

the Lamp

► **Managing success in a time of change**
An interview with Chairman and CEO Lee Raymond

Kizomba, our flagship development in West Africa



PLUS

- **Harnessing heavy-oil technology**
- **A tradition of giving**
ExxonMobil Foundation celebrates 50-year milestone
- **Alliances making progress in quest for cleaner diesel**
- **2005 World Expo**
ExxonMobil goes to the fair



An interview with Lee Raymond

Managing success in a time of change

This is the third in a series of interviews with Exxon Mobil Corporation Chairman and CEO Lee Raymond. In this session, he comments on the company's approach to meeting future challenges in the world's rapidly changing energy business.

“One of the great strengths this industry has is the ability to adapt around the world to changes in the market.”

Q. What are your top priorities for ExxonMobil in the coming months?

A. Our near-term priorities have to be viewed in the longer-term context of what the company has to accomplish. For ExxonMobil, that requires continuing to work on adding to the resource base, selecting projects for development and completing the projects that we have under way, and trying to efficiently manage the huge upstream producing operation we already have. The downstream continues to make progress in terms of the application of technology, reliability, efficiency and a more cohesive marketing plan. I think we can look forward to significant, identifiable steps in each of those areas. In chemicals, we continue to operate what we have very effectively and more efficiently, and we are planning some major expansions in the next few years. Overall, the corporation must manage specific objectives with regard to our financial structure in returning cash to the shareholders and increasing the dividend, which we have done. We will also continue to improve our competitive position and our operating and environmental performance.

Q. How should shareholders interpret the news that Exxon Mobil Corporation has become the most valuable company in the world?

A. We have been there before. And as you know, much as I would like to say that we are entirely responsible for that, what it really reflects is the relative judgment of the stock market in various industries and the relative value of our company versus other large international companies. That comes and goes. This is a business that has cycles to it. If you look at it historically, we have gone through periods of very strong growth. Then we go into some valleys largely driven by the commodity price structure. And then we go through another period where we set record earnings. So, I suspect we are in one of those cycles again. I have no idea how long this cycle will last, and I am no better at forecasting than anybody else. In times of very strong markets, what is important is for the company to be in a position to capture the full value of those markets and be able to deliver the best return in the industry through the cycle.

Q. How will the Exxon Mobil Corporation invest its huge cash reserves?

A. If you look at it over a long period, we have done a very solid job of managing cash. We continue to return sizable amounts to the shareholders in dividends and share buybacks. We also have a large, robust capital investment program. Beyond that, what we are going to do is what we judge is in the best interest of the shareholder.

Q. Some observers have suggested recently that Exxon Mobil Corporation might be opportunity constrained by virtue of its immense size. Are the company's options limited in this way?

A. We heard the same speech in the early 1980s when we started the share-buyback program. At that time, the company was worth about \$40 billion. Here we are 20 years later, and now the market cap is almost \$400 billion. So much for those who thought this was a company with opportunity limits.

Q. On the other side of that coin, are there any trends you see moving in the wrong direction that could hinder the efficient production and delivery of energy to the world?

A. Perhaps more visibly than any other industry, I think the oil business and the natural gas business demonstrate the power of the market. One of the great strengths this industry has is the ability to adapt around the world to changes in the market. Any time you start to make or put impediments in the efficiency of the market, the result is going to be that eventually somebody is going to come up short of what their needs are. In times of stress such as we have right now, we should continue to heed the lessons of the 1970s and 1980s – that regulatory intervention would make the problems much more difficult and that the marketplace is the arena that always produces the best solutions. I would urge everybody to be very skeptical of government mandates and intrusions into the marketplace, because a less-efficient market is not in the interest of either producers or consumers.

“ExxonMobil is committed to proprietary technology, and we have been for a long time.”

Q. How have the emergence and increased influence of state-owned oil companies affected the global energy business?

A. They have a clear interest in and impact on the structure of the business in the market for the kinds of things we do. Ultimately, of course, they also have to be driven by economics. I do not think any of them view themselves as a social organization. They all have certain things they can bring to bear. But we have things we can bring to bear, too. We have financial capital, management experience, technology, and a demonstrated track record of how to participate in upstream projects. So, I suspect they are going to be another group that will continue to participate in what will be by all measures a growing international oil and gas business.

Q. Research leading to advances in automotive technology and more efficient internal combustion engines continues to show considerable promise. What is ExxonMobil's perspective on research in this area?

A. We have been involved in research in that area for many years. We have been working very closely with leading automobile and heavy-equipment manufacturers for a long time on developing advanced internal combustion engines. Our efforts in that area are consistent with our broader philosophy that society needs to continue to find ways to use energy more efficiently. Research on advanced internal combustion engine technology is very exciting, and I expect we will see continued progress in this area. We have factored the development of advanced vehicles and power systems into our longer-term outlook for energy supply and demand. Yet even with these advances, demand for oil and gas will continue to grow very strongly over the next 20 or 25 years. Viewed from another perspective, if we do not have such advances in technology, the demands will be even higher, which means we must continue to make progress in automotive technology to be able to manage the future demand for energy.

Q. From an ExxonMobil perspective, is there any trend you would point to for shareholders that is especially noteworthy as you continue to compete in a growing international oil and gas business?

A. The biggest trend, as far as our company is concerned, is that we have demonstrated a track record for over 120 years of being an effective competitor and a leader in the industry in a wide range of environments. I have no reason to doubt that the company will continue to have that ability in the future.



Q. How are ExxonMobil's investments in proprietary research and technology benefiting shareholders, particularly at a time when most of your competitors are going out and buying technology developed by third parties?

A. The technology they buy on the street is average technology, and available to everyone, by definition. And the people who develop and sell it do not have long-term staying power. ExxonMobil is committed to proprietary technology, and we have been for a long time. That gives us a decided advantage versus almost anybody at this time, because we are about the only company that has a commitment to proprietary technol-

ogy on a scale large enough to be significant and meaningful. Another value is that it integrates the research companies with our operations, and therefore it gives our company a unique set of people who are able to support the operating companies every time they deal with special challenges. If you do not have that integration and commitment to proprietary technology all through the company, then you do not have that skill set either. So to me, as I watch the industry evolve, and more and more people get out of sponsoring proprietary technology, it makes the uniqueness of the approach we have even more valuable for the shareholders.

Q. Given the current higher prices for gasoline, why aren't oil companies rushing to build new refineries in the United States?

A. Well, new refineries have not been built in the United States primarily because it has not been a particularly

good business to invest in. The returns have been very low. They tend to be cyclical, and they are surrounded by an extensive and overlapping regulatory scheme such that someone who would really think about building a new refinery would have to spend hundreds of millions of dollars to even see if they could get a permit, which in most cases is probably very unlikely. So, I think it is a little bit unrealistic to think that there are going to be a lot of investors showing up to build new refineries. On the other hand, our company continually looks for ways to make our refineries more efficient and productive. In fact, through steady, incremental improvements at our existing facilities, we build the equivalent of a 150,000-barrel-a-day refinery every three years. That is by far the most efficient and cost-effective way to do it. I would never say never, but I would be very surprised if there will be significant new grass-roots refining capacity built in this country.

Q. When many of the "baby boomers" begin to retire in the next few years, how well is ExxonMobil positioned to attract and retain high-quality talent in its workforce?

A. We carry on a large recruiting program all over the world. More than two-thirds of our business is outside of the United States, so we really try to attract people from everywhere in the world. The quality of the people we are hiring today continues to be outstanding. Obviously, most of the professionals we hire are in engineering and the physical sciences, because that is the nature of our business. But we also need people in finance, marketing, law and many other areas, and the quality of the people is as good or better than we have ever had. [theLamp](#)



“Research on advanced internal combustion engine technology is very exciting, and I expect we will see continued progress in this area.”

A photograph of an offshore oil rig at night, illuminated by warm lights. The rig's complex structure, including a large crane and various platforms, is visible against a dark sky. In the foreground, yellow structural beams of the rig frame the view. The sea is dark, with some lights reflecting on the water. Another rig is visible in the distance.

Our flagship development in West Africa

ExxonMobil Development Company president Mark Albers, ExxonMobil Production Company president Morris Foster and ExxonMobil Development Company vice president Mike Flynn explain how a simple concept, “design one, build multiple,” is helping ExxonMobil’s affiliate for Angola Block 15 (Esso Angola) break all industry records for fast-track development of a major resource.



► With the startup of the Kizomba B platform and its supertanker-sized production vessel in July, Angola Block 15 quickly reached a production milestone of 550,000 barrels of oil per day. Now the site of three ExxonMobil producing projects, Block 15 includes some of the most prolific deepwater acreage in West Africa. By employing ExxonMobil's "design one, build multiple" approach, Kizomba B has already set new industry standards for performance and speed. The company trimmed almost six months off its original startup schedule, and millions from its cost. The success of Block 15 is yet another example of ExxonMobil's continued commitment to explore for and develop new production capacity with significant, large-scale resource opportunities. Africa as a region represents a growing percentage of non-OPEC production, and Angola is in the top 10 non-OPEC countries in terms of resources.

Just eight weeks after mooring on Block 15 in May, the floating production storage and offloading vessel (FPSO) for the Kizomba B development was fully commissioned and ready to go. Within a week of startup, the FPSO was producing 100,000 barrels of oil per day. In less than two weeks, the rate climbed to 200,000 barrels of oil per day, making it the fastest production startup of its kind. Kizomba B is currently delivering more than 250,000 barrels per day, bringing total production from the ExxonMobil interest in Block 15 to 550,000 barrels per day.

This fast-track development of the company's flagship deepwater projects in West Africa would not have been possible without the

early management decision to create a single design for Block 15's offshore platforms and production vessels, then build two of each. The first pair, known collectively as Kizomba A, began producing oil in August 2004.

"These opportunities require significant investment, execution capability and long lead times to bring on stream," says Mark Albers, president, ExxonMobil Development Company. "The Kizomba projects are examples of the disciplined approach, persistence and commitment necessary to take on the world's toughest energy challenges."

Overall, ExxonMobil has interests in five deepwater blocks in Angola covering 4.5 million gross acres. An ExxonMobil affiliate, Esso Angola, is the operator of Block 15, which holds some of the richest finds so far. Through the end of July, Esso Angola and its co-venturers had announced 38 deepwater discoveries containing the equivalent of 12 billion barrels of oil.

Back to basics

"Angola provided a unique opportunity for us," says Morris Foster, ExxonMobil Production Company president. "It allowed us to execute some basic principles as we planned the development. The idea of designing one and building several is not new, but it's hard to execute on this scale."

At left: The FPSOs for Kizomba A and B are two of the most complex machines ever designed for an offshore development; yet both were built and deployed in record time.

At right: About 5,000 workers logged a total of 7 million hours to build Kizomba B.





Because Kizomba A and B are nearly identical, production operator Valerie Johnson can transfer between them as needed and be familiar with the facilities.

The benefits, however, are clear. Kizomba A, the first of Block 15's two main production centers, was delivered in a record 36 months. Kizomba B was delivered in under 31 months. One challenge, Foster notes, was sticking to the original plan.

"When you 'design one, build multiple,' you take out some of the unknowns," he says. "Difficult tasks are always easier the second time, but that's not the traditional way people do things in the oil business. Every engineer wants to create something new. When you are building two of something, as we did for Kizomba, there is tremendous pressure to make changes the second time around."

But sticking to the plan generates a lot of valuable experience that automatically transfers from one job to the next. At least 80 percent of the people who built

Kizomba A also built Kizomba B. Although some alterations between A and B were done to meet the specific needs in each field, most people would say the platforms and vessels are identical. By sticking to the original design for A, Foster estimates that the company saved about \$400 million in development costs and shaved nearly six months off the delivery time for Kizomba B.

"There is also a huge benefit in terms of training, safety and efficiency for the people operating these facilities," Foster says. "Our operators can now move from one facility to the other and be completely familiar with their operation."

Early-production systems

Another good example of the "design one, build multiple" concept is the growing number of early-production vessels the



company is placing offshore Angola, Nigeria and Equatorial Guinea. These ships, loaded with oil processing and storage equipment, are designed to begin producing oil from new fields in as little as 18 months. They can begin recovering oil right away, while larger, more permanent facilities are being built. In smaller fields, early-production systems may serve indefinitely as the sole production facility.

“That was a strategy we began to consider after forming ExxonMobil Development Company seven years ago,” Foster says. “Large projects, such as those on Block 15, typically have long cycle times. Traditionally, they call for spending a lot of money up front, while it’s years before we see the first dollar back. The concept of ‘design one, build multiple’ allows us to

safely and efficiently generate income as quickly as possible.”

The first oil from Block 15 came from Xikomba, an early-production system deployed in 2003. Xikomba is currently producing up to 70,000 barrels of oil per day.

Building the home team

While ExxonMobil and its co-venturers are working hard to develop Angola’s oil and gas, they’re also building the country’s industrial base and training its workforce so that Angolans can do much of the job themselves.

“That is another benefit of ExxonMobil’s presence in Angola,” says Mike Flynn, ExxonMobil Development Company vice president. “One opportunity we eagerly embrace in Angola and a number of developing countries is working with them to build the



Bernardo Kimbundo (left) and Subretro Kamata were in the first group of 60 trainees who attended technical schools in the United States and Canada. They are now operators on Kizomba B.

country’s industrial infrastructure. We spend a great deal of time adding to the management and skilled-worker base.”

That’s much easier to do when jobs are the same from one project to the next.

“When you compare Kizomba A and B, you’ll see a progression in the amount of construction that we were able to do in Angola,” Flynn says. “For Kizomba B, not only did Angolans produce the same items as they did for Kizomba A, this time their experience and increased capacity enabled them to assume a bigger share of the load.”

A new manufacturing plant in Lobito, for example, now makes the umbilical lines used to control subsea wells. Fabrication yards in both Lobito and Soyo have also increased their construction capacity.

Some argue that building in Angola increases the cost, but Flynn sees the real benefits. The

expanded fabrication yards and a growing pool of skilled workers

will be invaluable when construction begins on Angola’s liquefied natural gas (LNG) facility to be built near Soyo in the next few years. The new plant, a first for Angola, will receive most of the offshore natural gas that is now being reinjected into Angola’s deepwater reservoirs. Building the LNG plant could generate 5,000 local jobs.

“When you grow local capacity, you are investing in the future,” Flynn says. “You have to take the long-term view.”

“We are very proud of our work in Angola,” Foster adds. “We realize that ExxonMobil is constantly judged by its performance compared to every other oil company in the world, but in that regard, no one is even close to matching the job we are doing in Block 15.” **theLamp**

▶ To learn more
[exxonmobil.com/
 upstreamtechnology](http://exxonmobil.com/upstreamtechnology)

Kizomba B facts

- ▶ Investment: Kizomba B, \$3.5 billion
- ▶ Partners: Esso Exploration Angola Limited (40 percent); BP Exploration Angola (26.67 percent); ENI Angola Exploration B.V. (20 percent); Statoil Angola (13.33 percent)
- ▶ Concessionaire: Sonangol
- ▶ Location: 90 miles (145 kilometers) off the coast of Angola
- ▶ Water depth: 3,280 feet (1,000 meters)
- ▶ First oil: July, 2005
- ▶ Production capacity: 250,000 barrels a day
- ▶ Total production from Angola Block 15: More than 550,000 barrels a day

At left: About 120 Angolans have either completed or are in their final stages of technical training to prepare them to run Kizomba A and B.

Alliances making progress in quest for cleaner diesel



ExxonMobil is working with Toyota and Caterpillar in separate programs to design diesel fuel and engine systems that will significantly reduce emissions. Drawing on the strengths of each company, the effort has already produced groundbreaking research that brings new levels of understanding to combustion science.

▶ ExxonMobil has teamed with Toyota Motor Corporation and Caterpillar, Inc. in programs to develop ultra-clean diesel fuels and engines. The work is leading to advances that could improve efficiency and significantly reduce tailpipe emissions associated with diesel systems.

With most large vehicles having diesel engines, diesel is the world's workhorse. Although modern diesel engines are much

cleaner than those of 20 years ago, they still produce more unwanted tailpipe emissions than new gasoline engines.

By 2010, most developed countries will have reduced the sulfur content of diesel fuel to one-tenth of the 2000 levels. Significant reductions in sulfur content will also be made for diesel fuel used in heavy construction equipment and locomotives. The lower sulfur levels will enable the use of particulate

traps and exhaust catalysts that will dramatically reduce emissions.

"Some people believe the new emissions standards can be met by advanced engine designs, while others say it's a fuel issue," says Brian Harney, ExxonMobil policy planning executive. "But long ago, we learned to consider the vehicle and the fuel as a single system. You can't make adjustments to one without affecting the other."

Source of soot

ExxonMobil's collaboration with Toyota has already brought new insight into the effects of fuel structure on soot formation in diesel engines.

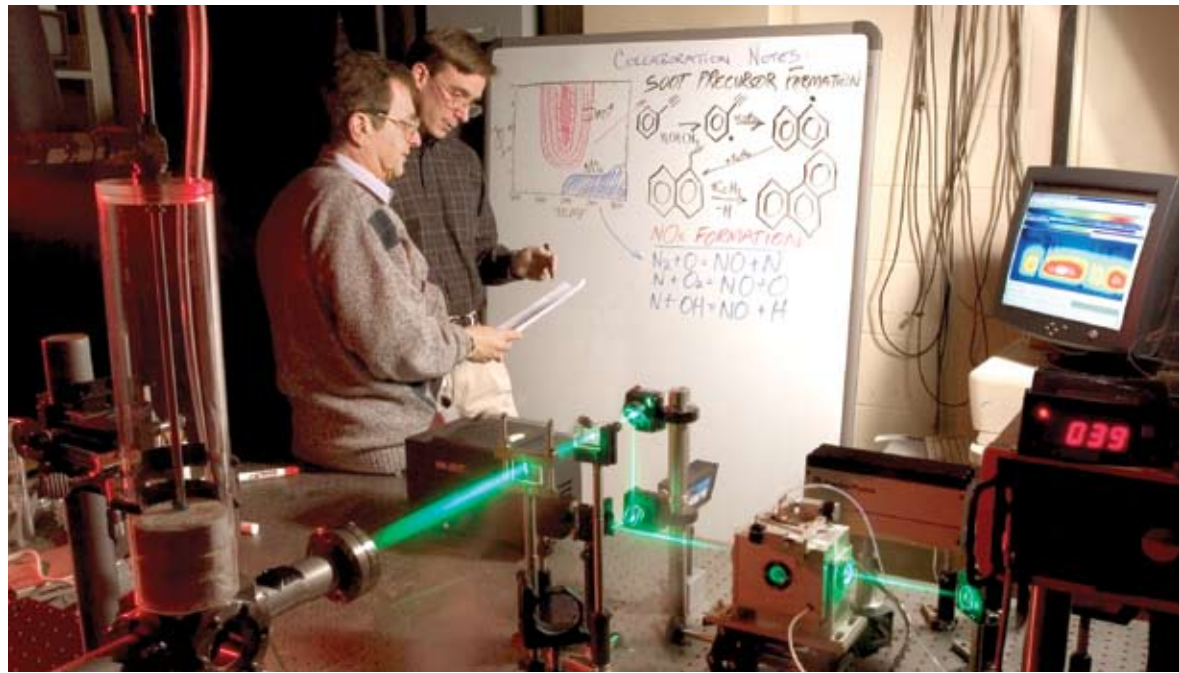
"We formulated a series of diesel fuels that were essentially identical except for chemical changes to the fuel composition," says John Farrell, who leads ExxonMobil's research in combustion fundamentals.

"All the important physical properties, such as boiling point and ignitability, were kept the same, and advanced analytical characterization tools were used to provide a detailed molecular composition," he says. "The fuels were then evaluated in Toyota's state-of-the-art research engines. The results from these precisely controlled experiments allowed us to correlate the soot emissions to the molecular structure of the fuel."

The results provided new insight in the field of combustion science. For their work, Farrell and senior scientific advisor Walt Weissman, along with scientists at Toyota's Central Research and Development Laboratories, received the prestigious Harry Horning Memorial Award from the Society of Automotive Engineers.

The best of both

Meanwhile, ExxonMobil scientists are working with separate teams of researchers at Toyota and Caterpillar to study a new concept



Walt Weissman (left) and John Farrell monitor tests in progress at ExxonMobil's Corporate Strategic Research laser lab in Clinton, N.J.

The difference with diesel

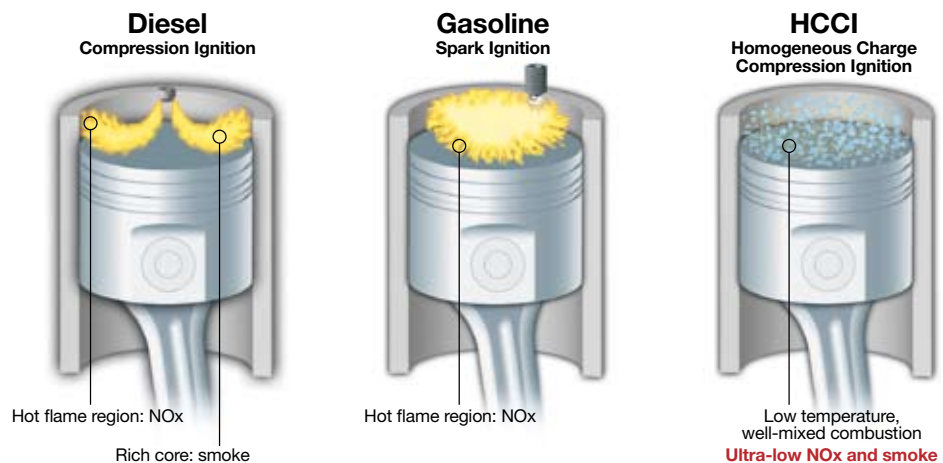
Gasoline and diesel engines are as different as the fuels they use. Gasoline engines have spark plugs, but diesels rely on compression to ignite the fuel, which is injected directly into the combustion chamber.

"The fuel itself is quite different," says Charlie Schleyer, senior scientific advisor. "Diesel ignites more easily

than gasoline when compressed in an engine. Diesel is slower to evaporate and more dense. Per gallon, diesel also produces 10 percent more energy than gasoline."

Improvements in fuel-injection equipment over the past decade have produced better fuel and air mixing in diesel engines, leading to reduced emissions and

improved performance. That's one reason for the increasing popularity of diesel engines in passenger cars and light trucks, particularly in Europe. Emerging Homogeneous Charge Compression Ignition (HCCI) technology provides the best of both engine systems – improved combustion using diesel fuel.



'A whole new kind of catalyst'

Many refiners build new reactors or modify older ones to produce low-sulfur diesel fuel, but ExxonMobil scientists have a better way. Their invention, a catalyst called *Nebula 20*, saves investment capital and years of construction time.

Catalysts increase the rate of chemical reactions, but are not consumed in them. *Nebula 20*, for instance, helps remove sulfur from fuel by combining it with hydrogen. Huge refinery vessels full of pea-sized catalyst pellets can perform their job for years with little attention. Still, there are limits. If refiners need more processing capacity, they usually have to add expensive new hardware.

"That's where *Nebula 20* comes in," say Stu Soled and Sal Miseo, two of the primary scientists at ExxonMobil Corporate Strategic Research who made the initial discovery. ExxonMobil research and process-development teams in New Jersey, Virginia and Louisiana perfected the process. *Nebula 20* was developed in cooperation with Albemarle, which manufactures and sells it to ExxonMobil and other companies.

"The active ingredients of traditional catalysts are supported on an alumina base, which limits the amount of active component in the reactor," Soled explains. "But *Nebula 20* is a bulk product, so it contains more of the active ingredient. For many applications, *Nebula 20* is at least twice as active as any other catalyst."

Nebula 20 is already used at two ExxonMobil refineries in the United States and three in Japan.

"*Nebula 20* allowed us to meet Japan's new low-sulfur diesel requirements," says David Stern, section head of hydroprocessing at ExxonMobil's Baton Rouge Process Research labs. "Building a new reactor can take more than two years and cost millions of dollars. In some refineries, we don't even have room for a new reactor, so from many aspects, *Nebula 20* really saves the day."



For many applications, *Nebula 20* is at least twice as active as any other catalyst on the market.



Mike Noorman, (left) and Charlie Schleyer are finding ways to make diesel engines run cleaner than ever before.

that combines the best characteristics of diesel and gasoline engines. It's called homogeneous charge compression ignition, or HCCI. When all the technical challenges are worked out, HCCI could go a long way toward meeting even the toughest new air-quality standards.

"The trick with HCCI is to properly mix the air and fuel before ignition," says Weissman. "Traditional diesel engines inject fuel directly into the combustion chamber, where it combines with compressed air and ignites."

That system, however, creates a poor mix of air and fuel. The combustion process is slow, and it produces soot and other emissions that have to be removed from the exhaust gas.

"With HCCI, we achieve essentially soot-free combustion by the effective mixing of air and fuel," says Weissman. "The mixture burns fast, which boosts efficiency. The flame remains relatively cool, and that prevents the formation of nitrogen oxides, one of the emissions we are trying to control."

To reach their potential, HCCI engines may need enhanced versions of diesel fuel, and ExxonMobil researchers are continuing to explore ways to find the right formulation.

Fuel changes, for example, may help address the problem of HCCI combustion being too fast at high engine load, which creates unacceptable levels of engine noise and prevents HCCI's benefits from being realized across the entire engine operating range.

When technology pays off

Beyond their work with engine makers, ExxonMobil researchers have discovered a new class of catalyst, *Nebula 20*, that's up to twice as effective as other catalysts in removing sulfur from diesel fuel. The catalyst is being deployed in ExxonMobil refineries around the world.

Distinguished engineering advisor Ernie Lewis heads the project. "*Nebula 20* is helping us meet the new low-sulfur standards at a significantly lower cost than our competition," he says.

"This is one example of the way our company distinguishes itself through technology," Lewis adds. "Within ExxonMobil, there is a strong relationship between research and implementation in the field. Innovation is great, but it is the application of technology that makes money." **theLamp**

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Research into climate solutions

▶ “Secure, reliable and affordable energy sources are fundamental to economic stability and development.”
 “Climate change is a serious and long-term challenge that has the potential to affect every part of the globe.”
 These quotes – with which we agree entirely – were among those endorsed by government leaders at the recent G8 meeting in Gleneagles, Scotland.

The G8 proposed moderating potential climate risks through improvements in efficiency and through providing opportunities to develop and deploy new lower-emitting energy technologies. We, too, strongly support efficiency and advancing technology.

At the same time, G8 leaders recognize that billions of people lack modern energy services and cannot afford the most expensive energy-saving and emissions-reducing technologies.

World economies will long be highly dependent on fossil fuels. Non-OECD countries are beginning to use more energy and emit more carbon dioxide than OECD countries, and the disparity will grow with each passing year.

These factors underlie the Global Climate and Energy Project (GCEP), initiated at Stanford University in 2002, with the intention of ExxonMobil, GE, Schlumberger and Toyota to invest up to \$225 million over a 10-year period.

GCEP’s aim is to provide fundamental new knowledge that will underpin the development of commercially viable technologies with the potential to dramatically reduce global emissions of greenhouse gases.

Now in its third year, GCEP has built a wide-ranging

portfolio of research activities (see gcep.stanford.edu). Among the many breakthrough research projects are:

- Researchers are investigating the use of genetically engineered bacteria to capture solar energy and produce hydrogen, which could then be used for power generation or advanced automobiles.
- Investigators are looking to make flexible sheets of solar cells – organized at the molecular level – to provide far less expensive and more efficient electricity from sunlight.
- Materials are being researched for high-capacity storage of hydrogen in carbon nanotubes, with subsequent easy release for power uses. This approach may offer a safer and more efficient alternative to high-pressure storage of hydrogen.

- The geologic integrity of underground reservoirs and aquifers is being assessed for potential use in storing carbon dioxide generated by burning fossil fuels.

GCEP also aims to build capacity for future innovation by fostering interdisciplinary interactions, by training a new generation of research scientists and engineers, and by promoting collaborations throughout the world. Impressively, nearly 100 students and postdoctoral fellows have been engaged in GCEP projects.

GCEP and other research efforts offer hopeful avenues for providing the massive quantities of energy that the world will need in the future, and for limiting the environmental impact of both the production and use of that energy. We welcome the support of the G8 leaders in addressing this technology challenge. [theLamp](#)

Technologies with potential for dramatic global emissions reductions

Harnessing heavy-oil technology

Research and technology are turning Canada's vast reserves of heavy oil into a key energy supply.

► Viscous, heavy oil, the kind found in abundance in Alberta, Canada, has many names: bitumen, tar sands, oil sands, extra-heavy oil. The latter, at least visually, is probably the most appropriate. It's commonly described as having the consistency of cold molasses. But what it really looks like is roofing tar, or your grandmother's dark chocolate pudding, lumps and all.

Unlike conventional oil, something with this kind of texture doesn't just bubble up. Mixed with sand, clay and water, it sits stubbornly below the surface, requiring coaxing or digging to get it out of the ground. And once that's done, it's hard to

imagine turning it into the gasoline you put into your car.

"It used to be known as the distant cousin of conventional oil," says Howard Dingle, Imperial Oil Resources Ltd. vice president of production. He should know. Dingle spotted potential in Alberta's oil sands in 1964, when he first began working with heavy oil as a university student.

Now 40 years later, Dingle and others who have worked diligently in Alberta oil-sand country have seen their work come to fruition. Technological advances make extraction and production increasingly attractive, both economically and environmentally.



At Imperial Oil's research center in Calgary, technologist Karl Pustanyk demonstrates how thick Alberta's heavy oil is. "Now you see why we have to use steam," he says.





(At left) Turning heavy oil into crude involves removing part of the carbon from the raw bitumen in a process called “coking.” Syncrude’s coker at the mining site outside of Fort McMurray, Alberta, stands as an imposing labyrinth of steel and technology.

(Right) ExxonMobil and Syncrude employees Tony Bazzini and Gord Mounce are assisting in Syncrude’s expansion project, one of the biggest construction projects in the world.



The proof in this particular thick pudding is the numbers. ExxonMobil Canada Ltd. partners, Imperial and Syncrude Canada Ltd. (Imperial interest, 25 percent), together produced almost 370,000 barrels of oil a day in 2004. Both companies are expanding and expect to increase production. Planning is under way for a new Imperial Oil and ExxonMobil Canada oil-mining project, which could have the lifetime potential to yield 4.4 billion barrels of oil.

That’s just a drop in the barrel compared to Alberta’s potential. According to the Canadian government, the province’s deposits contain between 1.7 and 2.5 trillion barrels of oil. Of that, an estimated 300 billion barrels are recoverable using today’s technology.

“It’s an enormous resource,” says Jim Massey, ExxonMobil vice president of production for Canada and South America. “It puts Canada clearly in the league with Venezuela and the big Middle East producers.”

Although the extraction and

refining processes are not easy, new strides in research and technology are making these processes more efficient.

“The challenge with bitumen is not exploration,” Dingle says. “We know where the oil is. The challenge is how to get it out of the ground and how to turn it into something useful.”

Mining for oil

Stand in one of the enormous Syncrude-operated oil-sands mining pits outside of Fort McMurray in northern Alberta, shape a hunk of sand snowball-style, and after you toss it, look down at your oil-stained palm. Now you understand why the heavy oil here is called oil sands. The earth here, just below the topsoil, is drenched in oil.

Likewise, stand in one of Syncrude’s mining pits and you’ll know what it feels like to be in a world of giants. Everything here is enormous, and superlatives involving the word abound.

The trucks hauling the oil-laden sand are the biggest ever

built, each weighing 800,000 pounds. Fully loaded they weigh more than two Boeing 747s. The shovels are also among the biggest in the world. Each scoop of material weighs in at about 100 metric tons.

Syncrude is able to separate the oil from the sand and upgrade it, on site, with a shipment average of about 240,000 barrels of oil per day in 2004. A significant expansion is under way that is increasing Syncrude’s production capacity to about 350,000 barrels per day. All of the enhanced and new facilities are expected to be on line by mid-2006.

Technological advances seen throughout the operation, including the extraction and mining process, have allowed Syncrude to expand to become the world’s leading oil producer from oil sands, says Charles Ruigrok, Syncrude’s chief executive officer. “Technology evolution has been a fundamental driver behind Syncrude’s ongoing success,” he says.

Working with the makers of the big equipment is a large part of that technology. Much of it,

like the shovels, is specifically designed to fit the needs of the operation. Even the tires, which measure more than 12 feet tall, are made to specification.

For better efficiency and maneuverability, the company is retiring older draglines and bucketwheels and replacing them with large trucks and equally large shovels.

One of the most important extraction-related achievements is the implementation of a technique called hydrotransport. Developed by Syncrude, it involves mixing the oil sands with water to create slurry, which is transported via pipeline to the extraction plant. This technique saves energy by eliminating conveyors. The process also begins the separation of the oil from the sand while en route at a greatly reduced water temperature, saving more energy.

Since 1978, the plant where

Syncrude turns the oil sands into its own crude oil blend has been a large-scale operation. "It's very impressive," says Tony Bazzini, part of a team of ExxonMobil project managers assisting in the construction. He says this while standing atop a 23-story fluid coker, the largest ever built.

But equipment alone has not accounted for Syncrude's success. At the Syncrude Research Center in Edmonton, about 90 scientists and technologists are working on new techniques to further enhance production. They are also studying new methods for reducing greenhouse emissions and more efficient ways to improve the land once the oil has been removed. Already, about 9,000 acres have been reclaimed.

Many innovative techniques will be used at the new mining project Imperial Oil and ExxonMobil Canada are planning in Alberta. The partners plan to use the

same big equipment and hydrotransport technology, as well as the latest reclamation science.

Steaming for oil

At first sight, Imperial's operation at Cold Lake, Alberta, might seem less imposing than the Fort McMurray mining operation. Imperial's Howard Dingle prefers the word "elegant," although Cold Lake is home to one of the world's largest thermal oil recovery sites. Spread over roughly 300 square miles, about 200 pads nestled among evergreen forests each contain 20 to 30 wells. To the naked eye, Cold Lake looks, and in some ways acts, like a conventional oil operation. That's because most of the reservoir is located at least 1,500 feet below the surface, too deep to be mined economically.

But unlike conventional oil, none of that extra-heavy oil resting far beneath the surface comes up with a pump alone. It requires a lot of help, including added heat and pressure.

Engineers at Cold Lake have employed a thermal recovery process called cyclic steam stimulation (CSS), which was developed by Imperial in the mid-1960s and today is the standard for in-situ oil recovery. CSS, nicknamed "huff and puff," sounds simple enough. Steam produced in large boilers is injected into the ground at very high pressures, where it soaks, softens and mobilizes the oil from most of the sand. After a set period – anywhere from a few months to a few years – the heavy oil and water are pumped to the surface. After the water is removed,

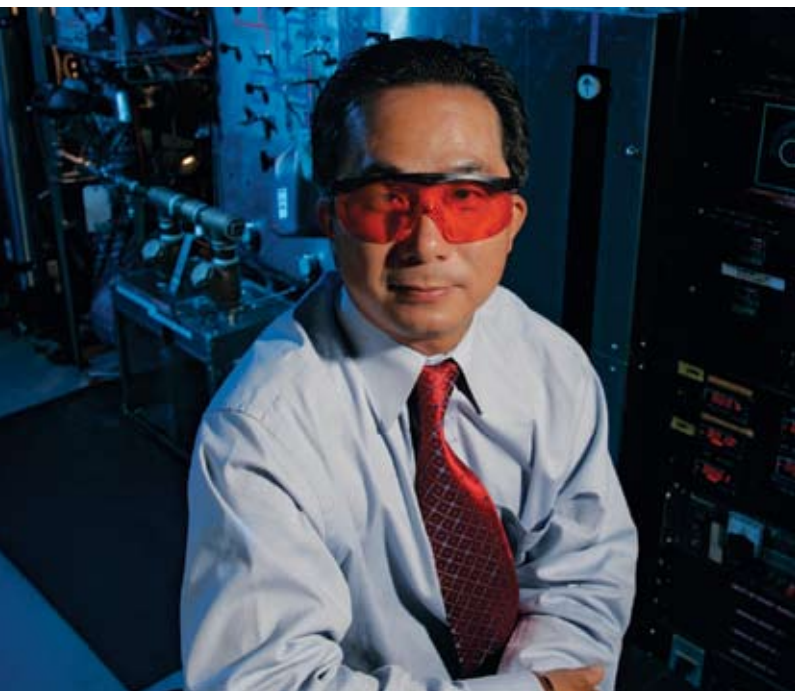


the oil is mixed with a light hydrocarbon liquid to make it less viscous and enable it to be shipped through pipelines to processors.

"CSS is so much more complex than it seems," says Eddie Lui, Imperial's vice president for oil-sands development and research. "When we first used CSS in Cold Lake to produce bitumen in the seventies, we were only able to extract about 13 percent of the bitumen in the reservoir. Now, we are at about 25 percent. That major difference is the result of better operations and a tremendous amount of new technology and research."

Advances realized through research and technology include computer-generated mapping to better understand how steam works in the reservoir, directional-drilling techniques

Eddie Lui, Imperial Oil's vice president of oil-sands development and research, pauses in front of an industry-leading apparatus that simulates how solvents, steam and oil interact underground.



► To learn more
[exxonmobil.com/
coldlake](http://exxonmobil.com/coldlake)



that increase a well's reach and coverage, and special solvents added to the steam to increase a well's life and enhance efficiency. Something Lui is particularly excited about using on new sites involves a new twist to an old technique: adding solvents to steam. Lui expects that by employing these innovative processes, the company will be extracting more than 30 percent of the known bitumen reserves in the near future.

None of this would be possible without Imperial's cogeneration plant, which provides the operation's electricity, and a state-of-the-art water recycling plant, which recycles about 95 percent of the 600,000 barrels of water used daily to make the steam.

"It's been a very good story in Cold Lake, and we have the mak-

ings of repeating that with other developments," Lui says.

In it for the long haul

Some say heavy oil is getting so much attention lately because of higher oil prices. There is a measure of truth to that. Alberta's heavy oil is more expensive to produce than traditional oil reserves, and rising oil prices make recovering those reserves a more attractive option.

But Syncrude has been operating in Alberta commercially since 1978, and Imperial Oil's Cold Lake development went commercial in 1985. Regardless of waxing and waning oil prices, both have been consistently profitable.

"We've been in Canada for a long time because it's profitable and stable and reliable," says ExxonMobil's Jim Massey. "Is it



more profitable when oil prices go up? Sure. But a disciplined management approach means that we don't do a lot of things differently when oil prices get high or when they go down. We're in it for the long haul."

theLamp

(Above center) Noel Dion services a pump at one of Cold Lake's in-situ operations. Surrounded by ever-green forests, the operation at Cold Lake is the world's largest thermal oil recovery site.

(Above) About 300 bison spend their days munching on grasses dotted with wildflowers swaying lazily in the breezes on former Syncrude mining land.

► Glad in her denim shirt with the *StopAIDS* logo, Katia Paiva queried a group of 19 co-workers from the Global Real Estate & Facilities unit. “Have any of you ever lost someone to AIDS?”

Five hands went up. Thus began the first *StopAIDS* peer education workshop – the first for Katia Paiva and for Esso Exploration Angola. At the close of the lively, interactive session, Paiva confessed she was nervous in her debut as a peer educator but pleased with the outcome.

Angola is one of 23 affiliate countries participating in the *StopAIDS* program, launched by ExxonMobil in 2004. The program aims to promote the prevention of HIV and AIDS among employees and their families in sub-Saharan Africa and to improve access to testing and treatment. Among international companies in the region, ExxonMobil is at the forefront of workplace efforts to mitigate the HIV/AIDS pandemic.

ExxonMobil does not know the exact impact of HIV/AIDS on its workforce, “and we don’t want to know,” says *StopAIDS* Coordinator Sunday Essien, stressing the company’s commitment to medical confidentiality. ExxonMobil does know that more than half the 40 million people living with HIV/AIDS worldwide are in sub-Saharan

Africa, where the company employs about 5,000 people. HIV/AIDS in Africa is largely a heterosexual disease, and mobile people with disposable incomes are particularly at risk.

Since HIV/AIDS is a personal rather than an occupational illness, ExxonMobil respects the fact that “the individual, not the company, owns the issue,” says Steven Phillips, Medical Director for Global Issues and Projects. “Our role is to equip individuals with the information they need to keep themselves healthy.”

ExxonMobil tapped the expertise of Population Services International (PSI), a leading nonprofit health services organization, to create a template of HIV/AIDS education tools that participating affiliates tailor to local needs. Key to the PSI model is the rigorous selection and training of 375 peer educators from the workforce, in lieu of outside experts.

One ExxonMobil affiliate was already miles ahead: Mobil Oil Kenya – a seasoned marketing organization – has conducted peer training sessions since 1999. Kenya was thus an ideal venue for the pilot launch of the more structured *StopAIDS* program last year. The second pilot affiliate – Esso Exploration Angola – is a young exploration and production organization.

The incidence of HIV/AIDS in the country is low relative to other sub-Saharan nations, yet so is the level of public knowledge.

StopAIDS has now been launched in all remaining target countries. “We considered a longer term of implementation,” says Debora Rice, ExxonMobil Global Health Issues Manager, “but the local country managers didn’t want to wait.”

“I’ve been on the road nearly every month,” says Essien, who is on loan from Mobil Oil Nigeria to guide *StopAIDS* affiliates through local design and implementation. In each location, PSI administers a Knowledge, Attitude and Practices survey among employees, on a voluntary and anonymous basis, to assess overall gaps in HIV/AIDS perceptions. The results, before peer education and after, will help ExxonMobil measure the success of *StopAIDS*.

Kick-off events prior to the startup of peer education might feature testimonials from non-employees living with the disease and theatrical presentations aimed at neutralizing the stigma – a big challenge in many parts of Africa.

“My mother won’t even say ‘AIDS,’” says Shamim Chanzu, *StopAIDS* Coordinator for Mobil Oil Kenya. “She calls it ‘this disease that has come.’”

Paiva’s education session is an



STOP AIDS

ExxonMobil Workplace AIDS Education & Prevention Program



In sub-Saharan Africa, no segment of the population has escaped the scourge of HIV/AIDS. ExxonMobil employees are helping to combat the spread of the disease through an innovative program of peer education and access to voluntary counseling, testing and treatment.



Esso Exploration Angola provides funds for the nonprofit group, Population Services International, which conducts training sessions for potentially at-risk youth.

overview of HIV/AIDS facts, modes of transmission and prevention methods.

Workforce enthusiasm and support are widespread. “All of our employees realize this program is good for them, not just for the company,” says Terry McPhail, lead country manager for Esso Exploration Angola.

Esso Exploration Angola holds separate education sessions in English and Portuguese to accommodate expatriates as well as local employees. In Mombassa, Kenya, where the workforce is largely Muslim, peer educators are of the same faith and therefore sensitive to religious perspectives.

Other local companies are interested. “Everybody wants to know our game plan,” says Chanzu, “but our success is all about commitment.”

Essien agrees: “Our PSI contacts say our company succeeds where others don’t because of the buy-in from the top that goes down through the organization.”

“The original effort started with the determination of a few employees,” says John DiTullio, former chairman, Mobil Oil Kenya. “*StopAIDS* has been a great tool for taking their initiative to the next level.”

Local committees are envisioning strategies for continuing *StopAIDS*. “We view it like a safety program,” says Dave Lofquist, *StopAIDS* Coordinator for Esso Exploration Angola. “We’ll be talking about AIDS for as long as the organization is here.” **theLamp**

HIV/AIDS treatment

As employees across sub-Saharan Africa heed the call to stop HIV/AIDS, ExxonMobil does its part to ensure they have access to voluntary counseling, testing and treatment for the disease. Every participating affiliate works to build local capacities for those services and to communicate them to the workforce. At *StopAIDS* kick-off events in Angola and Kenya, representatives of local health services distributed information materials and fielded employee questions.

As with any illness, health services for HIV/AIDS are private and confidential, and the company’s nondiscrimination policy further protects any victims of the disease.

As recently as last year, health insurance providers in six of the 23 *StopAIDS* countries excluded treatment for HIV and AIDS from their coverage plans. ExxonMobil has been working assiduously toward a goal of covering HIV/AIDS like any other disease. Through a combined effort by regional and local human-resource teams, the company is renegotiating plan provisions with several insurers. In several countries, ExxonMobil is tackling the issue in concert with local industry groups.

“Our theory is, if we build demand for HIV/AIDS coverage, the supply should follow,” says Steven Phillips, ExxonMobil Medical Director, Global Issues and Projects.

One promising development is a drastic reduction in the prohibitively high cost of AIDS medication. “Treatments that used to cost ten thousand dollars a month are down to about a thousand dollars,” says Louisa Norman, local representative for Population Services International in Angola, “and subsidies are coming from nonprofit groups like the World Health Organization.”

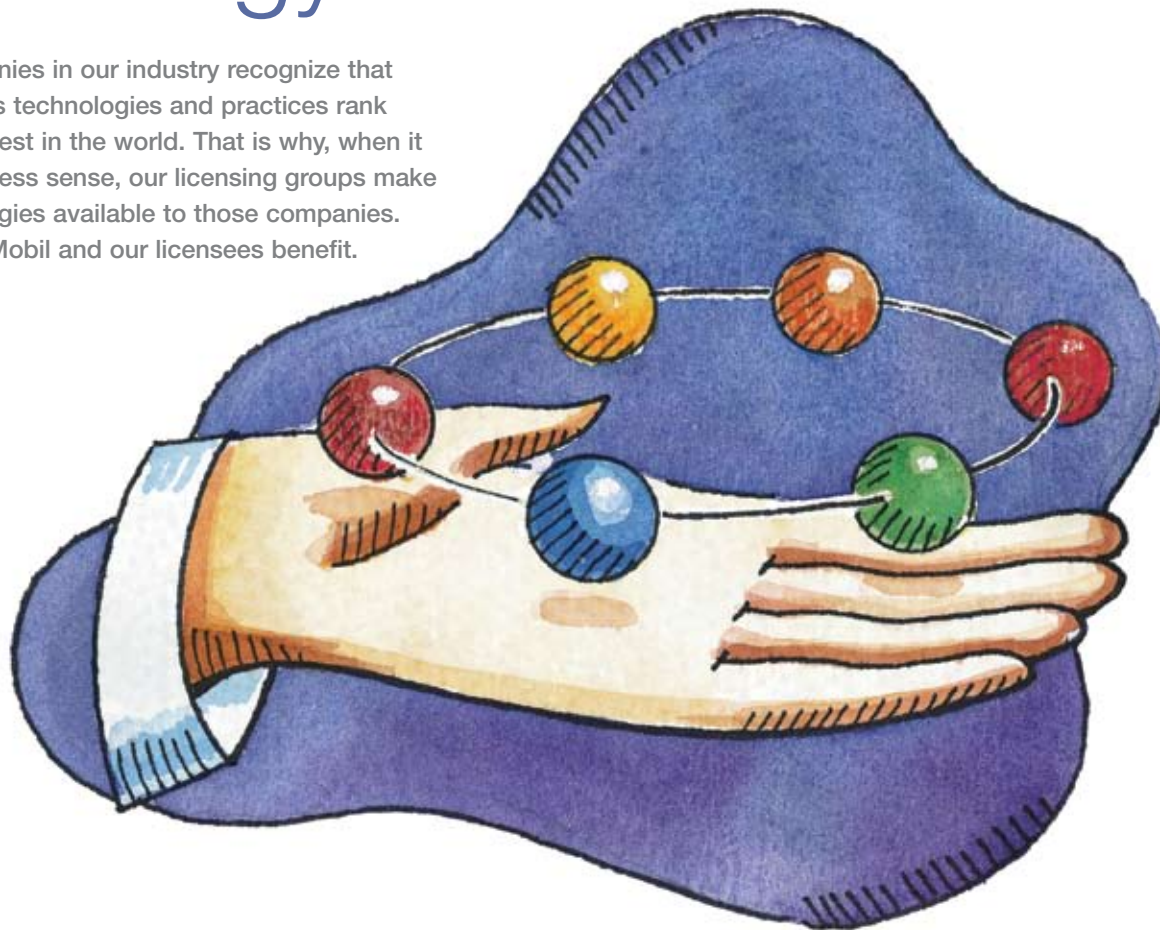
ExxonMobil expects to have removed all barriers to HIV/AIDS insurance coverage by the end of this year.

► To learn more
exxonmobil.com/stopaids
exxonmobil.com/africahealth

ExxonMobil licensing technology

“It works for us. It will work for you.”

Most companies in our industry recognize that ExxonMobil's technologies and practices rank among the best in the world. That is why, when it makes business sense, our licensing groups make our technologies available to those companies. Both ExxonMobil and our licensees benefit.



► “A line from an ExxonMobil Chemical advertisement, ‘It works for us, it will work for you,’ captures the essence of why competitors should license technology from us,” says George Barile, vice president, ExxonMobil Technology Licensing LLC. Barile defines his group’s mission in clear, direct terms: “We must align with our businesses to determine which technologies we can license to other companies and what value we can provide. Then we work closely with potential customers to find out how our technology can help them be more profitable.”

Giving value to get value

To pursue that mission, a dedicated licensing group has been established to license aromatics, olefins and polymers technologies. A licensing group within ExxonMobil Research and Engineering (EMRE) in the Downstream has a similar mission – licensing fuels and lubes technologies to the petroleum refining industry.

Those groups have made technology licensing a successful business for ExxonMobil. And the business is growing – the number of new EMRE licensing agreements has increased

threefold since 2000.

But why do we license to our competitors the technology that has helped make ExxonMobil an industry leader?

“We only license our technologies where we have business alignment and get good return for the value that our technology provides for our licensees,” explains Barile.

The value we get comes in several forms. John MacFarlane, manager of Technology & Sales Licensing for EMRE, explains: “In addition to income, licensing provides valuable market insights about the competitiveness of our technology. It also gives us important feedback on

how our technology is performing and how we can further improve it.”

A technology leader

By all accounts, ExxonMobil technology is performing remarkably well. Our technologies for olefins, polymers, aromatics and catalysts have built a reputation as well-engineered, successful solutions geared toward current industry issues.

Our industry-leading steam-cracking technology for olefins, which are major petrochemical building blocks, produces a very high yield of ethylene with low investment and operating costs – a valuable combination in this highly competitive market.

In polymer technologies, ExxonMobil Chemical is a global leader. We have more than 40 years of experience and the world’s broadest range of product capability.

In LDPE (low-density polyethylene), our licensed technology is well-recognized for its product quality, breadth and well-engineered process design.

In catalyst technology, ExxonMobil is the recognized leader in several petrochemical, polymer and refinery areas. The success in our aromatics licensing businesses in alkylation and paraxylene, as well as our refinery lubes basestock technology, are the direct result of our zeolite-catalyst expertise. “Our zeolite-based catalysts alone are in well over 100 non-ExxonMobil commercial facilities around the

world from the United States to China,” says Barile. “That’s quite a compliment to the capabilities of ExxonMobil’s technologists.”

In aromatics, we partnered our alkylation technology with The Shaw Group to form Badger Licensing. Badger, a world leader, creates and sells technology for the ethyl benzene, styrene and cumene chain markets and has pioneered continuous improvements for more than 25 years.

ExxonMobil’s portfolio of paraxylene technologies is world renowned and has been licensed directly by us for 30 years. More recently, we partnered with Axens, a French company, for grass-roots aromatics complexes and the combined capabilities, called ParaMax, have enhanced our market access significantly.

For the refining industry, EMRE offers a broad array of technologies for fuels and lubes. Two examples are the *SCANfining* process and *MSDW*. The *SCANfining process*, which has been licensed to more than 20 refiners worldwide, recently earned ExxonMobil the American Chemical Society’s highest industry honor, the “Heroes of Chemistry” Award. “*SCANfining* has provided an attractive solution to the challenge of producing low-sulfur gasoline,” says Simon Hacker, EMRE Licensing Executive. “This technology allows refineries to reduce high sulfur levels in key gasoline blending components

while retaining the molecules that provide high octane.”

EMRE’s *MSDW* technology enables refineries to produce high-quality lubricant basestocks. Finished oil blenders are using more Group II and Group III basestocks, which possess a high viscosity index and excellent performance quality, to meet increasing market demand for high-quality lubricants. Basestock manufacturers are, in turn, looking for ways to increase production of these products. Many of these manufacturers have chosen ExxonMobil’s lube isomerization dewaxing *MSDW* technology, a full suite of integrated processes that cost-effectively satisfy the unique needs of refineries.

Licensing our patents

In addition to licensing full technology packages to refiners, EMRE offers licensing agreements that give companies rights to develop and operate their own technology under ExxonMobil intellectual property. A prime example is an initiative to benefit from ExxonMobil’s strong proprietary patent position on the catalysts, processes and products of its *AGC-21* gas-to-liquids (GTL) conversion process.

MacFarlane says EMRE will continue to provide competitive technologies to the market through licensing: “The ExxonMobil Downstream has a healthy technology pipeline that will continually deliver new opportunities for our refineries. As is the case with Chemical,

we work hand-in-hand with our business lines and technology developers to be in a position to make these technologies available to the market as soon as possible and in keeping with our overall business goals.”

The people behind the technology

Barile acknowledges that ExxonMobil technology is a critical part of the company’s success, but without talented people behind it, the technology wouldn’t exist: “With any business involving technology, you have to have knowledgeable salespeople and strong technology experts behind them to deliver the products. Those experts are the same ones who work with our licensees.”

“ExxonMobil employees should feel proud that leading petrochemical companies, and even our major competitors, select ExxonMobil technology. Those companies have a lot of pride in their capabilities. For them to license our technologies demonstrates our world-class position in the industry and speaks to the caliber of our scientists, engineers and staff support.”

Our licensees – including our competitors – know that if it works for us, it will work for them. **theLamp**

To learn more
[exxonmobil.com/
technologylicensing](http://exxonmobil.com/technologylicensing)

ExxonMobil goes Expo

Visitors from more than 120 nations gathered in Japan recently to celebrate technological achievements at the 2005 World Exposition.

▶ World fairs have long been remarkable celebrations of great technological achievements, and the 2005 World Exposition in Aichi, Japan, stayed faithful to the tradition.

More than 15 million business executives, political leaders, and families from Japan and across the globe visited the first world's fair of the new millennium, where some 120 countries gathered to showcase their best technology at individual pavilions.

ExxonMobil Lubricants & Petroleum Specialties Company was among the more than 70 sponsors of the U.S. Pavilion, which centered its exhibit on founding father and scientist Benjamin Franklin and showcased American culture, values and technological progress. Other sponsors of the pavilion included American corporations, universities and 18 states.

The estimated 10,000 people who visited the U.S. Pavilion each day viewed displays representing innovations of the past, present and future, including replicas of Orville and Wilbur Wright's 1902 glider and the Mars Exploration Rover. The Wrights used *Mobil* lubricants for their first flight a

century ago, and NASA continues to use the company's lubricants today.

"We are proud to have been associated with the significant technological accomplishments that were highlighted during the exposition," says Jerry Kohlenberger, president of ExxonMobil Lubricants & Petroleum Specialties Company.

A five-minute video featuring footage of ExxonMobil's businesses was displayed outside the exhibit. And those attending special events in the Franklin Room were able to view ExxonMobil artifacts including historic signage, current advertising and a *Formula 1 Toyota/Esso* model race car.

"Supporting a world-renowned event in a country where we have significant operations is important for us," says Kohlenberger. "We are proud of our 110-year history doing business in Japan, and we are especially pleased to be part of this special occasion."

ExxonMobil sells lubricants, fuels and petrochemical products in Japan under the *Esso*, *Mobil* and *General* brands.

Its five refineries, located in Kawasaki, Sakai, Wakayama,



Benjamin Franklin's experiments with lightning created an electric atmosphere for visitors to the U.S. Pavilion at Expo 2005.

Nishihara and Chiba, have a total capacity of 836,000 barrels a day. Being part of the Expo was also a way to show support for the corporation's 4,000 employees based in Japan.

Company managers attending the Expo, including Harunari Miyashita, Director of Lubricant Sales in Japan, had the opportunity to host important lubricants customers, retailers and industry executives at ExxonMobil events held in the U.S. Pavilion.

"Our customers were very impressed with the U.S. Pavilion and the cordial way they were treated," Miyashita says.

ExxonMobil's commitment to leading the industry in research and technology while operating in an environmentally responsible manner aligned perfectly with the theme of the Expo, "Nature's Wisdom," which focused on the connection between humankind and nature. As Miyashita puts it, "The Expo was a great opportunity to communicate to visitors our message that we believe in more efficient energy use, new energy technology and emissions reduction." **theLamp**



EXPO
2005 AICHI
JAPAN

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citizenship](http://exxonmobil.com/citizenship)

Energy is too precious a resource to take lightly. It is essential to our way of life. Essential to economic progress. Essential to raising living standards for over five billion people in the developing world. And, because we take energy seriously, we take our responsibilities seriously too. In how we look for it. How we retrieve it. How we transport it. How we process it.

Energy and the environment.

And how we use it. As global energy demand grows (and it will, by as much as 50% in the next 25 years), we will not shirk our responsibility to find ways to meet it – and ways to reduce the emissions this rising demand will inevitably create. It's a huge challenge. On one hand, the world demands more and more energy. On the other, it demands less and less environmental impact. Meeting this challenge – on a global scale – will take all the technology and human ingenuity we can muster. That's why, for decades, we have consistently led the industry in research and technology. And why we're now making the largest ever investment in independent climate and energy research that is specifically designed to look for new breakthrough technologies. The world faces enormous energy challenges. There are no easy answers. It will take straightforward, honest dialogue about the hard truths that confront us all. Wishful thinking must not cloud real thinking. New energy initiatives, however appealing they may sound, must also be practical, viable, and economical – worldwide. However tough the issues, our answers must reflect the real world. Energy is simply too important to treat in any other way. exxonmobil.com

ExxonMobil

Taking on the world's toughest energy challenges.™

A tradition of giving

Exxon Mobil Corporation's tradition of philanthropy spans generations, back to its predecessor company, Standard Oil Company (New Jersey). Responsibility for the company's charitable donations rests with the ExxonMobil Foundation, which marks its 50th anniversary this year.

► In 1882, John D. Rockefeller learned of a struggling college for African-American women in Atlanta. The school operated in a small, damp church basement, but instructors and students alike were enthusiastic and determined.

Rockefeller and his wife, the former Laura Celestia Spelman, were moved by the school's situation and vowed to give it their support.

In 1883, Rockefeller donated \$5,000 to retire the mortgage on land the fast-growing school had bought for expansion. In gratitude, the school offered to name itself after Rockefeller. He asked that it be named instead in honor of his wife's family.

That was the beginning of the Spelman Seminary – later known as Spelman College – one of America's most respected schools for African-American women.

Changes in corporate giving

At the turn of the 20th century, it was common for wealthy individuals to make charitable gifts. It was less likely for corporations to do so. The reasoning: The sole obligation of a business was to make money for shareholders.

In addition, laws and judicial opinions limited corporations to education contributions that provided direct benefits to their principal business line. General education programs were not considered eligible.

In the late 1940s, Standard Oil

Co. (New Jersey) and other leading businesses supported legal changes to enable corporations to contribute funds to educational institutions. In 1953, the U.S. Supreme Court acted to make such contributions lawful.

The Exxon Education Foundation was established in 1955. The name was changed to the ExxonMobil Foundation when Exxon and Mobil merged in 1999. Today, the foundation focuses on three key areas: education, health and the environment.

Advancing education

One of its hallmark initiatives is the Educational Matching Gift Program, begun in 1962. The program includes a 3-to-1 match of contributions to colleges and universities from employees, retirees and surviving spouses. In 2004, the combination of individual and foundation matching grants totaled more than \$26 million to 932 American colleges and universities.

Other programs are aimed at specific needs in education.

"We are focusing our resources and efforts on math and science," says Gerald McElvy, president of the foundation. "These disciplines are the lifeblood of our company and the lifeblood of an advanced industrial economy."

ExxonMobil supports numerous programs to help prepare



For a decade, ExxonMobil has supported programs to halt the decline in the world's tiger population.

"science-savvy" citizens, to spark student interest in science and mathematics, to support educators in teaching and to attract minorities and women to the mathematics and science fields.

For example, Building a Presence for Science, directed by the National Science Teachers Association, is ExxonMobil's signature science-education program. It helps science teachers implement state and national science education standards in their schools.

Project NExT, administered by the Mathematical Association of America, prepares new Ph.D. mathematicians to teach undergraduates. NExT has developed a professional community of more than 800 fellows at 425 universities.

The K-5 Mathematics Specialist Program develops experts to serve in elementary schools as resources for teachers, administrators and parents.

In an effort begun this year, PGA Tour star Phil Mickelson and his wife, Amy, helped launch the Mickelson ExxonMobil Teachers Academy to help elementary school teachers improve instruction in science and mathematics.

Project ACCCESS is another program designed to encourage the professional development of mathematics faculty at two-year colleges. It is a joint effort of the American Mathematical Association of Two-Year Colleges and the Mathematical Association of America.



Top row: John D. Rockefeller gave \$7 billion in 2005 dollars to charitable causes; ExxonMobil supports numerous programs to encourage women and minorities to study math and science; in Nigeria, researchers in the Roll Back Malaria program help prepare prepackaged doses of antimalaria drugs.

Bottom row: PGA Tour star Phil Mickelson and wife, Amy, have joined ExxonMobil in efforts aimed at improving instruction in science and mathematics; Lee Raymond has guided ExxonMobil's philanthropic endeavors since 1993.

The mission of NACME, the National Action Council for Minorities in Engineering, is to increase the participation of minority men and women in engineering and related careers. ExxonMobil helped establish NACME and is its largest financial contributor, providing more than \$9 million over the past 30 years.

Through Outreach to Women and Minorities, ExxonMobil funds organizations that share its goal of promoting opportunities for scientific and technical careers for women and minorities. It supports the Society of Women Engineers, the Society for Hispanic Professional Engineers and the National Society of Black Engineers.

ExxonMobil has announced a

new initiative, Educating Women and Girls, which will fund numerous education projects in the developing world. The company will spend \$3 million on the program in 2005.

During the past 50 years, the company and its foundations have given more than \$3.5 billion to charitable organizations, of which more than \$1 billion has been directed to education.

Health

In 2004, ExxonMobil's worldwide health contributions totaled more than \$10 million.

In areas where ExxonMobil has a business presence, the most pressing health issue is malaria in Africa. At least 300 million people suffer from acute cases of the disease. More than 1 million have died. Nine out of 10 malaria deaths occur in sub-Saharan Africa. Most victims are young children and pregnant women.

ExxonMobil is one of two private-sector representatives on the board of Roll Back

Malaria, a global partnership founded by the World Health Organization, the United Nations Development Programme, the United Nations Children's Fund and the World Bank. The goal is to cut the world's malaria cases in half by 2012.

In 2000, ExxonMobil established the Africa Health Initiative to fund and support activities related to the prevention, control and treatment of malaria and HIV/AIDS in Africa.

Focusing on biodiversity

The foundation's leading environmental program reflects its commitment to biodiversity.

In 1995, ExxonMobil and the National Fish and Wildlife Foundation established the Save the Tiger Fund to support the conservation of Asia's wild tigers.

Since its launch, the fund has supported 253 projects with more than \$12.4 million. ExxonMobil has contributed more than \$10 million.

[To learn more
exxonmobil.com/
community](http://exxonmobil.com/community)

Tigers continue to face serious danger. The primary threat comes from poachers, who kill tigers for their organs and bones. Tiger parts bring high prices in many of the world's street markets because they are erroneously thought to have special curative and rejuvenating qualities.

Looking to the future

The foundation has evolved significantly in the course of its first 50 years, and Gerald McElvy says it must keep adapting to meet changing needs.

"ExxonMobil operates around the world," he says, "and in many regions there is a pressing need for help in areas such as health, education and basic infrastructure.

"ExxonMobil will be doing its part to help meet these needs. And the foundation will continue to develop innovative, efficient ways to support that effort."

theLamp



Principled

► Even Hollywood would have a tough time scripting a story to match his. That's because William W. ("Bill") George has already achieved so much – more than most of us would dream possible for one person in one lifetime – that a movie chronicling his life would likely be dismissed as too fanciful to be believed by a paying audience. But marketable or not, it is truly a noteworthy biography.

Elected an ExxonMobil director in May 2005, George is esteemed as one of America's most distinguished executives – a testament to a 30-year career leading several of its most successful businesses. Most recently, he served as chairman and CEO of Medtronic, the world's largest healthcare-technology company.

Today, George is a Professor of Management Practice at Harvard Business School, where he teaches leadership and leadership development.

Prior to joining the Harvard faculty in January 2004, George was Professor of Leadership and Governance at IMD International in Lausanne, Switzerland, and Executive in Residence at Yale University's School of Management.

George has enjoyed academic success throughout his life, a propensity he attributes

leadership personified

From the boardroom to the classroom, ExxonMobil Director William W. George brings to bear a powerful intellect, phenomenal business success and an expertise in leadership and corporate governance that have made him one of America's most influential and respected public figures.

to early influences, principally “a good childhood, loving parents and my Dutch upbringing in Grand Rapids, Michigan – very conservative, very frugal and very down to earth.”

Athletic achievement also came readily in his formative years. Early on, George recalls, “I spent a lot of time focused more on that (sports) than on the academic side,” adding with matter-of-fact understatement, “I would probably say that tennis was my best sport.” His team won the state championship his senior year.

Just as scholarly attainment and leadership have been the defining subtexts punctuating his intellectual endeavors, George has left his distinctive mark on every institution with which he has been associated. He received his BSIE with high honors from Georgia Tech and his MBA with high distinction from Harvard University, where he was a Baker Scholar.

In 1966, after graduating from Harvard Business School at age 23, George served for three years at the Pentagon – working first as Assistant to the Assistant Secretary of Defense, and later as Special Assistant to the Secretary of the Navy.

“I had the privilege of meeting with a small group in the office of the Secretary of Defense every

Friday morning,” George explains. “It gave me the opportunity to observe many exceptional people – remarkable leaders such as Cyrus Vance and Paul Nitze.”

George credits his brief stint at the Pentagon and those “remarkable leaders” with teaching him valuable lessons about how government operates – lessons that have since served him well in positions of leadership in business and education.

Following his work in government, George began his career with Litton Industries, where he served for 10 years in leadership positions, principally as president of the corporation's microwave division. He then spent 10 years at Honeywell, including time as president of the company's Space and Aviation Systems division and president of Honeywell Europe.

In 1989, George joined Medtronic. Under his leadership, its market capitalization grew from \$1 billion to \$60 billion.

In 2002, having helped build Medtronic into the world's largest healthcare-technology company, he decided to take on new challenges and stepped down to return to his other passion – helping train tomorrow's leaders.

“One of the reasons I'm now teaching at Harvard,” George explains, “is to help ensure that the next generation of business

leaders is well grounded in their purpose, their focus and their core values.”

George believes it is important for future leaders to understand how a great corporation is managed. “ExxonMobil is one of the best examples on the planet of how you can run an ethically based company and be highly successful,” says George. “There is a direct correlation between strong corporate governance and strong long-term performance.”

“I'm a great believer in the capitalist, free-enterprise system,” says George. Whether you're in the healthcare business or the energy business, you are serving society by running your business well.”

Reflecting on his lifetime of stellar accomplishments, George says simply: “We have been very fortunate. Our two sons, Jeff and Jon, have embarked on successful careers in business and medicine. My wife, Penny, and I believe we have a responsibility to give back to our society. We've been fortunate to do well financially and have established The George Family Foundation, which is focused on integrated health, education, leadership and spirituality.”

Among the other organizations in which he is involved, George serves as a director of Goldman Sachs, Novartis

and Target Corporation. He is Chairman of the Global Center for Leadership and Business Ethics and also is on the board of the Carnegie Endowment for International Peace.

William George is the author of “Authentic Leadership: Rediscovering the Secrets to Creating Lasting Value,” and he was recently named one of “The 25 Most Influential Business People of the Last 25 Years” by PBS Nightly News. He is a recipient of the Alumni Achievement Award from Harvard Business School and the Legend in Leadership Award from Yale University. His corporate peers have honored him for his leadership and extraordinary achievements. He was named Executive of the Year by the Academy of Management (2001) and Director of the Year (2001 to 2002) by the National Association of Corporate Directors.

Taken in its entirety, it is no exaggeration to suggest that the William George story is “one of those cases in which the imagination is baffled by the facts” – to borrow a line from a leader George admires, and who likewise achieved uncommon success in multiple fields of human endeavor – Winston Churchill. And when it comes to leadership, by George, he also wrote the book. [theLamp](#)

▶ Around the world with ExxonMobil

ExxonMobil Chairman and CEO Lee R. Raymond announces retirement; Board expected to elect ExxonMobil President Rex W. Tillerson to succeed Raymond

Mr. Lee R. Raymond, 66, chairman of the board and chief executive officer of Exxon Mobil Corporation, has announced his intention to retire at the end of this year after more than 42 years of service, including over 21 years as a director. It is anticipated the board of directors will elect ExxonMobil President Mr. Rex W. Tillerson, 53, as chairman of the board and chief executive officer to succeed Mr. Raymond.



Educational Matching Gift Program tops \$26 million for higher education

More than \$26 million will be donated to 932 colleges and universities across the United States through the ExxonMobil Foundation's 2004 Educational Matching Gift Program. ExxonMobil employees, retirees, surviving spouses and directors made more than 9,000 individual contributions totaling \$7.7 million to institutions of higher education in 2004, which was matched by the ExxonMobil Foundation, with more than \$18.6 million in unrestricted educational grants.

Begun in 1962, the ExxonMobil Foundation's Educational Matching Gift Program matches gifts to higher education on a 3-to-1 basis and has provided more than \$300 million to higher education in the United States.

In response to the program's tremendous support and success, ExxonMobil has increased the amount per donor to \$7,500, starting with 2005 donations.



An Airbus A380 prepares to take off in front of a crowd of visitors at the 46th International Paris Air Show held at Le Bourget Airport.

ExxonMobil provides the "first fuel" and hydraulic oil for the Airbus A380

ExxonMobil Aviation provided the first fuel for the Airbus A380's maiden flight on April 27, 2005, from the plane's final assembly plant in Toulouse, France. Under the terms of ExxonMobil's contract to design, build and operate the fueling facility at the Airbus A380's final assembly plant, ExxonMobil Aviation will also supply the first fuel for each Airbus A380 built until the year 2022. The Toulouse fueling facility allows for three simultaneous fuelings at about 12,700 gallons per hour.

Educating women and girls in the developing world

A new community-investment initiative, Educating Women and Girls, will fund numerous education projects for women and girls in the developing world. The multi-year initiative is an extension of ExxonMobil's long-standing support for education. ExxonMobil will invest \$3 million during 2005 to fund projects in Angola, Chad, Kazakhstan, Qatar and Indonesia, as well as two projects with a global focus.

The company worked with governments, communities and local and international nongovernmental organizations to identify and develop projects that improve access and remove barriers to education and economic empowerment for women and girls. The projects address locally identified areas of significant need, are culturally aligned with their target communities and aim to have long-lasting community benefits.



In Angola, women take part in a writing program aimed at improving literacy and economic opportunity.

Partners break ground for Fujian Integrated Refining and Ethylene Joint-Venture Project

The partners of the Fujian Integrated Refining and Ethylene Joint-Venture Project held a groundbreaking ceremony on July 8 in Quanzhou, Fujian Province, China, marking an important step forward in the development and construction of this world-class integrated refining and petrochemicals project. Chairman and CEO Lee Raymond represented ExxonMobil at the event.

The project will expand the existing refinery at Fujian Petrochemical Co., Ltd. from 4 million tons per year to 12 million tons per year. The upgraded refinery will be designed to refine and process sour Arabian crude. In addition, the project will build new petrochemical facilities, including an 800,000-ton-per-year ethylene steam cracker, a 650,000-ton-per-year polyethylene unit, a 400,000-ton-per-year polypropylene unit and a 1-million-ton-per-year aromatics unit. A 300,000-ton crude berth and associated utilities will also be constructed.

The joint-venture project partners include Fujian Petrochemical Co., Ltd. (50 percent), ExxonMobil China Petroleum and Petrochemical Co., Ltd. (25 percent) and Aramco Overseas B.V. (25 percent). The project brings together a unique mix of internationally advanced technologies and managerial expertise, reliable crude supply and proximity to China's southeastern coast market. The project will be the first world-class integrated refining and petrochemicals complex in China with foreign competition.



ExxonMobil Chairman Lee Raymond (second from right) joins other business and government leaders in a groundbreaking ceremony at the Fujian Integrated Refining and Ethylene Joint-Venture Project.

ExxonMobil completes restructuring of its Dutch gas transportation interests

Exxon Mobil Corporation subsidiary, Esso Nederland B.V., has completed the restructuring of its interest in the Dutch gas transportation business.

Following the successful completion of various regulatory reviews and detailed agreements, Esso Nederland B.V. and Shell Nederland B.V. have formally transferred their ownership share of 25 percent each in Gasunie's gas transportation business to the State of the Netherlands.

At the same time, the State of the Netherlands has paid an agreed net compensation in the amount of 2.77 billion euros to NAM, the Dutch oil and gas producing company jointly owned by ExxonMobil and Shell.

The positive after-tax earnings impact of this transaction will be approximately \$1.6 billion and will be

reported in third-quarter 2005 results.

This step completes the restructuring of the Dutch gas transport business consistent with the goals of the Second European Gas Directive to further the liberalization of the natural gas market in Europe. It is also consistent with the recently revised Dutch Gas Act. As part of this restructuring, Gasunie has been legally split into a transportation company and a merchant company.

The transport company is now 100 percent owned by the State of the Netherlands.

The ownership of the merchant company remains unchanged, with 50 percent owned by the State of the Netherlands and 25 percent each owned by Esso Nederland B.V. and Shell Nederland B.V.

ExxonMobil selected by United Arab Emirates to enter final negotiations on Upper Zakum field participation

The Abu Dhabi Supreme Petroleum Council (SPC) has selected ExxonMobil to enter final negotiations for participation in the Upper Zakum offshore oil field. The SPC said ExxonMobil was chosen because it submitted the best technical offer.

Upper Zakum is one of the world's largest oil fields, contributing significantly to Abu Dhabi's current production and with the potential for substantial growth. The successful conclusion of final negotiations will allow ExxonMobil to obtain a 28 percent equity interest in the Upper Zakum oil field. ExxonMobil has participated in Abu Dhabi's petroleum business for more than 60 years.



ExxonMobil supports restoration of historic lighthouse

In collaboration with the American Lighthouse Foundation, ExxonMobil Pipeline Company has begun the restoration of the 134-year-old Pomham Rocks Lighthouse in East Providence, Rhode Island.

The historic lighthouse, one of the oldest on Rhode Island's Narragansett Bay, has been owned by ExxonMobil since 1980 and sits on a small island near the Company's East Providence terminal.

The first phase of restoration work will focus on the exterior of the structure and include the replacement of the roof, the stabilization of the tower, the repair of the pier and the installation of new windows and gutters. A second phase will include the reinstallation of a navigational beacon in the lighthouse.

ExxonMobil reports record performance in health, safety and energy efficiency

ExxonMobil recorded its best-ever safety and health performance during 2004, retaining its leadership position in the petroleum industry. The company also achieved record energy efficiency in its refining and chemical businesses, and it continued to improve efficiency well ahead of the petroleum industry's historical rate.

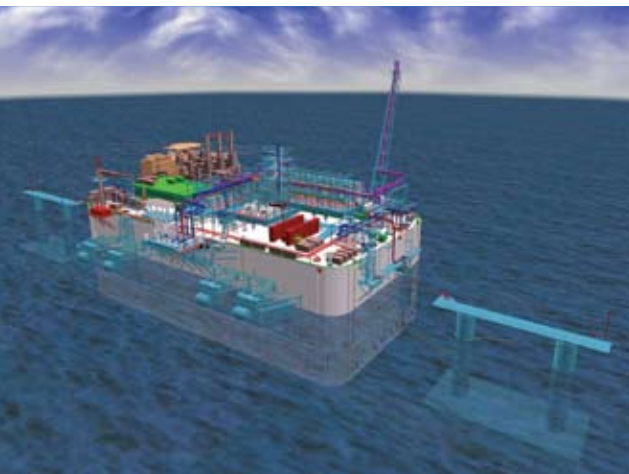


Expanding "ewiz" financial services kiosks at On the Run convenience stores

ExxonMobil Corporation announced the expansion of ewiz financial services kiosks at *On the Run* convenience stores in Chicago, South and West Florida, and Southern California.

The expansion is expected to continue in additional markets in 2006. It follows successful market tests of the electronic payment system at *On the Run* and *Tigermarket* convenience stores in Memphis, Nashville and Charlotte.

The ewiz kiosks operate 24 hours a day and offer customers a convenient way to pay bills; transact financial services such as money-order purchases, money transfers and check cashing; and purchase prepaid telecommunications products including phone cards, ring tones and gift cards.



A computer-generated rendering of the Isola di Porto Levante LNG terminal

Major activities commenced for Isola di Porto Levante LNG terminal

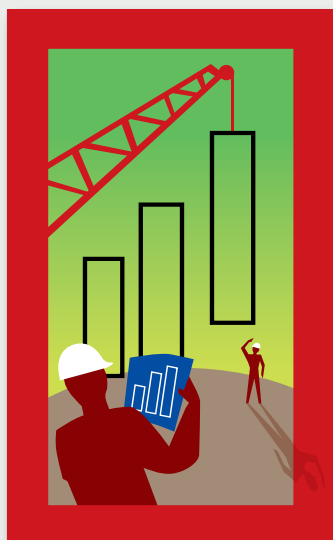
Qatar Petroleum, ExxonMobil and Edison have announced major milestone agreements for the Isola di Porto Levante liquefied natural gas (LNG) terminal to be located offshore the coast of Italy in the North Adriatic Sea. The terminal, scheduled for startup by year-end 2007, will have a regasification capacity of 8 billion cubic meters (225 billion cubic feet) a year. The state-of-the-art facility will be a key component in providing dependable supplies of natural gas to the Italian energy sector to meet the country's growing demand.

The terminal will be located approximately 15 kilometers (9.3 miles) from the Veneto coast and positioned in about 30 meters (98 feet) of water. The concrete gravity-based

structure (GBS) will be constructed onshore, towed to the site and positioned to create an artificial island.

The LNG storage tanks, which will be designed using ExxonMobil's proprietary modular tank technology, will be positioned inside the GBS and have a total storage capacity of 250,000 cubic meters.

The terminal will be equipped with a berthing/mooring system for product unloading, designed to accommodate ships delivering up to 152,000 cubic meters of LNG. The gas for the project will be sourced from Qatar's giant North Field, which is estimated to contain recoverable resources of more than 900 trillion cubic feet of natural gas.



Second Quarter Earnings Set Another Record

ExxonMobil's second quarter 2005 earnings excluding special items of \$7,840 million, increased \$2,050 million from the second quarter of 2004 and are the highest second quarter ever for the Corporation.

Including a special charge of \$200 million for the Allapattah lawsuit provision, net income of \$7,640 million (\$1.20 per share) increased \$1,850 million.

Upstream earnings were \$4,908 million, an increase of \$1,062 million from second quarter 2004 reflecting continued strength in crude and natural gas prices.

Downstream earnings, excluding Allapattah, were \$2,221 million, an increase of \$714 million from last year due to improved worldwide refining conditions and higher refinery throughput.

Chemical earnings were \$814 million, up \$207 million from second quarter 2004 due to higher margins.

Capital and exploration expenditures of \$4,537 million in the second quarter of 2005 were up \$920 million compared with last year.

ExxonMobil's net income for the first half of 2005 was a record \$15,500 million, up \$4,270 million from the first half of 2004. Excluding special items, earnings increased by \$4,010 million reflecting improvements in all areas of the business.

ExxonMobil quarterly financial summary

| Millions of dollars, except per-share amounts | Second quarter | | First half | |
|--|-----------------|-----------------|------------------|------------------|
| | 2005 | 2004 | 2005 | 2004 |
| Functional earnings | | | | |
| Upstream | \$ 4,908 | \$ 3,846 | \$ 9,962 | \$ 7,859 |
| Downstream | 2,021 | 1,507 | 3,474 | 2,511 |
| Chemical | 814 | 607 | 2,246 | 1,171 |
| Corporate and financing | (103) | (170) | (182) | (311) |
| Net income (U.S. GAAP) | <u>\$ 7,640</u> | <u>\$ 5,790</u> | <u>\$ 15,500</u> | <u>\$ 11,230</u> |
| Net income per common share – assuming dilution | | | | |
| | \$ 1.20 | \$ 0.88 | \$ 2.42 | \$ 1.71 |
| Special items | | | | |
| | \$ (200) | \$ 0 | \$ 260 | \$ 0 |
| Earnings excluding special items | | | | |
| | \$ 7,840 | \$ 5,790 | \$ 15,240 | \$ 11,230 |
| Other financial data | | | | |
| Total revenues and other income | \$88,568 | \$70,693 | \$170,619 | \$138,295 |
| Income and other taxes | \$23,846 | \$20,746 | \$ 47,071 | \$ 41,537 |
| Capital and exploration expenditures | \$ 4,537 | \$ 3,617 | \$ 7,954 | \$ 7,018 |
| Dividends on common stock | | | | |
| Dividends per common share | \$ 0.29 | \$ 0.27 | \$ 0.56 | \$ 0.52 |
| Thousands of barrels daily, except for natural gas and chemical | | | | |
| Operating data | | | | |
| Net production of crude oil and natural gas liquids | 2,466 | 2,581 | 2,504 | 2,608 |
| Natural gas production available for sale (millions of cubic feet daily) | 8,686 | 9,061 | 9,730 | 10,275 |
| Oil-equivalent production (6 million cubic feet = 1 thousand barrels) | 3,914 | 4,091 | 4,126 | 4,320 |
| Petroleum product sales | 8,259 | 8,023 | 8,244 | 8,074 |
| Refinery throughput | 5,727 | 5,589 | 5,738 | 5,593 |
| Chemical prime product sales (thousands of metric tons) | 6,592 | 6,930 | 13,530 | 13,722 |



Size and scale are redefined with the arrival of the world's largest FPSO vessel. An ExxonMobil colossus stands ready to hold more than 2 million barrels of oil above Angola's blue deep.

Cover photo by Keith Wood



► In this issue

the **Lamp**

- Lee R. Raymond**
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- Rex W. Tillerson**
President and Director
- Edward G. Galante**
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1 Managing success in a time of change

Chairman and CEO Lee Raymond discusses the company's approach to meeting future challenges in the rapidly changing energy business.

5 Kizomba B sets the pace
Our flagship development in West Africa

9 Alliances making progress in quest for cleaner diesel
ExxonMobil is leading the way in combustion science.

12 Viewpoint
Research into climate solutions

13 Harnessing heavy-oil technology

Research and technology are turning Canada's vast reserves of heavy oil into a key energy supply.

17 StopAIDS
Addressing an African healthcare crisis

19 Licensing technology
Maximizing the value of intellectual property

21 ExxonMobil goes Expo
Aichi, Japan welcomes the 2005 World Exposition.

22 Energy and the environment

23 A tradition of giving
The ExxonMobil Foundation celebrates its 50th anniversary.

25 William George
ExxonMobil's newest director

27 Panorama
Business highlights from around the world

30 Second-quarter earnings set another record

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