

Message from the President

by **Jake Rathmell**

It is my pleasure to serve as president of the Society of Core Analysts for the year 2001. The new millennium presents a set of new challenges for our society and our industry. The last years of the twentieth century saw great changes with mergers of a number of major oil companies in the USA into a few super giants. Several high-quality research labs disappeared from the scene, including ARCO, my employer for 35 years. The center of the US oil industry is now, even more than before, Houston, Texas. This consolidation has caused a decline in the number of laboratories in the United States serving the industry and it presents new opportunities for internationally-based commercial laboratories, research organizations and academia to continue advancing theory and measurement technology for core analysis. This must occur with some decrease in our US industrial support base. The Society of Core Analysts must continue to provide a high-quality forum for presentation and discussion of these technologies.

The excellent efforts of the local organizing committee (LOC) in Abu Dhabi, produced a exciting and technically superior meeting in 2000. I can not imagine more congenial, enthusiastic, and hardworking hosts than we enjoyed during our meeting. We started with discussion of methodologies for discerning essential special core analysis required for carbonate reservoirs. We enjoyed an excellent viewing and informed discussion by our guide of the Simsima carbonate outcrops on the geological field trip. This outcrop is the producing formation in the Shah field. It illustrated the complexities of making core measurements on carbonates. The technical content of our symposium was better than ever, with discussion of key advances in technologies for relative permeability and wettability measurement. The support of our meeting by the LOC was excellent. I would especially like to acknowledge the efforts of Mohamed Bin Juma for his excellent work as chairman of the LOC and Waddah Al-Hanai, Vice President of Technology, for organizing our technical sessions. The enthusiasm and dedication of these two individuals and their cadre of support personnel were instrumental in our meeting's success. I agree with Doug Ruth, SCA President for 2000, who in his closing remarks rated the symposium as truly "world-class."

I would like to congratulate Matt Honarpour, who received the SCA Technical Achievement Award for 2000 at the Abu Dhabi meeting. A more deserving and more appropriate choice could not have been

found. He has a career-long record of technical achievement that has benefited all of us. Matt continues to contribute and inspire younger engineers who work in the ExxonMobil Upstream Research Company.

We look forward to another interesting and technically stimulating symposium in Edinburgh, Scotland for 2001. The LOC is based at Herriot-Watt University. There will be a work-shop on relative permeability (pore level to field scale-up) and a geological field trip before the meeting sessions begin. Be sure and arrive early to participate in these events. We have just completed abstract review for our next symposium and from the quality of the abstracts, there is no question the 2001 symposium will live up to our expectations.

I am especially proud of the accomplishments of the Society of Core Analysts in recent years. Under the inspired leadership of Jill Buckley, Doug Ruth and others, SCA has continued to move toward greater international membership and participation. All of our proceeding are now available on CD. We have a new and greatly improved web-site, www.scaweb.org, because of the efforts of Bas Schipper with some assistance from his son. This has moved the SCA into the electronic age with most of our communications by teleconference, email or web-site interactions. As you can see, we are now publishing SCANews on this web site. Encourage your friends and associates who may not have visited our web-site lately, to take a few minutes of their time to do so.

I am also proud of the technical achievements of the SCA as it continues to champion excellence in theory and measurement of core analysis. Theoretical and numerical analysis are powerful tools when combined with the constraint of high-quality laboratory measurements on cores. Continued advances in laboratory measurement realism are seen in the more common use of native-state and reservoir conditions in sample testing and improved understanding of wettability and its theories. What exciting times these are to be an active participant in the SCA. I wish each of our members could experience, every year, the inspiration of participating in our symposia. We are now 650 members. I look forward to seeing as many of you as possible in Edinburgh, Scotland in 2001. Please tell your friends and associates about this meeting.

Results of the Questionnaire on the Future of SCANews

Feedback Status 30.09.00: **31 responses**

- | | High | Medium | Low |
|--|------|--------|-----|
| 1. How do you estimate the present value of information of SCANews ? | 7 | 21 | 3 |
| | | Yes | No |
| 2. Do you support the idea to replace the printed editions by an online electronic version on the SCA Webpage ? (with an email notification when a new issue is available) | | 26 | 4 |
| 3. Do you have access to the Internet and thus the SCA webpage ? | | 29 | 2 |
| 3.a If yes, would you request a paper copy of SCANews in addition to the electronic version? | 5 | | 23 |
| 3.b If no, do you envisage to get access to the Internet within the next year? | 0 | | 1 |
| 4. Would you be ready to pay extra charges for the mailing of a printed copy of SCANews? | 6 | | 23 |
| 5. Do you have regular access to the SPWLA Journal "Petrophysics" ? | 16 | | 15 |

The lucky winner of **a free lifetime SCA membership** is.....

Ali H. Al-Habschi, Abu Dhabi, U.A.E.

Publisher's Corner

by **Lutz Riepe**, SCA VP Publications

The readers have given a clear vote: SCANews will go electronic from 2001 onwards! But are you ready for a change ??

This sounds like a pure rhetoric question in view of the fact that there is possibly no really intended way back to a "conventional" newsletter?!

But of course, it always depends on the wishes and the needs of our members, that will determine the most efficient way to communicate amongst the SCA members, and to find the best medium to demonstrate the outstanding SCA contributions to the external professional world!

In the last issue we asked for your views on the way forward and the potential future of SCANews, so don't blame me if you have missed your chance for a quasi democratic vote, and the potential win of a lifetime membership.

(By the way, I can assure you that the winner, Ali Al-Habschi from Abu Dhabi, was not "selected" as a special gesture of appreciation for the Local Organizing Committee, but drawn by Abbey's lucky hand as a purely stochastic unbiased result, carefully witnessed by all the attendees at the SCA business lunch in Abu Dhabi. Furthermore Ali was already a lifetime member, but we will think about a proper compensation).

Many thanks also to those about 30 members, who responded to the questionnaire within the deadlines, and who really helped the Board and the Editor of SCANews to take the risk for a change and a quantum step into the electronic website area.

As you can see from the attached results of the questionnaire, there are two clear and important messages:

- an overwhelming support of the idea to replace the printed editions by an online electronic version on the SCA webpage !
- a clear indication that most of our members have meanwhile access to the Internet!

Nevertheless, there is still some concern, that there might be a considerable number of "quiet" members, who still have no easy internet access or who are simply reluctant to surf all day long in the internet, and thus would not be very happy with a purely electronic access to SCANews?!

I can indeed also remember, that it was always quite nice to find from time to time a printed

edition of SCANews on the desk among the "normal" mail. The very handy format allowed just to take it with me in my bag and to scroll through it in the bus or train on my way home.

The Board is fully aware of this potential "loss of ease", and so we are still looking for potential options during an intermediate phase, where we might aim to offer also a printed version to those members, who will explicitly send a request for a personal printed copy to the editor or to the SCA offices.

My original plan was to finalize the first special new electronic issue of SCANews before the end of the Year 2000, and to send a "self made semi-professional" paper copy to all members. However, as you can see from the delayed distribution of this first issue in 2001, all good resolutions did not materialize due to heavy time constraints of myself and of all our Board members. Originally I had an offer from my parent company in Germany to produce the paper copies for all members, but "unfortunately" I meanwhile could not reject a very fascinating offer for a posting in Syria, so I have to look for potential alternative solutions or for "volunteers" to provide the copies?!

At the time of (re-)editing this column, I enjoy the warmth of Syria, but I still cannot offer you a printed version, but only the electronic contributions on our website **www.scaweb.org**.

However, you will hopefully understand, that we will not plan to edit and print any future issues of SCANews again by a professional printer, as we did in the past with the Blackman's.

So, this is indeed the time to say good bye to the familiar format and the black&blue&white SCANews layout after more than ten years of SCANews history!

Many thanks to all that contributed over the many years to the success of the newsletter, to all previous editors, to Joy et al from the SCA offices, and last but not least to the Blackman's, who certainly will have had many short nights to meet the deadlines for the final editing and printing.

I hope you will enjoy this first electronic version of SCANews in 2001. For "nostalgic" reasons, but also just to not forget about our roots, we will keep the original counting of our issues, so this will be SCANews Volume 13, Number 1 !

SCANews est mort! Vive SCANews!

Review of the 2000 Int. SCA Symposium Oct.18-22, Abu Dhabi

by **Jos G. Maas**, SCA 2000 VP Technology, Chairman of the Technical Committee

Practical Applications of Special Core Analysis in Carbonate Reservoirs

The year 2000 SCA Symposium saw some 250 attendants, half of them from the region, who got treated on a Workshop and 2½ day of high-class technical presentations in the splendid setting of the Abu Dhabi Hilton. The title of the workshop was "Discerning the essential from the unnecessary in a comprehensive SCAL study for carbonates through an integrated, multi-disciplinary investigative approach".

Three workshop presentations, each augmented by substantial discussions with the audience afterwards, set the scene for the remainder of the symposium. Shebl and Boyd discussed "What is a rock type and why do we need one?", leading us basically to the conclusion that there are many ways of characterising rock and that it really depends on the objective of the study at hand what the proper way is. There is no best way that fits all. Subsequently, Arisaka and Al-Hassani took us "From sample selection to relative permeability". The impact of sample heterogeneity on the measurements got strong focus, also in the discussion with the audience. Carbonates typically are heterogeneous and one may argue that to be representative for the reservoir, one needs to select the appropriate heterogeneous plugs. However, data may then be dominated by some local feature in the plug, completely non-representative of the reservoir at large. The interested reader is referred to the search engine on the SCA website to review recent (including the 2000 symposium) SCA literature on that subject. Several issues in SCAL flow measurement methods were highlighted. It was discussed that particularly the unsteady-state (or Welge) technique is sensitive to local heterogeneities and a dangerous tool for relative permeability measurements on Abu Dhabi carbonate samples. In the third workshop presentation, Thiebot and Black showed a pragmatic

Engineering approach to "SCAL Tables with an Old Database". An interesting view on work in progress to rework existing data, using modern insights on wettability, measurement artefacts, etc., into new data. The discussion with the audience focussed on SCAL for transition zones, a key issue for low permeable carbonate reservoirs in Abu Dhabi and abroad. This all provided a natural linkage with the papers presented in the remainder of the week.

The symposium itself was built from sessions on "SCAL for Carbonates", "WAG and Three phase relative permeability measurement technology", "Core analysis starts downhole", "Improved laboratory techniques", "Wettability", "Advances in SCAL data interpretation", "Case studies" and "SCAL for gas". In addition, ample time was given to review the posters and to visit the Exhibition. The 20+ posters provided a great extension to the material presented in the papers and an excellent opportunity to discuss technology developments.

It is really impossible to summarise the wide diversity of developments presented, but one important conclusion stood out: no single measurement technique for relative permeability can be found. It is a combination of several techniques, combining the strengths of each, covering for the weaknesses in another, that will produce the best answer. Conventional low-rate unsteady-state is not a good source for representative relative permeabilities, in particular not for heterogeneous carbonates.

I am confident that Xu-Dong Jing, the SCA 2001 VP Technology will endeavour to bring us an equally well-organised and enthusiastic audience as we had in Abu Dhabi.

See you in Schotland, September 2001!

**Remember the date for the Year 2001 Symposium
September 16-19 in Edinburgh, Scotland**

Please REGISTER NOW!!

For further Information visit the SCA Website: www.scaweb.org

Lifetime Achievement Award for Matt Honarpour

Laudatio presented by **Dan Maloney**

The Society of Core Analysts presents its Lifetime Achievement Award in recognition of outstanding contributions of an individual that have advanced our science and profession. This award is the highest honor that we bestow in thanks and praise for the commitment, leadership, mentorship, technology development, knowledge and service that an individual has unselfishly given over the span of a career.

In just a moment, I will be presenting this award to **Dr. Matt Honarpour**, but first, let me tell you a few things about him.

Matt is a senior staff member with ExxonMobil Upstream Research Company in Houston, Texas. He is a recognized reservoir engineering expert within ExxonMobil and in the petroleum industry. He has contributed to the characterization of many giant reservoirs around the world, including fractured carbonate reservoirs in the Middle East.

Matt joined ExxonMobil following 10 years of service with Mobil E&P Technology in Dallas. Prior positions included service as Geoscience Manager with IIT Research Institute at the National Institute for Petroleum and Energy Research (or NIPER), Professor of Petroleum Engineering at Montana Tech, and Senior Reservoir Engineer with the Oil Service Company (or OSCo) of Iran.

Matt has made significant contributions in many areas of reservoir engineering including gravity drainage, effects of small-scale heterogeneity on relative permeability, and the coupling of relative permeability and capillary pressure measurements. He has established a worldwide quality control program for ExxonMobil and chaired the API quality control subcommittee on core analysis. He has designed several world-class lab systems for multi-phase measurements in reservoir rocks.

Matt is a registered professional engineer. He has published over 50 technical papers in areas of reservoir engineering, reservoir characterization, formation evaluation, EOR, and core analysis. He has published 3 books - - and you can honestly say, "Matt Honarpour wrote the book on relative permeability." He currently serves on the SPE distinguished Author Committee. He has served on SCA technical committees for many years, and was

President of the SCA in 1988. Some of our earliest SCANews issues were his work.

Matt has been my friend and mentor for about 15 years (or since the time that his photo in the program was taken!) I worked for Matt while he was a Geoscience Manager at NIPER.

Matt is one of the most persistent and resourceful people that you will ever meet. When he first joined NIPER he was heavily into the new technology of using a CT scanner to image fluid saturations in rocks. We didn't have a CT scanner, so he would take cores and fluid-flow experiment set-ups on carts to our local hospital late at night to perform his scans. Through his charisma, he managed to use the CT scanner at the hospital for free, but only when the scanner was idle. More than a few times he had to pull his rocks off the scanner when someone was rushed to the hospital and needed a CT scan.

He was very sure imaging devices would become common in the best petroleum laboratories. NIPER management was very reluctant to spend any money on new equipment, but after threatening to build a homemade CT scanner out of plywood, management finally relented and Matt got his scanner. He also got several other costly pieces of equipment that ultimately allowed the facility to perform credible research for the next decade. As Dave Payton, one of Matt's former technicians at Mobil told me, "Matt usually gets what he needs and takes care of his people." Matt's sense of humor and hospitality are well known throughout the industry.

Matt has had several close calls during his life. As an engineer in Iran, he was sent to check on a well, and shortly after leaving his Jeep, it was blown up by a rocket. During a family vacation, while driving through Colorado with his car window rolled down and his elbow on the window frame, a lightning bolt struck the car and melted a hole through the door only a few inches from his arm. These certainly were close calls, but there was no close call in electing to present the Lifetime Achievement Award to Matt.

So, on behalf of the Society of Core Analysts, I am honored to present this award to you in recognition for all that you have done, and all that you will continue to do in your career.

SCA LIFE ACHIEVEMENT AWARD ACCEPTANCE SPEECH

by **Matt Honarpour**

Thank you very much ladies and gentlemen

First, I would like to compliment the Society of Core Analysts board of directors and the Abu Dhabi organizing committee, especially Waddah Al Hanai for the outstanding program they have put together this year. Also, I would like to thank Frank Kemnetz, ExxonMobil country manager, for sponsoring tonight's activities and ADNOC, ADCO, ADMA, ZADCO and other operating companies for their support of the SCA International Symposium in Abu Dhabi. I knew Waddah and his team are strongly religious but what I didn't know was that they could also do miracles. I may even ask them to turn me into what I looked like in my picture fifteen years ago! One of the miracles I observed is that they have gathered some of the best minds in the industry in this conference to address the complex nature of their reservoirs and these people are very happy to be here and even more than happy to work on the issues.

Secondly, I wanted to let you know I am truly honored to be the recipient of the SCA Outstanding Technical Achievement award. Especially since I am receiving this award where I started my career in this part of the world, working on fractured carbonate reservoirs exactly 30 years ago.

I want to tell you I am very pleased to see our hard work pay off and the field of core analysis has gained credibility, depth, and respect despite the difficult time our industry has experienced in the past two decades. My compliments to all of you and our Society for generating this environment that we are enjoying today.

Over the past thirty years, I have seen significant technological achievements and I want to name six of them tonight. I know many of you in the audience have been carrying the banner in these areas. These advancements are:

- **Coring and Core Handling** - Significant progress has been made over the past decade in obtaining longer and less invaded cores at lower cost per unit length. The latest example is 581 feet of hard carbonate core obtained in one trip from a well in Qatar. The new challenge is to improve coring practice in

heterogeneous/fractured carbonate rocks. Refined techniques have been developed for stabilization and preservation of fragile rocks.

- **Laboratory Technologies and Equipment** - Many improvements in laboratory equipment have emerged over the past 20 years. Some of these are: core scanning equipment such as the CT scanner; fluid saturation monitoring equipment such as the x-ray, gamma ray, microwave; production monitoring equipment such as the acoustic separator; pressure and rate monitoring equipment such as transducers, flow meters, and pumps; high pressure and temperature coreholders made of non-metallic material; profile permeameter for high resolution permeability measurements, and automated centrifuges for capillary pressure and relative permeability measurements, and finally, automation software for long term and remote monitoring of experiments. Our new challenge is to be able to monitor fluid flow in heterogeneous vuggy and/or fractured rocks at higher resolution and in three-dimensional space.
- **Core Analysis** - Techniques have been developed for analysis of homogeneous formations with permeability ranging from a few microDarcies to tens of Darcies. The measurements are often conducted with live reservoir fluids under simulated reservoir pressure and temperature conditions. However, we need to develop suitable technology for measurements of rock properties of heterogeneous/fractured carbonate formations.
- **Wettability Characterization** - Substantial progress has been made toward better characterization and understanding of wettability and the influencing parameters. We need to understand complex wettability characteristics of heterogeneous/fractured rocks.
- **Quality Control Practices** - The best practices in core analysis, quality control and quality assurance methods have been documented in the API RP-40. We need to expand this document to include analysis of heterogeneous cores.
- **Pore-Level Modeling and Coreflood Simulation** - Techniques and algorithms have been developed to further our understanding of the processes at the pore-level. Coreflood simulators are being

used to integrate capillary pressure with relative permeability data and validate measurements. We still need to develop

- fine-scale three-dimensional coreflood simulator for heterogeneous cores.

In summary, we have come a long way and now the core analysis data are not adjustable parameters anymore. Core analysis data are the standard for all other measurements. However, we still have many challenges ahead of us. We need to:

- Develop rigorous techniques to measure multi-phase flow properties in heterogeneous/fractured systems, sometimes in the presence of complex fluids and a complex wettability distribution.
- Find ways to integrate pore-level data, core-level data, and downhole measurements for up-scaling and performance prediction using reservoir simulation.
- Train a new generation of core analysts that can collaborate better with geoscientists, petrophysicists, and reservoir engineers. An excellent example of this type of training was the outcrop visit we had the other day.

My experience over the past thirty years has taught me that we should not be afraid of taking calculated risks to come up with improved and practical ways of doing our business.

The word “practical” reminds me of a professor who was asking a group of his students to measure the height of a flagpole. He wanted them to make use of the poles shadow on the ground. A couple of engineers were walking close-by and were challenged. They walked right to the pole, unscrewed it, laid it on the ground and measured it with their tape measure. “12 feet and 6 inches” they told everybody. Then, quickly screwed the pole back in its place and walked away. The astonished professor turned to his students and said, “ that is exactly the problem with these engineers, they just measured the length of the pole instead of its height.”

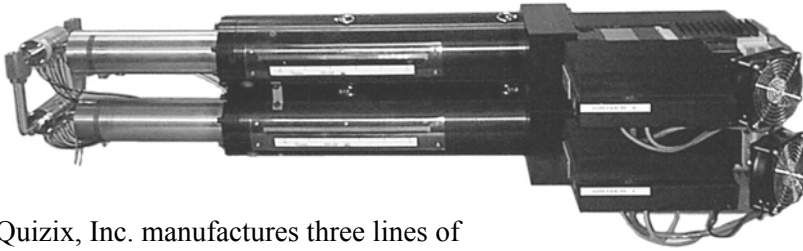
Again, I thank you for selecting me for this prestigious award. You have been very kind and generous to me.

Mehdi Matt Honarpour's CV:

Dr. Honarpour received his B.S., M.S., and Ph.D. in Petroleum Engineering from the University of Missouri. He is currently a senior staff with ExxonMobil Upstream Research Company. Honarpour has served as a reservoir engineer, geoscientist, experimentalist, core analyst, project manager, team lead, and petroleum engineering professor over the past thirty years. He has worked on characterization and management of giant reservoirs in six continents. He has done extensive work on naturally fractured carbonates and consolidated/ unconsolidated sand including those from heavy oil, light oil, volatile oil, gas-condensate, and dry gas reservoirs. He chaired the API Quality Control subcommittee on core analysis and established a world-wide quality control program for Mobil. Honarpour has designed several novel apparatus for relative permeability and capillary pressure measurement. He was the 1988 Society of Core Analysts president and published the first SCANews for the society. Honarpour has authored several books and over 50 technical papers in the petroleum-related literature. Honarpour is a registered professional engineer.



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