MEXICO

A Shifting Energy Paradigm

A Special Report From
Oil and Gas Investor
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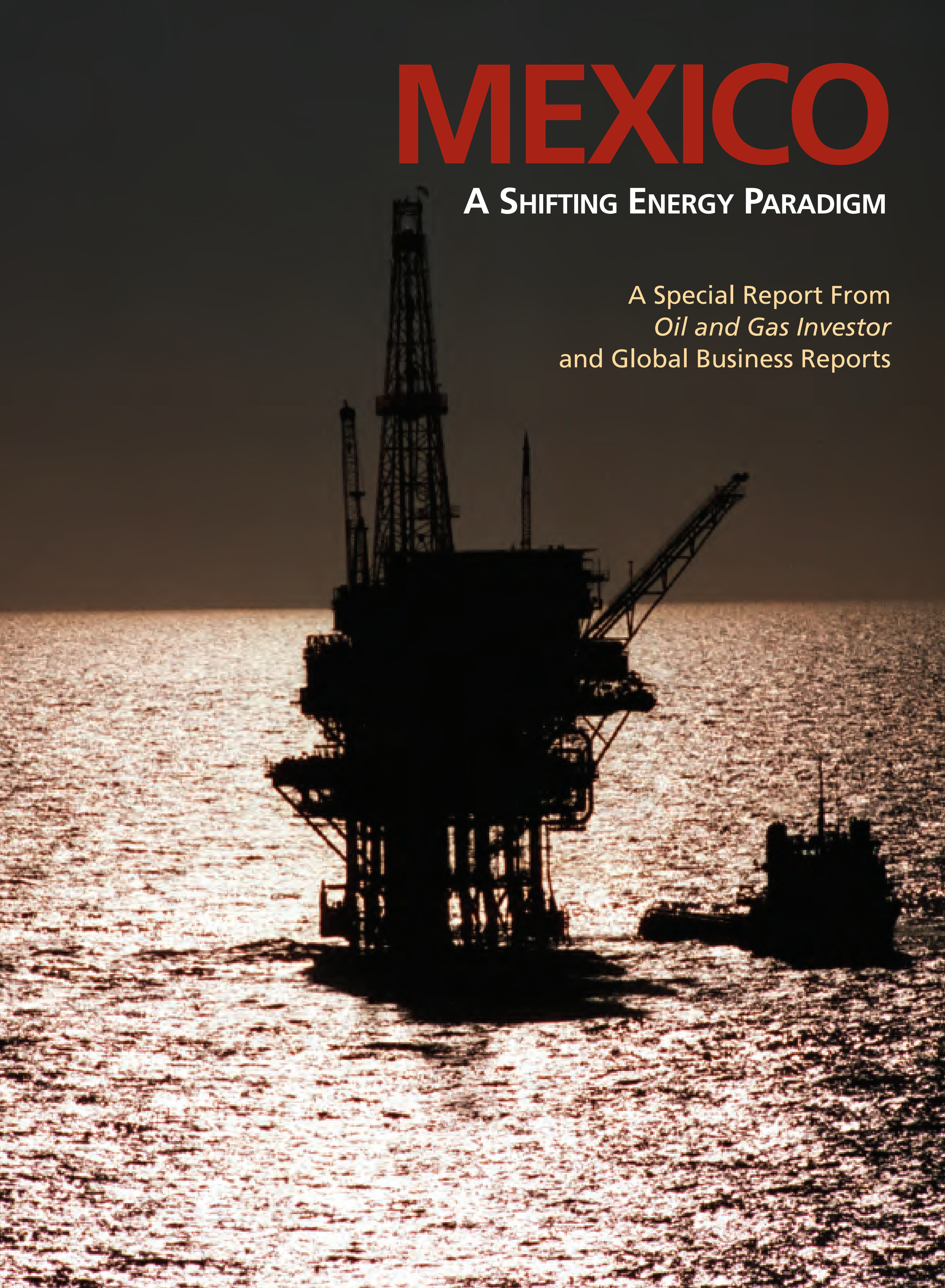

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Redesigning An Oil Paradigm

Production declines prompt energy reforms.

Since 1938, Mexico's state-owned oil giant Petroleros Mexicanos (Pemex) has retained close to complete control over the country's sizeable crude reserves. National ownership of Mexico's oil reserves is considered a sacrosanct political and historical achievement, and Mexicans view Pemex as a powerful symbol of the country's economic and political independence despite being in the shadow of the world's greatest superpower. Over the past few years, however, sharp drops in production at the large Cantarell Field have prompted the government to try to thwart the decline through a recently legislated energy reform. This report looks at the energy sector as it attempts to redesign its hydrocarbon paradigm and face up to some significant challenges.

Oil revenues accounted for 40% of Mexico's annual budget in 2008. The new energy reforms seek to give Pemex more power to self-govern and, it is hoped, rope in some much-needed foreign investment.

While outsiders may associate tequila, rather than oil, with Mexico, hydrocarbons have been crucial to the Mexican economy for many years. In 2008, oil revenues accounted for 40% of the country's annual budget.

With proven oil reserves of close to 12 billion barrels, Mexico's oil supply has garnered Pemex the status of eleventh-largest petroleum company in the world. Following President Lazaro Cardenas del Rio's decree of expropriation favoring the nation in 1938, Pemex was given carte blanche over the entire industry. Since then, the company has enjoyed 71 years of virtual monopoly, survived the Mexican economic crises of the 1980s and '90s and consolidated its position as a national symbol.

In addition to crude, Pemex expanded its monopoly to include the production of natural gas, petrochemicals, gasoline and diesel fuels. In 1995, the company averaged 2.7 million barrels of crude oil production per day, and eventually peaked at 3.8 million barrels daily in 2004 before falling to 3.5 million per day in 2007. Oil production fell a further 9.2% in 2008, and at year-end the government finally managed to legislate an energy reform aimed at reversing this trend.

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The drop in output has, in large part, been blamed on Cantarell Field's natural decline. But fingers have also been pointed at the administration and Pemex's failure to make any significant reinvestments in exploration and production since the 1980s. Despite the monumental revenues generated by Pemex (over $100 billion in 2008), it has had to pay a large portion to the federal government to cover more than two-fifths of the national budget. This has led many to describe the NOC as the government's own personal "piggy bank."

Revamping governance

In this respect, the recent energy reforms revolve around the issue of corporate governance. Realizing that Pemex had evolved from a productive organization into a crutch for the central government—and that the company's financial policies, budgeting rules and human resources were being governed by an institution that by nature was never designed to promote profit-making—President Felipe Calderon and his National Action Party (PAN) released plans in April 2008 to implement reforms that would revamp the industry. The aim: to give Pemex more power to self-govern and, hopefully, rope in some much-needed foreign investment.

The reform plans were met, however, with consternation in the Congress from the opposing Party of the Democratic Revolution (PRD) and Institutional Revolutionary Party (PRI). Also, the majority of Mexican citizens voiced a strong objection, viewing the reform as an attempt to privatize Pemex and as violating a basic principal in the constitution that ensures Mexican oil will always remain firmly in the hands of Mexicans. After exhaustive talks and negotiations, a set of energy reforms was finally agreed upon in October 2008. But to appease the almost unprecedented degree of public disapproval, President Calderon and his supporters were forced to water down the reforms and limit private-sector participation.

Industry insiders' reactions have been diverse, with some experts voicing optimism about the reforms, while others appear deeply concerned. The majority of Mexicans, however, seem merely to be surprised that the three main political parties managed to come to any form of agreement on such a controversial issue. That this has been achieved is a testimonial to the need for change; it remains to be seen whether the agreed-upon reforms will be sufficient to alter the way Pemex operates and regenerate Mexico as a major player in the energy sector.

The new rules of the game

The seven energy reform bills that have been adopted will not alter the energy business in Mexico to a great extent. They conform to the status quo that the Mexican nation will maintain direct dominion over the subsoil as well as the exclusive right to exploit and develop oil and gas. All domestic petroleum and hydrocarbon resources and basic petrochemicals will continue to be regarded as strategic activities reserved for the state. However, the bills will instigate a few small changes that could promote diversity in the sector.

Primarily, Pemex will undergo some internal changes with the appointment of four professional directors, who are expected to help improve corporate governance and strategic planning within the company. While the reforms grant the Ministry of Energy (Sener) the power to establish the annual oil production platform, the new laws will loosen the restrictions under which the company has been operating in the past. They give Pemex greater freedom and autonomy, and substantially increase its 2009 E&P budget by 27%, according to sources. Also, under the new legal framework fewer restrictions will be imposed on the contracts that Pemex is able to award to companies from the private sector.

Historically, Pemex has never been allowed to enter into product-sharing agreements, participation agreements or to grant concessions with private companies, as this would undermine Article 27 of the constitution. Private investment in the sector could only be undertaken through the restrictive procurement laws, which relate to acquisition, leases and services for the public sector as well as public works and services. Under the new scheme, companies and investors will be able to operate under performance-based incentive contracts awarded by the new Pemex board of administration, which will be advised by a new transparency and auditing committee.

While a number of Mexican companies will benefit from these new contracts, foreign companies will need to demonstrate a solid presence in the country before being considered worthy of winning a tender. Speculation is rife as to whether the incentives behind these new contracts will be beneficial enough to entice big players to enter the deep-sea oil and gas sector, which Mexico desperately hopes to develop.

For many, one of the more interesting aspects of the reforms is a bill that creates the National Commission of Hydrocarbons, which will in effect act as a regulatory commission over the upstream sector. Unattached to Sener, the regulatory commission will be given authority over the regulation and supervision of all exploration and production in the country. Likely to be modeled on the Energy Regulation Commission (CRE), which handles the more flexible market for transportation and distribution of natural gas and LPG (and has been considered a great success since its formation in 1992), the new hydrocarbon commission is charged with increasing efficiency and transparency in all business relating to exploration and production.

Perhaps the greatest disappointment to arise out of the energy reforms is the lack of any major changes relating to Mexico's refineries. The country currently imports 40% of the gasoline it consumes, and it was hoped that private investment could bolster a drive for new refineries. This was not the case, however. Currently, the government has plans and investments in place to construct a new refinery in Tula, in the state of Hidalgo, but there is wide-spread skepticism as to whether this will be sufficient to stop the country from becoming a net importer of gasoline.

> **Companies** *and investors will be able to operate under performance-based incentive contracts.*

The new laws initiated by the reforms also focus on renewable energy, and give Sener the responsibility to conceive and operate a renewable energy program. It envisions implementing a national strategy for the sustainable use of energy, through incentives for companies working towards producing renewable energy schemes and instigating proven energy savings.

The most important achievement of the reforms has been to create a more level playing field for the political parties to discuss oil-related issues with a high degree of technical and political complexity, leaving aside emotions and ideology. While the energy reforms will no doubt help develop Pemex's corporate governance and allow private companies more freedom to enter the market, the reforms are viewed by many as simply a first step in the right direction, with more needed in the future. □

An Interview With Mexico's Secretary Of Energy

Georgina Kessel, secretary of energy, discusses Mexico's drive toward reviving its oil and gas industry following the energy reform.

Global Business Reports (GBR): *The energy reform was debated for well over 15 years before finally being legislated late last year. What are the principal obstacles that the government faces in the immediate application of the reforms?*

Georgina Kessel (GK): We need time to execute a number of operations instigated by the reforms that were recently adopted. These will include a new system for performance contracts for the hydrocarbon sector, the entire part of a new legislation on renewable energy, all the necessary parts of legislation on energy efficiency, and of course, all the changes with regard to the restructuring of corporate governance for Pemex.

Georgina Kessel, secretary of energy, believes the new reforms will permit a broader regulation of the sector.

I believe that the reform was very comprehensive and that it will give the regulatory authorities a series of tools that will allow us to better regulate the sector far more broadly and expansively.

GBR: *Can you detail how strategies and protocol will change in light of the recent energy reform to ensure Pemex becomes a profitable institution and what exact role Sener will play?*

GK: From its inception, the Calderon administration has understood how the uncertainties inherent in the hydrocarbon sector pose a substantial risk to the energy security of Mexico's future generations. What we see today in our petroleum industry is not a sudden and unexpected development. Rather, it is the unavoidable result that comes from decades of neglect; an inertia created by political expediency and short-sightedness. Currently, over 90% of our production is based in fields that have already passed peak production levels and are in a state of decline, such as Cantarell. Ku-Maloob-Zaap will soon follow.

Pemex has a strategy in place for this situation, and it includes several measures to manage the decline of these two sites. These include increasing the production capacity of existing wells, the installation of gas-injection equipment, dehydration and desalination of crude oil, operational process automation and the application of rational technical criteria. Our production goals are aggressive.

In addition to the measures listed above, Pemex will also need to expand exploration to find new fields and bring them online as soon as possible to meet our goals. I have stated several times that Mexico must explore new fields in areas that present greater technical challenges in terms of complexity of watershed and geology, such as the reserves at Chicontepec and the deepwater reserves in our national waters in the Gulf of Mexico.

The reform approved by Congress achieved a significant structural change in the oil industry, as well as reforming Pemex itself. This reform allows us to move forward, making it possible to meet the goals that we have set for ourselves, particularly in production and the restoration of reserves. In the short term, these changes will enable us to halt our recent decline in oil production, and increase the reserve-restitution rate. We expect that during 2009-2010, production levels will be between 2.7- and 2.8 million barrels per day. Then, beginning in 2011, production will gradually increase, reaching 3 million barrels per day in 2015, and by the end of the current administration (2012), the reserve-restitution rate will reach 100%.

GBR: *What was the purpose of creating the National Hydrocarbon Commission (NHC)?*

GK: The National Hydrocarbon Commission will have as its main objective the regulation and supervision of petroleum exploration and extraction, as well as all products that accompany or result from these activities. These include processing activities, transportation and storage.

Responsibilities within the purview of NHC include providing the technical details necessary for defining national oil policy, as well as regional exploration and production programs; collaborating with the Ministry of Energy to determine a national policy for hydrocarbon reserve restitution; establishing the necessary technical guidelines to identify appropriate sites for exploration; conducting studies to assess, quantify, and verify national oil reserves; establishing official Mexican standards that fall within the jurisdiction of the commission; and verifying compliance with those standards.

GBR: *Where do you see the best opportunities for foreign companies looking to invest in the Mexican oil and gas sector?*

GK: All oil production in Mexico is reserved solely for the government as the representative of the Mexican people. For this reason Pemex is the only company that can legally produce Mexican oil. However, the newly enacted contract framework allows Pemex the freedom to establish project or service contracts, which offer incentives related to the success of the project. These contracts are subject to the following conditions: compensation is always and only in cash, it is not possible for any government entity to cede ownership of Mexican hydrocarbons to any non-Mexican entity, contracts cannot include clauses to share either production or profits, and contracts cannot include any clause that cedes or establishes a preferential right to acquire petroleum or its derivatives.

The new framework gives Pemex more autonomy and flexibility in operation and investment spending. Now the company has new terms of engagement that allow it to explore and exploit hydrocarbons in a more agile and efficient way, ensuring a more timely response to market conditions. This will attract greater foreign investment. □

The Path To Reform

Changes to Pemex represent a political triumph as well as opportunity for foreign companies.

Transforming a giant like Pemex was never going to be an easy task, and no matter how inconsequential the energy reforms may appear to some observers, they represent a political triumph. With a history stretching back more than 71 years, since President Lazaro Cardenas nationalized the industry in 1938, the national oil company's (NOC) governing policies have undergone few if any major changes. Essentially, the legislation governing the oil industry in Mexico was drafted in the 1930s.

"Pemex is an important engine of the Mexican economy that has been run by very peculiar rules," says Raul Livas Elizondo, chief operating officer of Pemex. "As a result, we have not been contributing efficiently to the economy. It is desirable for a company to generate more revenue at a rational cost, but Pemex has been governed by rules that only control the cost, which creates very irrational behavior."

Raul Livas Elizondo, chief operating officer of Pemex, says the objective is to accomplish full replacement of reserves.

Because many Mexicans sold off their family riches to help the government raise enough capital to buy out foreign companies during expropriation, any form of energy debate regarding Pemex has been regarded as taboo. These debates have traditionally become heated, and when President Felipe Calderon first raised the issue of energy reform in April 2008, Andrés Manuel López Obredor, a former presidential candidate and member of the Party of the Democratic Revolution (PRD), rallied his supporters and occupied both houses of Congress, chaining the front doors in an attempt to prevent approval of any changes that could lead to even partial privatization of the sector. To appease popular sentiment, therefore, Pemex's leaders have traditionally painted an optimistic picture of the company's operations for the public while appealing to government to initiate change.

While some experts have argued that short of privatization, little can be done to save Mexico's oil and gas industry, Livas disagrees. "We have a very clear mandate from the population and there is a very strong objection from the majority of citizens in Mexico to privatize Pemex. This is something we need to obey. It is the will of the people. If you were to look at the situation exclusively from a performance perspective, privatizing the company would most likely be more effective, but violates the basic principal that is encapsulated within the constitution."

In view of increasingly pessimistic news from Pemex managers, agreement was eventually reached between the prominent political parties in Congress, leading to the energy reform legislated at the end of October 2008. But it remains to be seen whether the changes will, firstly, be enough to reverse Mexico's oil-production decline and, secondly, whether those in charge possess the will and dedication needed to ensure the reforms' success.

Immediate challenges

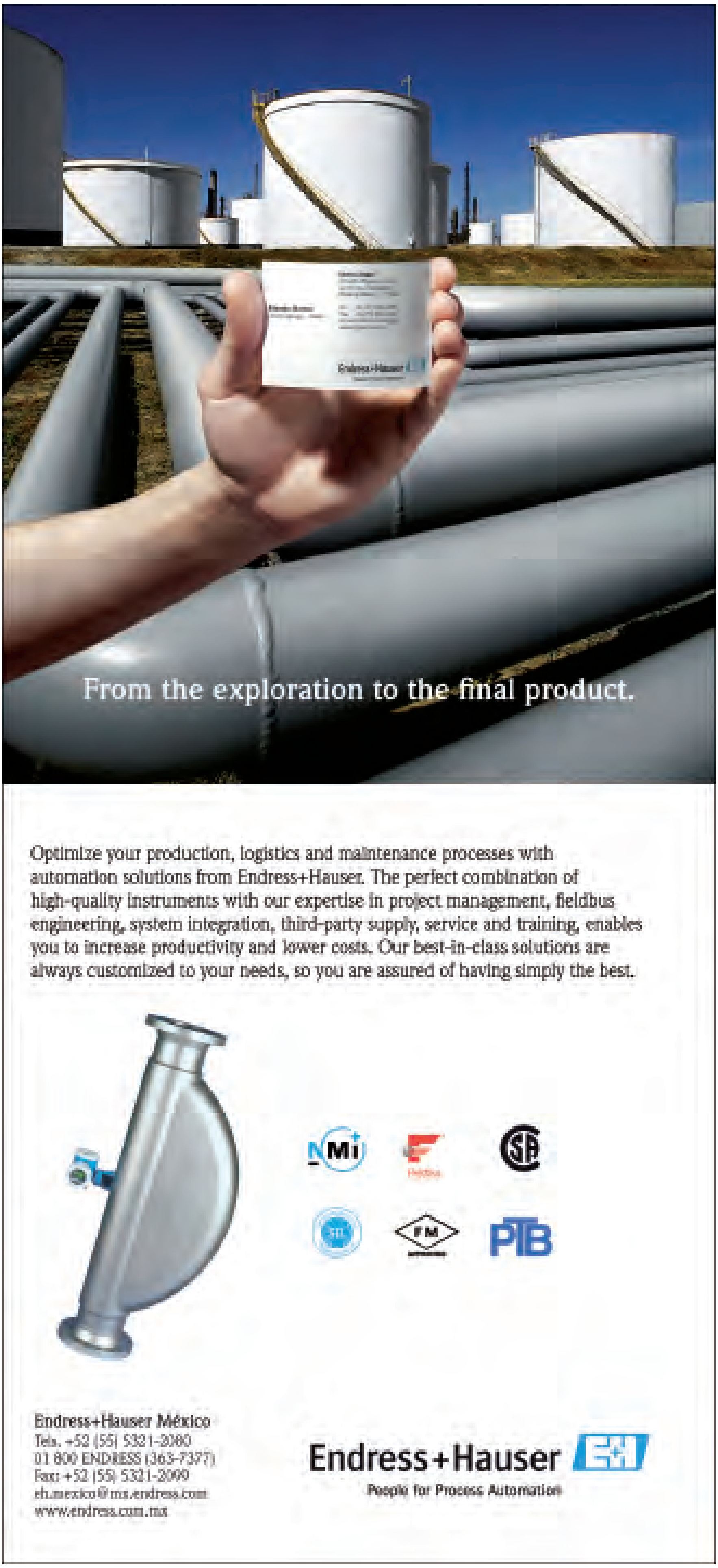
During the recent celebrations of the 71st anniversary of the NOC in March 2009, Pemex released figures showing crude oil and natural gas reserves had fallen for the tenth consecutive year. This was due to the decline of Cantarell Field—a supergiant said to contain the third-largest known deposit of crude. Oil production in 2008 stood at 3.1 million barrels per day compared to 3.5 million daily in 2007.

Says Livas, "The situation in Pemex is currently characterized by the evolution of its main oil field, Cantarell, which is presently undergoing a decline. The future challenges are enormous, not least of all because extracting oil from Cantarell required far less investment than the new oil fields."

While the Energy Information Administration forecasts that Mexico will produce 2.9 million barrels of oil per day in 2009 and 2.7 million barrels daily in 2010, President Calderon pointed out at the anniversary event that while production had been declining, the country had experienced a reserve-replacement ratio of 71% in 2008, up from 50.3% in 2007. He went on to say that he fully expected the reserve-replacement ratio to reach 100% or more by 2012.

"Our objective for this administration is to accomplish full replenishment of reserves with 1P and 3P reserves and reach a sustainable phase in our production," says Livas. "With the 3P figures, this replacement ratio has been accomplished already. The figures released show that in 2008 there was a 71% replacement ratio in 1P and 102% replacement ratio in 3P." While these figures show potential, the high replacement ratio can in part be explained by lower output levels, rather than increases in reserves.

Whatever the case, Livas admits that there is an immediate need for a lot more activity on all levels, and that the need to maintain the production platform requires massive investment in E&P. While Pemex's E&P budget is estimated at some $19 billion (all amounts in U.S. dollars) for 2009, Livas explains that far more important in reversing Mexico's downward trend will be the application of the energy reforms. "By removing the straightjacket under which Pemex is currently restrained, the NOC will be enabled to move forward at a much faster pace."



Acclaimed energy analyst David Shields has been living in Mexico since 1980. He is the editor of local magazine *Energia a Debate*, and has written two books on Pemex. He emphasizes that what is important about the energy reform is that as a piece of legislation it gives the people in power much to accomplish. Committees must be created, regulators named, and a score of business and work plans drawn up. "The reform in itself is nothing," he says. "The next phase is now and it is critical. Whether or not they can get the committees, work plans, and contracts actually working in an optimal way so as to create business and attract investment remains to be seen."

Currently the reforms' success depends upon successful implementation of attractive contracts, establishment of a functional National Hydrocarbon Commission, and the outcome of the different types of autonomy awarded to Pemex. Says Shields: "The big challenges are here and they need to be tackled now."

His comments are backed up by Luiz Ferezin, Accenture's project manager for Mexico. "We have not seen NOCs going from 0 to 100 in a matter of seconds, and this will not be the case with Mexico. However, we see this reform going in the right direction, and as soon as the committees that were created start to act—and they are still learning how to work—and as this starts to move, we will probably see additional change that will make the processes more efficient. This is a very positive move, but the reform itself is no doubt an evolutionary process."

Creating a new administration

The most important aspect of the energy reform revolves around creating a new set of rules for Pemex and restructuring the administration of the NOC. "The key aspect to understand about the reforms, which can be difficult to comprehend at times, is that at their heart is the issue of corporate governance," says Livas. As with the evolution of NOCs elsewhere, there is a general desire to shift these corporations away from the restrictions imposed upon them by central government and towards a more liberal and profitable playing field. "Governments were not designed to control the production of goods and services in a competitive market; they were established to provide services that the population needs based on taxation,"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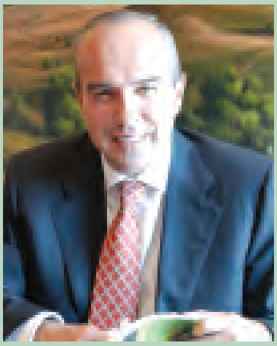
says Livas. Thus, the reforms were aimed at giving Pemex the power to govern its own human resources, financial policies and budgeting rules.

To realize this, the energy reforms established a new board of directors for the company that will include four independent advisors. The importance of these new members is to empower the board's decision-making while creating a set of modern accountability rules. While these four independents were intended to be selected in December 2008, they were not chosen until this March. This does not show a lack of dedication on the government's part to push through the reforms, but rather, reflects the time and effort required to ensure the right people were selected, according to Livas.

The new board members include Rogelio Gasca Neri, who formally headed the *Comision Federal de Electricidad* (CFE, the Federal Electricity Commission); José Fortunato Álvarez Enríquez, a member of the governing National Action Party (PAN), who has worked in a number of state-run financial institutions; Héctor Moreira, also a member of PAN and former researcher at the Tecnologico de Monterrey University; and Fluvio César Ruíz Alarcón, a former advisor to Andrés Manuel López Obredor, who battled President Felipe Calderon in the 2006 presidential election.

Analyzing the new legal framework



Energy-focused attorney Rogelio Lopez-Velarde says Pemex will have a regulator for the first time.

Mexico has finally decided to change its oil and gas industry. On the one hand, for the first time the oil and gas monopoly—Pemex, the national oil company—will have a regulator. This will result in better industry standards, as the regulator, the National Hydrocarbon Commission, intervenes in restitution of reserves, recovery levels and technology.

On the other hand, Pemex's new framework will allow it to operate more like a public company and less as a governmental department. Corporate governance rules with professional directors taking the lead in issuing contract rules and evaluating the company's performance should materially help Pemex shift towards enhancing economic value and increasing productivity levels. Also, the placement of "citizen bonds" in the securities market—with yields linked to Pemex performance—should bring accountability to the NOC's business. The market will oversee its performance, strengths and weaknesses, business plans and prospects—something the organization has been lacking for decades.

In its effort to materially increase productivity, restitution of reserves and production levels, Pemex must not only go to the deepwater frontier, but also must work on difficult onshore areas such as Chicontepec. Oilfield service companies and private investors (both domestic and foreign) will play a major role. A cornerstone of the reform is Pemex's ability to issue its own rules for entering into service contracts, which should allow the company to approach more internationally standard service contracts. Oil and gas contracts (for upstream, midstream and downstream) will be carved out from the government procurement laws and given a new contracting framework expected to result in more commercially oriented agreements. Pemex is also authorized to build incentives into the contracts, with very broad modalities, including per-barrel fees and payments based on findings, among others.

Finally, Pemex will be given considerable latitude and autonomy from the financial and budgetary standpoint. It, rather than the Ministry of Finance (Hacienda), will decide what projects to undertake and invest in. It will also negotiate and assume its own financing with foreign and domestic lenders with no intervention from the ministry. These enhancements, plus an increase in available resources based on improved ability to reinvest part of its revenues, should boost the number of projects available for companies working in the field.

—Rogelio Lopez-Velarde

A number of industry experts have praised these selections. Leading energy attorney and former head of the international legal department for Pemex Rogelio Lopez-Velarde, of law firm LVHS, describes the four independent directors as very capable individuals. "These new directors know the nitty-gritty of the government and Hacienda (Ministry of Finance), and by the same token, they are also mindful of the lenders' issues and financing."

When asked whether the political backgrounds of the four new directors would remove transparency and authenticity with regard to their being independent overseers, Livas points out that while they do have some varied political backgrounds, this can be seen as a means of representing the differing views of the Mexican people, all of whom have a right to say how the NOC should be governed and run. "The names of the four professional members of the board satisfy a broad set of interests, and I think it is going to be helpful in terms of having easier conversations and developing a greater trust-building capacity between Pemex and Congress."

The new advisors will not only represent Pemex on the board of directors, but will also control and supervise some of the more important committees created by the energy reforms, such as strategy and investments, auditing and performance evaluation, transparency and rendering of accounts, works and services, and leasing, among others.

A new financial instrument

Another significant aspect of the new Pemex administration involves citizen bonds, which were, for the most part, fully approved in the reform proposal.

While the exact measures of these bonds remain to be worked out by the Ministry of Finance, the design of this new mechanism should be made public by year-end. These are a financial instrument that is linked to Pemex's economic results, says Livas. "Once the instrument is out in the market, it will serve as a proxy to determine how well Pemex is performing economically." Essentially, the holders of these bonds or instruments will have an interest in analyzing the company's results as well as possible deviations from expected results. "We will establish a market discipline on Pemex which will be very helpful to attain the long-term objectives of the

organization," says Livas.

Lopez-Velarde is optimistic about the corporate restructuring. "The most important aspect of the reform is that the Pemex mandate will be to create economic value for the company." This change in mindset is in fact a historical shift for Mexico, as Pemex has never been given the flexibility or encouraged to focus on profit. The citizen bonds will act as proxies forcing Pemex managers to focus on results.

Redefining E&P

Pemex enjoyed a strong exploration program during the 1960s and '70s, when large deposits were discovered in the provinces of Chiapas and Tabasco. Gigantic discoveries in the Sound of Campeche, including Cantarell Field, followed in the late '70s. But the discovery of Cantarell spelled disaster for the future of exploration. Investments from the E&P budget were diverted towards development of the huge deposit, leaving other exploration efforts badly neglected.

Carlos Morales Gil, the director general of Pemex Exploration and Production (PEP), who has worked for the NOC for more than 30 years, is openly critical of the decision to not reactivate new exploration initiatives sooner. "That is something that should never have happened," he says. "I believe that at the moment when the decision was made to speed up production in Cantarell, exploration activities should have been reactivated as well."

Active exploration resumed four years ago, near the end of Vicente Fox's presidency. However, as Morales points out, "Exploration is not an overnight activity; you have to work for several years to rebuild capacities, the peoples' strengths, the acquisition of information, especially after so many years of being inactive in that field." The goal of the area under his command is to fully replace the reserves that are extracted every year, which he hopes to accomplish by 2011 or 2012. The E&P budget for 2008 was more than $17 billion; for 2009, the figure looks set to exceed $19 billion. Most of this investment will be spread among onshore E&P (primarily in the Chicontepec Basin), deepwater E&P, and shallow-water activity to increase the production of assets in Cantarell and Ku-Maloob-Zaap fields.

The Chicontepec *Basin is currently Pemex's major area of focus…*

Morales highlights the need for investment in shallow waters, saying, "We have very good quality reserves and the rock is not too complex." Ku-Maloob-Zaap overtook Cantarell on January 6 of this year for the first time, producing 822,000 barrels of crude compared to Cantarell's 811,000 barrels produced on the same day. In response, investment is being directed to Ku-Maloob-Zaap's recently discovered satellites: Ayatsil and the Pit Block. Also being funded is light marine crude exploited in the shallow waters off the state of Tabasco and onshore, to keep the levels of light oil at some 1 million barrels daily.

Focus on Chicontepec

The Chicontepec Basin is currently Pemex's major area of focus, and it is hoped that this area will supplement Cantarell's declining oil production in the short- and medium-term. It was recently announced that the basin contains an estimated 139 billion barrels of reserves; however, with current technology and a 7% recovery rate, Pemex will only be able to exploit an estimated 18 billion barrels of crude from Chicontepec over the next 30 years. This has not deterred its E&P aspirations for the region, and the NOC plans to sink more than 16,000 wells there over the next few years.

Chicontepec is a notoriously difficult field to exploit owing to the area's rough geological aspects and the fact that the rock is extremely hard to drill through. Drilling in the basin, which covers an area of 3,800 square kilometers, is further complicated by the dense population, which includes numerous indigenous communities. With previous development in the area having been shut down in the early 1980s, production is now under way. In light of the decline at Cantarell and the fact that the size of the Chicontepec reservoir has been compared with reservoirs in Saudi Arabia, the field's development is of utmost importance. However, the company does not currently possess the technology to sufficiently exploit the field's reserves.

To remedy this, Pemex is working closely with the Instituto Mexicanos del Petroleo (IMP) along with a number of large international service companies to fully exploit every new form of technology available. Héber Cinco Ley, director general of the IMP, explains: "At this point they are obtaining about 7% of their recovery factor, and we have to find a way to help them increase this recovery factor and double it, at the very least."

The IMP has received substantial funds from the central government to aid this effort. "Since the very beginning, the IMP has never received any money from the government; we only receive payment for our services directly from Pemex," says Cinco Ley. "However, as a result of the energy reform, we will be receiving some research funds from the government and this year we are going to receive around $30 million from them."

Recently, Schlumberger and Weatherford won contracts to develop wells in the area. Schlumberger bested Weatherford, Halliburton and Baker Hughes with its $690 million tender for the ATG 3 package, which includes developing 500 wells. Weatherford then outbid Mexican company Industrial Perforadora de Campeche for the ATG 4 package, which also includes the rights to develop 500 wells in the area, for $648 million. This was the third contract won by Weatherford there. Last year it picked up two contracts valued together at $870 million to drill up to 600 wells. However, Pemex has been forced to fine Weatherford for missing drilling deadlines on both of these contracts, and a number of competitors have accused it of underestimating the costs and difficulties of drilling in the area of ATG 4, claiming that they will eventually have to significantly cut the profit margins for the drillers working for Pemex.

Deepwater investment

While the Chicontepec Basin provides numerous challenges, Pemex hopes it will provide enough crude until it can undertake deepwater E&P.

Regarding Pemex's deepwater efforts, Morales indicates that the new reserves are going to require Pemex to keep investment coming. It is unlikely that the NOC will find reservoirs comparable to Cantarell, but instead will discover smaller reservoirs requiring a lot of activity and a continuous investment flow. "We must never forget that we are in the Gulf of Mexico, which we share with the U.S. In this light we expect to benefit from the wide experience in the U.S. part of the Gulf so as to speed up our own processes," he says.

Heber Cinco Ley is director general of the Instituto Mexicano del Petroleo.

Apart from the fact that production within these deepwater reserves, by the most optimistic estimates, will take at least seven years to develop, it remains unclear whether the performance-based contracts due to be released by Pemex towards the end of the year will provide benefit enough to rope in the large foreign NOCs and IOCs that possess the technology to extract these reserves.

Says Luis Miguel Labardini, a partner at Marcos y Asociados, a Mexico City-based finance boutique, "The incentives based in the new contracts will have to take into account that each of the operators has an opportunity cost to the capital cost invested, and this opportunity cost will have to be met one way or another, even though the constitutional constraint does not allow the Mexican government or Pemex to directly link compensation to production, or to oil finding, or to the value or volume of production."

Pemex and the Mexican government will likely need to draft the contracts to take into account an operator's expected return on its capital investment, and these contracts will have to be flexible. Labardini is upbeat: "There will be interesting times, and my expectation is that Pemex, the Mexican government and the operators will move very rapidly into finding the right terms of engagement."

A final area of interest is marginal or mature fields. It is estimated that in southern Mexico, of the more than 7,000 wells that have been drilled, fewer than 2,000 are being used to produce. Mexican company Comesa, often described as a little cousin to Pemex, is very involved in these fields. Comesa director general and president Adán E. Oviedo Pérez, along with a number of energy analysts working in Mexico, believes that the development of these previously abandoned mature and marginal fields may provide Pemex with the fastest way to recover from production declines in Cantarell Field.

Incentivizing contracts

Without a doubt, the reform of most interest to potential investors and companies is the development of soon-to-be-released new contracts, which will determine the criteria for companies to work alongside Pemex. Livas of Pemex asserts that the NOC is "working on a set of contracts that will have proper incentives for the performance of the execution of the works that are related to the contract itself." Pemex hopes to set up the appropriate balance between risk and reward, and success is crucial. "Pemex will need to complement itself with the capacities and capabilities of other companies in order to properly execute all of the tasks that lie ahead."

The contracts themselves will of course be limited by Pemex's inability to share production or grant concessions, and so will be oriented to technology-contribution and service-rendering models. While this would seem to exclude the interests of larger players, it would have been unrealistic for the majors to expect the energy reform to grant a carte blanche entry into the sector. They will have to decide whether the contracts, once released, provide enough incentive to enter the market.

Nevertheless, Lopez-Velarde of LVHS says the contracts "will represent a cultural revolution in the way we operate business. We are talking about an industry that has been working for 70 years, and now it will need to reward companies based on performance. It will not be an easy change, and it will take years."

Pemex has always been subject to constitutionally mandated government procurement laws, which apply to all ministries in the country. Dur-

A large industrial zone supporting the energy sector is at Cangrejera.

ing the reform process, however, Congress decided that instead of creating a specific statute to regulate Pemex contracts—which would have caused political infighting between the leading parties—it would be more beneficial to simply amend a provision stating that the government procurement laws do not apply to Pemex's core substantive productive contracts. While these include nearly all contracts relating to the NOC's activities and operations, a new set of laws and rules, drawn up by the Pemex board of directors, will have to be established to govern these contracts, says Lopez-Velarde.

This process will be extremely beneficial for the industry for two major reasons. First, the board of directors is going to issue clauses that are directly advantageous for Pemex and the industry's growth, which was not the case in the past. Second, if any errors are made in the guidelines of the new contracting rules, the board can simply make a resolution amending the guideline. If the regulations were established by law, any changes would be subject to action by Congress, which would be a lengthier process.

Making the reinvention of the contracts subject to the board of directors' approval rather than Congress reflects a sea change in the NOC's operations. Previously, "all of Pemex's contracts have not had the best interests of the company in mind," says Lopez-Velarde. Because the new independent advisors on the board of directors will also chair the acquisitions and procurement committee, it is likely that the new contracts and regulations will be attractive to IOCs and service contractors.

These incentive-based performance contracts, as they are being called, will be cash based and completely unrelated to any of Mexico's crude resources. It is hoped that they will be awarded under the terms of additional compensation for increased performance, and Pemex will ultimately become more productive.

Managing risk

The risk and liability aspects of the contracts remain a major concern for companies wishing to work for Pemex. The new system may address these concerns. Even though it is the only buyer among many sellers, risk-management issues have prevented Pemex from selecting the best services at the best prices. While the current regulation aims to reward the lowest bidder, Pemex's costs are reportedly 30% higher than the global industry standard. "The way to change this is to lower the risk profile of the contract, because when you make the contract too one-sided, you end up participating with a high contingency risk fee, which at the end of the day is being paid for by Pemex and tax resources," says Lopez-Velarde. It is expected that the new contracts will provide interested parties with more attractive risk-related clauses to lower expenses over the long term.

It is likely that the new contracts will be released by second-half 2009, allowing Pemex to start formal negotiations through bidding processes. While no definitive date has been set for the release, Livas reckons that Pemex will have the first drafts of the contracts ready by June. "We will be ready with the documents and depending on how the market is behaving, it will be seen whether we can achieve our first contract this year, which is our objective."

At the end of the day, companies—especially foreign ones—should understand that while the Pemex contracting landscape is changing, profiting from agreements with the NOC will be not be easy. The legal framework and regulations will remain extremely complex, and outsiders who do not understand the multilayered operations and modus operandi of the Pemex institution will continue to find it easier and more lucrative to partner with a local Mexican company rather than go it alone. Labardini advises anyone interested in working in Mexico "to understand and be willing to commit and lock into a long-term strategy instead of a short-term opportunistic strategy."

"The foreign companies that decide to really get involved from the ground up are the companies that are going to make it," agrees Shields.

Developments in natural gas

Mexico estimates it will produce an average of 6.45 billion cubic feet per day of natural gas in 2009. Shell operates a liquefied petroleum gas (LPG) plant in the Gulf of Mexico close to Altimira, and Sempra operates one on the Pacific. The main areas of natural gas production are in the northern region of the country at Burgos Field, where Pemex recently announced plans for a $276-million investment in the gas-processing facilities as part of an overall $613-million planned investment over the 2002-2009 period.

Developments in deepwater E&P are another area of interest, with gas production expected to expand significantly there.

While Mexico remains a net importer of natural gas, Pemex currently provides 95% of all natural gas supplied in Mexico, with the remaining 5% coming from the U.S. Since 1994, the sector has been regulated and controlled by the Comisión Reguladora de Energía (CRE, the Energy Regulatory Commission).

Private participation within the sector became far more accessible after the 1992 reform to the electricity act, allowing private investment. Francisco X. Salazar Diez de Sollano, CRE president, believes two main problems challenge the natural gas sector. The first involves market distortions. "As long as the government does not decide to liberalize the price of LPG and give us the power to link it to the market, the growth of the natural gas industry will be limited. Although natural gas is still more competitive than LPG, it is not as competitive as it should be due to the implicit subsidy on LPG," he says. Unless they are very large users, there is not sufficient incentive for consumers to switch from LPG to natural gas.

Francisco X. Salazar Diez de Sollano, president of the Comisión Reguladora de Energía, says the price of LPG should be linked to the market to incentivize natural gas use.

The second challenge is linked to rights-of-way and local permits to expand infrastructure. Salazar Diez de Sollano believes local governments should play a more active and encouraging role.

Agustín Humann Adame, executive president of the Asociación Mexicana de Natural Gas (Mexican Association of Natural Gas) explains that while the industry is growing in Mexico, it has not been growing fast enough. "We do not have sufficient infrastructure in place currently to transport the gas, and as a result, we

Tabasco is the site of the new Pemex gas processing complex.

Senator Francisco Labastida Ochoa says there will be no problem supplying the crude to the new refinery at Tula.

are looking for increased participation from the private sector with regard to the introduction of more pipelines for the transport of gas and the development of new zones for its distribution and commercialization."

However, the energy reform will make Mexico an attractive location to invest in natural gas in the future, says Humann. "Following this, we will have a far better developed natural gas industry that will attract even further investment."

Refinery expansions

On April 15, Jesus Reyes Heroles, Pemex general manager, announced that a new refinery will be built in Tula, in the state of Hidalgo. The plan reportedly involves a $10-billion investment for construction of a refinery capable of processing 300,000 barrels a day, boosting Pemex's refining capacity by 19%. Reyes Heoles also announced plans to invest $3.76 billion to revamp the Salamanca refinery.

There is a definite need for a new refinery, given that the country imports a little more than 40% of the gasoline it consumes while exporting crude to countries as far afield as India. Mexico currently has six operational refineries. The past lack of interest in investing in a new refinery to counter growing gasoline product imports has stemmed from Pemex's determination that the refineries' rates of return are relatively low. It has not invested in a new refinery in more than 20 years.

"While we have modernized the existing refinery cluster in the country—and in doing so allowed some expansion of the installed capacity of refined gasoline—demand for gasoline is growing more rapidly than we can offer it," says Roberto Newell of the Institute of Mexican Competitiveness. He estimates that to supply internal demand growth, Mexico will probably need to build at least two more refineries in the next five years, "although a number like five or six makes much better sense."

Given the decline in crude production, some sceptics have asked whether there will be sufficient crude to merit development of a new refinery. "We will have no problem supplying the crude to the new refinery, even if we build two more refineries," counters Senator Francisco Labastida Ochoa. He expects production in Chicontepec to eventually reach 600,000 to 800,000 barrels per day and also sees great potential offshore.

Environment and sustainability

A new Pemex also means a new approach to the environment and sustainability. Carlos de Regules Ruiz-Funes, Pemex manager of environmental protection, outlines his strategy: "The main aspect defining Pemex's environmental strategy is that it is a business strategy; thought out as an instrument to allow the business strategy to become a reality, and I feel that this makes it an all-around robust strategy."

The Pemex environmental department budget will grow to $10 billion from 2007 to 2012. Its investments have and will be dedicated to increasing fuel quality by reducing sulphur content in gasoline and diesels, increasing sulphur recovery in Pemex refineries, benefiting from cogeneration plants, reducing gas flaring, and emphasizing land remediation and water treatment.

An interesting initiative that Pemex hopes to adopt will involve a focus on working only with environmentally conscious service providers. De Regules explains that Pemex is working on a pilot project to incorporate the carbon footprint of his organization's suppliers. The aim is to create a culture among suppliers that will enhance the way they compete for contracts while benefiting the environment. "It will not become an imposition from our side, but rather create a competitive issue among these suppliers. I would encourage anyone interested in working with Pemex to cut their emissions in order to have a successful future relationship with us," he says.

While the energy reform appeared

to focus on Pemex and the overall operations of the oil and gas industry, it also addresses renewable energies, alternative-energy sources and energy-efficiency savings. Sener's Gabriel Budebo expects the measures to expand the renewable-energy sector.

"Wind and solar energy projects will receive an initial fund of 3 billion pesos, which is designed to support relevant investments recognizing that they have positive externalities (reduced emissions that could generate social benefits, etc.) without generating widespread subsidies that do not make sense; but rather quantifying the benefits, not captured through the market price, but captured through the analysis of the benefit of reducing emissions and other factors," he says. This puts Mexico on the path to not only developing its fossil fuels, but also to producing renewable energies over the medium and long term. The result? A much cleaner balance sheet and more environmentally friendly energy generation for Mexico.

Surviving the crisis

Thankfully for Mexico, Agustín Guillermo Carstens, the secretary of finance, had the foresight to hedge Mexican oil prices at $70 a barrel for the duration of 2009. At the same time, the federal government is setting in motion the largest public investment in recent years to generate economic activity throughout the country and create jobs through infrastructure projects. However, because Pemex generates 40% of the government budget, 2010 will be a difficult year for the Mexican economy, and should oil prices fall even further next year, the company will have to work exceedingly hard to overcome the challenges it already faces.

Pemex chief operating officer Livas expects a better year for oil prices in 2010. "The global economy will continue suffering under pressure, at the same time the natural decline of not only our oil but many of the mature oil fields in the world is putting a lot of pressure on increased investments, and therefore supply will adjust and prices will go up," he says.

Mexico has survived two major economic crises before, and as Carlos Morales of PEP says, "As long as the prices are at a level at which our projects still have a good return, we will continue going in the same direction. We do not expect there to be further drops in global oil prices, and I can guarantee that all projects we have today are profitable and have positive returns." □

The National Hydrocarbon Commission

The new hydrocarbon commission embodies the most important change brought about by the reforms, according to Mario Gabriel Budebo, sub-secretary of hydrocarbons for the Ministry of Energy (Sener). While the commission's role will essentially be to regulate the upstream sector, "the regulatory commission will give information to Sener far more quickly and clearly regarding such things as determining the petroleum platform and the restitution of the reserves, while at the same time dividing and defining the politics governing oil and gas, the regulation of oil and its execution and operation," says Budebo.

Mario Gabriel Budebo is sub-secretary of hydrocarbons for the Ministry of Energy.

Previously, the role of the regulatory commission was undertaken by different bodies within Pemex, and many of the current woes the industry is facing are blamed on the absence of a firm regulatory committee. The new commission will permit greater scope in the medium- and longer-term planning of energy policy. Ultimately, its establishment will separate the roles of operator and regulator within the areas Pemex operates. It is modeled on a similar regulatory system that has proved successful in Brazil and Norway.

While in many respects Pemex has always been over-regulated with regard to expense and budgeting, it has maintained close to complete control over its core business, especially exploration and production. Now, the NHC will serve as not only the technical arm evaluating projects presented to Pemex, ensuring maximum recovery of hydrocarbons, but also as a regulatory body over Pemex's upstream operations.

It is likely that the NHC will be primarily attached to Sener, because the operations of the NOC and Sener are currently so intertwined. Furthermore, Sener will probably want to establish close contact with the NHC to ensure that it has the ability to regulate. "The commission will rely upon the technical capability of the Sener, and its commissioners will be nominated for five-year periods in order to give continuity to the application of the norms," says Budebo.

The appointment of the five new commissioners, as yet unnamed, has provoked debate. While many believe that they should be individuals who know and have worked within PEP, others think this would complicate transparency, leaving the industry once more regulated by the same people who are accountable for some of its current problems.

Energy analyst Shields believes that PEP has been run and managed in the past by a tight-knit group of oil engineers who are not open to new ideas. "I think the challenge of the hydrocarbon commission is to get some other experts in there who are able to question what is going on in PEP and give an external independent opinion. There is a risk that the NHC could become another level of bureaucracy."

While calls have been made to separate the NHC from both Pemex and Sener, it remains to be seen how the government will proceed. Senator Francisco Labastida says that unless the NHC is given the professionalism and independence it requires, it will not be able to help Pemex make important decisions. Ultimately, the NHC's objective is to "ensure the heritage of the Mexican oil and gas industry," he says. He goes on to explain that the government's objective "is not to increase production, but to expand the country's energy security and ensure that we have this energy security for the next 10 years at the very least."

Becoming Pemex's Preferred Partner

Partnership requires an understanding of the NOC's mind-set and a dedication to Mexico's future.

Pemex's domination of Mexico's oil and gas sector is so complete that an army of service companies, contractors and suppliers is required to support its quest. Becoming a preferred partner is no easy task, however. As the energy reform is set in motion, companies are positioning themselves within their specific niches to win work. Building a successful relationship with Pemex requires an understanding of the way the oil company operates and how its people think, and dedication to both the oil and gas business and Mexico's future.

The success of his company stems from his close relationship with Pemex, says Jorge O. Vasquez, head of Double V Holding.

Double V Holding, a company born of the consolidation of a number of different companies under the leadership of Jorge O. Vazquez, specializes in engineering, procurement and construction (EPC) projects. As head of a hugely profitable company, Vazquez explains how the success of his venture depends to a great extent on establishing a close relationship with Pemex. "We have had to work very closely with Pemex in order to be successful, and we have a daily relationship with the company."

He observes that Pemex employees are placed under a lot of stress, and are often wary of signing contracts with private companies for fear of being prosecuted by the government or perhaps losing their jobs should anything go wrong. This is an often-mentioned point among companies throughout the sector, and while many hope this will change following the reforms, Vazquez believes that frequently the companies are themselves to blame. Pemex "needs more creativity from its suppliers to help make things easier and faster," he says. To succeed, companies must be very precise and efficient. Within the Mexican oil and gas sector, "you will have to pay for every mistake you make," he says.

Juan Reynoso Durand, director general of Blue Marine Technology, which services the offshore industry, admits to not possessing any professional experience in the sector prior to starting the company. He says he "learned about opportunities in the oil business through some friends who are oil engineers." It is perhaps this open-minded approach that has helped his company generate revenues of $150 million to $160 million (all dollar amounts are US unless otherwise specified) in 2008 after a mere 10 years in the sector.

Reynoso reckons that one of the company's greatest challenges, as well as one of its greatest successes, has been to push Pemex to change the contract model for the offshore market. "Instead of having just one-year contracts as was the practice," explains Reynoso, "we asked for five-year contracts that made it easier to get financing and to give Pemex better prices. This has been a common effort among Blue Marine and the other players in the market that has resulted in success." Given the right approach and a good deal of patience, the behemoth that is Pemex can, in fact, be flexible.

Blue Marine Technology supplies Pemex with its only operational floating production, storage, and offloading vessel (FPSO), the Yùum K'ak'náab, which has a 2-million-barrel storage capacity, and a 600,000-barrel capacity for mixing different types of oils. It is one of the three

biggest FPSOs in the world. In the future, says Reynoso, "we believe that anything that can maximize the production of Pemex is going to be demanded."

But an insightful and creative approach to the market is not the only prerequisite for success with Pemex. Carlos Perea López is the technical sub-director of Rotenco, Mexico's first mudlogging company, which has worked with Pemex for more than 60 years and helped the NOC strike the Tortuguero #1, the country's first well following the expropriation. While his company has an extensive and long-standing history with Pemex, Perea says that to continue this successful partnership he must "provide better quotations, more efficient services, and more modern equipment."

Better business with better technology

In the quest to develop a fruitful relationship with Pemex, many companies are mindful that supplying new and innovative technology is key. Modec is one such company, focused on increasing its market share with Pemex by developing technology for tension-leg platforms (TLPs) as well as the semisubmersibles it supplies offshore.

Founded in 1968 as a shipyard engineering firm, the company evolved into designing and constructing vessels and later, supplying jack-up drilling rigs, one of which has been operating for Pemex for more than 28 years. The company also supplies Pemex with an FSO called Ta'kuntah, which Enrique F. Westrup Neira, the director of Modec, boasts has been operational for more than 10 years without needing to go to the dry dock. And, during this period it has offloaded more than 1 billion barrels of oil.

Westrup expects the reforms to open many opportunities. He is planning to use new technologies to tap additional work for the giant. "We are undertaking a research and development program at the moment called 'Gas to Liquids' that could be very important for Pemex in the future. This project is about two years off, and will eventually be a gas-to-liquid converter that we will be able to install on floating vessels."

An insider's knowledge is always useful. Mexican-owned and -operated SCAP was founded 15 years ago by Joel Arratia Núñez, who has more than 35 years experience as a Pemex employee. SCAP engages in construction, automation and safety control, information technologies and chemical products. It exports services to such distant markets as Saudi Arabia, Malaysia, Korea and the U.S., which is uncommon for a Mexican company. Providing Pemex with excellent technology through strategic alliances with specialized companies from abroad has been a major source of success for the company.

Recently, Pemex hired SCAP to install the first offshore dehydration, desalting and gas separation plant to process crude offshore before it is transported to land. "This was a $23-million turnkey project that included engineering, construction and maintenance of the plant," says Eduardo Arratia Vingardi, vice president. The project involved importing new technologies through alliances SCAP has forged with foreign companies that specialize in the treatment of crude oil. SCAP also has a key partner in ICS Triplex, which was recently acquired by Rockwell Automation. Through this alliance, SCAP is able to supply state-of-the-art automation and safety controls for Pemex, expanding its relationship with the NOC.

Even state-owned companies such as Comesa cannot take relationships with Pemex for granted. Comesa is eager to explore the potential of marginal and mature fields and to provide Pemex with new technologies to improve recoveries at Chicontepec Field. Adán E. Oviedo Pérez, Comesa director general and president, notes that the company is building on its relationship with Pemex. It needs to provide better technologies and services than its competitors in such areas as onshore production, marine seismic acquisitions, processing, reservoir studies and supervising offshore facilities, to name just a few.

"We have a number of new and innovative technologies that we are currently testing, especially in Chiconte-

Joel Arratia Núñez, right, founded Mexican company SCAP 15 years ago. He is shown here with Eduardo Arratia Vingardi, vice president of the construction, automation, information technologies and chemical products company.

Adán E. Oviedo Pérez, Comesa director general and president, notes that the company is testing innovative technologies in Chicontepec Field.

pec, which is a very difficult area to produce results," says Oviedo.

Not only Mexican companies are providing new technologies to the NOC. General Electric, which has been operating in Mexico for more than 100 years, has increased its market share with Pemex through the acquisition of companies that allow it to offer better technology at better prices. Rafael Díaz-Granados, president and chief executive officer of GE Mexico, says that Mexico as a technology base is becoming increasingly sophisticated. Giovanni Aloi-Timeus, a former race-car driver and matador, and now director general of GE Energy Mexico, describes an innovative new technology that GE is able to provide through its acquisition of Sundex, which makes software for directional-drilling processes. This technology "is hugely helpful for Pemex in deepsea drilling, but also in Chicontepec Field, where the geology of the area is incredibly complex and hard to drill," says Aloi-Timeus.

Mexico's technology base is becoming increasing sophisticated, says Rafael Díaz-Granados, president and CEO of GE Mexico.

Paint giant Comex is another technology provider to Pemex. "We have been investing about 3% to 4% of the revenues of the company in research and development each year," says Alfonso Felix, vice president of the industrial division. Comex currently has a facility called the Centro de Investigación en Polímeros (CIP). "This is a top-notch facility that gives us horizontal support to go and sell to customers like Pemex in a very competitive way with the right performance and at the right prices. If we buy all the raw materials from third-party suppliers we will not be competitive enough to supply a huge market like that of Pemex."

Challenges remain, however, for companies wishing to work with Pemex, according to Steffen Huber and Eduardo Rodríguez, managing director and marketing manager, respectively, for Endress + Hauser. The company provides meters for instrumentation including calibration and ultrasonic meters, flow-measurement devices, and its most specialized product, the Coriolis meter, the largest of which is used for ship casting and platforms. Huber says that while the company often supplies innovative and new products directly and indirectly to Pemex through EPC contractors, the Pemex oil engineers are often distrustful of and adverse to new technology. "It can literally take years to convince the engineers and key players in Pemex that they can save money and increase efficiency by installing newer technology," he says.

Safety and certification

Pemex has had a poor safety record in the past, including collisions with its platforms and explosions at fields. Today, however, the company is investing in a comprehensive effort to improve safety. Horacio Fajer Cardona is president of Kidde Mexico, a fire and safety security company acquired by UTC Fire & Security Co. in 2005. Today, 65% of Kidde's Mexican operations are dedicated, indirectly or directly, to Pemex. To improve the safety and security of Pemex under the limitations imposed by the procurement laws, the company developed a frame contract.

"The frame contract is a way for Pemex to access spare parts so as to react more quickly to any failure in the fire systems," says Fajer. Through this contract, which basically involves a four-way interaction between United Technologies (UTC) in the U.S., Kidde Mexico, Pemex and ITS (a Pemex-owned company operating in the U.S.), it now takes 30 days to draft a bid, award the bid, and buy and replace equipment, compared to the previous five-month delay.

"We then broke the orders into two types; materials and labor," says Fajer. "As a result, for any service that requires only labor (programing, checking, inspecting, training, etc.) we can now reduce this time by a further 15 days."

The next strategic improvement that Kidde hopes to achieve is to have inventories on hand to make safety and security systems instantly available and allow an almost immediate response to Pemex's needs. The company has also been providing technical training to the Pemex crew, and even servicing safety equipment supplied by other companies.

Kidde is also helping to create industry standards by serving on committees and chambers, to encourage the various players in the sector to act as one. "Our mission is to contribute in the building of a culture where safety for people and assets becomes real," says Fajer. Ultimately, Pemex's focus on improving safety standards and creating a zero-accident culture is opening up opportunity for companies such as Kidde.


Pemex owns the Cadereyta refinery in Nuevo Leon. Refinery expansion is under way in Mexico.

Nabors, the international drilling company, has 10 offshore rigs in the Cantarell area and five land rigs in the Villahermosa area, and counts Mexico as its second-largest international operation after Saudi Arabia. Lorenzo

Aldeco Ramírez, general manager for Nabors in Mexico, says, "We have a vision; to be the preferred service provider in the drilling industry."

Besides offering excellent performance supported by quality systems and products, Nabors' dedication to and focus on safety has not gone unnoticed by the NOC. With over 700 employees working in Mexico, Lorenzo Aldeco says, "Nabors rewards our people who distinguish themselves in proposing and implementing new ways of doing things in a safer and more productive manner. We work alongside our customer Pemex and help them accomplish their goals while at the same time improving the safety of their operations with us. In other companies, you find that the overseeing of safety and environment are tasks to be performed at lower levels of the organization, but in our case it is directly at the top of the company's priorities."

By shifting the company's internationally established culture of safety to Pemex, Nabors will no doubt succeed in creating a safer industry while enhancing its position with the NOC.

Appropriate certification is necessary to win work, according to Jorge Larrea Molina, director general of Andamios Atlas, the oldest and best-known scaffolding company in the sector. Its long-standing reputation is key to the company's achievements, and besides continuing to look for new technology to supply Pemex with the best possible solutions, the company is highly certified. "We comply with all the OSHA requirements, the health and safety requirements, and are the only ISO9000 scaffolding-registered company in Mexico; and in this light our customers and clients (including Pemex) can be sure that our company is one of the best there is to work with," says Larrea.

Developing local expertise

A much-hoped-for consequence of the energy reform is the emergence of a stronger local market with an increased skill base to support Pemex. Through expanded investment in in-

Planning to participate in the push to enlarge the local market is Francisco Julio Cesar Nuñez, director general of Flowcontrol.

At the Instituto Mexicano del Petroleo's spectroscopy lab, applied studies are being carried out to support various scientific and technical needs in the sector.

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stitutions such as the IMP (Instituto Mexicano de Petroleo), among others, the government hopes to promote the growth of a larger local service and support base, providing Pemex with cheaper, high-quality services and products while creating jobs for locals.

Mexican company Flowcontrol aims to profit from this effort by manufacturing products that Pemex has, until now, been importing. The company was established in 1997 under the direction of Julio Cesar Núñez to service the nuclear energy market. Flowcontrol decided to move into the petroleum market three years ago by providing integrated solutions for fluids handling—mainly through valves, filters and accessories. With two plants in Laguna Verda Veracruz, the company is actively looking into the possibility of manufacturing products it has previously imported from China, Taiwan, India and Italy. Núñez believes that following the energy reform, opportunities for Mexican companies to begin manufacturing are ripe.

The company has been suffering from high import duty taxes (sometimes as high as 125%) for products brought in from such countries as China, which has not signed a trade agreement with Mexico. Importing products from India is also complicated and time-consuming. Flowcontrol plans more manufacturing in Mexico to counter these problems. "We are planning on manufacturing half-inch to four-inch valves," says Núñez. "We have already brought some machinery into Mexico and we will begin manufacturing in the second quarter of 2009."

Flowcontrol will then produce several more types of valves, increase its products for the nuclear industry, and finally, it hopes to expand its market to the U.S.

The company has been working for Pemex for more than three years. Supplying the NOC with cheaper valves of better quality will likely strengthen its relationship with the oil giant. Núñez stresses that the establishment of plants in Mexico to manufacture its own products will not only help develop the sector there, but will "help Flowcontrol win contracts with Pemex in the future."

Spanish company Gas Natural, which has more than 150 years of operational experience in the energy sector, is spearheading a number of projects aimed to increase the Mexican skill base. The Spaniards believe they can benefit from the growth this can foster in the sector.

Gas Natural is the world's fourth-largest gas transporter by volume, and one of the biggest operators of combined-cycle generating plants in the world. Ángel Larraga Palacios, the country manager for Gas Natural in Mexico, explains how after Spain, Mexico is now the company's second-most important market. Mexico has approximately 1.2 million clients, as well as 15,000 kilometers of gas ducts across the country.

"While we grow, it is very important for Gas Natural to ensure that the local companies that support us and provide some basic services grow with us," says Larraga. Gas Natural is investing in a number of projects aimed at bringing smaller Mexican companies working in the energy sector under its corporate umbrella. Through these alliances, Gas Natural helps smaller companies to develop skills. "Obviously, gaining skilled employees is very important for the company and we are continually working towards training locals who will be able to manage and lead divisions within our company in the future," he says.

Highly regarded work ethic

Pemex appreciates foreign companies that demonstrate a dedication to the country by hiring and training local

Delivery points for natural gas, especially for large municipalities, are often termed "city gates" and play an important role in pricing gas. (Photo courtesy of Gas Natural Mexico)

staff. Michael LeBlanc, director general of Intertek Mexico, says, "Mexican workers have integrity, dedication and a strong work ethic. Mexico can provide an excellent skill base." Intertek is one of the largest independent testing, inspection and certification companies in the world and has recently opened six new facilities in Mexico with another three laboratories currently under construction. "As many foreign-based companies continue to change course and move their production facilities to Mexico, independent testing, inspection and certification in Mexico has never been more important than it is now," says LeBlanc.

Intertek derives about 40% of its revenue from Pemex. The company recently helped sponsor an American Chamber of Commerce event in Mexico City focused on increasing competitiveness between the U.S. and Mexico. President Felipe Calderon spoke at the event. LeBlanc hopes that through its participation in the conference it can show other foreign companies the benefits of working with Mexican employees.

"With strong leaders, regardless of nationality and considering respect for cultural and human elements, Mexico has a diverse, multinational corporate management structure," says LeBlanc. "We have the largest infrastructure of any of our competitors and we back it up with quality, but to provide this level of service consistently, employee medical insurance, savings funds and general employee benefits are critical."

Pemex no doubt recognizes the company's devotion to increasing the Mexican skill base.

Octopus is another company eager to boast of the efficiency of Mexican labor. Octopus has four main lines of products: pig launchers and receivers, separation equipment, pipeline spools and skid-mounted modular plants.

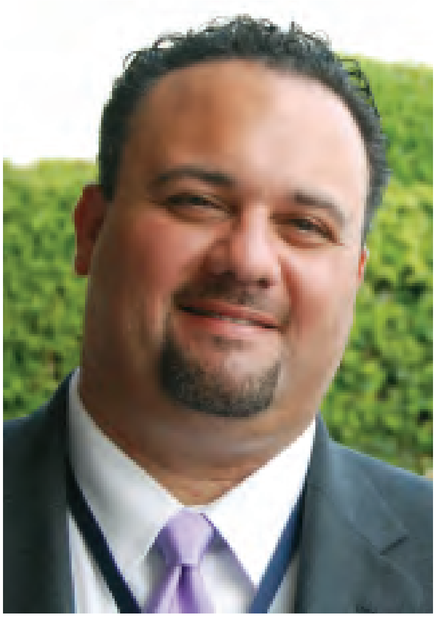
José Pablo Mendoza, who leads Octopus, explains that while most of the company's clients are Pemex contractors, its largest competitors are Houston-based companies. Mendoza describes an instance where he met his competition head on: "Atlas Engineering had doubts about relying on a Mexican client to do their fabrication; and so we invited them here to see our operations. They sent their inspector. who came on a Monday, visited us on Tuesday, returned on Wednesday, gave his report on Thursday, and we received the contract on Friday."

Mendoza believes that the only way to win over companies that have been relying on Houston for many years is by continuously and consistently providing quality services and products. "While our competition is in Houston, I will wager that most of our work is better than theirs is," he says.

Helping Pemex help the environment

The potential for Pemex to reduce emissions is huge. Rigid management and lack of investment capital have so far handicapped concerted efforts to do so. The energy reform includes a number of environmental clauses that could bring about change. Gabriel Quadri, director general of Mexico and Central America for EcoSecurities, explains that of the 12% of Mexico's carbon emissions for which Pemex is responsible, half comes from refineries and petrochemical production, and the rest from methane flaring.

EcoSecurities has a number of interesting projects in the pipeline, including landfill-gas-capture systems that flare and destroy methane. Quadri details how EcoSecurities is "also in the process of developing the first biogas-to-energy project in Mexico with the idea of developing electricity with biogas from landfills." He strongly hopes that Pemex will actively engage in environmental projects as a result of the energy reform.



Intertek Mexico's Michael LeBlanc, director general, praises Mexican employees for their integrity, dedication and strong work ethic.

ABC Labs, which began as a specialized clinical analysis lab in 1970, provides emissions and safety analysis of oil platforms. Juan Ignacio Ustaran Cervantes, director general, explains that with revenues of over $7 million in 2008, the company experienced a 15% to 20% growth rate. This growth is related to a new area of expertise for the company—soil testing for the increasingly environmental-focused Pemex. "In the near future," says Ustaran, "there are going to be more regulations applied at Pemex; not only soil contamination, but air pollution as well (organics in air). The new regulation on soil contamination will provide a huge market for us, and we hope in the future to have more regulations in which wastes have to be analyzed."

The company does face a challenge in that some of the large foreign oil service companies operating in Mexico send their samples to the U.S. for testing, and sometimes even use mobile labs on boats offshore Mexico. "The tests have to be carried out by a lab that is accredited in Mexico by the government," he says. "Right now the big analysis contracts, worth over $10 million, are going out of the country and this is against the law. We are fighting against this situation and with this crisis the government is pushing Pemex to support national companies which have the same quality products or services and the same competitiveness."

A new attitude from Pemex regarding the environment is good news for Mother Nature, as well as for specialized companies that can help to clean up the oil company's operations.

Pemex will continue to be a demanding partner for both Mexican and foreign companies to deal with, but as these companies' businesses demonstrate, the opportunities are plentiful. With the right mind-set, the right product and a good deal of patience, partnership with Pemex can be well worth the effort. □

Chicontepec's Time Comes

Carlos Morales Gil, director general of Pemex Exploration and Production (PEP) addresses the future of E&P for the NOC.

PEP's Carlos Morales Gil, director general, says the strategy for Chicontepec is three-fold.

Global Business Reports (GBR): *Can you detail Pemex's past exploration and production strategies, and how these are likely to change in light of the energy reform and the decline in oil production in Cantarell Field?*

Carlos Morales Gil (CMG): Pemex had a very strong exploration program back in the 1960s and 1970s. Pemex discovered deposits in the Chiapas and Tabasco provinces, followed by gigantic deposits in the Sound of Campeche including Cantarell during that period. When we started to develop and produce Cantarell, we continued exploring for additional reserves. Following this the exploration program began to slow down in the late 1980s, and was eventually put on hold with the decision taken in 1996 to increase the levels of production in Cantarell and to speed up the recovery of those reserves. However, the exploration program was not reactivated. It is an open criticism that I always make because it is a fact, and no one can argue against it.

Today, once again, we have a very strong exploration program and we have been actively acquiring seismic information and magnetometric information, and we have been preparing our people so as to be able to cope with the challenges that we now face. We are trying to replace all the reserves that we extract every year. By 2011 or 2012 we hope to be able to replace those reserves fully, and for 2008 the budget for exploration and production was about US$17 billion.

GBR: *With a proposed budget of close to US$19 billion for exploration and production in 2009, could you detail where this capital will be invested and what you believe are the most urgent areas in need of development?*

CMG: We still need to invest in Cantarell Field so as to increase the recovery factor. We have very good quality reserves and the rock is not too complex. Another of our priorities is to continue development of Ku-Maloob-Zaap and its two recently discovered satellites; Ayatsil and the Pit block. We also have to continue with the development of the crudo ligero marino (light marine crude). We are also continuing to invest in the state of Tabasco onshore so as to keep the levels of light oil at around one million barrels a day. Another activity is the development of Chicontepec, which has been lying almost untouched for 80 years without a development plan.

It is now the time for Chicontepec. For Chicontepec we decided to use a strategy that requires parallel activities: intensity (to drill as many wells as we can), the incorporation of new technologies (which will result in greater productivity), and the reduction of production and development costs. Several years ago the investments favored Cantarell, but today we have a balanced portfolio of investments that are distributed among the various oil and gas projects in Mexico.

GBR: *What benefits will the new performance-based contracts include and how soon will they be released?*

CMG: The first external contracts are planned to be granted at the end of 2009, which I think is a realistic date. The first thing to be considered in these contracts is the value creation for Pemex and for Mexico. We are aware of the need of a balanced contract that allows companies to have an attractive return on their investments and a good cash flow in order for them to have an additional contribution to their financial condition. Of course there are the limitations that we have here in Mexico, such as the fact that we cannot share production nor can we grant concessions; so we have to work under the technology contribution and service rendering models. The particularity of this new wave of contracts is that we are going to be able to include the right incentives, such as access to equipment fabricators.

GBR: *Given the rapidly changing landscape of the Mexican energy industry and the need for Pemex to develop its E&P portfolio, what are your forecasts for the future growth of the industry?*

CMG: In three to four years time I foresee that the PEP budget will be higher than it is now. I also expect Pemex to find new reserves in deep waters and I expect the company to keep up its level of activities in shallow waters. The new reserves in deep water are going to require that we keep investment going. If we are successful, we expect to find not huge reservoirs like Cantarell, but smaller reservoirs that will require a lot of activity and a continuous flow of investment. I also look forward to PEP becoming a sustainable business in terms of improving processes and in terms of developing the reserves we find very quickly. If we reduce the time gap between discovery and production we are going to be successful.

Here in Mexico we have many challenges, but these challenges do not stand alone. These challenges are in fact opportunities and offer us ways in which we can grow. Mexico offers a very good atmosphere for investment and Pemex has a very good working character; it is a company that knows and recognizes the compromises and the commitments made by individuals and companies, and we are very willing to diversify the portfolio of service providers, suppliers and of everyone that would like to work here. ☐

Local Partners Ease The Way

Unless foreign companies have a long-time base in Mexico, working with a local partner is critical for success.

Mexico's energy reform will open up many opportunities for both foreign and local companies to work alongside Pemex. For foreign companies, however, navigating the industry's legal framework is not an easy task. The most effective route is either setting up a permanent base in Mexico long before establishing a relationship with Pemex, or entering into a partnership with an established Mexican company that understands the game.

Raúl Monteforte, chief development officer of Fermaca Global, a company with more than 40 years experience in infrastructure development and construction in Mexico's key sectors, believes that for a foreign company to succeed in Mexico, it is imperative to find a local partner. "Given the institutional, legal, and contractual context, it becomes clear that a local partner is crucial for foreign investors in Mexico," says Monteforte. "Environmental, regulatory and construction permitting, siting, local procurement and outsourcing, and negotiations with the government entities can baffle and frustrate foreign investors."

Fermaca is involved in numerous gas-transportation activities through its subsidiaries and foreign partners. One such subsidiary, Brycsa, functions as its technical engineering and permitting arm. Fernando Calvillo Alvarez, Fermaca's president and CEO, describes how Brycsa was able to help its 50/50 joint-venture partner Oil Tanking obtain an environmental permit to build a refined-products terminal on the Mayan Riviera in the Yucatan Peninsula. "We have more than 25 biologists in the company, approved by the federal government (most used to work for the government) and we brought them to Brycsa a long time ago," says Calvillo. While the permit took two years to process and cost $3 million to pass (all dollar amounts are US), without the help of Brycsa, "this project would never have been possible for a foreign company to achieve on its own." Monteforte observes that the problems companies face in Mexico are idiosyncratic, "and you really need to know the rules, the institutions, the laws, the people, and all of the stakeholders involved in a project in a specific country, and for this you need deep local knowledge."

Strengthening through a JV

The energy development now under way in Mexico offers significant opportunities for joint ventures with Mexican companies. The processes within Pemex are complex, and every decision has to be reviewed by numerous people before it can become official. With the energy reform, many foreign and local companies are hoping that these shaded levels of bureaucracy will diminish.

But Eduardo Arratia Vingardi, of SCAP, believes the process may instead become more complicated. "As a result of the energy reforms, it is likely that this decision-

The Pemex gas-processing plant in Cactus, Chiapas, is just one in Pemex's significant infrastructure.

Service company ITS successfully entered Mexico without a local partner, according to Joe Chandler, vice president of North and South America operations.

making process will become even more complex as there will be an even greater scrutiny over Pemex's decisions and actions. Pemex will of course have greater freedom to make its decisions, but from an internal point of view, these decisions will be far more closely watched in efforts to become transparent." Thus, the need for foreign companies wishing to invest in Mexico to associate with companies that know their way around Pemex, its people and bureaucracy may only intensify.

Arratia Vingardi is used to doing business with foreign partners. "SCAP has proven itself as a viable and prominent player within its specific market and is a company that knows very well what it is doing," he says. "We always do research on the companies we enter into business with in order to ensure they are ethically viable partners."

Rotenco also envisions entering joint ventures with foreign companies as competition in its sector heats up. In the past, Pemex has paid mudlogging companies significantly lower prices than NOCs offer elsewhere in Latin America. Having a well-established set of operations in Mexico has helped the company provide the lowest prices. "It will of course be great for us should Pemex increase their prices, but will not be too beneficial in that it will attract a lot more foreign competition," says Carlos Perea López, technical sub-director.

"We are very open to forming alliances with foreign companies who wish to enter the Mexican market. We have the infrastructure, the expe-

International experience paved the way for Endress+Hauser's entry to Mexico, notes Steffen Huber, managing director for Mexico.

rience and we know how to work with Pemex," adds Alejandro Salas, directing grandson of the company's founder.

Going solo

Nevertheless, certain companies have cracked the market alone. One such is ITS, which offers pressure-control equipment for drilling in Mexico but plans to expand into casing-running services and tubular rentals. ITS has offices across Latin America in Venezuela, Mexico, Colombia and recently, Peru. Joe Chandler, vice-president of ITS North and South America, describes how the company was registered in Mexico. "We were committed and decided that even though we had no assurances from Pemex, we knew from the other multinationals such as Schlumberger and Halliburton (who we have a long history with) that Mexico was a good place to be. We opened up without an alliance with any company and began offering our equipment to the market."

After launching with a yard and office in Villahermosa, the company is already expanding considerably. Last year it imported $5.5 million of equipment into Mexico.

While Chandler says, "We hope Pemex will be our largest customer in Mexico," he also signals that the company's success in Mexico, despite entering the market alone, can be attributed in part to its international relationships with companies such as Schlumberger and Halliburton. "This opened doors for us here in Mexico, and we appreciate that," he says.

"We have met some very influential people in Pemex and we need to establish ourselves and demonstrate commitment to the market before we try to get on the approved vendor list and work directly with them. We have not considered entering into joint ventures, but our main goal since the beginning is that we want local people running our local operations. Venezuela is run by a Venezuelan, India is run by an Indian, and we are confident that soon we will have a Mexican running our Mexican operations."

Endress+Hauser also entered Mexico without significant support from local partners. Again, however, substantial international experience and recognition made the process easier. While the company is currently celebrating its tenth anniversary of operations in Mexico, it took the company five to six years to enter the Mexican oil and gas market. Its endeavor underscores the importance of having a well-established base before attempting to do business with the Mexican oil giant. "Primarily, we had to gain the knowledge, market share and reputation, and only then did we start placing a lot more emphasis on the oil and gas market. It takes time to be able to negotiate and reach arrangements with Pemex, as people here in Mexico are afraid of trying new things, but you have to be persistent and you will eventually succeed," says Steffen Huber, managing director of Endress+Hauser in Mexico.

A number *of law firms and financial boutiques advise foreign companies on how to work with Pemex and fund projects.*

Strategic advice

A number of law firms and financial boutiques focus on advising clients on how best to approach and deal with Pemex. Marcos y Asociados, a financial boutique, has at one point or another advised almost every single player in the Mexican oil and gas market. Luis Miguel Labardini, partner, once worked for Pemex, where his first assignment was to negotiate a $5-billion Eximbank line of credit to finance the development of Ku-Maloob-Zaap Field.

Marcos y Asociados started in 1995 as a financial boutique for infrastructure and energy projects in general. "There was a moment when a foreign company asked us to finance their project," says Labardini. "We obtained the commitment letters from the banks, but they did not get the

Tula, Hidalgo state, already the site of refinery infrastructure, will be the site of a new Pemex facility as well.

contracts. We then decided that foreign companies needed advice on business developments in Mexico." Ever since, it has been advising both Mexican and foreign companies on the best ways to work the market and, of course, to win the contracts Pemex will release following the energy reform. While Marcos y Asociados has so far only advised oilfield service companies, it is contemplating expansion. "If the contracts that are going to be released before the end of the year are attractive to operators, it will be interesting to see if it would be possible to work for the major IOCs in Mexico," says Labardini.

Another firm, Manatt Jones, provides strategic advice and helps its clients identify business opportunities across the board in Mexico. The company was originally formed by Chuck Manatt and Jim Jones, both American lawyers who had served as ambassadors. Juan Casillas, managing director, describes his company as an entity that promotes investment in Mexico but also consults on how to participate in the bidding processes. While Manatt Jones is not solely focused on the oil sector, much of its business is now being directed there as a result of the energy reform and increased interest from foreign investors. Says Casillas: "In terms of identifying opportunities, it is the correct time now for the oil and gas sector, especially for the midsized companies in the States or elsewhere who would want to come here." □

Overcoming The Challenges

Pemex reforms and massive investment in infrastructure open the door to opportunity for those with innovative solutions.

The dominance of Pemex, the imperative the Mexican government is now placing on the national oil company (NOC) to perform, and a difficult economic climate have created challenges for companies wishing to operate within the service and supply sector. In response, many are considering pioneering solutions to the problems they face when servicing the Mexican oil giant.

Gabriel Alvarez Gómez, who leads Conip Contratistas S.A. de C.V, which offers a full range of engineering and construction services, believes that one of the greatest challenges facing construction companies working in Mexico's oil and gas sector is finding sufficient project financing. Conip helps Pemex with refinery processes. The company has been widely successful in this operation, and through its 17-year representation of ABB Lummus, sold catalytic technologies used in the Cadereyta and Madero refineries, as well as equipment used in the Minatitlan and Madero refineries.

Pemex would benefit from creating an approved vendor list, says Alejandro Flores Trespalacios, director general of Rotork.

Then the company found a niche in its start-up and testing capacity for Pemex. Due to the economic crisis, a number of Conip's clients are not prepared to pay advances for projects, slowing the growth of both the company and the industry. To counter these problems, Conip is partnering with strong foreign clients such as Shell and ABB Lumus, and through this partnership an entire project is currently in progress to purify the gasoline produced at the Tula and Salamanca refineries.

Fernando Calvillo Alvarez, president and CEO of Fermaca, concurs with this approach. "Project financing is not readily available today," he says. "Take for example a US$300-million project. If you go to the bank in order to raise $300 million, you need to go to 10 or 20 banks. Before the current economic crisis, visiting only one or two banks would have been enough to get the funds." In light of the financial crisis, companies will focus on core projects. However, Cavillo points to opportunity despite the downturn. "A time of crisis is also a time of opportunity, and someone needs to save the Mexican market—and we have the structures put into place to help this happen. New infrastructure projects need to be built and we are here to help."

Relationship building

Alejandro Flores Trespalacios, director general of Rotork, a company that specializes in valves and actuators, suggests that Pemex create an "approved vendor list." While most large petroleum companies have an approved vendor list, Pemex hazs never had one. "Not having an

In light *of the current financial crisis, companies will focus on core projects.*

approved vendor list creates confusion, and if Pemex has a US$100-million project to undertake, things can get confusing without knowing who the best vendors in the market are." There is talk of Pemex putting together a critical equipment list, which would significantly benefit vendors such as Rotork.

Bluewater, a global company specializing in the design, development, lease and operation of tanker-based production and storage systems, is interested in entering the Mexican market but describes another major barrier: Pemex is unwilling to break its established relationships with companies offering inferior products and services. Allard van Hoeken, the Bluewater business development manager for Mexico, Latin America and the Caribbean, explains that the products being supplied to Pemex by competitors are 20 to 30 years old and need continual repair. In fact, these systems need so much repair and maintenance that the companies providing them have an ongoing relationship with Pemex.

"We are still facing this wall of existing relationships that is very difficult to break. We will do this by keeping a technological focus, and by being committed to offering the best quality available. We are also flexible and adapt the technology around our client," says van Hoeken.

Fernando Calvillo Alvarez, president and CEO of Fermaca, says new infrastructure projects are needed, despite the financial crisis.

Counter measures to limit the effects of the global crisis in Mexico include massive spending on infrastructure. Combined with the opportunities that Pemex reforms have opened up, the door is open for companies to enter the Mexican market. □