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Joel Parshall, *JPT* Features Editor



Patrick Pouyanné, SPE, is Senior Vice President, Strategy, Business Development, and Engineering Research and Development, E&P, Total. He joined Total in 1997 as General Secretary in Angola and in 1999 was appointed Group Representative and General Manager of the company's E&P subsidiary in Qatar. Pouyanné became Senior Vice President, Finance Economics Information Systems for E&P and a Member of the E&P Management Committee in 2002. He assumed his current position in 2006. Before joining Total, Pouyanné held several positions in the French Industry Ministry (1989–93) and then at the Cabinet of the Prime Minister as Adviser for Environment and Industry (1993–95) and as Chief of Staff of the Minister for Telecommunications and Information Technologies (1995–96). Pouyanné is a graduate of France's École Polytechnique and École des Mines of Paris.

The economic assumptions undergirding everyone's business outlook have changed completely over the past half-year, to say nothing of the price of oil. How is Total responding to that, in terms of upstream strategy, the amount and direction of E&P capital spending, and the implementation of projects?

We didn't discover just today that we are in a cyclical industry. It is true that since 1999, the price of a barrel essentially has climbed, but this is nothing new. We think that it is a good time to demonstrate that the business model of major companies like Total is the right one. Why? Because we have the financial robustness that will allow us to go through such a cycle. Basically, our view is not to make any stop-and-goes in our investment policy. We think that if you are strong enough to continue to invest in the lower part of the cycle, then you will benefit on lower costs, and when the high cycle comes back again, you will benefit from such investments. So of course to do that, you need to be financially robust, which is our case.

We need to keep our long-term view, which is that between supply and demand, the demand will continue to grow, thanks to Asian markets and for the supply it will be difficult to grow it beyond a certain level. The price of energy, which will have to take into account the future costs of development of unconventional plays obviously will climb. So on a mid-term and long-term basis, we are of the view that the price will be higher than today. So we want to keep acting now. When you are in the upstream business, you look at not only the short-term price but the long-term price. Otherwise, you don't make the right business decisions.

So basically what we are going to do is to keep our investment program—keep the volume of projects that we forecasted 1 year ago. But the value of this program should be lower because the costs have to come down and to reflect the general trend of the world economy. On the other side, we will be very rigorous on the operating expenditures. We have requested all of our subsidiaries to control and cut down their operating expenses. So we are preserving our future, keeping the capital expenditures, but being tough on short-term expenses.

What are some of your biggest upcoming projects?

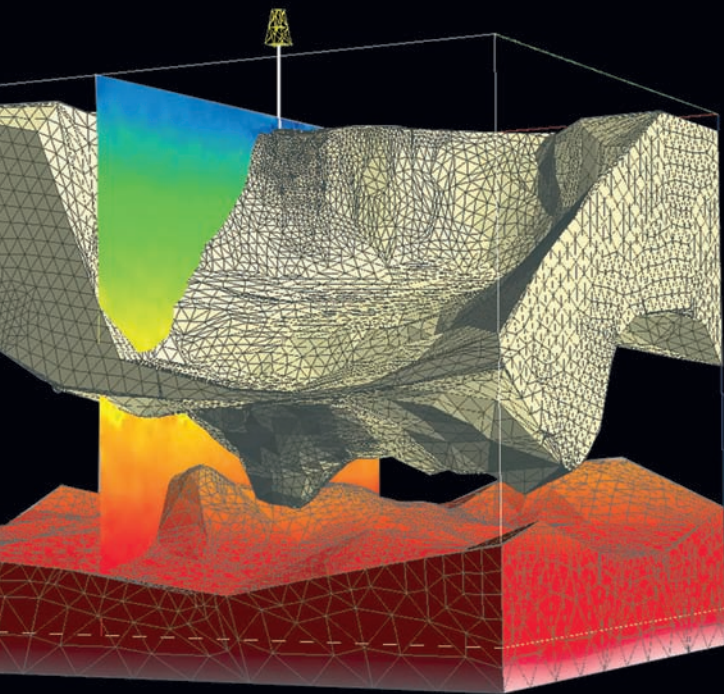
In 2009, the main big project that we have to sanction is CLOV in Angola, Block 17, which is a deepwater project, and Laggan in the UK North Sea. Most of our big projects to sanction are coming in 2010. We have Shtokman in Russia, Ichthys in Australia—another huge LNG project—and then Joslyn, an oil-sand mining project in Canada in 2011. We are in front-end engineering for these projects at present, and all of that is continuing.

The industry faced enormous commercial and technical challenges in advancing E&P development, even before the price of oil dropped. Those challenges have not at all disappeared. How does the industry tackle them successfully under the current economic conditions?

A year ago, we had to face a situation where we had high cost increases and where a number of countries wanted to renegotiate fiscal terms in order to increase the fiscal burden. On the top of that, we had tough competition because there was plenty of money in the oil industry and a number of small companies, private equity companies, independents; even national oil companies were going abroad to compete with major companies outside of their frontiers. So the life of a major company

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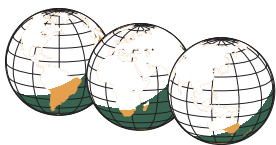
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was not easy at all. Today, we expect the costs to decrease, we have finished renegotiating fiscal terms, and competition is retreating. So my view is that, in terms of business environment, I think major companies don't like to have 150-dollar-per-barrel oil because you have very intense competition all around, despite your very good financial results.

On the technical side, the issue of greenhouse-gas emissions is really a technical challenge. We have to find and develop the technologies; the governments have to send some clear signals in terms of cost of CO₂. I think we need to have a global framework, not only in Europe but elsewhere in the world, in order to be able to take the right decisions—in order to invest in the technology. When you think about oil-sands development in Canada, for example, you cannot think of developing oil sands, if you haven't thought about development of CO₂-emissions technology. We have a project in the south of France, quite a big project, which will pilot CO₂ technology. At a gas plant, we have a 30-MW boiler that has been retrofitted. We have installed an oxy-combustion process that will capture CO₂ from plant emissions, and then we will transport and reinject the CO₂ in a depleted reservoir at an old gas field in the area. So we are investing money in CO₂ capture and sequestration. I think it is important, very important for our future.

How is R&D holding up, specifically the development of technology that will be critical in the future? What kinds of technology innovations are we seeing?

We are spending around EUR 200 million per year on R&D in the E&P sector, an increase of 50% over the past 3 or 4 years. We are continuing that trend for 2009. We have set up a target that we want to increase R&D by 10% a year over 5 years. It is so important for us, the technology. We have to keep an advantage in terms of technology, not only investing in R&D but implementing new technology. What type of technology do we develop? Technology that helps us discover new reserves, like seismic imaging; technology that helps us produce known reserves; and technology that helps us lower the cost.

So we have a number of specific technologies, such as subsea technolo-

gies that can help us develop smaller fields—long tiebacks. In subsea, deep water, we have been able to develop the giant fields; now we need to be able to develop the smaller fields, and that requires quite a number of technologies. Heavy oil is an area of investment for R&D. For example, in Venezuela, we have developed the Orinoco Belt only with cold production. The recovery factor is 8 to 10%. Being able to implement hot production in Venezuela should help us to enhance the recovery factor beyond 20%. Of course, our experience in Canada will help us, but we will still need to design a specific technology for Venezuela.

Mature assets are an area of great importance. What does the current business environment mean for these assets, and are we seeing a shift of investment in their direction? What kind of progress are we making in total recovery from the reservoir?

Mature assets are already in the portfolio; so it is not a matter of exploring or getting access to reserves. We have a mission as an oil and gas company to try to enhance recovery factors as much as possible. So to be able to manage mature assets to achieve that higher recovery is really important for us. It is costly; it is a challenge, but well worth it. First of all, the industry needs to implement IOR—improved-oil-recovery technologies. These are not new technologies, but you have a number of fields where they are not applied. When you go to Iraq, for example, water injection is not a common practice. Then you can develop new technologies for EOR—enhanced oil recovery—by using chemicals, polymers, or surfactants, which can increase the recovery factor in mature fields.

But developing mature assets is not just a question of technology; it is a question of human resources, too. If you have a dedicated reservoir and engineering team, you will be able to achieve more. In Cameroon, we have an asset that has been producing for 30 years. In 2001, we projected that the production rate of 60,000 B/D would decline to 10,000 B/D by 2008 and that we would no longer be able to produce the field in another 2 years beyond that. But with the work of the reservoir and engineering team we put in place

for this asset, each year since 2001 we have been adding a new tranche of production—essentially offsetting the natural decline. As a result, the field is still producing 60,000 B/D. And that is work, day-to-day work, with people concentrating on just that. With an asset like this one, it is a question of survival. If you are not able to do this, you will have to close the operation.

Success like that in Cameroon generally involves a combination of factors, continuous infill drilling, IOR, plenty of reservoir engineering, and reworking your reservoir models with additional production data. So I am optimistic. In all of our mature assets, each time we put in a dedicated team like this one—tell them that is your business—they manage, it's not finished; we don't see the end. That's why I think that recovery factors at fields generally can be enhanced. The current level of recovery in the industry is 33, maybe 35%. We consider that we should be able to get, at minimum, another 5% from existing fields, but that is a great deal of oil.

Sustainable development is an accepted premise in the industry and has growing implications, in a sense, with each new project. How do we assure the necessary progress on this front in an era of reduced capital and tighter economic constraints?

Sustainable development is part of our normal business. It covers various matters, such as helping local development, and of course environmental issues. It is part of the business of the industry. Some years ago, we may have been thinking that producing was one side, and taking care of the environment was another, and it was more constrained. But today, that time is over in the oil and gas industry. It is integrated into our business, controlling water produced with hydrocarbons, eliminating flaring. We have a no-flaring policy; we don't launch a new project with flaring, which is a constraint, but we manage to do that. We want to cut flaring in half from 2005 levels by 2012 on our mature assets, and we are on that road map. We have undertaken other initiatives in greater energy efficiency and in CO₂, as I have discussed. All of these commitments are being maintained.

(Contd. on page 85)

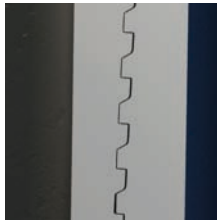
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New Online Format for SPE's Peer-Reviewed Journals

A new online format for SPE's five peer-reviewed journals was launched with the first issues of 2009. Previously, unless people were subscribers and logged in, they could not access the online journals. Now, any website visitor can view the table of contents and abstracts of each paper, purchase any papers of interest, and see a list of the journal papers downloaded most often in the past 30 days. Subscribers have access to papers from 2005 to the present, a hyperlinked references file, articles that cite the paper, and any discussion and reply on papers.

Listed below are some of the new features available for individual journal papers.

- Author names are hyperlinked to conduct a search in OnePetro.org, so website users can easily see what else the person has written.
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- A citation for the paper is provided.

- Tools are available to transfer information on a paper to one of the online reference tagging and sharing sites.

- Users can find similar papers in OnePetro.org.

The new format also allows SPE to begin publishing papers online before they appear in print. This allows authors to be published sooner, and interested readers to get quicker access to the latest peer-reviewed materials.

GUEST EDITORIAL (Contd. from page 20)

Finding, Training, and Retaining Workforce. To cope, OFS companies are working on creative recruiting initiatives and professional-development programs. They are also tapping into large, new, global talent pools in the rapidly developing technology and manufacturing economies of Asia and Eastern Europe. Embracing and leveraging cultural diversity in recruiting and professional development will be increasingly important.

Developing local and regional talent is becoming an important strategy for risk management as well as for basic demand fulfillment. As the sector's workforce becomes more diverse, companies are recruiting and training

people at all levels to work in their home countries, and developing programs with many local universities to recruit and train local talent.

A new workforce will increase the need for professional development in the service industry and policies encouraging and rewarding greater mobility will be critical to meet the requirements of the industry in this area. Integrated providers have a tremendous advantage as they can more readily rotate employees through numerous diverse environments, role, and experiences. This can greatly accelerate professional development.

Today's OFS companies face a dynamic, growing marketplace requir-

ing a sophisticated, long-term approach to business strategy. This approach involves anticipating changes and responding with capabilities to better serve a global client base.

To compete effectively at the next level, these companies are offering new services bundles and integrated products. They are launching advanced technology programs and using intelligent automation to operate assets from remote locations. They are also developing and implementing new organizational capabilities and operating models to adapt to the evolving industry structure, and nurturing a diverse and talented workforce to handle the challenges of the future. **JPT**

Q&A (Contd. from page 24)

Attracting young people and other potential newcomers to the industry workforce remains an essential long-term objective, even if the financial downturn is delaying the "big crew change" somewhat. How is the downturn affecting hiring, and, as you look ahead, what are the key selling points for E&P sector that could keep it a good career choice?

We have a problem in the industry. A number of people will be retiring in the coming 5 years. We did not recruit enough in the 90s. We were driven by cost cutting. We have launched some

large recruitment again during the last 4 or 5 years. The idea is to maintain that. We will not go through a hire-and-fire scenario at all. Most of all because it is a must; otherwise, we will have a real problem in 4 or 5 years. It takes quite a long time to train a young engineer in our business.

I think, by the way, that this crisis could help us. Recently, we had a forum in France to try to attract young professionals. The year before, we had a major job to convince a lot of them. All of these young engineers were going to financial institutions and banking. This year, there was a long queue in

front of our stand and nobody on the banking side. It is probably a good time to attract good talent. The image of the industry is maybe not so good, but it would be a mistake to stop recruiting. If we stop, we will once again lose credibility in attracting young talent. But in this financial crisis, it is a good time for a real industry like oil and gas to attract young talent because we offer them good jobs in companies that are able to invest.

So real assets have a lot of attraction. Real assets have a lot of attraction, even more today. **JPT**