CANADIAN WELL LOGGING SOCIETY

in site

CWLS Newsletter
OCTOBER 2003

President Message

We are over half way through the year and it is time to assess how the current executive is doing. It is my belief that the bench mark for that evaluation is based in one simple question "Has the CWLS helped you do your job better now, than six months ago?"

It is my hope that many of you will answer yes to that question. However, I would like to challenge each of you to really think about what our society has to offer and ask yourself two more questions. First, "What more can the CWLS do for me; to meet my expectations and help me grow professionally?" Second, "What can I offer to the CWLS to help it grow as an organization?"

Your answer to the first question is invaluable to this and future executives, and will help set a direction for the Society insuring that it continues to provide value. So, at the end of the next six months you can again answer in the affirmative," the CWLS helped me do my job better."

Answering the second question is essential to the continued growth of the CWLS. This Society exists only through the help of the people who dedicate time and energy to it. So, reflect on what you can offer to your organization and run for a position on the executive, give a presentation, submit a paper, volunteer to organize and contribute to seminars and conferences or serve on one of the various committees. It is through a personal commitment of your time to the society that will allow it to successfully grow and positively contribute to the petrophysical community of Canada.

So, how have we done so far? I am happy to report that our membership continues to grow with over 456 current members to date. While growing we have managed to maintain a healthy balance in membership between all sectors; with 112 members representing service companies, 19 private consultants, 325 representatives of oil companies and 39 corporate members.

- Our monthly luncheon meetings continue to grow in attendance.
- We have a new website with expanded services and links to the Rw Catalog and Special Core Database.
- This is the second In Site for this year and we are planning one more before yearend.
- We are pulling together a number of papers for the CWLS Journal.
- The 2004 CSPG-CWLS-CHOA Joint Convention will be held on May 31st to June 4th and a number of our constituents are chairing its various committees.

We have an exciting agenda planned for 2003-2004 and I'm looking forward to serving as your president for the remainder of my term.

Dave Shorey, CWLS President

New Corporate Members

Qercus Resources

New Members

John B. Maher - Polaris Resources

Ilir Kane - Computalog Precision Drilling

Jay Guilmette - Petro Canada

Penny Colton - APEGGA

Johny Tapia - Encana Corporation

Cathy Strange - Discovery Drilling Funds

Claidio Juan Jose Virues - Epic Consulting Limited

David Iverson - Arc Resources

On the Move

Doug Kozak to Recon Petro

Ian Cameron to Canadian Subsurface

Call for Executive Nominees 2004 - 2005

As outlined in the message from our President, Dave Shorey, the Society continues in a very positive direction. The accomplishments of the CWLS membership and executive for this term are significant ones, which I hope we are very proud.

As President in 2002-2003, I outlined one key goal for the Society was pursuing involvement with the technical community through:

- technical luncheons
- work shops
- symposiums

I believe this critical goal was and continues to be met through the 2002-2003 and 2003-2004 terms.

Dave's In Site address to the membership (April 2003 Volume 6) highlighted "value" as a key objective: "...meeting the challenge I have outlined to grow and further increase the value provided by this great organization." Clearly, quality people like Mr. Shorey play a key role in the continued success of our organization.

The success of the Society is possible through the continued involvement of quality people. As Past President, I ask our membership to actively participate and make a difference. One key way to do so is through the Executive.

As per our bylaws, nominations for the 2004 - 2005 Canadian Well Logging Society executive will formally open at our technical luncheon October 8, 2003. The committed nominees will be formally announced at the November technical luncheon November 5, 2003 and additional nominees will be accepted from the membership at large. Nominations will be closed as of the December 10, 2003 technical luncheon.

I currently have commitments from our members for two or more highly qualified people for each executive position. However, I hope to provide the membership a choice of three candidates at each position for which to vote. Since we still do need a number of nominees, please do not hesitate to contact me at 509-4064 or kovacsj1@calgary.wireline.slb.com.

John Kovacs, CWLS Past President

Message From the Editors

Now that summer is over and vacations have come to an end, it is time to prepare for a busy drilling season. This past summer has been the busiest since 1997 and it appears as though the trend will continue into this winter. This level of activity has kept personnel busy in both the Oil and Gas Companies and the Service Sector. The Canadian Well Logging Society has been busy this summer as well; recruiting new members, seeking more corporate members and looking for papers to publish in the journal. Without enough content there will be no journal. I had the fortunate opportunity to speak to G.E. Dawson-Grove (D-G) this summer. He told me that he and Ross Crain use to compete for the number of papers published. In the "old days" it was a common practice for Petrophysicists and alike in the industry, to contribute publications. Steve Burnie and I have extended the deadline to January 1st, 2004.

The reason I contacted DG in the first place was to learn more about the history of our society. It wasn't until I joined the executive committee this year that I learned that the CWLS is the oldest petrophysical society in the world. This is something I found very interesting and it is not well known. Then I got the idea that the history of the oldest petrophysical society in the world would make an interesting theme for the In Site. As the junior publications co-chair to Steve Burnie, this publication is part of my progression in the dual-chairmanship. With the executive committee elections coming up, if any one knows someone who would make a good candidate please contact John Kovacs our past president. John is currently taking nominations for next year's candidates.

I enjoyed my time speaking with some of our honorary members who have contributed articles for this In Site edition. I would like to thank Alex Finney, Bill Smith, E.R. Crain (Ross), G.E. Dawson-Grove (D-G), and Ted Connolly for their contributions.

Mike Eddy, CWLS Publications Co-chairman
Steve Burnie, CWLS Publications Co-chairman

Interpretation Course

October 20th to October 22nd, 1952

Front Row Sitting from Left to Right: *C.L. Franke (Canadian Gulf), A.G. Morrison (Home), C.R. Hemphill (Home), A.W. Farmilo (Western Leaseholds), F.E. Hanes (Sohio), D.D. Wright (Royalite), W. Burgers (Canadian Fina), G.G. Scruggs (Amerada), M.E. Hriskevich (Stanloind), D.S. Borwick (Texaco), W.J. Rodgers (Stanolind), R. deWit (Sohio), G.S. Horne (Texaco)*

Second Row Sitting from Left to Right: *B.R. Leeds (Socony-Vacuum), A.D. Berry (Seaboard), C.E. Baynham (Seaboard), A.L. Brown (California Standard), N.W. Taylor (Cities Service), D. Stewart (Socony Vacuum), M.P. Tixier (Schlumberger - Houston), H.C. Gerdes Schlumberger - Calgary), N.S. Brumwell (Amerada), J.M. Taylor (Canadian Delhi), W.C. Leuschner (Canadian Delhi), R. Lill (Imperial), C.F. Lailey (Anglo-Canadian), W.W. Waring (Imperial), John Irvine (Anglo-Canadian)*

Third Row Standing from Left to Right: *R.C. Davis (Schlumberger - Edmonton), A.L. Evans (Canadian Gulf), H. Wories (Union), E.P. Williams (Hudson's Bay), A.E. MacKay (Trafford & Associates), P.D. Gelpke (Shell), D.L. Potter (Phillips), E. Walker (British American), B.G. Ryan (Sun), E.W. Jennings (Great Plains), A. Rutgers (Pacific), Geo. Williamson (Sun), J. Browning (Bay), G.B. McCourt (Imperial), L.P. Kane (Northwell), R.L. Forsythe (Schlumberger - Calgary), L. Vladicka (New Superior)*

Fourth Row Standing from Left to Right: *A. Lycett (Tide Water), N.L. Burkholder (Union), J.W. Coveney (California Standard), A.D. Hunt (Albercan), H.A. Gorrell (Tide Water), A.H. Ellison (Royalite), P. Chabas (Schlumberger - Denver), K.A. Olson (Phillips), T.F. Head (Ohio), Geo. A. Mustard (Ohio), J.S. Crewson (Great Plains), F.J. Beveridge (Canadian Superior), W. Loucks (Canadian Superior), J.R. Cuthbertson (Husky), J.C. Scott (Husky), R.J. Hamilton (Hudson's Bay), A.J. Brinker (Northwell)*

Mud Logging Interpretive Concepts

The interpretation of the hydrocarbon data and logs involves the use of certain interpretive concepts. These concepts, when used together with the specific well data, aid the analyst in formulating a "Total Show Evaluator". A "**show**" is defined as "Any **significant** increase in liberated hydrocarbons associated with a potential reservoir". The **Total Show Evaluator** (TSE) is the analyst's overall evaluation of the quality of a show based on a variety of data and isolates those specific zones which warrant closer examination. The following factors should be considered when evaluating a show:

Increase or decrease in the drilling fluid gas.

There is no show to evaluate if there is **no recorded increase** in total hydrocarbons.

Fairly consistent rock types will generate fairly consistent readings if drilled at the same rate. This flat lying curve then constitutes the **drilling background**.

Periods in which the mud system is being circulated but no rock is being cut will result in a flat lying curve referred to as the **circulating background**.

Total gas increases should be considered with respect to peak height over drilling background. In some circumstances, a peak equivalent to twice background may be deemed significant. The analyst should always access this ratio of peak to drilling background, keeping in mind that the higher the ratio, the more significant the show.

Classification of Response

The analyst should select the appropriate category in which to place the response. Those shows which can easily be identified as contamination or recycling of hydrocarbons should be noted as such.

Liberated and produced shows merit careful consideration.

Liberated responses indicate that there were hydrocarbons recorded in the mud system and can be lagged to the appropriate depth.

Produced shows provide additional information to the analyst. Not only are there hydrocarbons in the mud system, but they have the capacity to move into the system, therefore, there has to be effective porosity. Should a produced hydrocarbon show exist that does not allow the background to drop back to normal, then the formation pressure must exceed the dynamic mud column pressure. This situation has other implications in respect of safety and evaluation of other zones later in the well. Produced response peaks as a result of tripping, connections, surveys, shutdowns or other reasons, will not be awarded a TSE.

The analyst should note arrival times of produced gas peaks. Peaks arriving at a consistent time suggest a fixed source. Peaks arriving at consecutively longer times suggest bottom hole swab and are common in shale sequences. In general, the following holds true:

1. Produced peaks quantitatively increase:
   a. formation pressure increasing
   or
   b. onset of overpressure zone
   or
   c. decrease in mud density.
2. Produced peaks quantitatively decrease:
   a. formation pressure depletion
   or
   b. increase in mud density

The beginning and end of a show are usually quite evident on charts and through lag application can be correlated to depth. This would then indicate to the analyst the thickness of the potential reservoir. There is not a minimum thickness beneath which an explorationist will ignore a zone, but it stands to reason that the greater the vertical extent, the more enticing it becomes. As a rule, thin zones become less attractive with increasing depth. The analyst should also keep in mind that a thin zone may not in itself be economical but a sufficient number of these zones together could.

Change of Penetration Rate

The rate of penetration of the bit through rock can certainly be affected by the driller changing those parameters over which he has some control such as bit type, RPM, FOB or mud density. It is the analyst's responsibility to determine if changes in drilling rate may be attributable to a change in any of these factors.

More commonly, the drill rate is reflective of the rock characteristics, with faster drilling being correlative to porosity. Similar to the total gas curve, the analyst can determine the drill rate background and compare increases or decreases in drill rate to this background. The analyst should consider that it is not always necessary to have a good drilling break to have a potential reservoir. Hydrocarbon bearing faults or fractures and productive yet low porosity carbonates may not have associated drilling breaks.

Continued on next page…

Mud Logging Interpretive Concepts...*continued*

It is also important to access the relationship of drilling break variation and vertical extent of any related shows as this can have important implications as to what medium occupies the pore spaces.

Lithology

The type of rock being drilled will generally affect drilling backgrounds and must be considered by the analyst in the evaluation of his information.

The primary reservoir rock types are sandstone, dolomite, limestone, shale and siltstone.

Sandstones normally do not have a predictable liberation pattern and have to be evaluated on its own merits.

Dolomites and limestones typically generate lower rather consistent backgrounds.

Shales and siltstones usually show smooth undulating and increasing backgrounds which can be rather high.

Coals manifest themselves as sharp increases in total gas usually of short duration.

Porosity Indications

Porosity must be present to contain hydrocarbons of commercial value. The analyst's best evaluation of the presence or absence of porosity is the physical observation of the cuttings under a microscope. One should keep in mind that they are not only looking for evidence of pore spaces but also calcite crystals or other evidence of fractures or faulting.

As mentioned previously, the penetration rate may infer porosity for evaluation purposes.

Permeability Indications

Porosity, in itself, cannot constitute a reservoir if the pore spaces are not interconnected. The measure of interconnection or effective porosity is expressed as permeability.

The presence of pressure induced produced gas verifies the presence of permeability. Physical observation of mud flow during flow checks or the loss of mud volume to the well bore indicates permeability.

High porosity, high permeability formations become susceptible to flushing or overbalance by the mud system and may account for the lack of a show in a prospective zone.

Compositional Analysis – Chromatography

In general, chromatograms weighted to methane and ethane or oil indicator values more than ten point to dry gas.

Middle range propanes and butanes or oil indicator values of ten and less indicate condensate range hydrocarbons.

Chromatograms heavily weighted to propanes and butanes or oil indicator values of ten and less favour oil as an interpretation.

The analyst must realize that shale sequences, whether carbonaceous or petroliferous, will often generate significant heavy hydrocarbons and this fact should be considered in his evaluations.

Visual Show

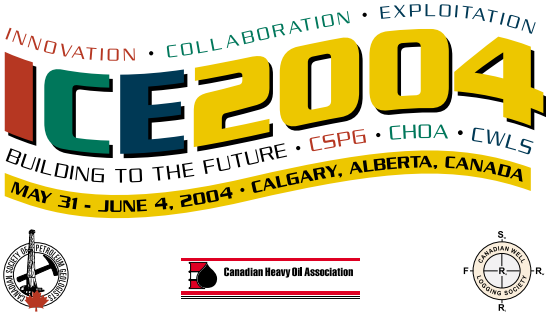
The analyst must first evaluate the cuttings on the basis of quality and quantity of oil staining, fluorescence, cut fluorescence, odour and any other visual signals - oil bleeding from core or cuttings, gas bubbles in core, etc.

The preceding discussions are meant to serve as a chronological guide for the analyst to follow in his evaluation process for the awarding of a Total Show Evaluator. The selection of a TSE is based then on a balance of the positive indicators of hydrocarbons against the negatives.

The analyst should bear in mind that this evaluation procedure is applied whenever there is an increase in total gas response but can be applied to evaluate any zone.

Alex Finney, Continental Laboratories

Canadian Well Logging Society
I.C.E. 2004 - Innovation, Collaboration And Exploitation
CSPG - CHOA - CWLS Joint Conference
Welcome from the General Co-Chairs



On behalf of the Canadian Society of Petroleum Geologists (CSPG), Canadian Heavy Oil Association (CHOA), Canadian Well Logging Society (CWLS) and the 2004 organizing committee, we are pleased to invite you to the joint CSPG-CHOA-CWLS Conference to be held in Calgary, Alberta, from May 31 - June 4, 2004.

"Innovation, Collaboration and Exploitation - Building to the Future" is the theme for the 2004 Conference. Along with the usual diverse program, next year's conference will include a symposium that will focus on the geology, evaluation and development of heavy oil and oil sands. We feel this is a very appropriate time for a conference of this nature what with the recent announcement by the Alberta Energy and Utilities Board (EUB) that Alberta's production of synthetic oil from oil sands surpassed conventional oil production by 25% in 2002. This is a sure sign of where many of our member's will be employed in the coming years. With deference to our general theme of Innovation, Collaboration and Exploitation, the conference organizers hope to highlight the new developments in the heavy oil, conventional oil and gas industries. Many of these developments evolved as a result of the innovation of geologists and their collaboration with various multi-disciplinary teams in order to exploit our vast resources.

Planning for the various technical and social events is now well underway. The Technical Committee has "roughed in" the framework of what promises to be an outstanding technical program. Abstracts will be accepted online at www.cspgconvention.org starting November 1, 2003. The abstract deadline is January 30, 2004 with an Extended Abstract Deadline on April 2, 2004. For more information on the technical program, please contact the Technical Committee:

Grant Spencer (CWLS Technical Co-Chair)
645-3581 grant.spencer@encana.com

Richard Evoy (CSPG Technical Co-Chair)
296-4350 revoy@petro-canada.ca

KC Yeung (CHOA Technical Co-Chair)
269-8770 kyeung@suncor.com

Our Special Events Committee is tasked with organizing the Ice Breaker, Luncheons and Core Wrap Up Party. These events have become a highlight of the yearly conference.

The conference will be located at the Round Up Centre, Stampede Park May 31 - June2. The Core Conference will continue at the AEUB Core Research Centre June 3 - June 4.

Please join over 4,000 of your colleges at the 2004 CSPG - CHOA - CWLS Joint Conference.

Ian Moffat, General Chair, CSPG
Ken Faurschou, General Chair, CWLS
Daryl M. Wightman, General Chair, CHOA

History of Well Logging in Canada

The history of well logging in Canada begins in 1937, a mere 10 years after the very first electric log was run in the Pechelbronn oilfield in France on September 5, 1927. A quote from the official Schlumberger history tells the story: "In another part of the country, a young engineer named Bill Gillingham was attempting to raise some interest in electric logging in the Bradford, Pennsylvania area. The response was not immediately tremendous. A trainee under Gillingham, R.R. Rieke, was told to head west by northwest, to Mt. Pleasant, Michigan, embarking on one of the strangest Schlumberger journeys you've heard of."

"You see, they ended up in Canada, not looking for oil, but for gold. The preliminary work had been conducted by Andre Allegret and, as a result of surface exploration, a contract had been let. 'When we arrived,' Rieke said, 'trouble was afoot. They had found gold all right, but not where the survey had said. When they drilled there - nothing. We left rather quickly."

Two years, later, "electric logs" were introduced to the Canadian oil patch in 1939 by the forerunner of today's Halliburton Services Ltd.

The first Halliburton unit was operated out of Black Diamond, Alberta by Jack Pettinger, who remained active until 1979. Jack and another pioneer, Stan Nelner, currently with Halliburton in London, England, recalled that trips of hundreds of miles to such far-flung wildcat sites as Kamsack, Saskatchewan, Pouce Coupe, B.C. and Lloydminster were not uncommon.

During the war years, equipment was also stationed at Norman Wells on the Canol Project and at Vermilion, Alberta.

The logger of those days had to be versatile because he was often called upon to operate cementing and acidizing equipment, or run drill-stem tests, in addition to the standard electrical survey (ES). With increased demands after the Leduc discovery in 1949, more modern survey equipment was added. Also, the "FM" (frequency modulated) system of transmitting subsurface data via a single conductor cable was adopted by Halliburton. This technique remained a unique feature of the Halliburton-Welex wireline equipment for many years.

The approximate dates of first availability of modern logging methods, as recalled by Gerry Obermeyer, a manager of operations for Halliburton, were Focused Resistivity 1952, Radioactive 1954, Induction 1954, and Acoustic 1958. A shift in the development of Canadian operations also occurred in 1957 when the parent company purchased WELEX Incorporated. A combined WELEX-Halliburton Electrical Well Section operated in Canada as a separate company for some time. The perforating service, which had also been introduced to Canada by Halliburton in 1940, was expanded. Later, that group was absorbed as an operating division of Halliburton Services Ltd.

Schlumberger arrived permanently in Canada in 1946 by opening a location at Lloydminster, manned by such notables as Ed Burge, Hugh Gough, and Arne Thorson. Truck numbers were in the 200 series.

One of the older units in Canada about that time required that the crew jack up the rear end and install a chain from the rear axle to the winch drive. Services offered were ES, six-shot sidewall core guns and bullet perforating.

By 1949, there were offices in Calgary and Edmonton, and Neil Collins was at the helm in booming Redwater. Barry McVicar had joined the forces as well. By 1951, tools available were ES, gamma ray, dipmeter, directional, cores, microlog, laterolog, limestone device, temperature, perforating and caliper. The year 1951 also saw the introduction of revolutionary armoured steel cable to replace the 1-inch diameter fabric-covered line known as the "ragline".

A job report of that year mentions a trip to a well near Fort Vermillion that commenced the 26th of April and ended June 29th, with most of the intervening time spent attempting to get to the well by building bridges and barges, waiting for ferries, and sinking into mud. Ten years later (1961) saw the first logs to be run in Canada's Arctic Islands at Winter Harbour on Melville Island. Since that epic event, operations have taken place in all the frontier areas from the misty Queen Charlottes to Hudson's Bay, the East Coast and the Beaufort Sea.

Lane-Wells established their first office in Edmonton on the Cooking Lake Trail in 1947, offering the usual GR log. They quickly opened stations in Stettler, Virden, Swift Current, Estevan, Drayton Valley, Red Deer, Swan Hills and Fort St. John, the hot spots of the time. The early managers were Bill Ludwig, Lee Lobdell and Glenn Robinson.

Perforating Guns of Canada Limited opened their first office in Edmonton on Calgary Trail in 1949. Walt Minor and Bill McKay were the people in charge. In the early 1950's radiation logging for cased and open hole was one of the primary services available, out of the usual towns such as Lloydminster, Kindersley, Stettler, Estevan and Drayton Valley. In 1965, the name was changed to Pan Geo Atlas Canada Limited and open-hole logging services were introduced in the following year.

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History of Well Logging in Canada... *continued*

In July of 1968, PGAC and Lane-Wells merged into one larger operation under the auspices of Dresser Atlas Inc. The combined companies offered a full line of services from various Canadian locations thereafter. Still later, Baker Hughes took over the entire Dresser complex, with the logging division becoming Baker-Atlas.

McCullough Wireline Services were around in the early 50s and offered services mainly in the cased-hole field. Mart Kernahan, one of the early managers, became better known for his contribution to the early days of computed log analysis at Computrex Computer Services Limited in the early 60s. Mart recognized the potential of the scintillometer, developed at the University of Manitoba, and offered it in place of the less efficient Geiger-Muller GR counter - now nearly all GR logs are run with scintillation counters.

The late 50s and most of the 1960s saw a number of independent wireline operators appear on the scene. This trend continues today, with one of the notable successes being the acquisition of an interest in Wireline Electronics (1976) Limited by Perfco Services Limited in 1976. Later in the year, the management of Perfco and Wireline joined with Gearhart-Owen Inc. of Fort Worth, Texas, to offer the Gearhart direct digital logging system in Canada for open-hole logging under the name of Computalog Services Limited. Perfco, Wireline and Computalog operated somewhat independently until 1979 when they were amalgamated to form Computalog-Gearhart Limited.

While the logging tools got better and more expensive, and the number of services grew, the interpretation of well logs remained at a relatively primitive state until 1951 when the first technical paper directly relating to interpretation of logs in Canada was published in The Canadian Mining and Metallurgical Bulletin in September of the year. The title of the paper was "Application of Electrical Logging in Canada" by M.P. Tixier and R.L. Forsythe. It was presented at the Annual General Meeting of CIM in Quebec City in April 1951. The paper dealt with the Leduc-Woodbend-Redwater discoveries and long-range correlations between the Nisku pools. Since that time, large numbers of technical papers have been presented at CIM meetings and, beginning in 1954, at the Canadian Well Logging Society meetings.

The Canadian Well Logging Society was formed in 1955 after a group of people in the major oil companies and service companies in Canada perceived the need for the exchange of ideas and technical information. This was the first technical society in the world to exclusively promote the science of petrophysics. The pioneers of the CWLS were Al Brown, Ed Burge, Nick Ediger, Barry McVicar and Gerry Shaw. Barry claims to have provided the beer and Gerry the sandwiches at the organizational meeting in the 400 Club cardroom. At least we know from this what their priorities were.

Other important names involved in the early years of the CWLS were A.G.T. Weaver, A.A. Perebinossof, Leo Vladicka, Ted Connolly, Trev Cutmore, Don Tough, Bob Labelle, Percy Cole, Doug Morrison, and Mart Kernahan. The author apologizes if any names have been left from the list. The society was even brave enough to open a chapter in Regina, which was active between 1957 and 1961. Don Tough was one of the prime movers in this venture.

Although lunch and evening meetings were held for a number of years, there is no formal printed record of the topics or papers presented until 1968 with the appearance of CWLS Journal, Volume 1 and almost simultaneously the Transactions of the 2nd Formation Evaluation Symposium. Symposia had been held roughly every second year (now in the odd-numbered years). The Journal ceased publication with Volume 10 in 1977 but was revitalized in 1982 by E. R. Crain, and it has continued regularly since then. Papers are also published in the Journal of Canadian Petroleum Technology.

The Society membership has grown from the initial complement of about 12 to something approaching 500 members. In addition, approximately 40 corporate members assist in financing the operations of the Society. Although this history is concerned mainly with well logging in Canada, it is important to note that the CWLS has a large list of members and officers from other disciplines related to formation evaluation, such as drill-stem testing, hydrocarbon logging, core analysis, and geological, geophysical, and reservoir engineering specialties.

The CWLS maintains direct liaison with the Society of Professional Well Log Analysts in the United States and with The Petroleum Society of CIM in Canada. These close relationships help to maintain the cross fertilization of ideas so necessary in a multidisciplinary function such as the petrophysical evaluation of well logs.

If any of these articles have inspired you to do more research into the history of the Canadian Well Logging Society you can contact the CWLS to volunteer.

E. R. (Ross) Crain, P.Eng.

Ross is a Professional Engineer and member of the CWLS, with over 35 years of experience in reservoir description, petrophysical analysis, and management. Many thanks to Ross for allowing us to publish this article.

Canadian Well Logging Society

CWLS - Wednesday, October 8, 2003

A Method of Creating Pseudo Acoustic (Compressional and Shear) and Density Logs Involving Fluid Substitution

Using Gassmann's model, adapted to cover shaley formations, and extended into the shear realm, pseudo acoustic and density logs can be generated. Input data are shale volumes, porosity and fluid content (gas vs. water). The pseudo logs can be calculated for any fluid combination desired. By comparing with actual acoustic logs it can be shown that compressional measurements are irregularly affected by the presence of gas i.e. it is not always the case that the acoustic log "sees" residual gas. The approach has significance in the creation of synthetic seismograms. For any one well, synthetic seismograms are available for pre-defined saturation models.

As an extension of this analysis, it is possible to estimate (in gas/water systems) water saturation for each of the porosity logs, without incorporating resistivity measurements. This approach can quantify the changing invasion profiles with depth, using porosity log information alone.

Examples (both clastic and carbonate reservoirs) are presented from western Canada.

Michael Holmes

Michael Holmes is president of Digital Formation, Inc. a software and consulting firm specializing in petrophysics. Consulting projects range from single well to field studies, and often involve the creation of petrophysical models to be used in reservoir simulation.

Michael has a Masters degree in Petroleum Engineering from the Colorado School of Mines, and a PhD degree in Geology from the University of London. He started his career in International Operations with BP, and then moved to Edmonton with Shell Canada, then to Marathon Oil Company's Research Center in Denver. Since the mid 1970's Michael has been active as a worldwide consultant in the fields of geology, petrophysics and reservoir characterization.

Calgary Well Log Seminars

2003-2004

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

Telephone (403) 265-3544

UNDERSTANDING WELL LOGS – October 6, January 12, May 31, 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 $240 + GST

BASIC WELL LOG SEMINAR – October 1-3, January 7-9, May 26-28, 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 is $690+GST

INTERMEDIATE WELL LOG SEMINAR – October 8-10, January 14-16, June 2-4, 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. Designed for candidates who have used logs qualitatively and wish a refresher and update on quantitative applications.

Fee $790+GST

For information and registration call Bill Smith at 403 265-3544

Canadian Well Logging Society Anecdotes

The Canadian Well Logging Society was the first such organization to be formed anywhere in the world. The Society of Professional Well Log Analysis or SPWLA formed in the USA a few years later and the early CWLS members took great pride in the fact that Canada was first. There were many attempts to get the CWLS to become a chapter of SPWLA but each time it was brought forward at a meeting it was soundly voted down. The two societies were close together in the late sixties and early seventies when the late Gene Carruthers (Philips) was SPLWA president. Gene was quite charismatic and there was some support at the CWLS for a union. Gene's successor was not as well received by the CWLS executive of the day for during lunch with CWLS president DG Dawson-Grove and VP WDM (Bill) Smith the CWLS was erroneously referred to as a chapter of the SPWLA. That killed whatever enthusiasm might have existed for a closer link between the two societies and completely nullified any idea that the CWLS would be a chapter of SPWLA. It became a non-issue as both societies agreed to cooperate in any way possible including the joint symposium idea, which has been so successful.

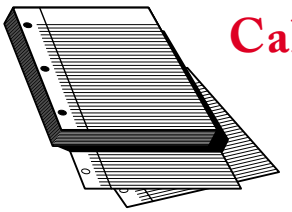
Well logging and well log analysis have always been important to the oil industry beginning with those first logs run in the late twenties. It is interesting that the technique was first called Electrical Coring. This was an early marketing effort to lead the industry away from coring to logging and perhaps to instill the idea that one could effectively core every well by running a well log. That early manifestation of marketing skill is still visible today and has been a notable feature of the logging service companies as the technology has steadily evolved over the decades. Perhaps the latest such effort to relate coring and logging is the high resolution logging and attendant software development to evaluate log data for Coal Bed Methane. The logging industry has been largely successful in making many of the measurements that are provided by coring but there is still a need for the benchmark data that only a core can provide. This is also true today in the evaluation of coal deposits for methane.

The CWLS got started in 1955 and some of those charter members are in the photo provided by Ted Jennings. The photo was taken at the first logging seminar held in Canada and CWLS charter members Al Brown (California Standard) and Ted Jennings (Great Plains-Norcen) are in the picture. The famous (to old CWLS members) Leo Vladicka is also in the photo. Al and Ted were among those who got the CWLS going. Al Brown was a highly regarded log specialist at Chevron in Calgary for many years. He had a great instinct for using the old logs to find oil and gas. Ted Jennings, whose Master's thesis was done on gamma ray logging, served in several capacities in the society and was among the faithful who attended all of the meetings. Leo was often at the luncheon meetings and when present, would invariably ask the first question. He frequently asked the same question as follows; "I am Leo Vladicka and I am just a poor consultant. Can you tell me how this information can help me?" He gave the CWLS a little character.

The CWLS opened a branch in Edmonton in 1965 when the oil industry still had large technical staffs there. The proximity of the Leduc reef fields, Redwater, the Swan Hills and Pembina fields made Edmonton a more convenient location for operations. WDM (Bill) Smith (Chevron) led the effort and AL Brown (Chevron) was the speaker at the first meeting. Despite the enthusiasm of a small but dedicated membership, the Edmonton branch did not last long as the industry began to centralize in Calgary. Logging technology was moving rapidly in those years with the Dual Induction, Sidewall Neutron and Density logs becoming the industry standards. It was exciting for log analysts to be able to deduce lithology in carbonates from the porosity logs with much greater confidence than previously. The Dual Induction was not welcomed so warmly as the logarithmic scale compressed the increase in resistivity associated with the presence of hydrocarbons. The log also made correlation with the previous generation of Induction and Electric logs a bit more difficult, but the retention of the linear presentation on the 2 inch (1 to 600) scale was a satisfactory compromise for log analysts and geologists. The linear scale is still presented today to enable the correlation all the way back to the earliest E-Logs.

W.D.M. (Bill) Smith

An Honorary Member, and Past President of the CWLS, Bill remains active as a well log consultant, specializing in the Western Canada area and is president of Professional Log Evaluation Ltd.



Call for Papers

The CWLS is always seeking materials for publication. We are seeking both full papers for the Journal and short articles for the Newsletter. Please share your knowledge and observations with the rest of the geoscience community. Please contact publications co-chairs, Steve Burnie Sr. (steve@rpcl.com) at (403) 264-4466 or Mike Eddy (meddy@wellsitegas.com) at (403) 230-0630.

You provide the material and we will provide the soap box!

History of the Canadian Well Logging Society

At 8:00 pm on August 4th, 1955, a meeting was held at the 400 Club in Calgary, Alberta. The purpose of the meeting was to determine the feasibility of forming a society or committee for log interpretation. Mr. A.A. Brown of the California Standard Company, along with A.G.T. Weaver of Shell Oil Company were the primary movers in organizing this meeting. Most of the major oil companies and service companies were contacted by Mr. Brown personally.

Mr. Brown acted as chairman for this first meeting. After discussing the aims and purposes of the proposed organization, elections were held and the first slate of officers was elected as follows:

A.A. Brown	Chairman
B.M. McVicar	Secretary
E. Burge	Treasurer
A.G.T. Weaver	Member at Large

Under the able leadership of this first executive the following statements of objectives and clarification of membership were arrived at:

The objective of the society is "the furtherance of the science of well log interpretation by providing regular meetings with discussion of related subjects and encouraging research and the study with respect thereto. A further aim would be to establish branch society's in Regina, Saskatchewan and in Edmonton, Alberta."

Active membership in the society is open to those within the oil and gas industry whose work is primarily well log interpretation or who, because of their knowledge of formation evaluation, will be able to contribute to the technical discussions of the society.

After a lengthy discussion, the embryo group established their name as the Canadian Society for Well Log Interpretation. At 10:10 pm the organization meeting was adjourned until the operational meeting could be called.

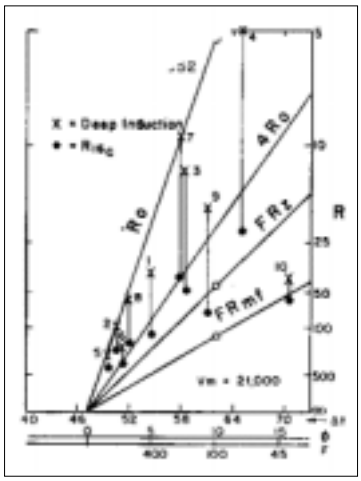
The first operational meeting was held August 30th, 1955, at the Al San Club in Calgary. Mr. Perebinosoff spoke on the subject of the present status and future possibilities of well logging.

At the end of the first year (1955) the society boasted 38 paid members and has never looked back. Stumbling once or twice and never giving up, the CWLS is firmly entrenched in industry as the leading formation evaluation society. The membership is growing towards 500 members and boasts 40 plus corporate members.

In case you are wondering how the name was changed from the Canadian Society for Well Log Interpretation to the Canadian Well logging Society, it happened in February of 1956. In January of 1957, the CWLS was officially incorporated into the Alberta Societies Act under the present name.

E.T (Ted) Connolly

Ted is a founding member, honorary member, and former president of the CWLS. For the past 50 years Ted has been active in contributing to the Oil and Gas Industry and owns Etcetera Consulting Ltd. specializing in Petrophysical Well Log schools, Wellsite Logging, pool and area Well Log studies in both Cased and Open hole. Thank you Ted for allowing us to publish this excerpt from your history of the CWLS.



Wellsite Log Interpretation c. 1962 compliments of E.R. (Ross) Crain.

A high resolution copy of the latest newsletter is posted on the CWLS web site at www.cwls.org. For this and other information about the CWLS visit the web site on a regular basis.

If you do not wish to receive this newsletter via e-mail, please send an e-mail message to the CWLS secretary, Krista Kellett, with the Subject heading REMOVE NEWSLETTER, or contact the CWLS office at 403-269-9366.

Please forward this newsletter to any potentially interested co-workers. We would appreciate any feed back on anything you've read in the In Site and any suggestions on how this newsletter can better serve the interests of the formation evaluation community. Feel free to contact anyone on the CWLS executive with your comments.

A Voice from the Past

Anecdotes of historical interest, relating to the early days of the Canadian Well Logging Society.

In Vino Veritas

In the middle to late 1960's the CWLS had its Annual General Meetings at the Calgary Petroleum Club. Kind sponsors would provide one hour's unlimited drinks at the bar, wine with dinner, followed by brandy or liqueurs. This all led to very pleasant, convivial meetings.

However, on one occasion there was miscommunication somewhere. Dinner was one hour later than expected. The bar was therefore open for two hours. The result was predictable. Behavior at dinner was none too good. Buns flew across the room. Fortunately, the aim was poor. BUT it was the business meeting that suffered the most. It was raucous, and near chaotic. Speeches tended to be garbled; some were almost incoherent. Speakers who wandered too far off course were unceremoniously told to shut up and sit down.

HOWEVER, viewed and reviewed in the cold, hard, light of sober day, I feel we somehow managed to achieve an excellent meeting. We elected a good slate of new officers and directors, and dealt successfully with necessary business, including an important item relating to the Calgary School Board. Parliamentary procedures might have been a bit shaky, but the decisions were good.

P.S. I believe that was the last time we were invited to have our AGM at the Petroleum Club.

G.E. Dawson-Grove (DG).

D-G is an honorary member and past president of the CWLS holding both Professional Engineering and Professional Geology designations. He has a Bachelors Degree in Petroleum Engineering from the University of London followed by a Masters Degree in Geology from Cambridge University.

Summary

I would like to thank Ross Crain, G.E. Dawson-Grove (D-G), Alex Finney, Bill Smith and Ted Connolly for their contributions to make this edition of the In Site possible. For the papers on the history of the Canadian Well Logging Society, I noticed a common thread from the authors. Each story in some way involved alcohol. In fact, when I met Ted Connolly and he said the Regina chapter of the CWLS folded in 1959, "they drank the assets and moved back to Calgary". It wasn't all fun and games however. The society really struggled to get off the ground and it took lots of hard work to get it to where it is today. If these stories about the past have interested anyone to further investigate the history of the society, you can contact the executive committee to further the research.

Early Halliburton Logging Truck c. 1946 compliments of E.R. (Ross) Crain.

Early Schlumberger Truck c. 1949 Compliments of E.R. (Ross) Crain.

UPCOMING EVENTS

The Annual General Meeting will be held on Feb 10th at the Palliser Hotel and the guest speaker will be Stewart McLean, host of the popular CBC hit, the Vinyl Café.

The Fall Social will be held on Nov 20th at 5:00 pm at the Palliser Hotel. Tickets are $15.00 with the proceeds going to charity. There will be a raffle for the tax receipt.

Luncheons

October 8th, 2003
A Method of Creating Pseudo Acoustic (Compressional and Shear) and Density Logs Involving Fluid Substitution, Michale Holmes.

November 5, 2003
NMR, Jos Jonkers (Computalog)

December 10, 2003
Invasion Corrections, Cindy Guan Sudan

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For information on advertisement in the In Site and the Journal, please contact either of the publications co-chairs:

Steve Burnie Sr. (steve@rpcl.com) at (403) 264-4466

or

Mike Eddy (meddy@wellsitegas.com) at (403) 230-0630.

Discounts on business card advertisement for members.

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