



World Energy interviews Thierry Pilenko, chairman and CEO of Veritas DGC Inc. (Veritas)

Veritas, headquartered in Houston, Texas, is a leading provider of integrated geophysical services and technologies to the petroleum industry worldwide.

World Energy: *Historically, the geophysical industry has seen both rewarding and challenging times. As you complete your first year as chairman and chief executive officer of Veritas, what insights would you share with us on this unique niche of the oil and gas industry?*

Pilenko: The geophysical industry is recovering from a long and painful period characterized by a lack of discipline, chronic overcapacity and, among most of the seismic contractors, poor financial results. During that period we observed what I call a “stakeholders paradox”: If you look at the geophysical value chain as a whole, the customers – the exploration and production companies – continuously improved drilling success ratios and production based on their use of seismic data, while the service providers – the geophysical companies – witnessed severe value destruction.

Fortunately during this period, a few major resource holders maintained their seismic acquisition levels, which attenuated, at least to some degree, the severity of the crisis.

The geophysical industry as a whole is now seeing a slowly building yet robust upward trend. This is particularly true for marine acquisition, which accounts for most of the increased global activity, followed by data processing and, to a lesser extent, by land acquisition.



Significant seismic imaging advancements from time migration methods to pre-stack depth migration and wave equation migration are reducing finding and producing risks by providing interpreters with a clearer view of the reservoir.

This new trend is being fueled mostly by increased exploration activity even though reservoir delineation and production optimization through advances such as time-based acquisition (4D) continue to gain steadily.

Back in June 2004, we started to anticipate the exploration pick-up, based not so much on the relative high price of oil and gas but more on the continued challenges the oil and gas companies are encountering replacing reserves and growing production. In fact, over the past two years, integrated oil companies, in aggregate, have not grown their production volumes. Compounding this issue is the fact that good exploration prospects are currently in short supply.

World Energy: *What do you see as the key challenges in the geophysical industry today?*

Pilenko: This may surprise you, but the greatest challenge is not in the industry fundamentals I just mentioned, but in the expertise required to improve them – in the people. The cyclical nature of the oil and gas business has created a long period of a minimum number of experts joining the industry.

The services sector, by its very human-intensive nature, continued to recruit and develop professionals on a steadier basis than the oil companies. But clearly, given the amount of work that needs to be done to renew reserves, more people will still be needed in the geophysical industry. And not just anybody; finding new reserves requires a passion for geoscience combined with expertise that can take years to develop.

Based on this, I believe the biggest challenge the industry faces will be finding, training and retaining expertise. Without this central and vital asset, both oil companies and services companies will lack the capacity to deliver on their goals.

After the personnel gap, the next challenge is technology take-up. When people better utilize better technology, the result is similar to increasing the distance from the fulcrum. Simply put, work is done more effectively; production increases and more reserves are found. But today, the oil and



The SR/V Veritas Viking conducting a 3D seismic survey offshore eastern Canada



gas industry is too slow to pick up new technology and lags behind other industries. This creates a tremendous value-gap inefficiency in our already too-thin workforce. And yet everyone knows and agrees that technology, particularly seismic technology, has delivered great value and impact!

World Energy: *How do you see Veritas within the oil and gas industry?*

Pilenko: Based on the backdrop of industry trends and challenges, Veritas is well positioned as a global geophysical information and services provider. We have a unique combination of differentiating technologies, an extensive data library and a deep pool of expertise. Together, they deliver “prospect-ready data” – that is, the right data at the right time – to our customers. And to ensure our product meets the specific and varying subtleties of our customers’ challenges, we work very closely with them, first to understand and then to answer their needs.

World Energy: *Have you implemented any specific changes to better align Veritas to meet the needs of the industry and your clients?*

Pilenko: To bring our product and service accountability as close as possible to the customer, we organized Veritas into three geographical regions: North and South America; Europe, Africa and Middle East; and Asia Pacific. These three regions are responsible for all Veritas activities, including customer interface, operational delivery and P&L. Our clients are typically organized in asset teams around specific areas and reservoirs. Our new organization allows us to better understand, react and deliver solutions that meet their specific needs.

And to maintain excellence and global consistency of our services, we support these regions with strong product lines. This guarantees that the right technology is developed and deployed, our people are trained in a consistent manner and economy-of-scale efficiencies are maintained throughout the organization. Our three product lines – land acquisition, marine

acquisition and data processing – are responsible for technology innovation, development and consistency throughout the entire business life cycle.

World Energy: *Your health, safety and environmental (HSE) practices and results are highly regarded in the industry. Can you outline the Veritas philosophy towards HSE?*

Pilenko: Years ago, Veritas placed HSE at its core. We did this to continue to improve the safety and health of our employees and as a business decision. Most customers today require contractors to deliver minimum HSE standards, and superior HSE performance is strongly valued. This has become a key differentiator for Veritas, and we thrive to continuously improve our performance.

As an example, between 2000 and 2004 Veritas saw a 41 percent improvement in our total recordable case frequency ratio, which in 2004 was below 3.8 per million exposure hours. Also, our key performance indicators tell a dramatic story: an order of magnitude improvement over the past five years that attests to our commitment and heightened awareness. In 2004 alone we reported more than 15,000 hazards, held more than 30,000 QHSE meetings and conducted 30,000 audits and inspections.



Cluster CPUs with new 64-bit Opteron processors are significantly reducing time-to-solution on processing large 3D data volumes.



Today, Veritas HSE performance has become a significant competitive advantage. However, I believe that an HSE culture is also one of the key criteria that assists us in both attracting and retaining the best people.

Similar to the product lines and regions I mentioned earlier, we run HSE with the same local and global structure. We can realize continuous improvement through local ownership and commitment combined with global attention and consistency.

World Energy: *Can you describe research and development at Veritas in more detail?*

Pilenko: While Veritas is not in the seismic equipment manufacturing business, we have the in-house capacity to evaluate, integrate and propose the use of specific acquisition systems to optimize the efficiency and quality for both land and marine acquisition. Also, working closely with our equipment suppliers allows us to provide engineering input to them, creating a best-in-class targeted solution. This requires a very strong, yet not necessarily large, group of engineering and development resources focused on acquisition and emerging technologies.

At the same time, we approach data processing, another key Veritas differentiator, with our own proprietary algorithms and processes. Since computing power is becoming more and more affordable, the most important ingredient to a successful processing business is a company's ability first to attract the best scientists and create an environment that encourages continuous innovation, and second, to reduce the time it takes to integrate those innovations into the production chain. This "tight" integration between the researcher, the programmer and the processor increases innovation to production efficiency in a spectacular manner. Just as important, this integration gives the researcher direct access to the customers, solving real problems and delivering a better solution. It is all about listening and speed.

I recall visiting one of our lead research scientists; his desk was covered with stacks of handwritten equations describing a new migration method. Two weeks later, not only was the program written and put in the production chain, but the first seismic images were already providing significant improvements, making it easier for our customers to interpret complex structures and reduce their risk in drilling the prospect. This was an impressive process and result, and it simply cannot be achieved if research groups are isolated.

World Energy: *Can you share one or two of your organization's most exciting successes?*

Pilenko: To encourage and develop a culture that supports superior performance, I like to measure success in terms of technical innovation as well as business impact for Veritas and our customers. Our research and processing groups have made immense progress in the past few years in seismic imaging, from time migration methods to pre-stack depth migration and wave equation migration. These advances have brought tremendous benefit to our customers. For example, in the deepwater Gulf of Mexico, salt tectonics create a geological challenge, as many promising reservoirs are located sub-salt and difficult to image seismically. Based on imaging technology progress, we are now able to create, on both recent and previously acquired data, depth-based images unimaginable even a couple of years ago. Our customers can now see the prospects and can considerably reduce their drilling risks. This is how we at Veritas are contributing to finding new reserve opportunities: You see them, you de-risk them and you increase your confidence and ultimately your performance.

Also, the multi-client model has been very successful for us for two key reasons; first because we involve our customers very early in the process to define the goals and parameters, and second because processing advances in our imaging and seismic attribute analysis add significant value to the seismic data. Oil companies have recognized this value, and this is how many customers come to understand "prospect-ready data."



Veritas buggy-mounted vibroseis units explore for oil and gas in the deserts of Oman.



World Energy: *How about a failure?*

Pilenko: Our lack of presence in the Middle East or the former Soviet Union where most reserves are found is incongruent with the success we have seen in other areas and with other customers. We have not introduced our unique capabilities to the major resource holders as well as we have with the international E&P companies. Ironically, we are faced with some of the same problems as our large customers: How do we penetrate the markets where most of the production will come from in the next 20 years? We have seen recent progress in Asia and the Americas, but in North Africa, the Middle East and Russia our market penetration is still very limited. This is both an area of concern and opportunity.

World Energy: *Can you give us a glimpse into the Veritas vision?*

Pilenko: I believe we are at the beginning of a period that will be seen as an exploration "renaissance." Reserves replacement concerns will continue to build and put tremendous pressure on the industry to find more oil and gas. To meet this need, the geophysical service sector must respond with the right capacity and, just as importantly, with the right speed and quality. Better technology and better data give explorationists the ability to see the prospect, thus lowering the risk and ultimately improving finding rates.

In addition to increased exploration, new discoveries in high-risk areas with complex or poorly defined geology will require improved delineation and fluid identification methods. Time-lapse (4D), high-resolution or multi-component data have brought some of the answers, but I believe the techniques with the highest potential are multi-azimuth and/or wide-azimuth acquisition, combined with advanced imaging such as wave equation migration and advanced demultiple tools such as 3D SRME (surface-related multiple elimination). These combinations are showing the best potential for truly illuminating reservoirs. Veritas is the only

company to date that's performed a towed streamer wide-azimuth acquisition survey.

This gives Veritas two areas of profitable growth opportunity: the development of "prospect-ready" multi-client data sets in selected geographical areas such as Canada, the Gulf of Mexico, the North Sea or West Africa; and the design, acquisition and processing of wide-azimuth surveys.

As for the longer term, I anticipate that other methods of reservoir imaging will become commercial and will further complement current acoustic technology, assisting the interpreter and industry in making better assumptions and decisions. The smart combination of different physical measurements is routine today in borehole interpretation. Similar integration will happen with the all-surface sensors, but how and when is a story for another day.

Thierry Pilenko is chairman and chief executive officer of Veritas DGC Inc., a global seismic company headquartered in Houston, Texas. Prior to his appointment on March 1, 2004, Mr. Pilenko worked for Schlumberger for 20 years.

His most recent assignments were in Paris as president of the SchlumbergerSema France Division, and in Houston as president of GeoQuest, the software and data management product line of Schlumberger Oilfield Services. Prior to this, he held several managerial positions in the Wireline and GeoQuest business lines, with postings in Indonesia, Dubai, Nigeria, Gabon and Italy. He also spent one year in Venezuela as a research scientist with Petroleos de Venezuela.

Mr. Pilenko is married with two children. He is a graduate of the Ecole Nationale Supérieure de Géologie de Nancy and the Ecole Nationale Supérieure du Pétrole in Reuil, France.



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