Do you think our theme “Jack of all trades vs. master of some: E&P vs. Service Companies” paints a realistic picture of the oil and gas industry?

NW (Norm Warpinski): This is an interesting view of these companies, which might be somewhat different at the corporate level as opposed to the individual level. From a corporate perspective, the major service companies offer a full range of services from exploration through to abandonment, mirroring the needs of the E&P companies. In addition, service companies are now the “keepers” of technology, such as logging tools, chemicals, bits, seismic services, pumping equipment, etc. From an individual perspective, however, the service company professional is much more likely to be nestled within a particular technology—and even potentially be a subject matter expert in that technology—compared with the E&P organization individual, who is more likely to have broader responsibilities and a wider perspective of the oil field.

Norm Warpinski is chief technology officer for Pinnacle, a Halliburton service company based in Houston. He is in charge of developing tools and analyses for hydraulic-fracture mapping, design, and analysis; reservoir monitoring; and integrated solutions for reservoir development. He joined Pinnacle in 2005, after 28 years at Sandia National Laboratories where he worked on various projects in oil and gas, geothermal, carbon sequestration, waste repositories, and other geomechanics issues. He received his MS and PhD degrees in mechanical engineering from the University of Illinois, Champaign/Urbana, after receiving a BS in mechanical engineering from Illinois Institute of Technology.

Keng Seng Chan is principal engineer for production and reservoir engineering for Petronas, Malaysia. He is a recognized expert on formation damage, matrix stimulation, downhole scale, and water control. He has held a wide variety of positions in a 33-year oil-industry career. With Sohio Petroleum Company, he served as a group leader for enhanced oil recovery and the waterflood-conformance research team. With Schlumberger, he participated in several key innovative developments in cementing, stimulation, and water- and sand-control chemical products. With Petronas, he works on improved oil recovery for thin-oil-rim reservoirs by reservoir simulation studies and field production evaluations. Chan holds BS and MS degrees in physics from the University of Rangoon, and MS and PhD degrees in chemical engineering from the University of Florida.
KSC (Keng Seng Chan): The theme can be misleading, showing some degree of mistrust between service and E&P companies. The relationship should rather be that of a close cooperation, with service companies providing the innovative and cost-effective technical solutions required by the E&P companies.

What are the career achievements that you are most proud of?

NW: I can think of three areas where I believe I have provided significant contributions to the industry. The first was the “mineback” work that was done in the late 1970s and early 1980s, where we created hydraulic fractures and then mined through them to find out what they were really like. The second was research in the 1980s that delivered a significant amount of information for the development of tight sands. The third area was the development of a system for microseismic monitoring of hydraulic fractures and other underground processes. This system became the basis for the services that my company now provides to the industry.

KSC: I developed several innovative products and engineering techniques for well completion and stimulation. I also improved several reservoir-engineering correlations for further understanding of fluid-flow mechanisms and field-development optimization.

What is the most influential science/engineering advance in our industry over the previous decade, and why?

NW: I can think of three areas where I believe I have provided significant contributions to the industry. The first was the “mineback” work that was done in the late 1970s and early 1980s, where we created hydraulic fractures and then mined through them to find out what they were really like. The second was research in the 1980s that delivered a significant amount of information for the development of tight sands. The third area was the development of a system for microseismic monitoring of hydraulic fractures and other underground processes. This system became the basis for the services that my company now provides to the industry.

KSC: Advancements in seismic allow us to seek more effectively; measurement while drilling allows us to drill precisely; and reservoir simulation enables us to reach unknown areas while keeping risks manageable. Advancements in accessing horizontal wells and laterals with coiled tubing ensure that we are able to manage our reservoir exploitation and production effectively.

Having dealt with both E&P and service companies over the course of your career, would you consider, in hindsight, taking any different career path?

NW: Probably not! While I started out in a research lab, it was very much like working for a service company, as we provided research directly for the government or industrial clients. When I left that position to focus on microseismic monitoring for a service company, it basically required the same mindset.

KSC: I first worked for an E&P company (Sohio Petroleum), then for a service company (Schlumberger), and I am now working for an E&P company (Petronas). This has been a great experience and it has given me a true vision of E&P and service companies’ objectives and focus. The path remains full of excitement and challenge.

What is a “better” way for a young professional (YP) to start out in oil & gas industry? Start in an E&P or service company?

NW: I do not think that there is generally a “better” way. It really is an individual choice or maybe even an individual need. Some people fit better in one environment and not so well in another.

KSC: The sequence is not critical. The key is to focus and excel in any and all assignments along your career path.

What job responsibilities do you feel an E&P YP has that a service YP does not, and vice-versa?

NW: I think it is pretty much the same as in every industry: dedication, hard work, imagination, creativity, and a sound technical foundation obtained during education and training.

KSC: You learn to listen and understand a problem or challenge, to communicate your thoughts, to work and coordinate with others on your team, and to explore and research solutions for pressing problems. There is no difference whether you are in a service company or in an E&P company.

What does it take to lead a successful career in the oil & gas industry?

NW: I think it is pretty much the same as in every industry: dedication, hard work, imagination, creativity, and a sound technical foundation obtained during education and training.

KSC: A passion to study—and solve problems—a passion to learn and to apply what you have learned, a passion to innovate.

How is the synergy between oil companies and service companies when working toward technical breakthroughs?

NW: It is an interesting tango between these two when it comes to new technology. Both want new technology, but the service company wants to create a market niche where it is the 800-pound gorilla, whereas the E&P company wants to see technology commoditized to lower prices and homogenize the results. I am sure that collaboration between the two will continue, but
there will always be this struggle.

**KSC:** Even though there are some joint industrial projects on specific technical problems, there is still mistrust, with E&P companies questioning service costs. On one hand, the service companies might have failed to demonstrate the value of their innovative products and solutions, while the E&P companies do not provide good studies for assessing the value of the innovative products and solutions provided by the service companies. In general, the service sector is product oriented, while oil companies are solutions oriented.

**What is your experience with these two cultures and how do you think the industry is bridging the gap?**

**NW:** I really think it is unfortunate that E&P companies lost so much of their research capabilities, since their technical experts often provided a direct bridge between the two cultures. Twenty five years ago, a service company speaker at an SPE conference or some other meeting could expound upon the merits of some tool or service that they had developed. Invariably, there would be some research person from an Amoco, Arco, Conoco, Texaco, Phillips, Mobil, Sohio, Gulf, or other company who would have tried that technology and would stand up and give an unbiased opinion of its merits. Today, the only person likely to have some detailed knowledge of the technology is someone from another service company. If they get up and say something, it sounds like sour grapes; if they do not, then unwarranted claims go unrefuted. The industry does not gain in this kind of situation, and as a result, we do not get enough hard, detailed, technical discussions.

**KSC:** Service companies now focus on creating solution packages to answer oil companies’ needs. However, due to market coverage, these solution packages might not be specific enough for a particular operator in a particular field. Some service companies have recognized that and are setting up regional technology hubs with technical-solution-development capabilities to optimize the solution packages.

**Do you think that the industry is doing enough to capture the knowledge of the senior experts and transfer it to the younger generations? Which side of the industry is doing better in this respect, the E&P or service companies?**

**NW:** No. I have been disappointed to notice how little corporate memory seems to get transferred to the YPs. I do not think that either side is doing a very good job.

**KSC:** The knowledge gap between the senior experts and young engineers is well recognized in our industry. Most of the companies have paid great attention to this issue and have set up capability-advancement programs with objectives of bringing the young engineers up to the level of expert within 5 to 7 years.

For instance, in one of the E&P companies I know of, there is an Accelerated Capability Development program set up to enhance the coaching of young engineers mentored by senior experts. This program has full commitment from senior management, and it entails not only a technical-knowledge-development plan tailored for each individual engineer but also a systematic progress-monitoring and evaluation procedure.

Service companies, as they rely critically on innovation and new technologies to meet their commercial goals, can be seen as having more emphasis on coaching young engineers through various technical projects. They push their engineers to continuously improve their technical skills, and internally recognize their progress by promoting their technical level based on four key performance indicators: technical understanding, innovation, business impact, and mentoring of others. In this process, capability development is continuous and seamless.

**Are you actively mentoring YPs? What advice do you give them?**

**NW:** Only on a limited basis. Advice: (1) reservoir access and exploitation are a systems-engineering problem; (2) read the literature; and (3) take continuing-education courses to stay current and expand your knowledge.

**KSC:** Yes. I love coaching them as I may have only a few more years before retiring. YPs need to focus and excel in any and all assignments, and they also need to work hard with passion. **TWA**