field engineer, field service manager, service quality coach, and sales. Field experiences include logging open hole for formation evaluation, production logging, casedhole services and perforation.

Howard Pitts

Howard is a geologist in Apache's new Venture group involved in unconventional fine-grained reservoirs. He came to Canada in 1981 and has worked in most parts of the CWSD. He feels it is the right time for him to volunteer his time and energy and stand for the executive position to help CWLS thrive in changing times.

(Treasurer)

Grant Ferguson



Vern Mathison

Grant is a graduate of the U of A in geophysics in 1977. Grant joined what was then Dresser Atlas in the spring of the same year as a junior field engineer. An 8 year international assignment allowed Grant to experience and enjoy an assortment of cultures as well as work with logs over a wide variety of formations both offshore and onshore across Europe, Africa, Middle East and Latin America. Grant is proud to have played an integral part in the application of the then new NMR technology to the complex production issues of the San Jorge basin in Argentina where NMR logs are now a standard service. Grant returned to Canada with Baker Atlas in 1988. He is currently the Canadian Business Development Manager charged with growing the technical applications of Baker Atlas's wireline data to the industry.

Vern started with Computalog in 1980. He received a diploma in Petroleum Geology Technology from SAIT in 1986 while working in the Computalog Geoscience Center. From 1987 to 2000 Vern worked as a field engineer operating an Open Hole wireline unit throughout the WCSB. Since 2000 he has worked in the Precision/Weatherford Open Hole Sales Division as a customer account manager. He is currently the treasurer of the CWLS, and a member of CSPG and SPWLA.
In the last 3 years he has been an active industry participant in Calgary, chairing a session at this years CWLS/CSPG annual conference, teaching basic log interpretation & analysis at FNFORM and the Reker Colledge educational forum. He has also co-authored and published papers in the CWLS InSite and at the CWLS conference.

(Publications Co-Chairs - Position 1)

Kelly Skuce

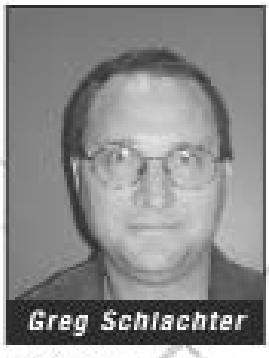
by acclamation

Kelly Skuce is currently Senior Petrophysicist in the Southern Plains team for ConocoPhillips Canada. Previously he was working in the Shared Earth Model team at Burlington Resources (now ConocoPhillips).

Kelly graduated from the University of Saskatchewan in 1986 with a Bachelor of Science degree in Geology.

Kelly's most previous experience was as a petrophysical and software consultant working the Western Canadian and Williston Basins for clients such as Suncor, PanCanadian, Burlington Resources and Nexen Canada.

(Chair of Committees)



Greg Schlachter

Greg Schlachter joined Schlumberger Data & Consulting Services in Calgary as a Senior Log Analyst in 1997.

Currently at Schlumberger he holds the position of Canadian Reservoir Domain Champion and provides reservoir logging tool technical support and interpretation both locally and internationally.

Previously, he was a Senior Staff Engineer for Delta-T test Corp in Calgary, specializing in closed chamber drill stem testing interpretation and software development. He has also worked in production testing and under balanced drilling data acquisition and interpretation as an Operations Manager for Datalogger inc. of Calgary.

Greg received a B.Sc. in Mechanical Engineering from the University of Alberta in 1987.

Satyaki Ray

Satyaki Ray works as a Senior Geologist / Geomodeler for ConocoPhillips Oil Sands Exploitation Team in Calgary, focusing on reservoir characterization, modeling of the Athabasca oil sands assets, particularly the Foster Creek & Christina Lake partnership with EnCana. In his 18 years long career, he has worked in various organizations in technical and managerial capacities. He started his career in 1989 as a field geologist/ wellsite geologist in ONGC Ltd India, moving onto roles in development geology, petrophysics, geostatistical reservoir modeling, stratigraphy and sedimentology. In year 1998 he joined Schlumberger Asia Services and worked in operations, sales, marketing support and Project management roles within Schlumberger. Satyaki worked in Canada with Schlumberger Data & Consultancy Services and Drilling Measurement. Currently his interests lie in applications of SAGD and other EOR techniques in heavy oil / bitumen reservoirs for ConocoPhillips . Satyaki has presented in CSPG, CWLS, AAPG, FAGE and Universities and has a number of publications in different fields of earth sciences. He obtained a masters degree (M.Sc) in Applied Geology and a masters degree (M.Tech) in Mathematical Stochastic Modeling from Indian Institute of Technology in Roorkee and Bombay respectively. His hobbies are golfing, music and cricket .

(Membership Chair)

Gary Drebit

With 29 years in the oil and gas business, Gary is pleased to run again for the CWLS Directors as the Membership Chair. Gary graduated from the Southern Alberta Institute of Technology with a certificate in Geophysics, and in 1986 completed a certificate, with Honors, in Geology. In addition to being a long time member of the CWLS, he as also served on their board of Directors in 2005 and 2006 as the treasurer. Gary is also affiliated with the CSPG and NSLT and has served on committees with the SPWLA. Since 1979 he has held Staff and Management positions for Schlumberger of Canada, including a Staff position for the Hibernia Project with their Reservoir Performance Team, located in St. John's Newfoundland. Currently he is a Principal Petrophysicist for Schlumberger Data and Consulting Services Group located in Calgary.

Bruce Keen

Bruce has been in the logging industry since graduating in 2000. He has spent time in the field, working all across the WCSB as well as some international work, including a term in Australia. His experience has allowed for much travel both with work and leisure. The job has been rewarding for Bruce; benefiting from the wealth of experience this industry provides with the expertise in our people. Bruce has been a member of the CWLS for the last few years. He believes in the breadth of its resources and all it offers. The CWLS is a strength where many can draw on our people and knowledge, where we can share ideas and promote thought. Our society is not in members with vast knowledge, it is a society we can be proud of and build on. Our membership is what makes us strong. Bruce asks for your support in his goal for Membership Chair.

Today Bruce is with Halliburton working with the Open Hole Logging division as an Account Manager and Business Development.

UPCOMING EVENTS

Tuesday, February 12th, 2008
CSPG Technical Luncheon

Telus Convention Centre

Is the Modern Belize Carbonate-Siliciclastic Shelf an Appropriate Analog for Exploration and Development of Western Canadian Devonian Reservoirs?

Guest Speakers: Burr Silver, Nigel Watts and Bill Martindale

Tuesday, February 19th, 2008
CWLS 2008 AGM

Crystal Ballroom, Palliser Hotel

Guest speaker: Jeff MacInnis

Tuesday, February 26th, 2008
CSPG Technical Luncheon

Telus Convention Centre

Subsidence and Sea-Level Change along the Northern Gulf of Mexico, Response of Mississippi River to the Last Glacial Cycle, and the Flexural Ups and Downs of Mississippi Delta

Guest speaker: Mike Blum

Wednesday, March 5-6, 2008
8th Annual Arctic Gas Symposium

Hyatt Regency Hotel, Calgary, Alberta, Canada

Wednesday, April 2-3, 2008
Canadian Uranium Symposium

Four Seasons Hotel, Vancouver, BC, Canada

Corporate Members are:

Platinum

ConocoPhillips
Encana Oil & Gas Ltd.
Schlumberger of Canada
Weatherford Canada Partnership

Gold

Continental Laboratories (1985) Ltd.
Devon Canada Corporation
Husky Energy Inc.
IHS AccuMap Ltd.
Nexen Inc.
Pengrowth Corp.
PetroCanada Oil and Gas
Qercus Resources Ltd.
RECON Petrotechnologies Ltd.
Talisman Energy Inc.
Tucker Wireline Services

Silver

Core Laboratories Canada Ltd.
Delta-P Test Corp.
HEF Petrophysical Consulting Inc.
Norwest Corporation
Suncor Energy Inc.
Taggart Petrophysical Services Inc.

Bronze

Apache Canada Ltd.
Arc Resources Ltd.
Blade Ideas Ltd.
Compton Petroleum Corporation
EOG Resources

A high resolution .pdf of the latest InSite is posted on the CWLS website at www.cwls.org. For this and other information about the CWLS visit the website on a regular basis.

For information on advertising in the InSite, please contact either of the publications co-chairs:

Tyler Maksymchuk
Tyler.Maksymchuk@can.apachecorp.com
at (403) 261-1258

Kelly Skuce
Kelly.S.Skuce@conocophillips.com
at (403) 260-1931

Discounts on business card advertisement for members.

WesternDiazo™

Papers | Printers | Supplies

Compatible papers for all major OEM printers

Western Diazo has manufactured superior quality papers for well logging since 1982. As an original Diazo Coater we specialized in folded papers for Well Logging, Geophysical and Seismic applications. Now we offer a complete line of papers for the newest digital Thermal, Color Laser and Color Inkjet printers. Custom sizes including folding and perforating to specification are available. We are now excited to offer Log boxes - custom manufactured and printed to your requirements.

8524 Bowfort Road NW, Calgary, AB T3B 3Y6

Order Desk

403.247.7474 or 1.800.463.4206

For more information please call

Sherry Sanatkaran, Sales Manager - Alberta

Cell: 780.242.9869 • 866.999.9295

sherry@westerndiazo.com

1982 25 years 2007

of excellence

Thermal Papers for Printrex / Gulton / Atlantek / OYO / ISys Veritas printers

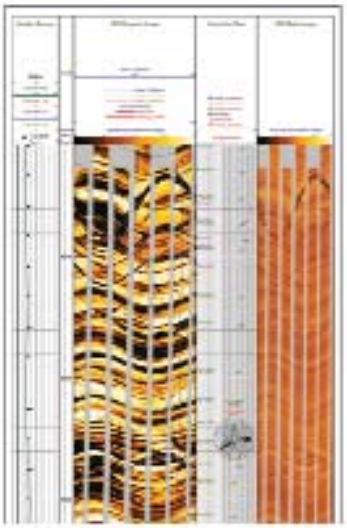
- Premium and Scuff-resistant top coat papers
- 6.25", 8.5" and 11" perfs
- Widths from 8.5" to 36"
- Truck box: 800, 1000 & 1100 sheets; Data center: 4000 or 6000 sheets
- Custom timing mark printing
- Custom fade-out logo and side-track logo printing

Color Laser Papers for iSys Iterra Elite & Pro printers

- 20lb and 24lb super bright white bond with 6.25" perfs
- Short box: 800 or 1000 sheets; Data center: 5000 or 5500 sheets
- Custom fade-out logo and side-track logo printing available

Inkjet Papers for Hewlett-Packard (HP) / Epson / ISys Iterra Lite

- 6.25", 8.5" and 11" perfs available
- Optional side sprockets for pin fed printers
- Widths from 8.5" to 36"
- Custom pack sizes from 500 to 6000 sheets
- Custom fade-out logo and side-track logo printing available.



hp invent

Western Diazo is recognized by HP as a Colour Elite Specialist. New Designjet Z6100 printers are here NOW!

www.westerndiazo.com

Calgary | Edmonton | Vancouver | Houston | Denver

Weatherford®

Eliminate the risk. Know your well.

When our clients demanded a safer, faster, and risk free data acquisition method for difficult well conditions; we introduced the exclusive Compact™ Memory Logging System.

This patented logging system provides you with a guaranteed data collection alternative for problematic, highly deviated, and horizontal wells. By providing you with a complete data set the first time, the need for further well conditioning on directional wells is eliminated.

The Compact™ Memory Logging System has proven on numerous projects to decrease data collection time and increase the level of safety associated with log collection. Plus, our equipment is easily mobilized to remote locations. Saving you time and money.

Unparalleled Product

But that's not all. Well control incidents are prevented by giving you the ability to rotate and circulate drill pipe while running tools into these difficult wells. By housing the tools inside drill pipe during descent, the chance of tool damage is greatly reduced while using our service. We also streamlined the Compact™ Memory Logging System to eliminate the need for wet connect or wireline services decreasing the likelihood of tool communication issues.

This is just another example of how Weatherford is providing products to suit your needs.

To find out more about how we can keep you informed, visit www.weatherford.com or contact your Weatherford representative.

Our business is built **All Around You.**

Drilling | Evaluation | Completion | Production | Intervention

Create Your Career Future. Visit us at www.weatherford.com/careers.