"If we are smart enough …"

Dr. Raymond Levey is in charge of an organisation with superb knowledge of the world's sedimentary basins, fossil energy and alternative energy sources. We have talked with him about the future of oil and gas exploration.

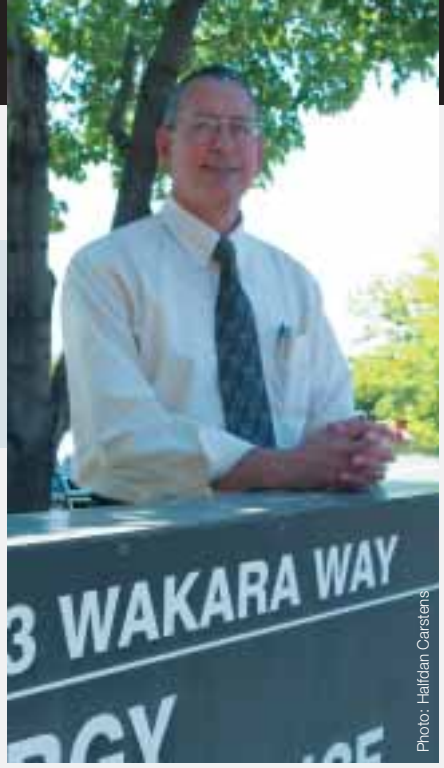

Photo: Halfdan Carstens

Dr. Raymond Levey is Director of the Energy and Geoscience Institute (EGI) located in Salt Lake City. EGI has the largest University based consortia group with 54 member companies from 20 countries. Dr. Levey was appointed Director in 1999, after serving as Deputy Director since 1997. His background includes a decade at Shell Oil where he was involved in petroleum exploration, development and research. He also spent 7 years at the University of Texas at Austin where he served as Associate Director for Fossil Energy at the Bureau of Economic Geology before coming to the College of Engineering at the University of Utah. He earned his Ph.D. in geology at the University of South Carolina. Dr. Raymond Levey is a Certified Petroleum Geologist and licensed geologist in Utah and Texas.

Q1 We are now using approximately 85 million barrels of oil every single day, and within the next 25 years, this will increase substantially. Do you think there is enough oil around to accommodate this need?

World consumption in 2006 is about to exceed the staggering level of 1,000 barrels per second. While it will be an incredible challenge for industry to find and produce the volumes needed for this rising world oil demand, I do believe there are enough additional new and remaining hydrocarbons to meet our needs to 2030, and future researchers will be part of the effort to achieve this success. However this requires that we get smarter about the way we use our liquid hydrocarbons for transportation directed purposes rather than electric power.

Q2 There are several alternatives to light, sweet crude; such as heavy oil, oil sand (GEO ExPro No. 5/6, 2005) and shale oil (GEO ExPro No 3, 2004). Which of these do you think will be the more important in the near future, i.e. the next 20-25 years?

During the last 100 years the world has used a vast amount of the easy to find and refine sweet light crude oil. This is forcing a switch to the vast remaining resources of heavy oil, oil sands and, yes, even future production from oil shale. If we are smart then we learn how too economically capture the man-made CO^2 from power generation and use it for EOR to enhance and extend production from known fields, including stranded oil. The success story in Canada of promoting development of oil sands is on the verge of being extended to the very different oil shale resource in the next 10 to 25 years. In the western U.S. we have vast oil shale resources and I believe the odds are very good that industry, academia, and government will solve the technological challenges needed for commercial production. EGI is part of the new U.S. government supported Heavy Oil Center to focus on North American heavy oil, oil sands and oil shale.

Q3 It is speculated that there are enormous amounts of gas stored in gas hydrates in the Arctic and below deep water (GEO ExPro No. 2, 2004). How do you look upon this possible resource for future gas supply?

I believe that while production from gas hydrates will ultimately occur, there are vast amounts of easier to produce conventional and unconventional natural gas resources still to be produced in the next 40 years. Hence I do not see significant economic development for gas hydrates in the foreseeable future.

Q4 USGS reports that 25% of the remaining oil and gas resources lie in the Arctic. While it is a long way to prove this, do you think this is the next frontier?

EGI is cooperating with scientific colleagues at Moscow State University, and various national geologic surveys to evaluate the chronostratigraphy of the circum Arctic region to establish a consistent and predictive geological framework for the industry. The odds are very good that the Arctic is rich in hydrocarbon resources, and given the technological progress in production in remote areas this may be achievable in the next 15 years. Major, long-lived, deltaic systems like the MacKenzie delta have fewer than 300 well penetrations. The ultimate resource potential of the circum Arctic could be enormous.

Q5 How do you look upon the main technological achievements in exploration technology in the last decades?

Actually I see this as an area of concern because the past decade and half have not produced the major "game changing" technology, such as 3-D seismic, that emerged 20 years ago. That said, the oil and gas industry is benefiting significantly by reaching to other-market advances in technology from incredible leaps in computing capability allowing more data to be processed faster and cheaper to visualization technologies that are spinning off from the gaming and movie industry and having a dramatic positive impact on subsurface imaging of reservoirs.

Q6 What do you think are the main geological achievements in exploration since we were faced with the theory of plate tectonics in the 1960's?

EGI is now evaluating the ultra deepwater, regions on transitional and oceanic crust, for hydrocarbon prospectivity. These regions have previously been written off by the industry as too "cold" for the generation of thermogenic hydrocarbons, but this traditional dogma may have limited our creative thinking and 40 years later needs to be reconsidered. These are the kinds of ideas that groups like EGI is challenging through cost-shared research for industry.