



## Stepping on the Gas in China

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## Stepping on the Gas in China

*Winning a major new production-sharing contract boosts Chevron's long-term strategy in the country.*

**W**hen Chevron signed a 30-year production-sharing contract at the end of last year with China National Petroleum Corporation (CNPC), it was publicly celebrated as one of our company's most important deals in recent years.



Dave O'Reilly (center, shaking hands), John Watson (to his left) and CNPC executives at the Beijing, China, signing ceremony in December 2007.

"Today's signing in record time is a testament to the hard work and ingenuity of those involved from both companies," Chairman Dave O'Reilly told guests gathered for the December signing ceremony in Beijing.

The prize: the joint development of the Chuandongbei natural gas area in central China, operated by CNPC's subsidiary, PetroChina Southwest Oil and Gas Field Company (PetroChina), and an important step toward greater involvement in supplying the country's burgeoning energy needs.

After being invited to bid on the project in late August 2006, Chevron moved quickly to assemble a cross-functional team and develop a proposal.

"Traditionally, business development efforts on such scale take several years because it takes time to pull in all the required experts to do the evaluation with limited data, to reach satisfactory conclusions and to progress negotiations," says Oleg Mikhailov, Business Development manager for Chevron Asia South Ltd. "In our case, we were able to access top people from around the world very quickly."

"The level of support and interest this project has garnered across the company has been tremendous," says Tim Galvin, manager of Opportunity Assessment and Asset Management for the China business unit responsible for the evaluation and proposal. "Having access to subject matter experts from Tengiz, Upstream, Energy Technology Company, Global Gas, Exploration, the Reserves Advisory Committee and the Business Development community was clearly one of the keys to successful capture.



View of Chuandongbei location, valley and farmland.

“Chevron’s proposal was built around our solid sour gas experience and technology and stood above those submitted by our competitors,” he adds.

Chevron’s industry-leading experience with safely producing sour gas in Carter Creek, Wyoming, which we have done since the 1980s, and at Tengiz, Kazakhstan, where sour gas is now reinjected to enhance recovery, were important factors in being selected as a partner. For more information about sour gas and Chevron’s expertise, see

“In our early discussions with PetroChina, we used our experience and lessons learned to engage their attention on what we could bring to the table,” says Dave Nelson, general manager of the Chuandongbei Gas Project. “The key criterion in producing sour gas is the prerequisite to do it safely.”



Many locations in the Chuandongbei gas development area have platforms built like this one for safe access to wellhead valves.

Lee Jourdan, general manager of Commercial and Business Development, Asia South business unit, says: “The engagement by the decision executive Steve Green, (at the time the managing director of the Asia South business unit), his review board, and senior Upstream and corporate management in shaping the closing stages of the deal and in providing seasoned Chevron negotiation experts was critical to our success.”

On December 18, in less than five months after the bid selection, Chairman O’Reilly witnessed former International Upstream President John Watson sign a 30-year

production-sharing agreement with CNPC, under which Chevron holds a 49-percent participating interest and shall take over as operator of the fields.

The Chuandongbei gas development area in the Sichuan province includes the Tieshanpo, Dukouhe-Qilibei and Luojiashai gas fields. It has an estimated resource base of 5 trillion cubic feet of natural gas, and design capacity at the proposed gas plants is expected to be 740 million cubic feet of natural gas per day.

Chevron’s involvement in China dates back to 1913 when we first began selling kerosene for lamps and home heating in the country. Currently, Chevron has nonoperated working interests in three areas of China: in the South China Sea, Bohai Bay and in the onshore Ordos Basin.

The Chuandongbei deal is expected to accelerate Chevron’s broader growth strategy in the country. It involves a multiphase work program with PetroChina to evaluate additional reserves in the contract area and commence front-end engineering and design work.

Some of the next steps and challenges involved in moving the project forward include:

- Establishing exclusion zones for safety throughout Chuandongbei.
- Identifying potential markets for sulfur produced from Chuandongbei’s sour gas. Much of it will be targeted for sale to China’s petrochemical and fertilizer manufacturers.
- Recruiting and hiring highly skilled employees for this new development – see sidebar, at right. Some Chevron workers currently employed at Tengiz may be brought to Chuandongbei, on a temporary basis, to help jump-start production.

“PetroChina is keenly interested in understanding our methods of project execution, our operational excellence program and how we pursue incident-free operations,” says Dave Nelson. “So part of what we’re bringing to our partner is our safety and project-execution processes.”

All those involved in clinching this deal – seen as a future “legacy” operation for the company – agree: in the face of stiff competition, Chevron brought something extra to the table. It was, perhaps, best summed up by Dave O’Reilly.

“Our work is guided by The Chevron Way,” he pointed out at the ceremony, “which not only emphasizes performance through partnership but also places great importance on protecting people and the environment.”

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## Fast Track to Success

**August 31, 2006:** Min Chen, Global Gas China general manager, introduces Keli Taureka, Upstream China country manager, to PetroChina vice president Hu Wenrui, with whom Min had a long-term professional relationship. Hu invites Chevron to bid on the Chuandongbei project.

**July 11, 2007:** Chevron formally presents plan to develop Chuandongbei.

**July 29, 2007:** Hu informs Min by phone that Chevron is selected as the preferred partner for contract negotiations. He advises that an official notice will be delivered and both sides should meet immediately to discuss forward plans.

**December 18, 2007:** Chevron signs 30-year production sharing agreement with CNPC. Chevron will become operator of Chuandongbei and hold a 49-percent participating interest.



## Work at a new Frontier

Chevron is looking for suitably qualified people to join its new China operation in Chengdu. The work will be at a new frontier for the company. Deploying our cutting-edge technology, the selected employees will be among pioneers of a new generation of sour gas field developments in China.

So where is Chengdu? As the capital of Sichuan province in Southwest China, Chengdu is a place rich in natural beauty, cultural heritage and history. It is a very diverse city with different ethnic groups and a growing expatriate community. Sichuan means “four rivers and valleys” in Chinese and is known for its teahouses, hot peppers and pandas.

With a population of 11 million, Chengdu is a major industrial base of China, focusing on heavy industries such as coal, energy, iron and steel, and light manufacturing industries such as building materials, food and silk processing. The climate is mild, but since the city falls into two different climatic zones, the west is cool while the east is warm. The temperature rarely falls below freezing, and snowfall is rarer still.

A second office to support Chevron’s Chuandongbei natural gas operations was opened on April 2 in Dazhou (see map above).



## The Power of Steam

*How did an oil and gas company become the world's leading geothermal energy producer?*

It's a textbook example of nature and industry in serene coexistence.

The scene is similar at the other geothermal fields in Indonesia and the Philippines, which Chevron operates. Vital to the energy needs of these host nations, Chevron's geothermal operations are renowned globally. We entered the business more than 40 years ago, and today we are the world's largest producer of renewable geothermal energy.



Chevron's geothermal operations in Salak, Indonesia, are surrounded by forests and tea plantations. In the distance, water vapor plums can be seen rising from the power plant that generates electricity from the steam.

In the early 1970s, the company pioneered the development of geothermal energy in the Philippines with two large discoveries – Tiwi and Mak-Ban. Commercial production from two additional discoveries, Salak and Darajat in West Java, Indonesia, began in the 1990s. Combined, the four projects now produce approximately 1,273 megawatts of geothermal energy.

So how did Chevron, a near 130-year-old veteran of hydrocarbons production, learn how to harness the power of subterranean volcanic activity under the forests and mountains of Southeast Asia? What skills do we bring, and how do these two activities differ?

### Knowing the Drill

Geothermal power is produced from the hot steam of extinct volcanoes. Chevron drills wells deep into porous, hard volcanic rock to bring liquid or steam to the earth's surface. Once the wells have been drilled and the steam in reservoirs deep below the surface of the earth has been captured, it flows through pipelines to power plants. There the steam turns turbines to generate the geothermal power that is transported to power grids across Indonesia and the Philippines.

Chevron brings many technologies from our long oil and gas producing experience, but in particular, we transfer expertise from natural gas drilling operations. There are striking similarities between the two activities. Like gas, the steam or hot liquids captured to produce geothermal power occur naturally and accumulate deep beneath the ground. Geologists find this trapped gas or steam and engineers transport it through pipelines to power plants.

Carryover technologies from oil and gas drilling and production operations as well as reservoir management techniques help remove unwanted liquid called “brine” and re-inject it into the earth.

“One of the key differences between geothermal energy and energy produced from oil or natural gas is that elaborate refineries for oil processing and complex natural gas conditioning facilities are eliminated. Steam is the fuel of geothermal power generation. It is clean and renewable,” says Jeff Harris, general manager of Resource Management for Chevron Geothermal Indonesia.

### Where Art Meets Science

While the drilling and pipeline operations may seem familiar to those of us working with oil and gas, the methods for discovering geothermal fields are very different.

“Data collection and interpretation are tough. It is more art than science,” explains Novi Ganefianto, geoscience manager for Chevron Geothermal Indonesia.

“The geology is complex. Think about what a volcano does. There are intrusions of magma and fractures in volcanic rock that go in all different directions. Our biggest challenge is that geophysical techniques, like seismic data acquisition that are applied in the oil and natural gas industry, don’t work very well in geothermal systems where the steam has accumulated in fractures amidst geology that is broken-up and confused.”

To understand the characteristics and processes of a geothermal reservoir, geologists and geochemists study the mineralogy of the rocks and the fluid chemistry of hot springs and other wells in the geothermal field. Their method is a painstaking process of cutting samples of rocks, identifying them and making inferences about the geologic structures of the subsurface reservoirs.

“When we drill geothermal wells, we have a lot less information available to us than we normally have when drilling an oil or gas well,” explains Steve Furry, drilling manager for Chevron Geothermal Indonesia.

### Same Drill, Different Well Tools

Geothermal wells use the same rigs as oil and gas wells, and the company can draw on its pool of highly skilled oil and gas personnel to work on geothermal rigs. But the difference is below the surface. Because geothermal drilling operations take place on extinct volcanoes, high temperatures are involved. Many traditional downhole well tools used in oil and gas operations, such as logging tools and wire lines, cannot withstand the 300° F (149° Celsius) or greater temperatures involved. The drilling team mitigates for these high temperatures in many ways. They have a few specialty tools with heat shields, run cool fluid into the well before drilling to check the temperatures or can use a fluid treatment called “mud chiller” at the surface of the well for cooling.



In the Philippines, the Mak-Ban (seen here) and Tiwi plants produce geothermal energy to supply 7 percent of the electricity required by Luzon island’s 43 million people.

Although there are many geologic and drilling challenges in the geothermal energy industry, it is a clean, renewable and reliable source of power. Geothermal fields provide energy for a long time — one source in Italy has been generating power for over a hundred years.

With global energy demand on the rise, the search for renewable forms of energy is heating up and Chevron's geothermal operations are at the forefront of that effort. Barry S. Andrews, senior vice president of Geothermal and Power Operations, puts our contribution in context. "The geothermal energy Chevron produces is sufficient to meet the electricity needs of approximately 4 million homes in Indonesia and 3 million in the Philippines. That's equivalent to about 16 million people."

In Indonesia, a large measure of new production comes from Darajat III. The 110-megawatt capacity power plant, which began operating in July, 2007, increased production from the Darajat field by more than 70 percent.

### **A Global Contribution**

Darajat III is the largest geothermal energy project to date to be approved by the United Nations as a Clean Development Mechanism (CDM) project. CDM is a market-based instrument of the U.N.'s Kyoto Protocol to encourage the implementation of cost-effective greenhouse gas reductions in developing countries.

Barry and his colleagues are evaluating additional opportunities to increase geothermal production in Indonesia. "We're currently studying the feasibility of adding yet another unit to our Darajat operations, and we have an optimization program under way at Salak that could result in additional geothermal energy being produced," he says.

Chevron has had a presence as an energy producer in Indonesia for more than 80 years and in the Philippines for some 40 years, with major oil and gas operations in these countries. Over that time, we've brought our leading-edge technology, reservoir management ingenuity and drilling expertise to help develop both countries' geothermal resources. Working in cooperation with governments and communities, we've not only helped meet their growing energy needs we've done it partly through the development of one of Mother Nature's purest, most sustainable resources – geothermal steam.



## On Patrol With the e-Cops

*With criminal and unethical computer behavior on the rise, Chevron's cyber-sleuths face a constant challenge.*

**T**he betrothed, a mid-level manager, could have become Chevron's very own runaway bride. Cancelling a series of international business trips she'd booked on her computer, she quietly refunded the tickets on her corporate travel card – then used the credit on items for her upcoming nuptials. This wedding, however, had a crasher: IT Forensics, Chevron's computer system crimestoppers. Within days, her transgression was confirmed and the newlywed hucksteress was fired.

Working in parallel with Information Technology Company's Security, Design and Consulting group (SD&C), which shields the company from external threats, and under the direction of Global Security, who have primacy on company fraud investigations, IT Forensics tracks down employees (and contractors) who view inappropriate material, commit fraud or blab company secrets. It's no small undertaking. Such cases, which also include deliberate and unintended compromises of intellectual property and outright theft, more than doubled in 2007.



Liz Seavey and investigator Farhat Kelani discuss a case, while investigator Martha El Zakhem finishes evidence for placement in Forensic safe.

While the bride's tawdry tale and others in this article are partly fictional, they are based on an all too real truth. There were 57 known cases of online financial fraud in Chevron last year, according to IT Forensics Manager Liz Seavey. Inappropriate use of workplace computers – to view pornography, for example – exposed the company to millions in potential lawsuits and sexual harassment claims. Laptop thefts, computer-involved conflict of interest (emails disclosing pending real estate sales or acquisitions, for instance) and failure to protect intellectual property round out an exploding case load.

"We have 80,000 personal computers in Chevron – that's a lot of exposure," says Rich Jackson, Liz's boss as general manager of Global Information Risk Management (GLIRM). In 1999 Rich and two assistants started the corporation's first combined information

protection and security group. "Nobody was even doing computer forensics back then," he says.

In 2006, Chevron focused on building an efficient team of high-tech investigators with special tools to aid efforts of detection and electronic discovery assistance. "Chevron is getting better and better at providing evidence of a wrong-doer's behavior," adds Liz.

IT Forensics team members serve as the detectives in Jackson's 45-person organization. Nabbing in-house fiddlers, fraudsters and oglers is only part of the job, however. Another big piece is helping company lawyers discover, preserve and protect emails and other electronic evidence for lawsuits. The forensics group also ensures, computer-wise at least, that Chevron stays within the bounds of U.S. Federal Rules of Civil Procedure and various laws and regulations regarding acquisition and handling of electronically stored information.

IT Forensics maintains their own labs in Houston, San Ramon and London, where entry is strictly controlled. Besides ultra-sophisticated scanning gear, each lab contains a thick-walled vault where evidentiary materials are tagged and stored, following strict "chain of custody" rules. Such precautions are especially critical during a trial's "discovery" phase. "Increasingly," says Rich, "Electronic documents are an important part of even routine legal proceedings. To support the company's position, we must be able to access and archive that information across the enterprise."

While IT Forensics guards the integrity of the company's legal documents and looks into computer abuse by employees and contractors, the 51-person SD&C group stands watch over Chevron's electronic perimeter. "We protect the firewall and keep out hackers, worms and viruses," explains Rick Van De Boom, SD&C manager. Working in conjunction with the SD&C team is the Enterprise Messaging Design Team, whose email filters scan about 100 million incoming email messages each week, deflecting all but about 5 million messages. Chevron has staved off literally hundreds of attempted network penetrations over the years. However, Rick says, "the number of attacks continues to climb each year."

SD&C boasts a perfect record against hackers – by definition any unauthorized attempts to use Chevron computers or network resources. Even so, a handful of other pests have proved sufficiently virulent to spill red ink. In 2001, a worm (an outlaw program that, unlike a virus, replicates itself without a host file) named Code Red infiltrated company servers.

"Code Red was a wakeup call, and we answered the phone," says Rick. Among other changes, the company implemented a new system for rating threat levels to servers and desktops. An Emergency Critical rating, for example, mandates a security patch within 48 hours on every vulnerable system in more than 100 countries.

### Why Integrity is Critical

Answering a question about integrity at his recent employee teleconference, Chairman Dave O'Reilly put it like this:

"Our reputation is absolutely essential to our long-term viability and success. That's why personal integrity, ethics, the business code and really living what we say are so critical to our success."

In the coming weeks, look for additional details on our updated Business Conduct and Ethics Code and newly redesigned computer-based training that will provide an overview of the laws and policies governing how we do business.

Complicating the jobs of both SD&C and IT Forensics are the increasing openness and interconnectedness of computer systems – Chevron’s and everybody else’s. As Rich puts it, “a hacker can be sitting in an Internet café in Amsterdam, trying to break into our system from across the ocean.” Ubiquitous memory sticks, wireless networks and ever-more-portable laptops only complicate matters. An “Evil Twin,” for example, a disguised wireless provider that can monitor your laptop, specifically targets wireless “hotspots” like airports, coffee shops or hotels.

Five years ago, a virus named “SQL Slammer” invaded Chevron’s system, causing a massive drop in email traffic and a systemwide slowdown. By the time Rick and his crew identified and disinfected sick servers and computers, the company had already suffered significant financial losses. Since then, Chevron has been threatened by thousands of viruses every year – for example 2004’s “Slammer II” – but thanks to a change in some key procedures, none have infected us.

Despite Chevron’s stout defenses, an internal “leakage” study last year found what Rich terms an “extraordinary amount” of data had simply walked through company doors aboard memory sticks, Blackberries, cell phones and as email attachments. Intellectual property, personnel files, marketing strategy and other sensitive information were among the migrating bits and bytes.

“Most of these breaches involve honest, hard-working employees, at home or on the road, who’ve unintentionally shifted company sensitive information into the public domain,” Rich says. In 2006, for example, several thousand U.S. payroll employee names and social security numbers were put at risk when a company vendor’s laptop was stolen. Chevron took swift steps to protect those affected – and to prevent a reoccurrence – and is confident that no permanent harm was done. Nevertheless, the incident underscored the need for constant vigilance both within the company and with those who handle data on behalf of the company.



“We keep out hackers, worms and viruses,” says Rick Van De Boom pictured right with Allan Lagang.

A brush with Chevron’s e-Cops is likely to be triggered by inappropriate use of company computers. In one case, a male employee forgot to shut down his computer when wrapping up a Powerpoint presentation. His machine displayed a salacious screen saver; a female in the audience complained; and IT Forensics was called in to investigate. The company discharged the man after his computer was found to contain pornographic images and email.

“We aren’t Big Brother,” insists Liz. “We’re not here to look at the family photos you’ve posted

on your screen saver or check out whether you emailed a golf buddy. We are here to protect Chevron’s business.”

IT Forensics conducts investigations only after being asked to do so, and only after such requests have been initiated and/or endorsed by the corporation’s Global Security and/or Legal departments.

Formally established less than a year ago, “our group was created because of the need for a more targeted, process-oriented approach to gathering computer-based information,” Liz says.

Partly that need reflects Chevron’s increasingly global operating environment. In the United States for example, an employee or contractor essentially forfeits his or her rights to privacy in the workplace by the sheer fact of working for the corporation. Elsewhere in Chevron’s world, notably in Europe, that’s not necessarily so.

“We’re still grappling with how to set guidelines that reflect the culture and legal differences you find when operating in so many countries,” says Jill Phillips, GLIRM’s Global Privacy manager. Jill currently heads a multi-department effort to create consistent guidelines governing access to and transfer of personal data. The new rules will further strengthen Chevron’s Data Privacy Policy 580, basically a code of conduct on how to handle personal information.

While most workers face little likelihood of becoming the target of IT Forensics investigators, Rich urges all to heed the growing concern about computer security. “Those who abuse our system hurt us,” he says, “just like a safety, reliability or capital management issue hurts our Operational Excellence.”

In one case, a Chevron manager funneled \$30,000 to a friend who posed as an outside company consultant. Exploiting his approval authority, the Chevron worker got away with the scam by using fake invoices. The approved invoices were sent to a central procurement clerk who, unaware that the company consultant never performed any tangible work for Chevron, relied on the invoice approval from the manager. When a random audit could not find anyone who knew the external “company consultant,” IT Forensics investigated. The result: A strong set of evidence detailing the illegal behavior. Chevron has taken appropriate action against the perpetrator.

Liz points out how easily employees and contractors can avoid similar travails with those often alluring devices that beckon from their desktops and briefcases. “Just use your computer for work,” she says, “and use it safely and wisely. Also, follow the Chevron policies and controls. It’s really that simple.”

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## How Can You Help?

Rich Jackson, Chevron’s general manager for Global Information Risk Management, gives the following advice:

- Use shredders to destroy hard copies of any work or correspondence that might be useful to a competitor – use one at home, too;
  - Click the privacy box when emailing meeting notices, especially when they contain confidential attachments;
  - Send conference call passwords and access codes in separate emails to participants;
  - If you suspect someone you work with is committing fraud, contact the Corporate Compliance hotline – 1-800-284-3015 or contact Global Security;
  - If you don’t recognize the author or subject of an email, don’t open it!
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## HOW IT WORKS

# Sulfur — An Essential Element

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Sulfur is one of nature's basic building blocks. Widely distributed throughout the Earth's crust, this yellow nonmetallic element is found in all living creatures, including humans. In fact, many scientists believe that life on earth originated in a hot, soupy deep-sea environment rich in sulfur.

If life could not exist without sulfur, neither could modern commerce. The mineral is so central to contemporary civilization that increased consumption of sulfur has served as an accurate indicator of growth in a nation's business activity and standard of living. Sulfur and its compounds play an essential role in the manufacture of literally thousands of products, including fertilizer, paper, rubber, fabric, medicine, cosmetics, plastic, paint and explosives to name just a few.

And Chevron is a sulfur expert. For decades the company operated extensive sulfur-producing gas plants in Canada and we have continued to build on that expertise. Today at Carter Creek, Wyoming, and our Tengizchevroil (TCO) partnership in Kazakhstan, we deal with sulfur on a daily basis in the form of hydrogen sulfide or H<sub>2</sub>S. Mixed in with natural gas, the presence of hydrogen sulfide makes gas "sour." At both locations, this sour gas must be removed to meet marketing and environmental standards for sulfur content.

Once removed, a thermal and catalytic process converts it to elemental sulfur. In this state, it is relatively harmless. Numerous studies affirm that open sulfur storage results in insignificant impact on the environment or health of people.

At TCO's Tengiz Field and Carter Creek, crude oil containing sour gas goes to a degassing facility to have its hydrogen sulfide removed. Once separated, that hydrogen sulfide is collected and heated in the presence of a catalyst to produce liquid sulfur and water.



Safe to handle: sulfur granules.

Regular monitoring is performed during the process to ensure that concentrations of hydrogen sulfide in the air remain below the maximum allowable levels of 10 milligrams per cubic meter and that sulfur dust concentrations stay below 6 milligrams per cubic meter.

TCO sold 2 million tons of sulfur in 2007 and reduced its sulfur storage inventory by nearly 500,000 tons to 8.54 million tons and increased crushing capacity from 50,000 to 90,000 tons per month. This record performance was a result of maximizing operational efficiency and reliability. TCO had a 6 percent share of internationally traded volumes of sulfur in 2006, having sold the product in various forms to 61 customers in 24 countries ranging

from Central Asia to South America.

In 2008, TCO expects to sell all produced sulfur, as well as an additional 600,000 tons from the inventory storage, thus reducing sulfur pads to about 7.9 million tons by the end of the year.



### Sulfur Exports

TCO sold sulfur to 61 customers in 24 countries (2006 data).

TCO's recent expansion projects include a significant change in how it processes volumes of sour gas. The Second Generation Plant (SGP), once finished, will nearly double crude oil production while injecting one-third of the sour gas produced back into the reservoir for enhanced oil recovery (EOR). TCO is installing additional sulfur-forming equipment to process all additional sulfur associated with SGP production.

Since the fourth quarter of 2007, sour gas has been re-injected as part of the expansion's staged start up. Like other forms of EOR that use water, steam or carbon dioxide, this

process helps to maintain underground pressure and increases crude oil recovery.

TCO plans to spend more than \$600 million on sulfur-related capital projects to increase sulfur sales capacity to 3 million tons per year by 2012, while continuing to reduce the existing inventory by at least 500,000 to 600,000 tons each year.



# Exploration Project Discovers Basic Needs are First Priority

*Chevron brings water, health and sanitation facilities to islands of São Tomé and Príncipe.*

Offshore near the islands of São Tomé and Príncipe, Chevron operates Joint Development Zone 1, where an exploration well was completed in 2006. During its first years searching for oil and gas, the company's Nigeria/Mid Africa business unit made another important discovery: the population was in desperate need of infrastructure improvements that would raise the standard of living.

Over the last two years, to help meet the needs of the impoverished people of these islands, Chevron has contributed \$396,000.

"Our community engagement work in São Tomé and Príncipe demonstrates Chevron's commitment to engage with, and commit resources to improve the lives of its project communities even before any production or revenues to the project," says Nadeem Anwar, manager of Community Engagement for Chevron.

### Project Photo Gallery



### Building Volunteers

Volunteers from the districts of Lemba and Lobata work with Chevron and the Red Cross to construct latrines for their community.

In February 2006, Chevron launched the first in a series of projects designed to improve the health conditions of the people of São Tomé and Príncipe. At a cost of \$100,000, new latrines were built for some 14,000 people who were suffering from a severe cholera outbreak that struck the districts of Lemba and Lobata in late 2005.

“Cholera is an infection of the intestine caused by drinking contaminated water or food,” explains Tim Parsons, country manager for São Tomé and Príncipe. He adds, “For our partnership with the people of these islands to be successful, it was clear that we should find a way to help them improve their health and overall quality of life.”

Chevron’s standard practice, when partnering to provide the energy needs of developing countries, is to find a local organization with the expertise and community knowledge to help get needed aid to the right people in the right way. The Red Cross of São Tomé was selected to do a needs assessment and to oversee and implement the construction of the new latrines after the project received the endorsement of the Health Ministry in São Tomé and Príncipe.

Local community volunteers played a strategic role in the project’s success. They supplied most of the labor and some construction materials to build the latrines.

The volunteer effort of the districts of Lemba and Lobata brought project costs down, and the money saved was used to construct 85 more latrines than originally planned. A total of 435 latrines were installed, serving over 2,000 people.

The new latrines have greatly improved living conditions for these people. During the two years since the completion of the latrine project the Ministry of Health has recorded only one case of cholera.

A second project was initiated in September 2006, when Chevron agreed to replace drinking-water pipes leftover from an old colonial era coffee plantation in the tiny communities of Monte Café Roca and Novo Destino. The Adventist Development and Relief Agency (ADRA) was selected to partner with Chevron on this project.

Once again, community volunteers turned out to work and donated supplies. A reservoir tank, toilet, shower, laundry connections and three water fountains were installed at sites in the village.

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*“For our partnership with the people of these islands to be successful, it was clear that we should find a way to help them improve their health and overall quality of life.”*

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A health clinic was constructed that includes a consultation room, waiting room and bathroom. Community members were trained in administering key health care procedures and handling basic medical supplies. A small shop to generate income to sustain the costs of running the health clinic was also created.

Members of the community enthusiastically worked with Chevron and ADRA to install Novo Destino’s new sanitation system. It includes 28 new latrines, a laundry facility and renovation of ten private and two public bathrooms, all of which are linked to a central septic tank.

Working through ADRA, Chevron has donated a total of \$132,000 for the potable water and sanitation systems and the health clinic at Novo Destino.

The Minister of Health, Arlindo Carvalho, came to the grand opening of the health post in Novo Destino on December 22, 2007. He commended Chevron for the company's leadership in funding the water, health and sanitation projects in São Tomé and Príncipe.

Partnering with local agencies to help people build sustainable improvements in their lives in developing countries where the company operates is another high priority at Chevron. In São Tomé and Príncipe, Chevron has contributed \$164,000 to provide people in the towns of Mesquita and São Tomé with the skills and resources to better support their families.

In one project in the town of São Tomé, Chevron is working with a local non-government organization called Mar Ambiente e Pesca Artesanal (MARAPA), meaning Sea Environment and Artesanal Fishing, to assist a women's association that markets fish. A flaked-ice machine has been purchased and, instead of wasting fish which are an important protein source, women are being trained to treat, preserve and market them in their islands.

To build the agriculture business in these islands, Chevron and ADRA partnered with volunteers in the community of Mesquita to replace a large irrigation reservoir and to renovate and extend its distribution piping network. Hundreds of farmers and vegetable growers are delighted to now have a continuous supply of water to irrigate their crops. The reservoir is giving them the opportunity to generate a sustainable income and to improve their quality of life.

"Chevron's commitment to working with volunteers and community organizations in São Tomé and Príncipe has improved the standard of living for thousands of people here," said Tim. "We've also provided them with much needed resources and training so they can build and sustain a better life for themselves and their families."



The article on work/life balance struck a chord with several readers prompting numerous letters and postings to our Voices Message Board. Here's a selection.

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Your "Balancing Act" article (*Line Rider*, February 2008 issue) was right on! Workloads are increasing, and our small boys' need to spend time with dad is increasing. The only way I can see getting through it is by praying for divine intervention from above to help me do and prioritize the work. When you get home, then your spouse comes first and then the kids. I won't say that I don't do a little work after the wife and kids go to bed, but I try to minimize it. I can deal with a little less sleep, just not multiple nights in a row. Thanks for recognizing this issue and writing about it!

**Todd Anslinger, Houston, Texas, United States**

I just wanted to say that the article "Balancing Act" was very useful and timely. I facilitate some of Chevron's leadership development programmes across our region and the topic of work/life balance (and juggling priorities) comes up regularly as an issue for the participants. I'm going to take this article along to my next workshops to use as an aid to discussion. Thanks!

**Kelly Fordham, Aberdeen, United Kingdom**

I read with interest the article on lifestyle and work-life balance. I have been in Chevron Drilling and Completions for the past eight months having come from another operator in Houston. I can truthfully say that the situation from where I came was one of the worst I have experienced in my whole life with regards to work/life balance. Since joining Chevron I have found the atmosphere and attitude a refreshing change. In fact, I suffer from diabetes and the change in my condition since joining Chevron has been dramatic. All my vital readings have improved due in part to less work stress and a more measured approach to the work which I see at Chevron. I wish to commend Chevron on their approach - I am certain it will help me live longer. An excellent article.

**Jonathan Deegan, Houston, Texas, United States**

It's a great topic to share for our future. I believe the company not only honors the employee but also the family whose support the person needs to achieve a good performance.

**Frietania Arifin, Duri, Indonesia**

Thank you for the article "Balancing Act." That's pretty much my life as a single mom. I juggle and juggle. But the one thing that has been a great benefit has been Chevron. I would not have been able to survive what I'm going through if not for my Chevron managers, the organization and benefits. This is a great place to work.

**Denise Lum, San Ramon, California, United States**

### **Impressed with Relief Efforts**

I was born in Palembang, Indonesia, and have relatives residing in Aceh and was very impressed with Chevron's efforts ("Capacity to Recover," February 2008 Issue) to assist people from Aceh in trying to return to their normal daily lives after the Tsunami devastation.

**Noer Ibrahim, Richmond, California, United States**

### **Can We Make Oil?**

Have we proven in a laboratory that oil/gas can be created from dead plants, spores, etc.? If yes, what are the obstacles to making our own oil from the same things? If no, then how do we know for certain that oil was created from plants, spores, etc.?

**Allen Kirkpatrick, San Ramon, United States**

*Editor's comment: We put these questions to Richard Patience, a geochemist from the Earth Science department at Chevron's Energy Technology Company. This is his response:*

*There is a vast literature on laboratory generation of oil and gas from all kinds of biological materials. There is also a more than 100-year discussion on the organic vs. inorganic origin of oil and gas. So, in brief, we believe these days that oil (as opposed to gas) comes predominantly from an organic, mainly (but not exclusively) algal/bacterial source. This is based on many lines of thinking, but two important ones are i) volumetric - e.g. there simply aren't enough fish to produce so much oil; and ii) chemical compounds we find in oil that we call "biological markers," which means they have chemical structures that can be traced back to specific organisms or classes of organisms. These biological markers point to algae and bacteria as the dominant source material.*

*Gas has more significant sources, including land plants and even inorganic sources, but still not fish.*

*Why can't we do this in the lab commercially from living organisms? Well, it's largely a function of scale (you would need a huge amount of living matter to make enough oil) and time. Nature takes millions of years to make the product, and the one we make in the lab isn't as good as Nature's.*

### **Good Explanation**

The "Oil and Gas Recipe" (How It Works, November 2007 issue) article is one of the best laymen's explanation that I have read. In fact, it was so good that I sent to several members of my family. Keep up the good work!

**Dennis Henderson, Houston, United States**