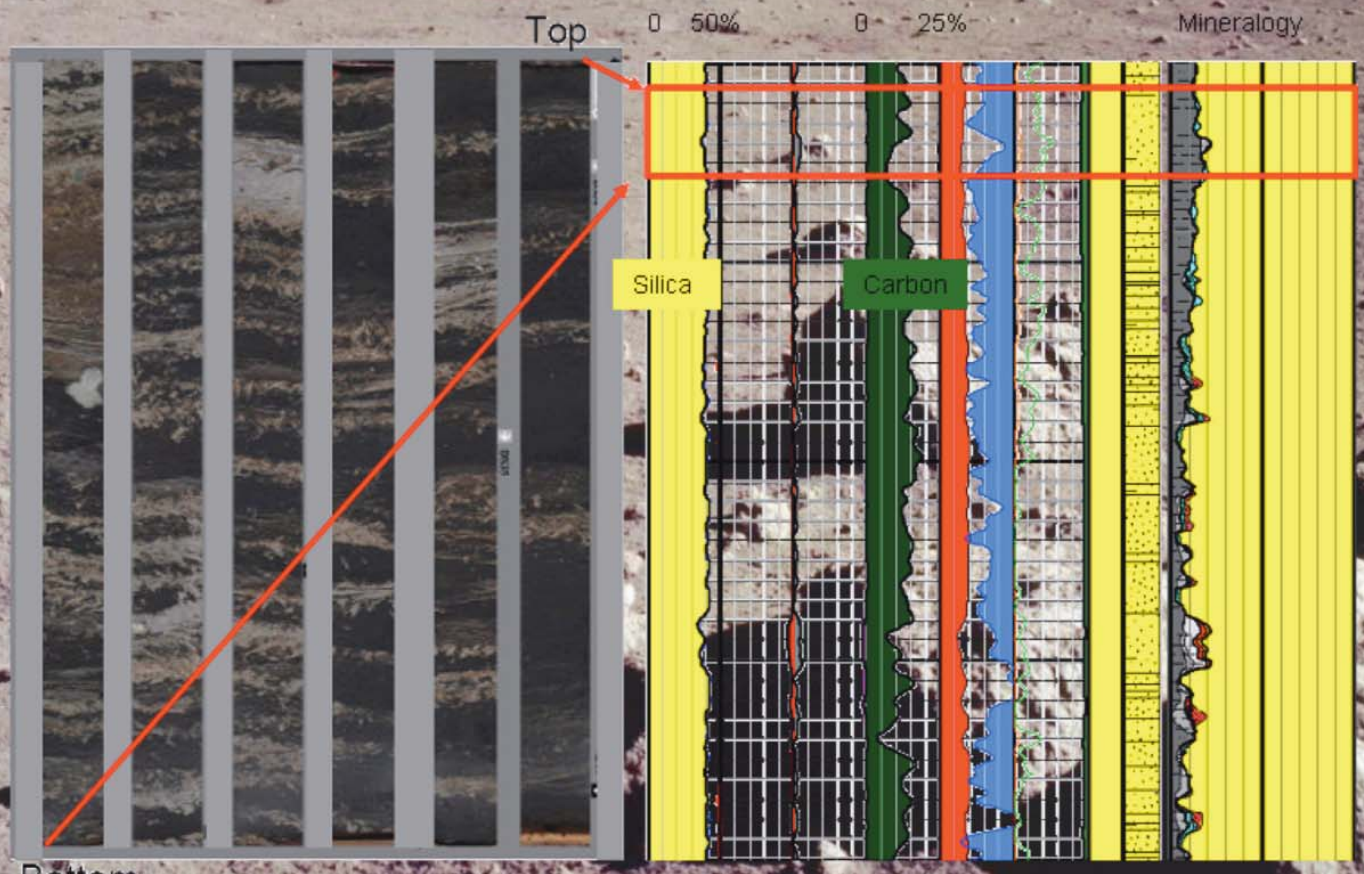
InSite

CWLS Magazine
May 2010 Issue 1 Volume 29



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GEOLOGIST, VERO ENERGY INC.

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CWLS Magazine May 2010

Issue 1 Volume 29

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Photos: If you have a photos that the CWLS can use on its next InSite please send a high resolution jpeg format version to kusuma1@slb.com or naladani@suncor.com. Include a short description of the photo with your submission.

The 2010 - 2011 CWLS Executive:

Back row (l - r): Simon Corti, Vern Mathison, Dave Shorey, Brian Glover, Harold Hovdebo
Front row (l - r): Kathy Chernipeski, Agus Kusuma, Nabil Al-Adani, Maggie Malapad

Vice President's Message

The executive and many volunteers have worked hard during this challenging year to keep the CWLS running smoothly and the technical quality high. The Primary duties of the CWLS Vice President are: organize and find speakers for the monthly technical luncheons; organize short courses or other special technical meetings; organize the Fall Social and organize the Annual General Meeting.

The luncheon talks were successful in 2009; though understandably not as well attended as in the past with 1412 tickets sold. Average attendance for 2009 was 157 people per lunch, a decrease of 25 per lunch over 2008.

Luncheon talks organized by this year's executive were:

- Mar 18, 2009 David Jacobi Geologist/Geochemist/Mineralogist, Baker/INTEQ "An integrated petrophysical Characterization of Shale gas Reservoirs"
- April 08, 2009 W.P. Gwozd Vice President, Gas Services, Ziff Energy Group "Full Cycle Costs of Natural Gas"
- May 13, 2009 Keith Shanley Geologist, Discovery Group, CO. "The Stat of fluid saturation in tight-gas reservoirs: Insights and implications from the Rocky Mountain basins."
- Jun 10, 2009 Russell W. Spears Petrophysicist, ExxonMobil "Development of a Predictive Tool for Estimating Well Performance in Horizontal Shale Gas Wells in the Barnett Shale, North Texas, USA"
- Sept 09, 2009 Dick Merkel Newfield Exploration Company "Shaly Sand Petrophysical Model Development in Low Porosity Sands"
- Oct 13, 2009 David C. Herrick PhD Consulting Petrophysicist "An Unconventional Approach to Unconventional Reservoirs"
- Nov 04, 2009 Bob Everett "Petrophysicist Shale Gas Methods, Free and Absorbed Gas in BGF/Section, Good and poor Haynesville Wells, Petrophyisical Characterization using Nuclear Spectroscopy (ECS) Multi-Clay Model and Geological Analysis by a Maximum Likelihood System"
- Dec 09, 2009 M.A. D'Iorio, PhD Director General "Gas Hydrates in Canada's North: Potential or Wishful Thinking"
- Jan 13, 2010 Rong (Grace) Guo "PhD, P. Eng Shell Canada "Coal Characterization by Core-Flood, X-Ray CT and Low-Field NMR"

Most of the presentations are available as a webcast on the CWLS website.

The Fall Social at the Palliser provided great and abundant food and superb views from the penthouse though attendance was down from last year. The silent auction and door tickets sales raised $1,370.00 for the Children Cottage Society of Calgary.

Finally, I would like to give a personal thank you to everyone that helped me this year, especially our administrator Ashley Pessell.

Dave Shorey,
Vice President

CWLS 2010 to 2011 Executive

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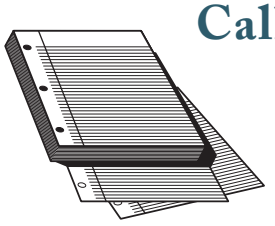

Call for Papers

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 publication Co-chair:
Agus Kusuma - kusuma1@slb.com or
Nabil Al-Adani - naladani@suncor.com

New Members

Melissa McMillan, Weatherford Canada Partnership
Sandra Bleue, BG International Limited
Robin Powell, Wrangler West Energy Corp.
Monika Pagenkopf, Compton Petroleum Corporation
Robert Blackmore, RH Blackmore & Associates Pty Ltd
Luis Guerra
Lorraine Stratkotter, Davlor Consulting
Redha Amara, Continental Labs
Bruce Keen, Halliburton
Larry Sopko, Antoinway Resources Ltd.
Giselle Haluszka, Unconventional Gas Resources
Adam Thatcher, Datalog Technology
Nasser Gomaa, BP Canada Energy
Ian Shaw, Cactus Ranch Consulting Inc
Catherine Ng, Imperial Oil
Jeffrey Dickson, Paradigm
Allan Morrison, North Rim Exploration Ltd.
Sean Johnston, Schlumberger
Andres Matheson, Weatherford Canada Partnership
Adesubomi Adesanya, Energy & Mineral Resourcs ltd.
Bogdan Batlai, Hampson-Russell
Mohamed Sweed, Repsol ypf (Remsa)
Haris Sharar, Weatherford Canada
Esther Tolani, Weatherford Canada
Ryan Cook, ME Canada
Olusanya Badejo, Weatherford
David Cailliau, EnCana Corporation
Trevor Bremner
Mohamed Hassan Abdalla, Sudapet Co. Ltd.
Carrie Dickinson, ERCB
O'niel Wint, Schlumberger
Khaled Benzaoui, Schlumberger
Tania Roenitz, Statoil Canada
Geoff Offer, Austral Wireline Services

New Members – Student

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Mohsin Khan
Luiz Felipe Del Nero
M. James Song
Sam Jovanovic
Reis Chase
Xiandi Xie
Michael Hauer
Jason Sandor
Bimo Rasyid Prawiro
Yu Huo
Daylan Miller
Michelle Ha
Andrew Liu
Kris Manipon
Melinda Yeoh
Rohullah Hussain-Zada
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Angela MacKinnon
Britany Muys
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Justin Gouveia
Salam Allami
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Darus Peterson
Jamin Laplante
Adam Wong
Chad Goldie
Brett Willms
William Richardson
Neven Dimic
Nishad Torane
Anthony Nguyen
Mingming Wang
Faisal Mehmood
Todd Shields
Luis Guerra

The CWLS and the InSite Magazine are

GOING GREEN!

Your CWLS Executive is proud to announce that we have adopted a greener attitude towards the way we are conducting our business. We have been working towards this initiative for some time now, especially with the introduction of our website and online presence, and we are continuing to move in this greener (and we believe) brighter and more sustainable direction!

One change we are eager to implement is the way we deliver our InSite Magazine to our membership. Going forward, we will now be providing the option for you to receive your InSite Magazine electronically rather than by hardcopy through the mail. For those who do prefer, we will be continuing our regular mailout as well.

The website will shortly be updated to allow this option. Within the next couple of months, please notify us of your preference to receive the next InSite Magazine and following ones electronically, by logging onto the website at www.cwls.org. Go to "my account" at the top right-hand corner of the page, and then click on "Edit Your Profile". Toggle on your preference. You may change your preference at any time.

Note; we have uploaded past issues of the InSite Magazine onto the website as well. You can access these and other notices and publications under Publications > Papers.

Please consider joining us in this GREEN initiative.

Sincerely,
Kathy Chernipeski
Secretary

CWLS 2010 ANNUAL

Meeting Photo Gallery

Russell Spears
President's Award

Grace Guo
Vice President's
Award

Frank O'Dea
Guest Speaker

Jeff Taylor
Distinguished
Services Award

Tyler
Maksymchuk
Distinguished
Services Award

Shaly Sand Petrophysical Model Development in Low Porosity Sands

Tuesday, September 9th, 2009 Luncheon

Dick Merkel's presentation at the September luncheon addressed the issue of expanding upon shaly sandstone models through nuclear magnetic resonance (NMR) data. Focusing primarily on Cretaceous and other Tertiary sandstones in the Rocky Mountains, he has been able to measure the volume of clay bound water (VCBW) and use it in turn to determine other shaly sandstone model parameters. In doing so he uses VCBW relationships to clarify why various instabilities exist in several of these models.

Shaly sandstone modeling is often plagued by the underlying problems associated with effectively distinguishing between multiple clay types and being able to deduce their volumes from unique log signatures. Utilizing NMR technology can directly determine VCBW, as well as the irreducible and free water components. Because NMR tools generally have a shallow depth of penetration, measurements for oil and gas signatures and mud filtrate are also obtained.

When plotted against resistivity, the intercept of the VCBW data slope line can be used to determine the resistivity of the bound water (Rwb) when VCBW equals one. Curiously, as depth and clay type vary, the slope of this line will not change, although the intercept (Rwb) value will. Because VCBW correlates to porosity, once this linear relationship with resistivity is established, other parameters used in shaly sandstone models such as the effective porosity, shale resistivity and both clay and shale volume can be calculated as well. However, Merkel notes that some of the models become unstable as shale volume approaches one. At this point, the total porosity approaches the VCBW value, and so the fundamental parameter relationships in regards to resistivity begin to falter.

Dick Merkel

Once these issues are identified, Merkel illustrates how the same NMR data from the reservoir portions of the well can be compared with the shaly intervals to further validate the accuracy of the model being used. Because acquiring NMR data can be an expensive prospect, it is important to note that the ability to directly identify model parameters from a single data suite, means that these can then be propagated to other wells in the same field without needing to perform additional NMR runs.

Jeffrey Dickson

An Unconventional Approach to Unconventional Reservoirs

Tuesday, October 13th, 2009 Luncheon

Quantitative well log analysis in reservoirs has long been dominated by the equations put forward by G. E. Archie in the 1940s. In these equations, resistivity and porosity are used to determine the water saturation of a reservoir. When a logarithmic relationship was utilized to explain the data Archie was working with, this was a significant breakthrough and his work has become somewhat dogmatically applied and modified in well log analysis ever since. This is the case that Dr. David C. Herrick put forward during his presentation in October of last year, when he spoke on the shortcomings of applying Archie's equation to unconventional reservoirs. Because most of the reservoirs being exploited today are not comprised lithologically of "Archie-type rocks," (i.e. those that are hydrophilic and homogeneous with simple intergranular porosity and electrical conductivity only through pore water) the application of Archie's equation is therefore invalid.

David Herrick

As Herrick advocates, rather than modifying Archie's equation itself, instead let him lead by example in his approach. Namely, derive an equation from the electrical data, rather than fit his equation to data it was not designed to model. In his presentation, Herrick put this to practice with several examples, notably indicating how shale content skews resistivity measurements by acting as a surface conductor. Conductivity (the reciprocal of resistivity) can be utilized to simplify equations, as this changes the value range from zero to one (similar to both porosity and saturation). In addition, the application of pore-geometric theory states that conductivity is a function of the geometry of the pores within the rock created through diagenetic processes and how that geometry is affected by the degree of water saturation. In this way, conductivity can be broken down into two different categories: volumetric (porosity and water saturation) and geometric (the pore geometric factor and its coefficient). These distinctions allow the electrical information to be analyzed much more sensitively.

By independently modeling the relationship between resistivity and porosity (providing one exists) Herrick shows that the results will provide greater accuracy than fitting somebody else's equation to your data. In doing this, he reinforces why it is important to question conventional methods rather than taking them at face value, and the gains that can be made by doing so.

Jeffrey Dickson

Shale Gas Methods, Free and Adsorbed Gas in BGF/Section, Good and Poor Haynesville Wells, Petrophysical Characterization using a Nuclear Spectroscopy (ECS) Multi-Clay Model and Geological Analysis by a Maximum Likelihood System

Wednesday, November 9th, 2009 Luncheon

In November, Bob Everett presented on the topic of shaly gas petrophysics, focusing on wells in the Haynesville field. He uses one of the poorer Haynesville wells as a comparative example of when improperly applied petrophysical models can return critically skewed results. He has instead proposed the combination of several methods in his procedure to estimate the adsorbed and free gas in shale gas zones.

Bob Everett's procedure/method is as follows: After assuming several parameters, perform a probabilistic clustering analysis to determine the various modes, or electrofacies, and assign a corresponding lithology to each. Then, estimate the mineralogy of each mode, and combined with other pertinent data, compute the wireline logs. In addition, a comparative analysis and any corresponding adjustments need to be made between the actual and computed logs, and between any core data and the modeled estimates. Throughout the entire procedure, the balances of various parameter relationships can provide red flags as to whether the outputs are valid or not. Finally, the total organic carbon (TOC) can be calculated from sonic-resistivity (DT) log, and compared to core TOC. An estimate of the quantity of kerogen is then used to solve for free gas and then for adsorbed gas.

The presence and quantity of clay minerals influences well log estimates of porosity, permeability, and water saturation. In the example Everett presents, rugose shales falsely amplify the density log; an effect that can be at least partly corrected for by comparing the bulk density of the core with that of the recorded log to establish minimum and maximum values, respectively. Also, one of the major problems associated with core X-ray diffraction (XRD) is that while clay mineral type is readily identified, weight percents are often critically underestimated. Normalizing the core XRD data to the neutron spectroscopy log (if one is available) can potentially solve this. In the free gas calculations, it is important to note that underestimation can occur when mixing total and effective porosity and water saturation values, rather than exclusively using the total values.

Bob Everett

Overall, this procedure has great potential to be further explored and expanded upon, and can be further validated by a comparison of production numbers yielded to those predicted.

Jeffrey Dickson

Gas Hydrates in Canada's North: Potential or Wishful Thinking

Wednesday, December 9th, 2009 Luncheon

At December's luncheon, Dr. John Harper discussed Dr. Marc D'Iorio's research on gas hydrate potential in the Arctic and presented an overview of the geopolitical, economic and societal issues that Natural Resources Canada is exploring regarding this development. In addition, the presentation highlighted the Mallik field in the Northwest Territories, which currently is the only producing gas hydrate field in the world. As a result, it has undergone a significant degree of testing to show how controlled depressurization can be used to safely dissociate the natural gas from the ice to the point when it can be produced.

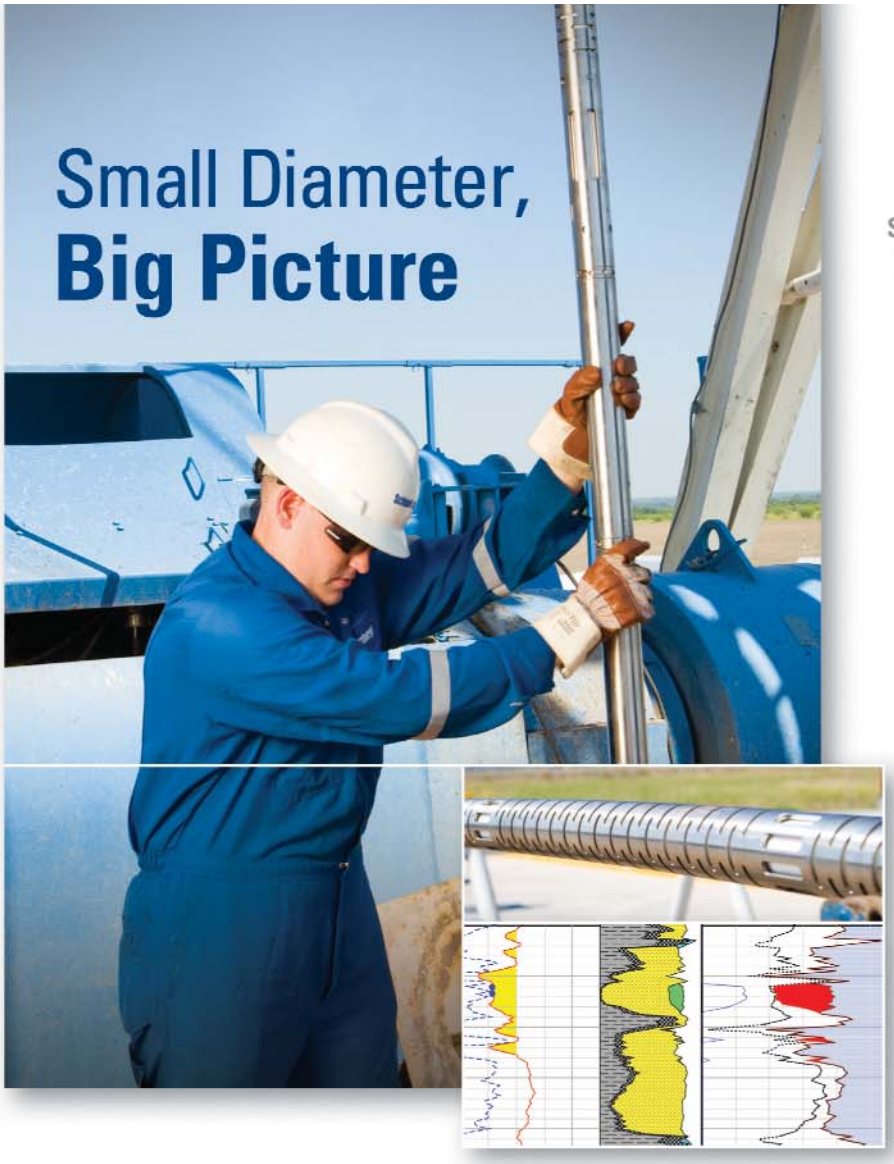
Gas hydrates themselves are an ice-like solid composed of primarily methane gas molecules retained within ice, occurring in colder regions and at moderate pressure. The energy potential of these gas hydrates is significant enough to draw comparisons to the oil sands. The identification of stability zones between the gas and the ice, illustrates that gas hydrates occur both within and below the permafrost on land, and as ice-like deposits both at and near the surface of continental margin seafloors. Looking at Canada's north and coastal margins, gas hydrate resources have the potential to be vast, but require further exploration to be proven and expanded upon. In addition, as extraction of the gas is an expensive endeavour, changing economic conditions will need to drive development of this unconventional source in the same way the oil sands were. The Council of Canadian Academies estimated in 2006 that this type of push to commercialize gas hydrates is still likely twenty years away from now, although considering that natural gas is seen as a more environmentally favourable fuel choice (compared to oil and coal) this is likely to garner increased interest as well.

Multiphase testing between 2001 and 2008 at the Mallik field in the MacKenzie Delta was very revealing in demonstrating how controlling the reservoir pressure through conventional methods can be used to extract the gas. This depressurization presented its own unique problems in terms of reservoir stability and water production, but through modified and conventional techniques, these issues can be managed and sustained gas flow reached.

John Happer

This research makes it clear that while there do not appear to be insurmountable technological or safety concerns that would limit our ability to exploit this natural gas source, industry partnership with government will be necessary to generate the capital required for further exploration and development. For now however, it is clear that Natural Resources Canada is focusing primarily on the lack of regulation and policy and the economic stimulus necessary to make these production methods viable. Their goal is to help bring gas hydrate development to market sooner rather than later and anticipate its development so that when it is eventually exploited, a framework will already be in place for industry and government.

Jeffrey Dickson



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Geoskills Day 2010 Lets Keep Those Contacts Alive!

February was a busy month for geology, geophysics and Earth science students from universities across Alberta. The third annual Geoskills Day Student-Industry Training Day and Mixer was held on February 10, 2010 with huge success. GeoSkills Day is an event held in downtown Calgary organized mainly by university students from the University of Calgary, University of Alberta and Mount Royal University and sponsored by APEGGA, CSPG, CSEG and CWLS. The event was created to bridge the communication gap and provide a networking opportunity between current university students and industry professionals.

This year involved an introduction from Chancellor Joanne Cuthbertson of the University of Calgary on what a university education can lead to, followed by lunch, a series of eight talk's occurring in two theatres and an evening mixer which was very well attended by industry professionals and corporate sponsors. The talk series included topics on The Hidden Responsibilities of the Geoscientist: Stuff We Didn't Learn in School, by Andy Williamson, Time-Lapse Seismic Monitoring of a Heavy Oil Extraction, by Peter McGillivray to Soft Skills and Networking, by Kristy Manchul to name a few.

Additional benefits to the students involved in the planning of GeoSkills included learning the basics of event planning, collaborating with a team of individuals all tasked with smaller pieces of the bigger picture, experience in approaching companies for sponsorship, public speaking and presentation skills, and in general learning how to balance the ever increasing responsibilities that are required by young professionals in the industry. On behalf of the CSPG and CSEG I'd like to thank all of the students who were a part of the planning committee, excellent work!

Moving forward into the warmer months it is important for students (and you too industry folks) to follow up with any contacts that were made. A simple email or phone call will suffice to stay in contact, exchange information and most importantly stay updated. Everyone is aware of the challenges in the current job market, but don't forget about the demographics of the current workforce; over the next 5 years there will be a significant portion of the baby-boomers opting for retirement and now is the time to learn as much as possible from these invaluable resources. Anyone you know to stay in contact with, go for a coffee or lunch or just ask questions to stay a step ahead of the rest. It is also very important to stay connected through various online and published resources regarding commodity prices, industry activity, hot new plays and news about company A buying company B.

Not all jobs are posted at schools or online job sites; many are a function of being in the right place at the right time. Initiative gets noticed, get out and be involved, volunteering is a great way to make contacts and there are many opportunities to volunteer with GeoCanada 2010, for further information contact volunteers@geocanada2010.ca

Cory MacNeill,
CSPG University Outreach Committee

Left to right: Kyle Plante, Natalie Stephenson, Laura Pecharsky, Sean Borchert and Josh Neville

CWLS Best Thesis Student Award

December 9th 2009 CWLS luncheon presentation

The CWLS best thesis student award was presented at the luncheon meeting on 9th December 2010 to Rong Grace from University of Calgary. Her thesis title was "Transport Phenomena in Coalbeds". This work was supervised by Dr. Apostolos Kantzas.

The Canadian Well Logging Society (CWLS) announces yearly awards for engineering and earth sciences undergraduate and graduate students in Canada. The purpose of these awards is to raise interest and awareness of careers in petrophysics and formation evaluation. Formation evaluation and petrophysics are the studies of rocks and their fluid properties as they pertain to the oil and gas industry.

Two $2,000 awards will go to students who submit abstract proposals of a thesis that critically examines some aspects of well logging, formation evaluation or petrophysics. Abstracts should be submitted to the CWLS in their final year of study. The CWLS will select award winners by March 31 of each year. An additional $5,000 will be awarded for the best thesis related to formation evaluation and submitted to CWLS upon graduation. The final thesis can be submitted at any time in the year of graduation. The award winner will be selected in January of the following year. The winner of this award will be invited at the expense of the CWLS to make a presentation at a lunch meeting of CWLS in Calgary.

Nabil Al-Adani
Publication Co-Chairs

They Came from Outer Space

E. R. (Ross) Crain, P.Eng.
Spectrum 2000 Mindware
1 - 403 - 845 - 2527 ross@spec2000.net

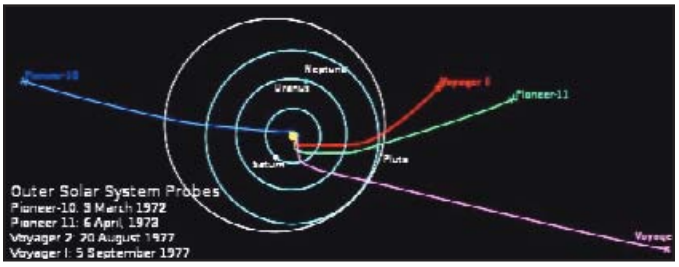
The Longest Log

As of February 1, 2009, Voyager 1 is about 108.60 AU (16.247 billion km, or 10.095 billion miles) from the Sun (add 0.32 billion mi or 0.52 billion km per year). It has passed the termination shock, entering the heliosheath, with the current goal of reaching and studying the heliopause, the boundary of the solar system.

Introduction

A log is a record of some observation versus time or distance, presented on an X-Y coordinate graph, a written narrative, or an audio or video report. Pilots, truckers. taxi-drivers, and tourists all keep logs. So do oil well drillers and other intrepid explorers who walk the Moon or operate robots on or near other planets. We even have logs from interstellar space. The Voyager 1 spacecraft, launched in Sept 1977, has recorded logs over the longest distances yet measured.

The documented geological record of the Earth is the longest time-based record so far, unless you want to count the less-well documented history of the Universe beginning before the Big Bang.



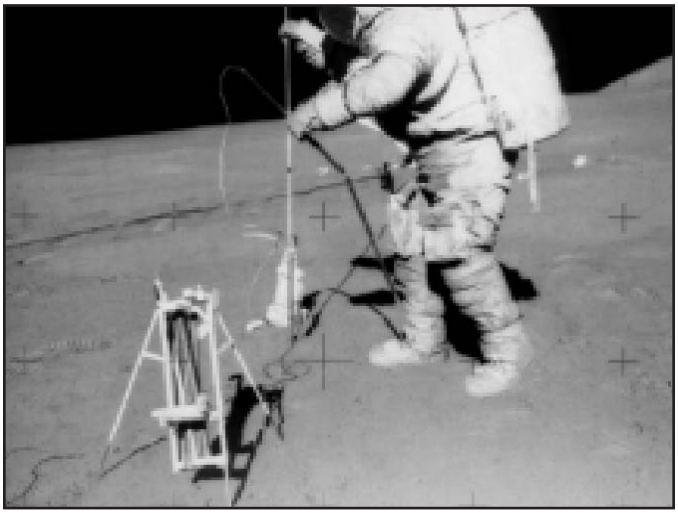
Trajectories of Voyager and Pioneer spacecraft as they leave the solar system. Voyager 1 is rising above the ecliptic and Voyager 2 is dropping below it. Who knows what these logging tools will find? Pioneer 10 and 11 are leaving more slowly and in opposite directions, but neither is still logging what they see.

To celebrate the 40th Anniversary of the Apollo 11 moon-walk by Buzz Aldrin in July 1969, let's look at the Lunar logs run 2 years after that famous "Giant Leap for Mankind".

First Logs on the Moon

Lord Kelvin's temperature / heat flow experiments in 1846 (and onward) were duplicated by Apollo 15 astronauts on the lunar surface in June 1971. The holes were only 1.5 to 3.2 meters deep and the logging tool was stationary, but the results were recorded versus depth, so these surveys are the first petrophysical logs recorded off planet Earth.

Apollo 17 astronauts repeated these temperature surveys and Apollo 16 and 17 crews also ran surface resistivity (EM style) surveys, similar to Conrad Schlumberger's early work in France.



Dave Scott of Apollo 15 running the first logs on the Moon in 1971

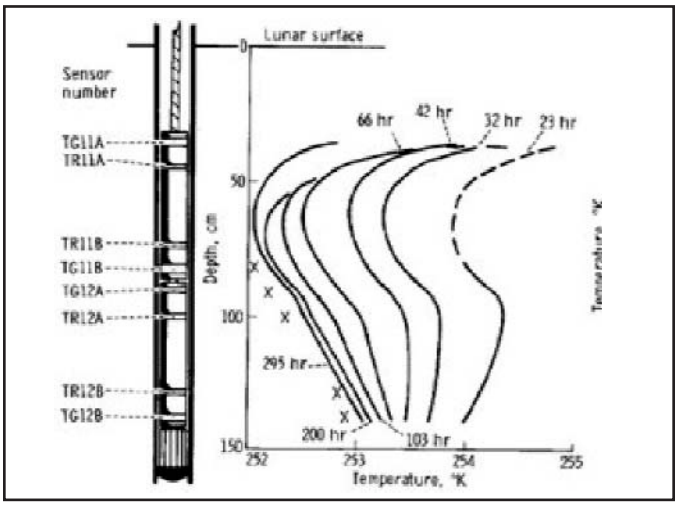
The lunar results: "The Moon is very dry". Golly, who would have guessed that? But don't despair. The moon has been mapped for neutron absorption and some areas absorb neutrons better than others. Hydrogen, hydrocarbon, or water? Or some other absorber (like iron for example)? Who knows.

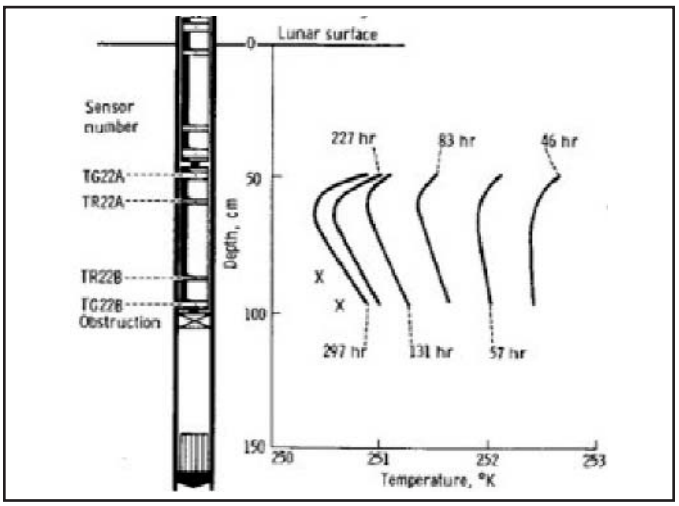
Harrison "Jack" Schmidt deploying the Surface Electrical Properties equipment (SEP) during Apollo 17 mission, 1972.

Continued on next page…

They Came from Outer Space *continued…*

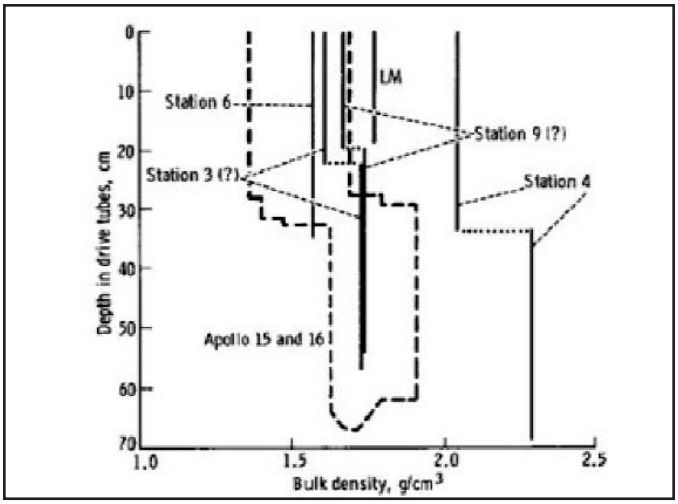
Below are samples of the temperature logs taken during Apollo 15 in 1971.



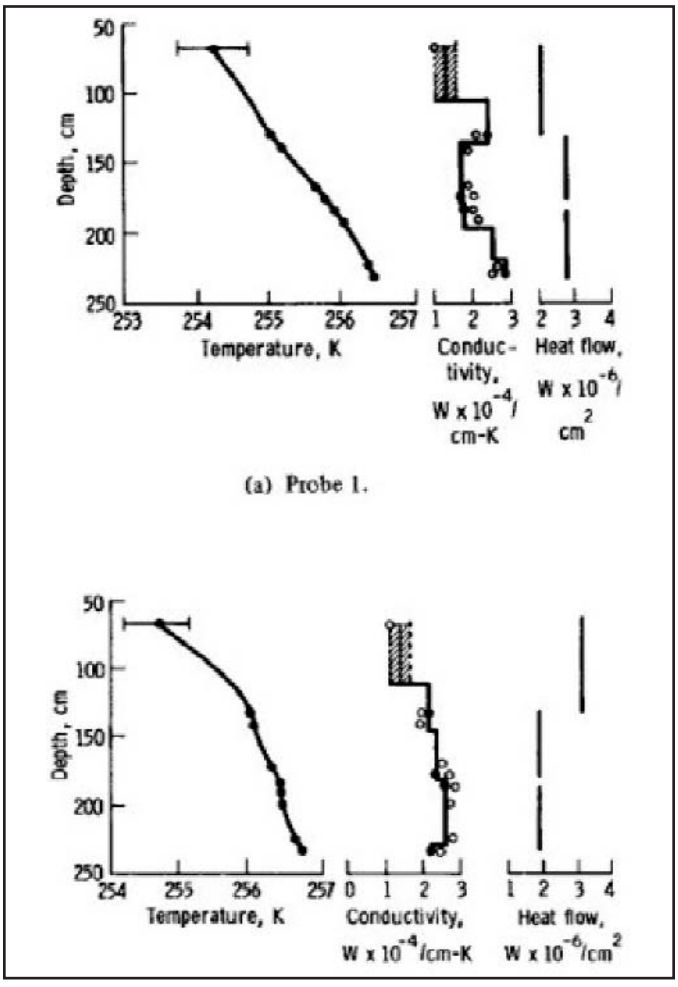


First logs on the Moon, Apollo 15, 1971. These temperature versus depth logs parallel similar surveys by Lord Kelvin in 1869. The lunar temperature probes continued to transmit data to Earth after the astronauts left the Moon. On Terra, we were just beginning to record logs in digital form, and were a couple of years from sending digital logs by satellite to processing centers. X's represents projected stabilized temperature profile.

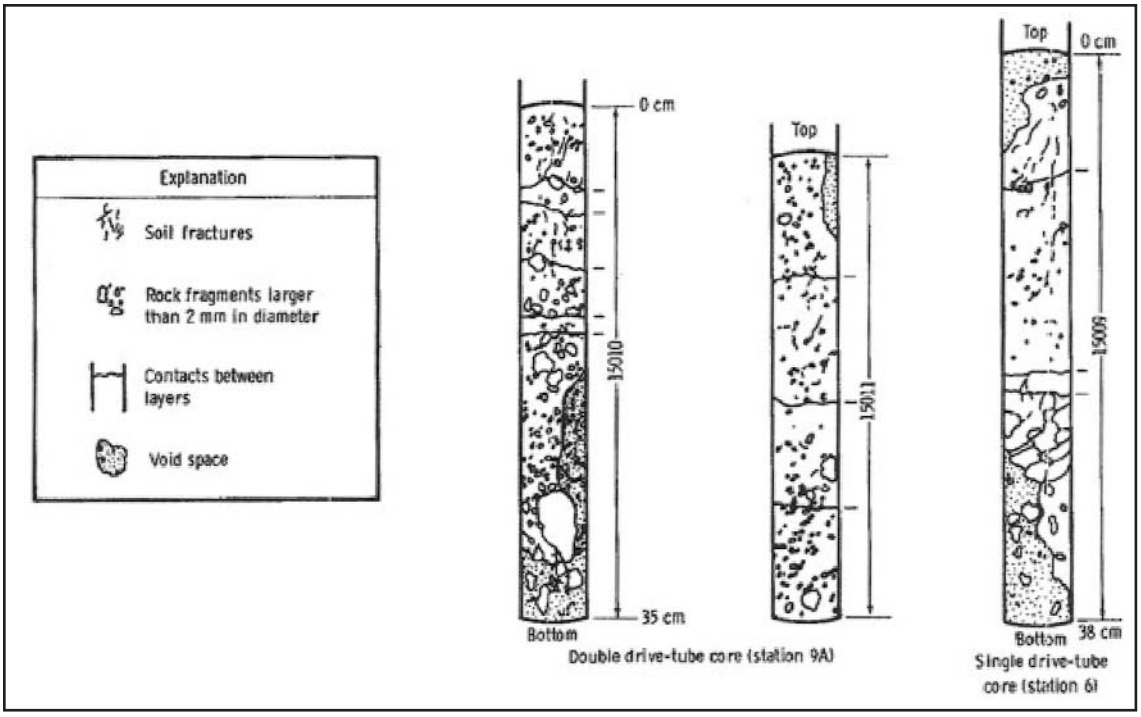
Shallow cores were taken during Apollo 15, 16, and 17 missions. Rocks were also analyzed in-situ with X-Ray fluorescence and photography. Samples of rocks were returned to Earth and subjected to myriad tests, much as we have done for many years on Earth in the oil and mineral business. Sample lunar cores are illustrated on next page.



Apollo 17 density logs measured on core samples (depths are in centimeters).



Apollo 17 temperature log, adjusted for diurnal variations, with derived thermal conductivity log.

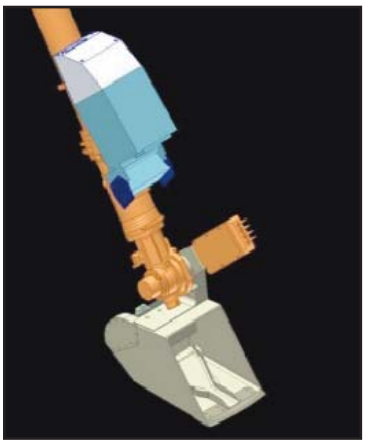


Sketches of cores taken by Apollo 17 crews on the Moon, 1972. Each core image is about 30 to 38 cm in length. Both driven and drilled cores were taken in the lunar soil.

First Logs on Mars

The Thermal and Electrical Conductivity Probe (TECP) on the Mars Phoenix Lander was designed to measure petrophysical properties on and near the surface of Mars. Physical properties of the near-surface of Mars were recorded during a 5 month period from June to October 2008.

Phoenix was equipped with a miniature back-hoe (called the Robotic Arm or RA for short) to dig trenches and deliver soil samples to other experiments inside the space craft. The TECP probe was mounted on the pivot at the RA scoop so it could be pressed into the surface soil or the wall of a trench.



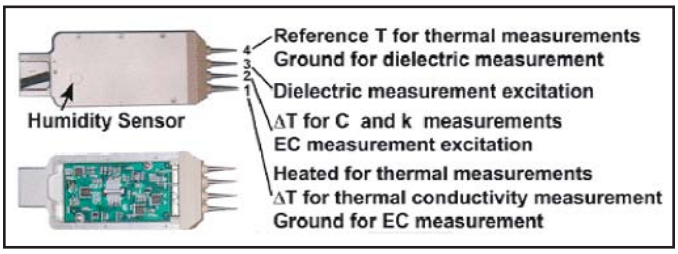
TECP is the 4-pin device above the Robotic Arm scoop near center of picture, the needles are 15 mm long

The TECP is adapted from the commercial KD-2 multi-purpose probe made by Decagon Devices. The four-pin probe determines electrical conductivity by a two-pin LC (dielectric constant) approach and a redundant four-pin van der Pauw technique. The 4 pin EC method is similar to the Schlumberger four electrode AMNB surface resistivity electrode arrangement from the early 1900's.

Commercial version of the TECP device

Thermal conductivity is measured by a pulse-decay method using a heater and a thermocouple pair embedded in the pins.

The primary purpose of the TECP was to measure the concentration and nature of water in Martian soils in solid, "non-



Photograph of the TECP instrument (top) and with the external cover removed to allow access to the electronics board (bottom). For each needle, the numerical designation and functionality are identified.

Continued on next page…

They Came from Outer Space *continued…*

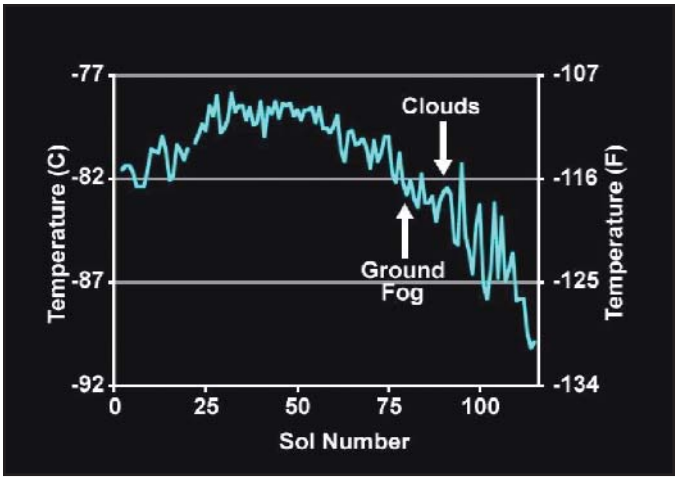
frozen," liquid, and vapor states. Other objectives were to determine changes in the reservoirs of water when soil is freshly exposed and to characterize the movement of water in and out of the soil by measuring atmospheric humidity, temperature, and wind speed above the surface. Sounds a lot like reservoir evaluation and monitoring.

There are hundreds of ASCII data files available with the results of the TECP measurements, recorded versus time and day of acquisition. None appear to have been plotted versus depth in the trenches that were dug by the robotic arm. However there are lots of images that are strikingly similar to resistivity microscanner images.

True colour photo image of a Mars Phoenix trench. White areas are believed to be water ice, as they appear to sublimate slowly after exposure to the Martian atmosphere. Samples were processed in the Thermal Evolved Gas Analyzer (TEGA).

Phoenix was purposely placed on the Martian Arctic Plain. It is cold there, but not impossibly so - a mere 70 C colder than the Canadian Arctic Islands, where we have found more than 17 Tcf of natural gas. So who is ready to drill on Mars?

The meteorological station on Phoenix was designed to monitor changes in water abundance, dust, temperature, and other variables in the Martian atmosphere. The Canadian Space Agency, York University, University of Alberta, Dalhousie University, Optech, and the Geological Survey of Canada designed and monitored the science operations of the station, which was built by Canadarm maker MacDonald Dettwiler and Associates Ltd. of Richmond, B.C.



A log of minimum daily temperature for 120 Martian days (Sols) recorded by the Canadian built Phoenix MET station.

Future Logs in Outer Space

After Phoenix comes MARTE, a stratigraphic drilling program for Mars. Mars Astrobiology Research and Technology Experiment (MARTE) performed a field test simulating a robotic drilling mission on Mars in September 2005. The exper-

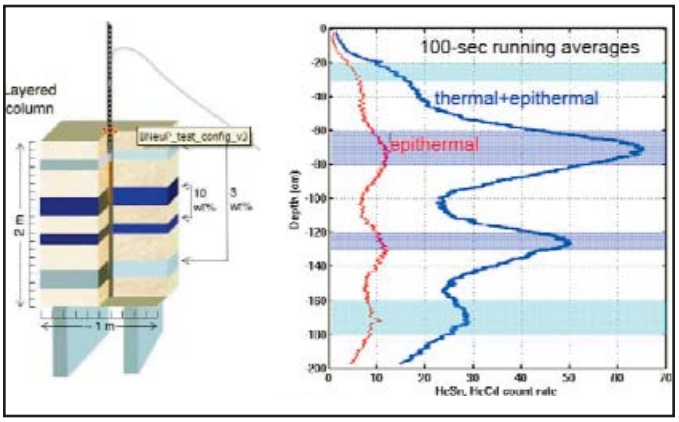
Prototype robotic drilling rig for Mars

iment took place in Minas de Riotinto in southwestern Spain, a highly relevant Mars analog site. The experiment utilized a 10 m class dry auger coring drill, a robotic core sample handling system, onboard science and life detection instruments, and a borehole inspection probe, all of which were mounted to a simulated lander platform.

The prototype robot drilling/coring/logging machine reached 10 meters. Plans for 100 meter capability are in the works. The objective is to advance the search for life on Mars, but where there is life, there is a possibility of hydrocarbons. There is methane in the Martian atmosphere and spectroscopy mapping indicates carbonate rocks, as well as the more obvious lava, dust, and other sediments. Interested parties can apply for drilling concessions.

MARTE can drill, core, and run neutron and fluorescence logs. Neutron logs see water and ice; fluorescence logs see bacteria. The Ames tool is so sensitive, it can see a single bacterium. The core samples can be analyzed on the drilling platform, then stacked for future examination. The remote sensing core analyzer can face or saw core samples, run spectrography, and prepare powder samples.

The borehole inspection system (BHIS) runs the neutron probe, a panoramic microscopic imager, and spectrometer. The borehole neutron log (BneuP) measures both thermal and epithermal neutron count rates. A surface version of the tool, to be carried on a Mars rover, is called (you guessed it) SneuP. It is intended as a dowsing machine, looking for hidden near surface water or ice deposits.



Sample of a BneuP log run in a manmade ice / soil test pit.

It's all real and working (almost). We just have to get it there and get to work.

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All image credits: NASA/JPL http://www.jpl.nasa.gov/

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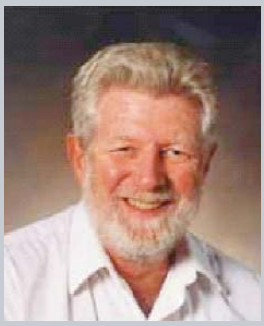
About the Author



E. R. (Ross) Crain, P.Eng. is a Consulting Petrophysicist and a Professional Engineer with over 45 years of worlswide experience in integrated petrophysical analysis

Ross is an Honourary Member and Past President of the Canadian Well Logging Society (CWLS), a Member of Society of Professional Well Log Analysts (SPWLA), and a Registered Professional Engineer with Alberta Professional Engineers, Geologists and Geophysicists (APEGGA).

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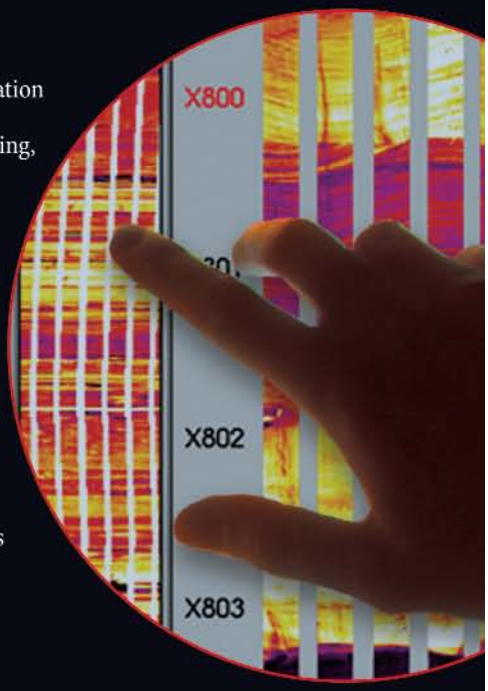

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Application of Pulsed Neutron Elemental Spectroscopy Measurements in Heavy Oil Reservoir Evaluation

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Baker Hughes, Calgary, Canada

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Baker Hughes, Houston, USA

Introduction

A new generation elemental spectroscopy tool – Formation Lithology Explorersm (FLeXsm), which utilizes a pulsed neutron source, permits the measurement of gamma rays emitted by both inelastic and capture interactions with neutrons in a formation. The combination of both inelastic and capture spectra allows the quantification of additional elements including Mg, Al and C that would not be available from capture data alone. The RockViewsm expert analysis software utilizes the results from the FLeX device and Spectralog II to determine formation lithology and mineralogy. In certain types of reservoirs the amount of elemental carbon measured exceeds the amount necessary for the mineralogy of the rock itself and is presented as 'excess carbon'. The measurement of carbon and determination of excess carbon along with mineralogy has applications for heavy oil reservoirs.

Theory and/or Methodology

Pulsed neutron tools have been used in the cased hole environment for estimating hydrocarbon content in the formation since Dresser Atlas a predecessor company of Baker Atlas introduced the technology to the industry in 1963. The theory of the measurement is well known and in common use in the industry, so only a brief discussion of the theory of the measurement will be given here.

The application of this technology in a wireline tool designed for use in open hole permits the use of a much larger detector. This improves the count rates of the gamma rays emitted from neutron interactions with the elements present in the formation. The energy levels of the gamma rays are characteristic of the elemental nuclei with which the neutrons interact. In the open hole environment where the sonde is placed immediately opposite the formation and shielding is applied to the tool minimizing borehole effects a direct spectroscopy measure of the elements in the formation can be made. Detailed information on the tool theory, design and processing can be found in the Pemper et al paper "A New Pulsed Neutron Sonde for Derivation of Formation Lithology and Mineralogy", SPE 102770, presented in San Antonio in 2006.

From the inelastic spectrum the new Formation Lithology Explorer (FLeX) is able to uniquely provide a formation weight percentage of formation elemental carbon (C). In addition the tool produces measures of Magnesium (Mg) and Aluminium (Al) that are much more robust than were previously available to the industry. These measures when combined with the elements that are quantifiable through the use of the capture spectra permit for a more robust estimation of the lithology and mineralogy of the formation.

The RockView interpretation methodology differs from previous methods in that it employs a sequential approach systematically building upon initial estimates. Using the elemental weight fractions as input, the interpretation system first defines a general lithology for each record then follows a more detailed classification of a specific lithology. Mineralogy is then systematically determined for each record by sequentially using the measured elemental weight fractions that are available. The process obeys the principles of mineral stoichiometry. Interpretations from the RockView software are based solely on the measured geochemistry and do not require input from other wireline logging devices. The system can be easily modified to account for unique basin or formation lithology and / or mineralogy. The resulting mineralogy from RockView can then be included with additional logging measurements for further petrophysical evaluation and reservoir characterization.

The elemental weight fraction of carbon is one output of the FLeX tool. Carbon may occur as part of the dry rock matrix or in the pores. The RockView processing determines the amount of the measured carbon that is required as a component of the dry rock mineral components of each record. Any remaining carbon fraction is classified as "excess" carbon. This ability to quantify the amount of carbon and excess carbon can be used in numerous ways depending upon the operator's particular production and formation issues. In the Heavy Oil environment the tool can provide uniquely a direct measure of the in-situ bitumen weight percentage of the formation.

Continued on next page…

Application of Pulsed Neutron Elemental Spectroscopy *continued...*

Oil Sand Applications of FLeX

The FLeX tool and RockView service have been run on a number of wells in the oil sand environment of north east Alberta, to investigate applications of the technology. FLeX logs were run along with more traditional wireline services and the well bores were additionally full bore cored. Wells included delineation wells from both SAGD and surface mining areas. What we have seen suggests at least two applications for the oil sands environment.

Bitumen Quantification

The bitumen weight of the oil sands can be largely defined by the amount of elemental carbon in place. In the relatively uncemented sands where little carbonate material exists virtually all the elemental carbon measured is tied up in the bitumen. The elemental weights of Carbon (12) and Hydrogen (1) coupled with their relative abundance in the heavy HC chains of bitumen result in bitumen having an average carbon weight of 83 to 87%. Remaining elemental weights are made up of hydrogen at 10%, sulphur from 1 to 5% with the remaining 1 to 2% being largely comprised of oxygen and nitrogen. Consequently, the formation carbon percentage weight determined from FLeX and the RockView interpretation product provides a direct indication of the bitumen weight fraction of the in-situ formation.

Figures TS-1 and TS-2 below show core photos along side the corresponding FLeX and RockView product. Where the carbon curve reads high you can see high bitumen content from the photos. Likewise where the carbon curve reads lower, lean zones are apparent in the photos.

The zone pictured in the core photos area highlighted in the red box on the wireline logs capture 4.8 meters of interval.

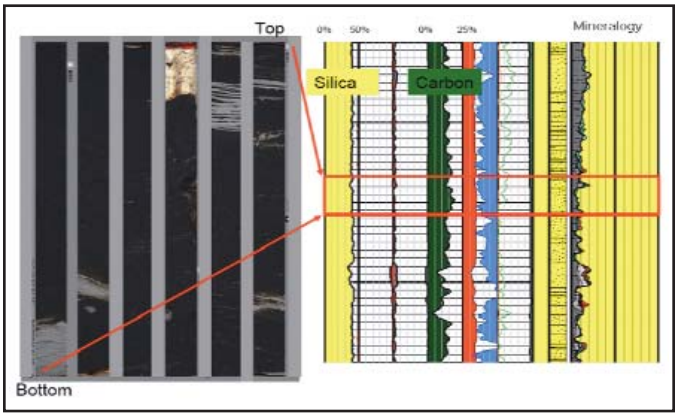

Figure TS-1. Bitumen Rich Zone Elemental Formation Weight Percentage

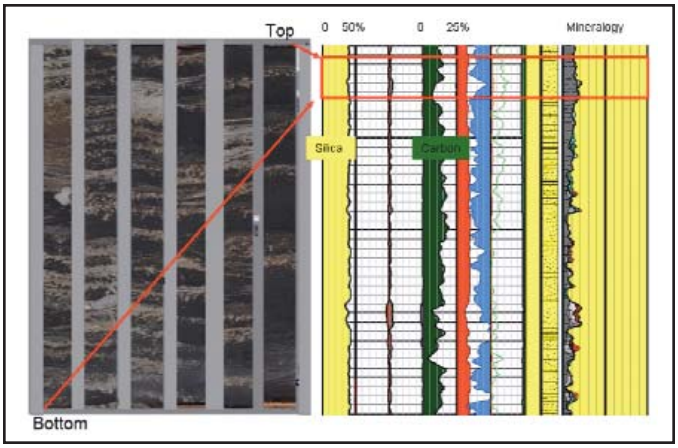

Figure TS-2. Bitumen Lean Zone Elemental Formation Weight Percentage

Conventional Log Analysis Methods Versus FLeX

The carbon weight fraction from the FLeX and RockView services provide a more direct and likely more accurate measure of the bitumen weight then is available from conventional wireline log analysis. The shallow burial of the bitumen deposits has resulted in highly variable formation water resistivity both with depth and in lateral extent. By measuring the elemental carbon directly, a more robust estimate of the bitumen content can be obtained independent of any variance in formation water resistivity.

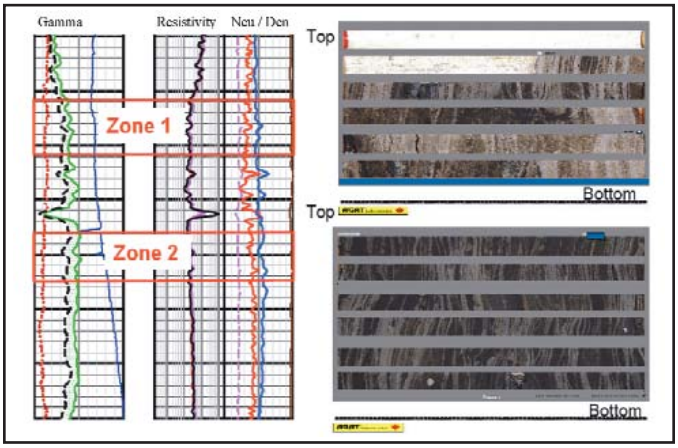

Figure TS-3a. Gamma Resistivity Neu / Den

Figure TS-3a shows core photos from two adjacent zones from the same well along with a conventional log display showing gamma ray, induction, neutron porosity, and formation density. Notice how similar the resistivity, density, and neutron porosity

curves appear in the two highlighted zones (indicated by the red boxes). One might be hard pressed to pick which zone belongs to which photo let alone do a volumetric analysis of the bitumen in place from the well logs that would match the dramatic difference in content evident in the core photos.

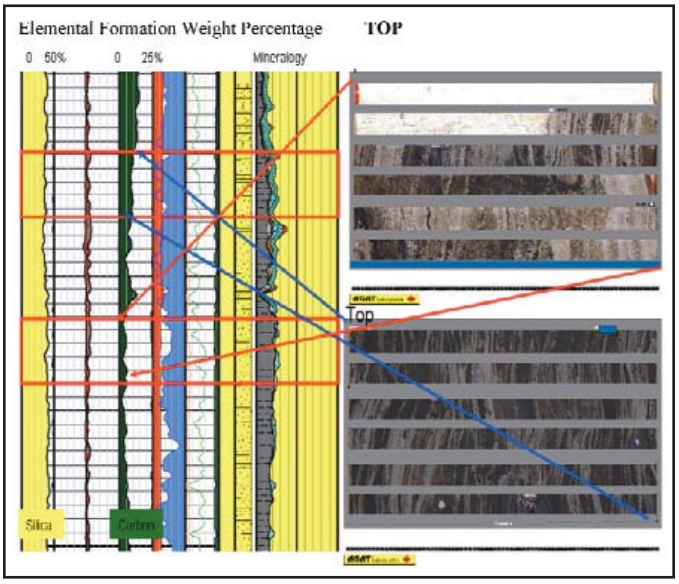

Figure TS-3b. Elemental Formation Weight Percentage TOP

When the RockView product is compared to the same photos in Figure TS-3b below, one can clearly identify the correlation of the two zones with the upper core box being associated with the lower zone and vice versa. Additionally, one would have more confidence in the relative bitumen weight percentages than could be obtained using conventional well log interpretation using Archie's formula.

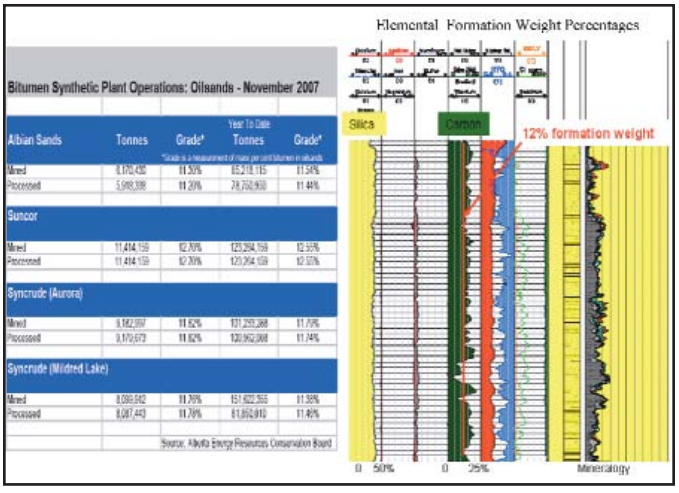

Figure TS-4. Elemental Formation Weight Percentages

The Carbon weight percentages of the RockView product applied to wells in strip mine locations agree favourably with published bitumen weight assays from the current mining projects underway in the area as published by the Alberta Energy Resources Conservation Board.

In Figure TS-4 we compare the bitumen grades being recorded at the current operating mines against the Carbon weight fraction from the RockView product in one of the higher- grade zones in the wells logged.

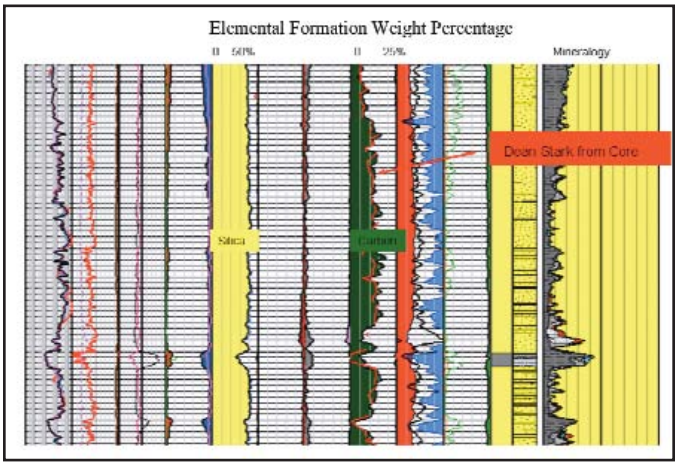

Figure TS-5 Bitumen Weight percent from Dean Stark (red curve) overlain Excess Carbon from the RockView Service (green infill)

In figure TS-5 we have a comparison of the excess carbon curve, calculated with the RockView product provided to the customer with in days of logging, against Dean Stark bitumen weight percentage from core.

Elemental Formation Weight Percentage

Considering the difference in the volumes measured with these two methods, a few ml with this Dean Stark core analysis compared to a few tens of litres with the FLeX tool, the agreement here is quite good. In fact, the in-situ carbon measurement from the wireline tool, averaged over a much larger volume can provide a more robust answer than Dean Stark in zones with variable mud / shale inclusions dependent upon their lateral extent from the well bore.

Continued on next page…

Application of Pulsed Neutron Elemental Spectroscopy *continued…*

In Figure TS-6 below is an example of where the RockView product provides a robust answer for Bitumen weight percentage where no core is recovered. Operators looking to reduce their future coring costs in areas where the mineralogy is well known may wish to consider the replacement of core with this wireline generated product

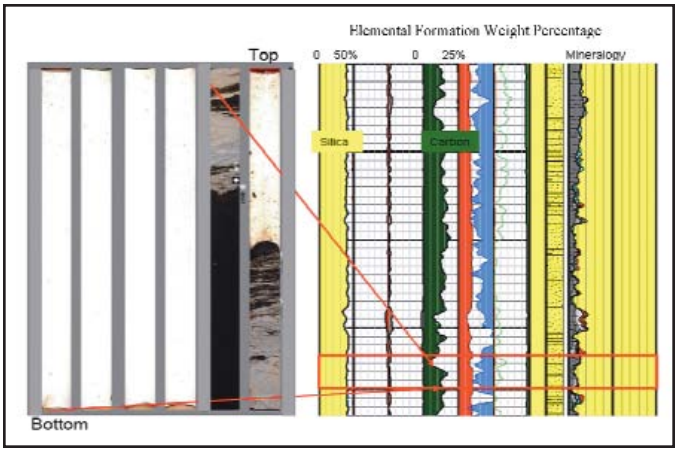

Figure TS-6 Lower Part of zone containing High Carbon content missing from core Elemental Formation Weight Percentage

Other Possible Applications

Apart from the silica and carbon measurements the tool also captures elemental measures for sulphur and titanium. Some logs recorded to date have revealed a general increase of these elements with depth in the zone. These elements are known to increase with viscosity of the bitumen as part of the biodegradation process. It may well be that some ratio of these elements to the carbon curve may be able to be indexed to viscosity. Bitumen viscosity measured from the core on these wells are undergoing laboratory measurement currently and may be part of a future paper on viscosity including NMR measurements made in the same well bores.

Conclusions

The introduction of a pulsed neutron spectroscopy measurement designed for the open hole environment allows a more comprehensive measurement of common formation elements including a direct measure of carbon. This additional information can be input into a new expert system interpretation software that provides a better definition of the lithology and mineralogy than has been previously available to the industry from wireline measurements.

This measurement of carbon and calculation of excess carbon weight fractions permit a more robust determination of bitumen in place than was previously available from well logs alone.

Acknowledgements

The authors wish to thank the operating companies who have permitted us to present data from their wells and Baker Hughes management for permission to publish this paper. In addition we appreciate the contribution of Richard Pemper and the other members of the FLeX development team at Baker Hughes and Jason Chen of Baker Hughes INTEQ for his input on heavy oil reservoirs.

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TOPIC: **Tight and Unconventional Gas Reservoir Evaluation and Optimization**

SPEAKER: Dr. Brant Bennion, Weatherford Laboratories

ABSTRACT:

Unconventional gas reservoirs fall into three broad categories:

1. Gas Shales (e.g. - Muskwa, Barnett, etc.)
2. “Tight” gas with sub-normally low initial water saturations (e.g. – Montney, Jean Marie)
3. “Tight” gas with normal capillary equilibrium saturations (e.g. – Milk River, Med Hat, 2WSS)

The challenges in these reservoirs commonly include:

1. Determining the exact type of reservoir, initial gas in place and determine the potential ability to produce the gas.
2. Optimizing the completion and production strategy to most effectively and economically produce the maximum amount of the resource in place.

This presentation reviews methods and techniques to understand and delineate the type and quality of these various different types of unconventional gas reservoirs, including the crucial parameter of proper evaluation of the initial water and gas saturations that are present, and reviews methods and current technology to best effectively exploit and economically produce the reserve.

SPEAKER BIOGRAPHY:

Dr. Brant Bennion, P.Eng., has over 30 years of experience in the areas of multiphase flow in porous media, formation damage, phase behaviour, drilling, completions and enhanced oil recovery operations. Brant has been a distinguished lecturer for both the SPE and the Petroleum Society on the topic of formation damage. He lectures as an adjunct Professor at the University of Calgary, is the author/co-author of almost 250 technical papers and has presented talks in over 40 countries in recent years. He has been employed by Weatherford Laboratories (formerly Hycal Energy Research) in various capacities since 1979 and is currently the Director of the Flow in Porous Media Group. He is a registered Professional Engineer with APEGGA and holds BSc. and Ph.D degrees in Chemical and Petroleum engineering from the University of Calgary.

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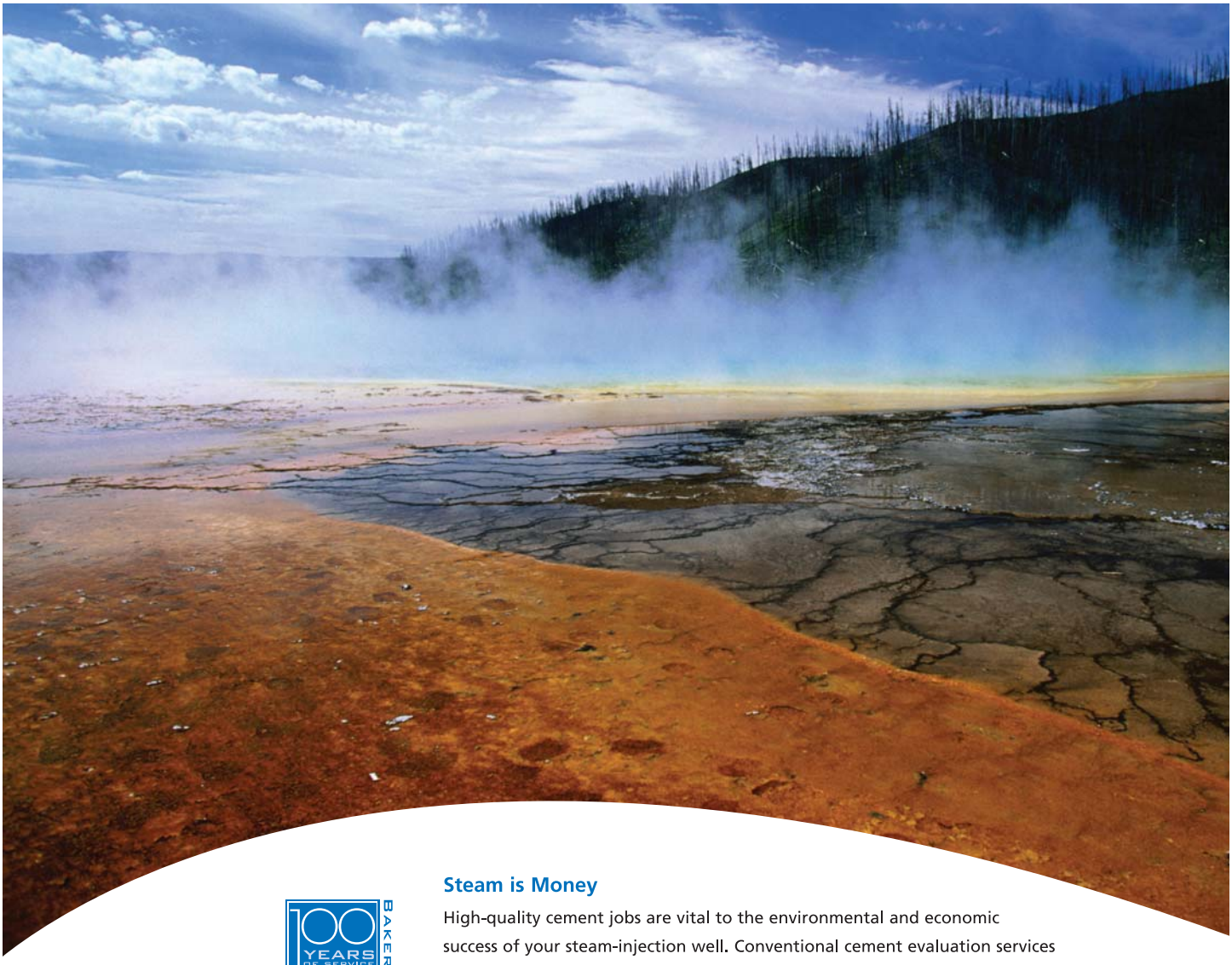

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"No Such Thing as Objective Truth"

By Kathy Chernipeski, P. Geol. July 9, 2009

David Finch, a noted local historian and outdoor enthusiast, graciously shares his informed and unique perspective on the current state of our industry in context of the history of the oil patch. Part 1 of the interview was printed in Insite Nov 2009 Issue 2 Volume 1.

Part 2

David Finch has been called the "Most Influential Author in the OilPatch" and was honoured last year with a lifetime achievement award for his book "Pumped: Everyone's Guide to the Oilpatch." Probably one of the reasons this book was so popular was because it answers the questions about where oil comes from, and he has written it in such a way that would make sense to his sixteen year old daughter, or to his mother. In his words, "Why does the price at the pump go up and down? And why does it feel like I have no control over all these factors? When of course you do! Where you buy your house affects whether or not you're going to need one car or two cars or where you can ride the bus some days...that's the point of that book, we have a lot more control over this part of our life than we think we do, but we have to think it through." He had a real opportunity to influence and encourage change in the way we think about things like consumption, a topic he is quite passionate about.

Another book that he published is called "Hell's Half Acre: Early Days in the Great Alberta Oil Patch," a project that he refers to as his "emotional favourite" and is one of the things he is most proud of. The book is about the social history of the development of the Turner Valley. "The history of the oil patch is extraordinarily complicated. But one of the ways to get into it and understand it better is to see it through people's eyes, through the experience of individuals." He seeks to understand not only what individuals accomplished, but why and how they accomplished them, again, the story behind the historical event. He records the "kinds of stories [that] help us see how the industry has changed society as a whole, and "had the privilege of interviewing dozens and dozens of those oldtimers [in the Turner Valley] and putting their stories into a book."

These stories illustrate a wide range of social implications because of the discovery of natural gas and oil in the Turner Valley. "From people who were digging in pipelines by hand, to whenever they smelt sour gas they thought that if they just turn their nose away it wouldn't bother them, those kinds of things, to working in the gas plant to dealing with explosions and out of control wells and working on wood cable tool rigs...it helps you see things like, until about the 1920's in southern Alberta, most everybody burned wood in their homes for heat and for fuel in their stove. But then natural gas came along, and it made a big difference." Besides no longer needing to chop wood for one month in order to heat the house for the rest of the year, "if you burned wood or coal in home, your whole house, walls were all covered in soot, black, so you would literally move everything out of the house, scrub everything down, maybe even whitewash it and then move everything back in. That's what spring cleaning meant. They didn't have to do that after natural gas came along...that's a really significant commitment of time and energy. And so being able to turn on the natural gas to heat the house is a real treat. But at the same time those people then had to live with the consequences of that because in the early days, the sour gas in Turner Valley wasn't treated, and they actually had sour gas coming into their homes...some of them died from explosions" or were overcome by the H2S. "And then once the gas was cleaned up they had to pay for it, because before that they were flaring most of the gas...it was a dance, life improved on one level," but then they had to deal with the downsides.

There were upsides, too. "Sour gas here in the West was highly pressured and then the Canadian oil men became very innovative with scrubbing the gas and dealing with the high pressures, so they became good at that, and then they were able to export that skill elsewhere." And even if one stayed close to home, "you might be a ranch kid, but if you were mechanically inclined, then you could go get a job in a refinery or a gas plant or something" like that. People's lives were changed by petroleum.

Continued on next page…

"No Such Thing as Objective Truth" *continued…*

One lesson we can learn from history is that "progress is never linear, something always comes along to nudge us off the path we expect the future to take." To illustrate, "there were oil field discoveries in Turner Valley in 1914 and it looked like it was going to be a big boom, but then the war came along, so that totally side-tracked it." Another discovery in 1924 began a boom that lasted through 1927, 28, and 29, that was also terminated by the downturn of the 1930s. "And then in the middle of the 1930s, there was another discovery of oil" while "all the rest of the economy was still in the doldrums...In 1936 down at the south end of the oil field down by Longview, they found another major source of oil and then it took off. So just because something happens and it seems like a new discovery, therefore it looks like it's going to be a boom, it's not necessarily the way it is."

When previously asked about his prediction if a particular boom was going to last, Mr. Finch replied "I don't know what's going to happen to this boom, or when, but I can give you twelve different examples of how it could go wrong."

Another lesson "to remember is the government and industry always have a very different perspective on the issue of the day, be it royalty, be it regulation, be it safety...And government and industry do have different roles to play in society and they should...When we hear industry saying one thing, and government saying another thing, we have to put on our special hearing aides or glasses" and acknowledge both points of view, but filter what they are saying through this perspective, and "don't take everything from one or everything from the other."

"The role of government is to look out for the best interest of the people...Business leaders and politicians are in a tricky business, because they are trying to influence huge international forces, and though they sometimes act like they have a fair bit of control, a lot of the time they don't." They certainly can provide direction, though unfortunately, "they don't always lead, they sometimes just follow public opinion," or the fad of the day, such as the environment. Certainly, "when there's a lot of money to be made, there's always a lot of players."

The third lesson to be learned from history is that "there's always room for collaboration and cross training and information exchange and innovative research, and the more that government can encourage industry to do that, and the more the industry can share that knowledge and so on, with other members of industry and with the public at large, the better." The importance of sharing learnings and technology can be illustrated by something Mr. Finch has discovered recently while working on the history of Transalta Utilities. He shares; "one of the things I found out in their history is that back in 1982, they did a carbon capture program on one of their coal fired plants, because Dome Petroleum wanted to see if they could take CO2 and inject it into an oil field for tertiary recovery...So almost nothing is completely new. Somebody might have already tried it before. In that case, it didn't work because of the economics, and because of the scrubbing technology, but it's been updated and refined now. And that same ammonia process might work now...There's always room for (innovation)... especially when there's sort of a neutral place, like a society, where it can be exchanged."

A fourth thing we can learn from history is that "Short-term thinking gets industry, government and the public into trouble during every crisis. Taking the long view in the midst of high, or low, oil prices is nearly impossible, but very important." Taking it further, and more personally, "life goes on... these other forces are as old as history and they will keep doing what they do, and our relationships with the people that we love and the things that are important to us should be as important as these other things."

Simple technological solutions to some of society's problems intrigue Mr. Finch the most, solutions such as "lateral thinking, revisiting ideas, finding new ways to solve old problems....In the past whenever we've needed more fuel we just found some more, just exploited it, and that's fine when there's lots and it's cheap." But as he wrote about in his book "Pumped', when he traded in his minivan for a "much smaller car...[he] found a whole lot more gasoline not overseas or underground, [he] found it in [his] gas tank, because the small car goes twice as far on a tank of gas as the big one. So there's a kind of discovery. That's more of a discovery in the mind rather than a technological one." And alternate sources of energy are good, "but then you still have to transport that energy, and you have to have all that infrastructure. When it comes to solar, my favourite type of solar power is the stuff that comes through windows in the house. If you put triple-glazed windows in your house, so that you don't lose heat, then you're not heating a cold house." It's a "source of solar energy that you don't have to pay for, you don't have to store, and you don't have to transport. So those are the kinds of innovations that to me are exciting." And their impact is huge. "If we want to talk about conserving energy, the stuff we don't consume is a really good place to save energy as well."

As a society however, we are pretty lazy. The best way to change the way our society thinks about consumption may be to "just put the price up. So if we have to end up paying three times as

much for electricity, because of say carbon capture, or carbon trading" we may buy the more energy-efficient light bulb. "When it hits us in the pocket book, when it comes right down to it, we're all very pragmatic. And if it doesn't hurt, then we don't care...We're going to be better consumers for economic reasons as well as for ideological ones." So, "I'm a great believer in the pricing mechanism...if the consumer really has to pay, then it will change." In North America we may not be able to depend much on public policy, which usually follows social desire and not the other way around.

Since WW2, we have "been very good at consuming and growing the economy, and raising the standard of living...but at some point we need to balance that 'go go go' with 'are we really having fun? Is this quality of life as well as quantity? Is it healthy, sustainable, is it something that we really enjoy?'" Canadians on a whole do pretty good at balancing, but we could always do better. There is a kind of prudence in enjoying life and spending time with the people you love and investing in experiences like that "because we are not guaranteed that's there's going to be another day."

It is quite motivational seeing those who are truly engaged, the ones who work in the industry, government, or academia, not for the motivations of money or greed, but for the pure love of learning. Mr. Finch has discovered that "innovation and creativity and initiative and brilliance come from the soul." Younger generations are sometimes taught negative motivations, but we should rather strive to "inculcate in somebody the love of learning...People really blossom when you take a real genuine interest in them, and encourage them, whether or not it's a young person."

Unhappily, "greed, corruption, arrogance and unwillingness to care for society as a whole are also prevalent" in every part of our society. "Any ways our society can reward goodness should be supported." Though a "believer in the importance of initiative and people doing things on their own," Mr. Finch also has a great respect for the government, and for the creation of the Energy Resources Conservation Board, and organizations like that, "because sometimes left to their own devices, people can be very wasteful...Security of supply is pretty much guaranteed in Canada. But will we have markets for our products that do not leave us with environmental consequences that are too much for us to bear?" It is all of our responsibility "to use less fuel, consume it more wisely, and pay better attention to the world's limited resources."

"The Canadian petroleum industry has right across the board been very innovative because we've had some real challenges, with the north, with harsh environment, with things like sour gas, high pressures, and heavy oil, and the oil sands. So if there's a lot of challenges that face you and you are successful in overcoming them then perhaps you'll have something to sell to the other parts of the world instead of just your raw resources."

"One of the challenges for all of us as individuals is to be open to other people and their ideas and to learn from other people." We could learn something entirely new that we have never thought of before, and maybe they could learn from us as well. "Some people say 'always have a friend in your life that's younger than ten and older than eighty just so you have a different perspective on life'" It will keep us from becoming too myopic in our focus. "Being open to others is a gift we can give to industry and society."

Membership – We have come a long way…

I know how the membership database used to be done, for our society, prior to 2005 and the creation of our website. It used to be an excel spreadsheet and manually updated by the Membership Chairperson. With the creation of www.cwls.org our membership database can be updated by our membership and historical membership is saved.

As an active member, your member privileges allow you to log into out WebPages. By clicking on the "sign in" button, in the top right hand corner of the webpage, you are automatically taken to the "Member login" page. Your username is the email address you provided and a password is provided to you, that you can change after you login in. There is also a password-reset option for those that only use the webpage once and awhile.

Once you have logged in, you can see your CWLS welcome page (Figure 1).

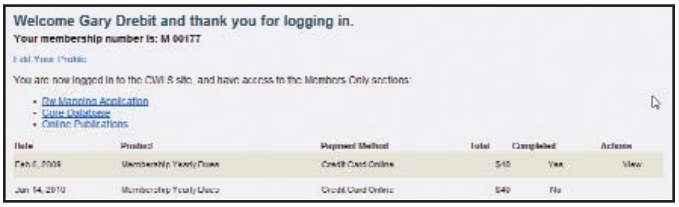

Figure 1.

Figure 1. Is an example of what mine looks like. You can see your membership number. When we started to assign membership numbers in 2005 and started with 100 and reserved 0 to 100 for special honorary occasions. There is a link to "Edit Your Profile" in which you can change your address, your username (which is your email address), your password and more. Also, links to the "RW Mapping Application, Core Database and Online Publications".

Once you have clicked "Edit Your Profile", a popup box appears such as Figure 2. Here you can make adjustments to your profile including your password. You can also decide if you would like the Insite Magazine sent to your company or home address. Once you're satisfied with updating your profile, select the "submit" button. This method allows our membership to change their profile data as required. We have decided to use your email address as the username so please remember, even if you are no long with your last company its just a username and will continue to work until you change it.

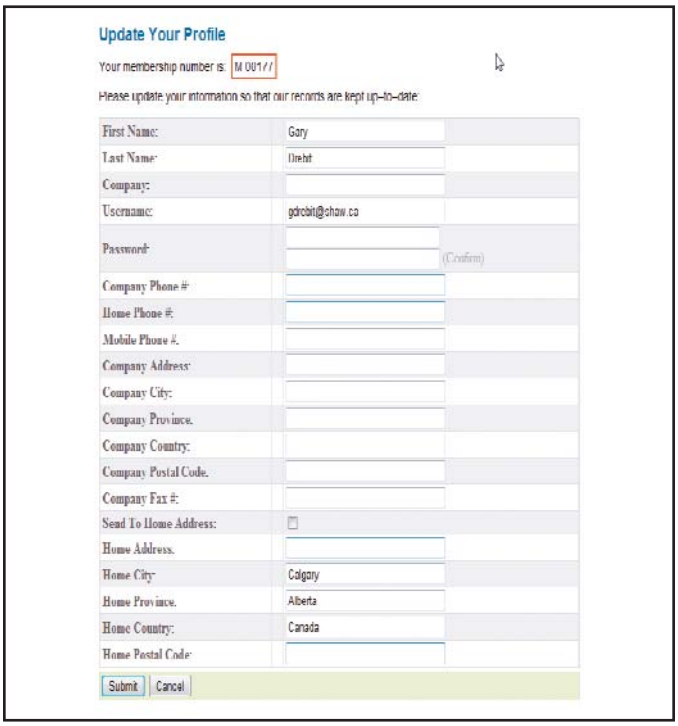

Figure 2.

So, what does the Membership chair do? Well, the year starts off with soliciting companies that we draw our membership from. Sponsorship allows us to keep our membership dues to the lowest of any Society in Calgary and supports your commitment to choosing our society. Our corporate support is acknowledged in the following ways:

1. On the CWLS letterhead with monthly mail outs
2. On the CWLS Website
3. In the Insite Magazine
4. At the monthly technical luncheons on our PowerPoint presentation prior to the meeting.

Membership in our society consist of:

A. Members
B. Honorary Members
C. Senior Members
D. Student Members
E. Corporate Members

A. Members

Membership may be granted to any person actively engaged in the study, development or use of formation evaluation techniques or to any person who has a genuine interest in increasing his knowledge of formation evaluation.

B. Honorary Members

The Society may confer Honorary Membership upon any Member who, in the unanimous opinion of the Honors and Awards Committee and the Board of Directors, is considered worthy of such honor by reason of exceptional service to the Society or outstanding work in the discipline of formation evaluation. Honorary members shall be elected for life.

C. Senior Members

Senior member status may be granted by the Board of Directors at the request of any Member who:

(a) has attained the age of 60, and

(b) Has been a member of the Society for 10 consecutive years.

D. Student Members

Student membership may be granted to any student who is enrolled at a college or university and has an interest in furthering his knowledge of formation evaluation.

Our bylaws state that membership is based from March 1st to Feb 28th annually and not the calendar date you purchased it. Our database reflects this, if you do not renew your membership prior to March 1st, your active flag is removed from the database, which prevents you from logging on to the webpage. If you fail to renew, you must reapply for membership, which is an additional $10.00 charge. This link has an explanation of this http://www.cwls.org/memberships.php.

I hope that helps explain some of the Membership Chairs role and give you some direction on how to update your profile. It has been a privilege serving you these last two years as your Membership Chair.

Gary E Drebit
2009 CWLS Membership Chair

UPCOMING EVENTS

October 25-26, 2010

Quebec Oil & Gas Association Annual Conference

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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 advertizing in the InSite, please contact:

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Discounts on business card advertisement for members.

Do the Right Thing

A recent survey suggests that only 65 per cent of practicing geologists and 53 per cent of practicing geophysicists in Alberta are licensed with APEGGA. While there are a variety of reasons given for non-compliance, the bottom line is this: if you are independently practicing geology, geophysics or engineering in Alberta you need to be licensed.

Geologists, geophysicists and engineers who intend to practice geology, geophysics or engineering in Alberta are required by law to be registered with APEGGA. The Province of Alberta has long decreed that only Members of APEGGA can apply the practice of geology, geophysics or engineering within the province. Alberta requires that APEGGA ensure that only its Members are able to practice. In the province's view, APEGGA does not exist to serve its Members, but rather exists to protect the public interest.

So, if you are a practicing geologist, geophysicist or engineer in Alberta, you should become a Member of APEGGA.

Do the right thing. Visit www.apegga.org for more information or call Mark Tokarik, P.Eng., Director, Registration, Bill Santo, P.Eng., Assistant Director, Registration or Park Powell, P.Eng., Assistant Director, Registration at 426-3990 or 1-800-661-7020.

This ad is the first in a series

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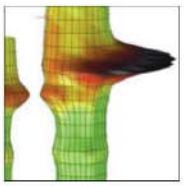

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