



## SPWLA: A Proud History, an Exciting Present and a Promising Future

Daniel T. Georgi, President SPWLA 2003-2004, Baker Atlas / INTEQ, Houston, TX

Copyright 2003, SBGF - Sociedade Brasileira de Geofísica

This paper was prepared for presentation at the 8<sup>th</sup> International Congress of The Brazilian Geophysical Society held in Rio de Janeiro, Brazil, 14-18 September 2003.

Contents of this paper were reviewed by The Technical Committee of The 8<sup>th</sup> International Congress of The Brazilian Geophysical Society and do not necessarily represent any position of the SBGF, its officers or members. Electronic reproduction or storage of any part of this paper for commercial purposes without the written consent of The Brazilian Geophysical Society is prohibited.

### Abstract

The SPWLA just changed the name of our Society to reflect the changes in our job and industry. The membership overwhelmingly approved changing the name from the Society of Professional Well Log Analysts to the Society of Petrophysicists and Well Log Analysts. We changed the meaning of the letter "P" from Professional to Petrophysicist not because we are less professional but because our jobs involve more than just the evaluation of well logs. As the use of MWD and LWD measurements increased, we simply ignored the means of sensor conveyance. However, by changing the meaning of "P" from Professional to Petrophysicists, we recognize that we are involved with many sources of data including cores and logs, and that we use more than charts, nomographs and computers to do our jobs. We use and develop petrophysical models that allow us to more completely evaluate formations and reservoirs.

The SPWLA is a nonprofit corporation dedicated to the advancement of the science of petrophysics and formation evaluation, through well logging and other formation evaluation techniques and to the application of these techniques to the exploitation of gas, oil and other minerals. Founded in 1959, SPWLA provides information services to scientists in the petroleum and mineral industries. The Society serves as a voice of shared interests for our profession, plays a major role in petrophysical education, and strives to increase the general awareness in the Oil and Gas Industry and the scientific community of the contributions of petrophysics.

In this short article, I will summarize the rich history of the SPWLA, review some of the present activities, and look towards what should be a very promising future.

### Introduction

The purpose of SPWLA, summarized in the Society's Articles of Incorporation, are "to advance the science of formation evaluation through well logging and other formation evaluation techniques, to develop the proper application of these techniques, and to educate members and others in formation evaluation methods." Founded in 1959, to be precise incorporated as a non-profit organization in the state of Oklahoma, the SPWLA provides information services to scientists in the

petroleum and mineral industries, speaks on behalf of professional log analysts and petrophysicists, strives to strengthen petrophysical education and to increase awareness of the value of formation evaluation and petrophysics throughout the industry.

### History

In the late 1930's, a subcommittee of the Houston Geological Society collected "type" (typical) logs and case histories in what was probably the first log study group in the U.S.. In the 1940's, a group of major oil company log analysts met to exchange log research information. In the early and mid 1950s, in the major petroleum centers of the U.S., groups were forming to discuss the new science of well logging and formation evaluation. Some meetings were more successful than others. As Tony Messineo relates in his informative article on the early history of the society after a not so successful meeting on a drive back to Tulsa "Bob Hamilton and Wilbur Haynes (Pan American Oil Co.) decided that the time was right for the formation of a log analysis society. Tulsa was the ideal location to start such a society, since it had the largest concentration of oil companies with logging staffs in the country. Tulsa could also draw support from Bartlesville, Oklahoma City, and Ponca City. Moreover, a strong local group already existed (the Tulsa Well Log Society, organized earlier by Bob Hamilton and G. T. N. Roberts). Nine major oil companies had logging staffs in the area (these companies were former members of the defunct Cooperative Logging Study Group). Tulsa was also the headquarters of the American Association of Petroleum Geologists (A.A.P.G.) and the Society of Exploration Geophysicists. The time was ripe, the location was perfect, and the need was evident." (Tony Messineo, "The Early History of the Society of Professional Well Log Analysts," [www.spwla.org](http://www.spwla.org)). Two years earlier, in January 1957, the Canadian Society for Well Log Interpretation (CWLS) was incorporated. It is the oldest society dedicated to the science of well log analysis and petrophysics. Ever since then, the two societies have cooperated with one another and have held an occasional joint annual symposium.

March 26, 1959 in Tulsa the SPWLA charter was approved by the 19 charter members. Thereafter additional chapters were formed in many locations, including: Houston Chapter in June 1961, Dallas Chapter in May 1962, Permian Basin Chapter in May 1962, ... , the Japan chapter in April, 1994, the Argentine Chapter in September, 2000, the Brazilian Chapter in May 2002, and chapters in Saudi Arabia and United Arab Emirates in March, 2003. Over the years a total of 64 chapters have been formed, but not all of them have remained active. Today there are 30 active chapters, including 2 chapters-at-large with well over 2500 members in 60 countries. The Society is truly international with chapters in

Argentina, Australia, Brazil, China, Egypt, France, Japan, Malaysia, Netherlands, Saudi Arabia, Venezuela, United Arab Emirates, United States and other countries. Approximately, 50% of our members live in the United States; the rest are located around the globe.

### Benefits of Membership

The SPWLA has several types of membership. Standard or Regular Membership is the most common and is available to anyone actively involved in formation evaluation with a minimum of nine years of experience (Including time in school). There is also a Junior Membership for less experienced individuals (less than four years). In addition, the Society recently introduced a free, web-based student membership. There is also an Associate Membership for persons with an interest in formation evaluation who do not meet the experience requirements for Regular or Junior Membership. In addition, the Society's Board of Directors may grant extraordinary Senior and Honorary Memberships in recognition of long tenure or outstanding contributions to the cause or science of log analysis and petrophysics.

It is also possible for professionals in the industry to be indirectly involved and benefit from the SPWLA functions as "Local" chapter member. The Society certainly wants to encourage local chapters to be open to newcomers, but we also want to encourage those who are not members of the SPWLA to make application and join.

Benefits of membership in the international SPWLA include our bi-monthly journal, *Petrophysics*, reduced fees at Symposia and Topical Conferences, and savings on certain publication fees. Most recently and more so in the future, we expect that members will receive additional services directly from the society's web site: [www.spwla.org](http://www.spwla.org). In addition, members have a voice in how the Society is run by voting in the election of officers and directors. Of course, all members are eligible and are encouraged to serve on committees and to run for positions on the Board of Directors. Overall, membership in the SPWLA is an excellent value.

The SPWLA promotes education in a number of ways including the Annual Symposium and the associated workshops and short courses. The Society and local chapters also host annual Topical Conferences, Regional Conferences and local chapter meetings, which all promote the general distribution of specialized knowledge associated with formation evaluation and petrophysics. In addition, there are a number of publications, including *Petrophysics*, Symposium Transactions, topical Reprint Volumes, which promote knowledge sharing, and, thanks to the efforts of the Denver Well Logging Society, most of the Society's previous publications have now been captured on CDs and are available for purchase.

Our members and the industry benefit from the SPWLA's presence on the World Wide Web. The web site can be accessed at [www.spwla.org](http://www.spwla.org). The homepage includes many links to other sites of interest to log analysts and petrophysicists, local chapter information, information on Society publications, a member directory (available to

members only), curve mnemonics, a logging glossary, a massive bibliography, and information on upcoming SPWLA events.

There are many opportunities for involvement. Industry professionals may want to make a presentation at a Topical Conference or local chapter meeting. Or you may want to present a paper or a poster at an Annual Symposium; or you may write a paper for *Petrophysics*. There are also opportunities for service in a local chapter or committee, or on a committee at the international level. Finally, there are opportunities for members who want to run for the Board of Directors.

Over the years, the Society has held the Annual Symposium at many different locations, including Calgary, Dallas, Houston, Lafayette, Mexico City, New Orleans and Paris. Most recently the symposia have been held in Oslo, Norway (1999), Dallas (2000), Houston (2001), Oiso, Japan (2002), and Galveston (2003); Currently, the Dutch Petrophysical Society is preparing for the next annual meeting to be held June 6-9, 2004, in Noordwijk, Netherlands. In addition, the Society sponsors one or more Topical Conferences per year. Recent Topical Conferences focussed on subjects as diverse as Permeability, Borehole Imaging, NMR, Anisotropy, Data Quality, and Hidden Hydrocarbons.

Recent and upcoming regional events include the European Logging Symposium previously held in Paris, London, and Moscow, as well as meetings in Beijing, China and the Well Logging Symposia held annually in Japan. The chapters at large also hold annual meetings: Society of Core Analysis (SCA) and Minerals and Geotechnical Logging Society (MGLS).

### Looking to the Future - The Technical Challenge

There are many pieces to the exploration, development, and hydrocarbon production puzzle. Certainly petrophysics is an important part of that puzzle, but we must strive to become the unifying discipline that brings the other areas of specialization together into a cohesive unit. Whether we contribute through the reconciliation of seismic attributes with borehole data or the reconciliation of surface and downhole seismic data, formation evaluation while drilling, wireline log analysis, completion planning and services, reservoir monitoring or production logging, our skills are critical throughout the life cycle of petroleum field. The data and knowledge we so often supply is critical to modern asset teams. It is only natural that we endeavor to become the project coordinators.

Our specialty and our society were born in the 2nd half of the 20th Century. Many changes have taken place in the last 50 years. 2D seismic sections have been supplanted by 3D seismic volumes; vertical and directional drilling has been supplemented with horizontal drilling and geosteering. Formation evaluation technology has expanded from surface (mud) and wireline logging to include Measurements While Drilling and Logging While Drilling (MWD/LWD). It seems that the newest advances in wireline are now almost simultaneously available as

MWD/LWD measurements. Borehole imaging has evolved to where we can now obtain resistivity images in both water-based and oil-based mud. NMR measurements are now part of many acquisition logging suites. Both acoustic and resistivity anisotropy measurements are now possible. Today we are seeing the first runs of formation pressure test tools while drilling.

The interpretation of the data has not lagged behind either. Petrophysicists and log analysts have adapted and built interpretation models that include the new measurements (e.g., NMR-derived Clay Bound Water and Bound Volume Irreducible Water; vertical as well as conventional horizontal resistivity; forward modeling and inversion; formation fluid sampling and downhole fluid analysis). Recently, a new term, Tensor Petrophysics, was coined to reflect the interpretation of directional resistivity data (e.g.,  $R_{\text{vertical}}$ ,  $R_{\text{horizontal}}$ ).

The advance of technology will continue in the 21st century. It is imperative that we stay abreast of new technology and continue to broaden our skill base. This will allow us to work with members of other disciplines, making the best use of all available data to produce accurate formation models. We cannot just work with the well data collected while drilling or in post-drilling wireline operations. We must use all the data, including basin wide geology, reservoir specific geologic data, core analysis results and well test and production data. The breadth of the data that we must include in our drive to understand the subsurface and the reservoir in particular was why the Society changed the meaning of the initial "P" from professional to petrophysicist. As we interact with others to do our job and broaden our skills base, we will build cohesive teams from individuals of diverse specialties.

The improvements in hardware and interpretation technology will be driven by our current shortcomings. We must critically evaluate our needs and failures; only then will it be evident what new measurements and interpretations are needed. For example, we can extract seismic attributes from volumes of seismic data. However, only by relating those attributes to core and log data can we hope to ever establish a relationship between seismic attributes and depositional facies. We have struggled for years to determine permeability from log data, but we still have not found a robust method that does not require extensive local calibration. For years we have referred to mobility obtained from formation test tools simply as permeability. But this is incorrect; we need to make an independent measurement of viscosity to convert mobility to permeability. Furthermore, in addition to permeability, we also need relative permeability data for our reservoir models. Perhaps, the current research on time dependence of resistivity measurements and the detailed forward modeling of the invasion processes will provide additional insight into such reservoir properties.

## Conclusion

When I think of the Society, I realize that the SPWLA has served me throughout my career in different ways. Initially, it provided me with the basic knowledge I needed

to perform my job. Later it became a source of knowledge for new technology that I was able to use to do my job. When I started in the industry, I formed friendships with many of my work associates. Now, after many years in the industry, I find that many of my friends and acquaintances were gained through SPWLA functions; today the Society is much more to me than just a source of knowledge; today the SPWLA is an integral part of my life.

In conclusion, I urge you to join SPWLA. If you are already a member, we thank you but urge you to become involved to further the disciplines of petrophysics and log analysis and to keep the SPWLA healthy. Please communicate with the elected representatives of the board to help the society move in the directions that will most benefit you the members.

## Acknowledgments

This article has borrowed heavily from my predecessors, in particular Allen Gilchrist, and from my fellow SPWLA members that have built the Society's web site where some of this information originated. Finally, I would like to thank Baker Atlas for permitting to serve SPWLA.