

# QUEST FOR OIL

A Subsurface Gaming Experience





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# Join the oil universe with Maersk

With the free, world-wide distribution of the real-time strategy game 'Quest for Oil,' Maersk unfolds the unknown universe of oil exploration and invites you to embark on a conquest of the depths of the seabed.

Quest for Oil is the first game of its kind and with the convergence of forces, innovation and technology Maersk gives you the chance to experience the challenging world of being on a drilling rig with its 53,000 tonnes of steel rammed into the bottom of the ocean. Every minute and every inch matter. Your equipment is tuned and ready. Time is ticking, and investments worth billions are at stake. Making the right decisions is crucial.

"Most people take for granted that we have oil and natural gas and not many people understand what it takes to find and produce it. The world's need for oil and gas is leading exploration into ever deeper waters and ventures demanding precision and cutting edge technology. It's a sophisticated, fascinating industry and 'Quest for Oil' offers everybody a glimpse of what oil and gas exploration is all about today," says Jakob Thomasen, CEO of Maersk Oil.

Using Maersk Oil and Maersk Drilling's vast experience in the hightech oil industry, Maersk opens the virtual doors to the pursuit of oil in the deep waters off Qatar and the North Sea, testing your strategic and practical skills to the utmost.

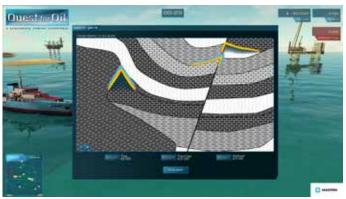
To master the challenge you will need to test your analytic skills looking for oil on a seismic map. What does the underground look like? Which layers of earth does it consist of? And where is the oil locked? You will be tested on how precisely you position your high-tech drilling equipment, always keeping an eye on temperature and pressure, before you can start extracting and producing the oil found. You have to constantly make the right analysis and decisions and then use the knowledge you gain to play 'Quest for Oil'.

"New times calls for new measures, and we want to use the computer game to tell the story of an extremely innovative business, which the entire world depends on, in a new and engaging way. We wish to engage in dialogue about our oil and energy business through gamification and at the same time give all interested the best opportunity to experience the underground," explains Claus V. Hemmingsen, CEO of Maersk Drilling.

# Do you have what it takes to keep cool and start drilling?

You can download 'Quest for Oil' free at www.questforoil.com.







# A computer game about gaining and applying detailed insights into the global oil industry.

In a unique online gaming environment, Maersk takes you on a quest for one of today's most indispensable resources - oil. You will go on a subsurface journey, exploring the underground and getting to the heart of the world's vital and challenging business: the oil industry.

# Knowledge is power

You test your wits against an artificially intelligent digital opponent dedicated to making you lose. Your ability to understand the key challenges of the oil industry is crucial: how to read earth layers, how to detect where to find oil reservoirs and how to know when you're wasting your time. The analytical decisions you make will determine whether you win or lose.

How well do you understand the industry? What is the importance of the seismic phase? How were the earth's different layers formed? Which of these might yield oil? You will learn the answers to all these questions and then use this knowledge to beat the digital opponent who is constantly trying to beat you.

### Rules of the game

You can explore two regions: the North Sea and Qatar oil fields. The entire Quest for Oil adventure is wrapped into a real-time strategy resource management game. It is packed with integrated action elements that focus on the primary challenges surrounding oil exploration:

- 1. Seismic analysis
- 2. Reservoir identification
- 3. Placing and drilling wells
- 4. Setting up and optimizing production, including getting the oil ashore

Winning or losing comes down to your ability to use your knowledge and skills. You need to make the right calls. Make the right analysis. Reach the right conclusions. Only then you will be able to beat your opponent.

When you've completed a game, you can challenge friends through e-mail and social media, including Facebook and Twitter. High scores can be posted on the Quest for Oil website, where you will also find additional material provided by Maersk.

www.questforoil.com



# Game guide

Produce a pre-defined volume of oil faster than your opponent.

The winning amount depends on the scenario:

North Sea: 1,000,000 barrels of oil Qatar: 2,000,000 barrels of oil

# 1:



Choose your location, North Sea or Qatar

# 2:



On the 'Overview' tab, you can see an outline of the oil fields for which you can buy licences. The map also shows your own assets and activity indicated with blue dots. Your opponent is indicated on the map with red dots.

# 3:



If you click on the 'Potential' tab, you will be able to see where the oil fields with the highest potential are located. Orange: low, yellow: medium and green: high. However, the greater an oil field's potential, the more you need to invest.

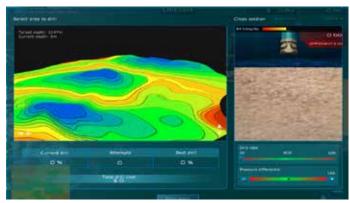
# 4:



Three Maersk advisors are at your disposal throughout the game. They give you an introduction to their field of expertise in the Minigame Tutorial. Make sure you listen to them carefully - they provide the crucial knowledge you need to become an expert in finding oil.

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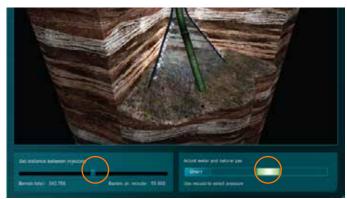
# 5:



Analyze the seismic 3D map for locating your first exploration drill (use arrows to move the map). Blue areas are nearest the surface, red areas are deepest. Your objective is to locate the actual reservoir and then find out how much oil is actually found down there.

Tip: Oil moves upwards!

# 6:



Your objective is to unlock the oil from the reservoir rock. You can do this by injecting water and natural gas into the rock. The right pressure adjustment is crucial.



When you have completed a game, you can challenge friends through e-mail and social media.

Share your high score on the Quest for Oil website!



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# Going underground to tell the full Maersk story

If you thought Maersk only involved shipping, then think again! The core businesses of this global conglomerate includes an oil and gas company and a drilling company and, with the worldwide launch of the real-time strategy game 'Quest for Oil', Maersk is once again opening its doors to an intriguing universe. Louise Münter, Group Press Officer and acting Press Officer for Maersk Oil, elaborates on why and how.

Speaking on the back of the launch of 'Quest for Oil', Group Press Officer Louise Münter, is clear about the ambitions and intentions of the innovative game.

"We are renowned as a shipping company all over the world, but less so as an oil company. We also want to tell the incredible story of two of our business units Maersk Oil and Maersk Drilling. The oil and gas exploration business is deeply fascinating but also unknown to most people. We want to make it known," Louise Münter says.

According to Loiuse Münter, 'Quest for Oil' combines the knowledge of critical natural sciences with entertainment and learning about the conditions of an entire industry.

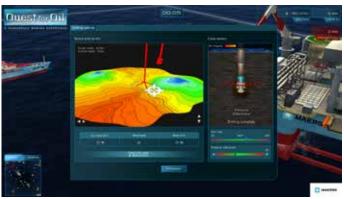
"The oil business is indispensable and with 'Quest for Oil' we aim to communicate a message of a high-tech business by means of both competition and education," Louise Münter explains.

'Quest for Oil' is the first game of its kind and with the free and global launch of the game, Maersk sends the players on a virtual quest for oil requiring knowledge, skills and steady nerves. With three mini games in one and detailed exposure of earth layers and technical requirements, 'Quest for Oil' challenges players to juggle investments wisely, analyze seismic data and start the drilling process in exactly the right places. The ultimate goal is to beat one's opponent by developing a viable oil company in a battle against time and harsh weather conditions.

'Quest for Oil' was developed in close collaboration with Maersk's own exploration and drilling experts to ensure a high level of realistic features and several trial runs of the game by students reflected their keen interest in joining the virtual journey into an otherwise unexposed universe.

"We aim to constantly renew and challenge the way we communicate our businesses and we are truly first movers as we are the first oil company to ever launch a computer game about what actually happens during oil exploration. We are thrilled to be telling our story using new means and on new platforms," says Louise Münter about 'Quest of Oil'.







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# Opening the door to the science of the future

During a test run of 'Quest for Oil' among high school students, it was clear that the game fulfills the ambitions of both providing a rare insight into the oil industry and telling the story about the sciences all of us heavily rely on for our future.

According to teacher Birgit Sandermann Justesen of Nærum High School, the educational potential of 'Quest for Oil' is huge. She recaps the overall experience: "Quest for Oil stimulates students' curiosity and creativity and educates them at the same time. I can easily see the game as an integral part of their science lessons."

Justesen supervised her students as they played Quest for Oil the very first time and says that Quest for Oil "represents an entirely new way of learning about the layers of the earth, how complex it is to unlock the oil and what it takes to be in the highly competitive oil business. At the same time, the players learn to understand the importance of having the right knowledge and the right skills."

In Nærum, 'Quest for Oil' was introduced to a critical audience of thirty students who have crystal clear expectations when it comes to playing any kind of game: It must be easy to understand, fun and challenging.

Within a few minutes, the teenagers' expectations were met but this game isn't just for fun; it's also about education. Quest for Oil challenges players' ability to read seismic maps, access the potential of the subsurface layers and make the rights decisions as to where and how to drill for oil.

# Competing to win

Birgit Sandermann Justesen's enthusiasm about 'Quest for Oil' was echoed by her students. According to 19-year-old Simone, "I didn't know a lot about oil or the underground before I played 'Quest for Oil' but I quickly understood what we had to do and how to do it to succeed. Now I know what the oil business is about."

During their testing of 'Quest for Oil', the students also caught on to the competitive element of the game. Beating one's opponent and successfully reaching a production target of 1 million barrels of oil is within reach but only if you play smart and listen to the advice provided by the experts assigned to help you.

"We have already lost twice to our opponent but that has only encouraged us to play again and do better," said Stefan whose group of players rapidly picked up speed and energy to gain the ground needed to come out of the next game as winners.

## Education with a different feel

According to the young test players who will be graduating this summer and moving on to choose their career paths, the visual elements of Quest for Oil are some of its strongest features. "You get a completely different feel for learning when you see the layers of the earth laid out like this. It's much more interesting than having to sit still and learn facts written on a chalkboard," says Sara, another student.





# We have jobs for all of you

"We have jobs for all of you." Growth as far as the eye can see and plenty of work opportunities. The offshore industry is a rare ray of hope in a time of low growth and a scarcity of new jobs. When Job Centre Esbjerg teamed up with Maersk Training to train and retrain the unemployed for the offshore industry, 16 out of 19 of the first graduates found employment immediately.

"There are jobs for all of you," says Michael Bang, instantly getting the group's undivided attention.

He is Managing Director of Maersk Training in Esbjerg, Denmark, and has just welcomed 19 jobless people to two days of skills mapping at Maersk Training.

"Our courses are a direct ticket to the offshore industry. The training is mandatory, it can be put to specific use and is in high demand. The people we train usually find jobs straightaway," Michael Bang explains.

# Growth and well-paid jobs

The skills mapping was commissioned by Job Centre Esbjerg after being contacted by Apro Wind, an offshore wind turbine specialist looking for 19 employees for pre-assembly of wind turbines at the Port of Esbjerg.

"The offshore industry is growing, and it has proven worthwhile to offer the necessary courses to individual jobseekers. We're now expanding the concept to entire groups of unemployed individuals," says Frits Sørensen, head of section at Jobcentre Esbjerg.

"Maersk Training understands what we need. In two days, we can see whether the participants have technical flair and team-working skills, for instance. It helps us ensure that we select the right people for the training courses. And it is generally something that jobseekers want. The jobs are well-paid," he adds.

The growth scenario for both the oil and gas and offshore wind-turbine sectors is expected to continue for many years to come. This sparks a demand for employees, and unemployed electricians for instance often have the requisite skills but lack the training required for this new setting, such as safety courses.

Accordingly, Frits Sørensen regards the initiative as a general skills upgrade of unemployed individuals for a new industry.

"They are not obliged to work for a specific company. The industry is characterised by high employee turnover and companies often use temporary employment, so we take a holistic approach. People get trained for the industry," he says.

# Upgraded qualifications = access

O-STAR ENERGY, an Esbjerg-based company, provides manpower for the oil, gas and wind industries and has had more than 500 employees in peak periods. With current demand, this figure is expected to be surpassed in 2013.

"We enjoy rewarding teamwork with the job centre. If an unemployed person is relevant for a job, we issue an employer declaration. The job centre pays for the courses, and then we employ the person. We pay for any further qualification upgrades. It's a real positive story," says Tina Flindt, Resource Manager at Q-STAR ENERGY.

"We need to have people with the right skill-sets when the orders come in. So we do our best to get people out working, and if we're occasionally unsuccessful, other suppliers usually have openings."

Out of the 19 jobless participants who took part in the skills mapping process, 16 were offered a job at Apro Wind. They started on the requisite qualifying courses at Maersk Training the day after completing their skills mapping.





# "It's an incredibly imprecise science; that's why I love it"

After 37 years in the oil and gas exploration industry, Stephen Daines, Head of Exploration in Brazil and the Gulf of Mexico, still feels a rush of excitement when he helps to unlock the huge potential of the underground.

Stephen Daines has a great view. From his corner office on the 25th floor of Maersk Oil's building in Houston, Texas, he can take in the sight of the sprawling, clean, high-tech city, fittingly known as the oil capital of the world.

Here it certainly is all about the oil. Everywhere you turn in the Texan heartland, an oil company name pops up on a sign in seemingly endless rows of signs. All the major contenders are here, competing in the both famous and infamous industry relying heavily on long-term investments, cutting-edge technology and people with sophisticated hard skills.

Stephen Daines and his team have got it all and Maersk Oil is steadily and patiently moving into new territories as part of the company's ambitious growth strategy, which to a large extent entails the extraction of new oil reserves in some of the harshest and most demanding basins in the world. Deep-water drilling is the new challenge and even for the highly experienced Daines, taking on these conditions is no easy feat.

"The areas we are currently exploring in the Gulf of Mexico probably represent the most difficult challenge I have ever met in my career," Daines says, referring to the "extreme complexity" of the geology, which in his words is also "the beauty of it."

He knows what he is talking about. Since graduating as a geo-scientist in 1976, Daines has worked in virtually every oil hub in the world, among them Singapore, Indonesia, Yemen, Oman, Scotland, Turkey, French Congo and California. He has been with Maersk since 2005, moving from Aberdeen to Houston in 2009.

He loves the science of the industry: Reading and interpreting the seismic data, "working the data hard" as Daines phrases it, and constantly evaluating the consequences of the next step in the perpetual hunt for the riches of hydro-carbons entrenched in some of the least accessible layers of the earth.

"It's such an incredibly imprecise science, which is partially why I love it," explains the 58-year-old Brit. "There are absolutely no guarantees and you have to constantly be on top of your game to keep up with nature. You have to have a certain mindset to be in this line of work – always realizing that there is no one single answer, for instance when interpreting a map of data. You have to continuously stretch the available technology, your knowledge and your imagination to the absolute limits. That's when the magic happens."

# An industry for the patient

Given the fact that the chance of obtaining commercial success in a newly explored oil field is typically only 20 percent and that the period of time from exploration to first oil can easily be 10 years, patience also seems to be crucial for success. "Patience, persistence and a thick skin," adds Daines, who never underestimates the importance of a seamless merger between the on-the-ground facts and the right set of business skills.

"Of course we also have to make clever business decisions to succeed. Maersk Oil is part of a group and we can never lose sight of the fact that we must contribute to being financially sound and making our contribution to the group."

# Our people make the difference

So what makes the difference, why is Maersk Oil successful out there in the most challenging exploration zones in the nerve-wrecking balance between uncertainty and the potential for massive success?

"Our people make the difference. We aim to hire people who have an inherent willingness to question conventional wisdom and who understand that when it comes to going into the unknown, there is not just one answer but multiple answers," explains Daines. And then there is the basic drive of a true oilman – the thrill of the hunt. "If you ask geologists what their favourite part of the job is, the vast majority will tell you that it is the massive excitement of succeeding in the quest for oil," says Stephen Daines.

"I agree," he adds, "I also find that very compelling. However, nothing beats the feeling of being a small part of project that is going to be hugely beneficial for all parties involved. That's the real price."



# "It's important to tell young people about this business"

## **Urs Mohn**

Chemical engineer

Urs Mohn, a qualified chemical engineer with a degree from the Technical University of Denmark (DTU) knows the challenges of oil and gas exploration. After more than 30 years in the energy sector and the last 27 years with Maersk Oil, Mohn is the man to ask when it comes to subsurface assessments, exploration wells and lean technology.

This is also why Urs Mohn was a member of the Maersk advisory team during the development of 'Quest for Oil'. With colleagues Henrik Tirsgaard and Jacob Odgaard, Mohn evaluated the technical elements of the game along the way.

"We were presented with a line of ideas and went through them with the game developers. Of course, it is essential to use correct technical details and facts when the purpose is to create a game that provides true insight into this business," Mohn says.

When playing 'Quest for Oil', the player is challenged in 4 areas: seismic analysis, reservoir identification, the placing and drilling of wells and setting up and optimizing production, including getting the oil ashore.

# An unpredictable business

So in this expert's opinion, what is the hardest part of the fine science of oil exploration?

"Making the right assessments and estimates of wells and fields is the most unpredictable and trickiest part of the oil exploration business," Mohn says. "Frequently, the best strategy is to enter a new area with incremental steps and avoid getting carried away because you feel confident that you've made an excellent find. I'm sure that this will be challenging for 'Quest for Oil' players."

Urs sees great perspectives in the game when it comes to making young students aware of his line of business. "It's an excellent idea to have fast, interactive means for introducing the sciences involved in the oil exploration and drilling industry. There is a big need to fill the gaps in young people's awareness of what we do. It's an intriguing world that has fascinated me throughout my professional career," Urs Mohn says.



# Travelling the world and breaking records – Lea Holstein loves her job

### Lea Holstein

Geologist

"Would you like to go to Antarctica to work? You can if you are a doctor, dentist, nurse, engineer or geologist!"

These were the words in a newspaper which led young Lea Holstein directly down her future career path. The latter choice – geologist - was the most appealing as Lea had always been keenly interested in the natural sciences and prompted Lea to enrol at University of Copenhagen to study geology.

That is how Lea's journey into the world of oil and gas exploration started, fuelled by her deeply felt desire to go out and see the world. Looking back on her career 15 years later, Lea Holstein, now a senior geologist for Maersk Oil, has certainly seen her dream come true. She has travelled all over the world in her job, working both offshore and onshore

Lea's fascination of the forces at play when humans confront nature and its abundant resources has not worn off over the years. "The science of geology is still at the centre of everything I do professionally. My particular interest, mind you, is what has happened in the evolution of the earth over the past 600 million years," the geology expert says with a smile.

Although as far from a stereotypical science nerd as you can imagine, Lea admits to being somewhat of a 'techie'. "I have always enjoyed the technical aspects of my job – the detailed process of unfolding and planning exactly how and where to carry out the exploration."

"I'm intrigued by the layers of the earth and how we can use the resources they provide. Basically, you can say that civilization as we know it was built up using resources we have extracted from the earth," Lea says.

She has been involved in record-breaking projects, including drilling a more than 17,000 foot reservoir in 8 days with just one drill bit, which she regards as one of the biggest operational achievements of her career.

"The best part of the job is the immense satisfaction you feel when you and your colleagues land a project successfully. Sometimes it feels like running three back-to-back marathons but when you make it, it's an exhilarating feeling that beats everything," Lea says.



# Drilling is a land of opportunity

# **Jacob Odgaard**

Director of Operational Readiness

# Jacob Odgaard never tires of the business he loves.

Whenever you start to drill, as you play 'Quest for Oil', the action begins. Drilling is the moment of truth: did you chose the right area, the right technique and the right speed and will that enable you to unlock the oil from the earth layers?

Jacob Odgaard, Director of Operational Readiness, Maersk Drilling, knows all about that part of the game and his expert eyes have had several close looks at the details in 'Quest for Oil' to ensure that everything is done by the book.

After 15 years at Maersk, Odgaard is a genuine Mr Drilling. After getting his degree in mechanical engineering, Odgaard enrolled in Maersk Drilling's trainee programme at Maersk Training in Svendborg and, after 14 months of hands-on training, he was ready to conquer the subsurface world.

Odgaard was impressed by the transformative training process which shifted his strictly academic focus to the practical challenges of working on a rig as part of a team.

"The training is very efficient and those 14 months as a driller trainee prepared me for almost anything I would encounter in the job,"
Odgaard says, adding that he still thoroughly enjoys visiting the training grounds and stepping into the simulator that immediately

makes you feel like you are onboard a powerful drilling rig in the middle of the ocean.

Odgaard surely has tried the real thing. Iran was the first leg in a string of challenging offshore assignments for Odgaard. After 2 years there, he moved to Egypt where he remained for more than 3 years before moving straight north to work in Stavanger, Norway, for 5 years.

Today he is based in Maersk Drilling's headquarters in Lyngby, Denmark, and is heavily involved in overseeing the building of Maersk Drilling's new fleet of enormous, technically advanced deepwater drilling rigs.

Despite his extensive experience, Odgaard is still deeply fascinated by the hardware he sees. "I am awed by the rigs we have. It's an incredible feeling to be onboard such a massive piece of machinery, run by a closely-knit team of highly skilled people," Odgaard says.

Odgaard regards the drilling industry as an outright "land of opportunity" when it comes to career options and career development. "Sometimes people seem to lose sight of the amazing possibilities inherent in the industry. If you are skilled, curious and flexible, you get to travel all over the world and do things you never dreamed of doing. If you remain ambitious and open-minded, the opportunities are endless."



# Working at Maersk on the Quest for Oil

### Mana Saravi

Operational Support Engineer

I started out working for Maersk Line, and, after three years my technical background prompted me to join one of the Maersk graduate programmes called MITAS. This programme gives you the opportunity to work in three different business units and even three different locations.

# Maersk, home for the technically inclined

Flexible career choices is one benefit of working for a diversified conglomerate like Maersk, a fact Mana Saravi realized when she transferred from Maersk Line to Maersk Drilling.

Originally from Iran, Mana now works at Maersk Drilling's Houston office after completing an intensive company training programme for technical graduates. Because her work entails both onshore and offshore work, Mana enjoys the best of both worlds as she deepens her technical expertise while forging strong ties with colleagues across the world.

# Godwin Ebhoma

Senior Drilling Engineer

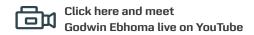
Flexibility within the company allows you to spend more time with your family. I can attend training courses and meetings while on the job, which is perfect.

# Life's big questions: Maersk knows what matters

Long-time industry professionals like Godwin Ebhoma of Nigeria choose Maersk Oil. After 16 years in the oil iand gas ndustry, Godwin knows what matters: time for the family, a fulfilling job and enough flexibility for him to combine the two when necessary. And Maersk gives him just that.











# Working at Maersk on the Quest for Qil

# Sabi Balkanyi

Integration Manager

My educational background is actually aerospace engineering, but after graduation I decided to enter the oil and gas industry because it is a high-tech industry. We use lots of cutting-edge technology, but it is also a very international environment.

### Maersk: Off the beaten track for oil

How much does it cost to get oil out of the ground and is it profitable to do so? Meet Sabi Balkanyi, who embodies a combination of technical expertise with commercial acumen.

Though Sabi studied aerospace engineering, the thought of using cutting edge technology to access oil in ultra-deep water led him to choose the oil and gas industry instead. Among the oil companies, Sabi prefers Maersk because of its wider range of responsibilities and the broader perspective it offers.

When Sabi isn't at work, he spends time with his son, and enjoys running, tennis and skiing.

# Click here and meet Sabi Balkanyi live on YouTube

### **Mario Monteiro**

Geologist

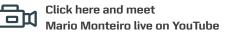
A couple of years ago, Maersk Oil launched an aggressive, incident-free initiative, which is not just about safe operations and environment protection, but also involves building a safe mindset and risk awareness of the daily activities affecting both our working and personal life. This is how oil and gas operations should be carried out.

# Recreate geological formations with Maersk

Mario Monteiro is proof that one's career can lead to unexpected places. Despite gravitating towards water exploration, Mario was drawn to the oil and gas industry after learning that oil can be sustainably extracted.

Recently, Mario was temporarily transferred from Rio de Janeiro to Houston. He proudly defines himself as an 'oil finder,' a recreator of geological formations as they would have been millions of years ago.

Before moving to Houston, he married his fiancée and brought her with him.





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# **OIL**: An indispensable resource for decades to come

Population and income growth are the two most powerful driving forces behind the demand for energy. Since 1900, the world's population has more than quadrupled. The next 20 years are likely to see continued global integration, and rapid growth of low and medium income economies. More people with more income means that the production and consumption of energy will rise, making oil an indispensable resource all over the world for decades to come.

Today more than 6 billion people rely on the skills, innovative abilities and dedication of the oil and gas industry, providing not only petrol for transportation or ensuring heating or cooling for billions of households and workplaces around the world, but also the thousands of products we use in our everyday life.

The oil is pumped from the underground and shipped by oil tanker or conveyed by pipeline to an oil refinery, where it is converted into a wide variety of fuel oils. One 42 (US) gallon barrel of oil produces approximately around 19 gallons of petrol. The rest produces around 10 gallons of diesel, 4 gallons of jet fuel, 2 gallons of heating oil, and 3 gallons divided between heavy fuel oil and liquified petroleum gases. The rest of the oil, approximately 7 gallons, is used for other products. Few people are aware that more than 6,000 daily products are made from oil

Petrochemicals are the refined components of oil and the chemical products made from them. They are used as detergents, fertilizers, medicines, paints, plastics, synthetic fibres, and synthetic rubber used for making everything from artificial limbs, sweaters, boats, nail polish, heart valves, food preservatives, eyeglasses, basketballs, soap, vitamin capsules and antihistamines to shoes - all of which are things we take for granted. The total production of 1 barrel of oil augments to 45 gallons of different fuels and products.

# But how do you find the oil?

Using Maersk Oil and Maersk Drilling's vast experiences of the high-tech oil industry, Maersk opens the virtual doors to the adventurous, unknown universe of oil exploration, testing your strategic and practical skills to the outmost.

With the free, worldwide launch of the real-time strategic computer game 'Quest for Oil', the first ever of its kind, Maersk invites you to embark on a challenging journey underground.

# Want to play?

You can download 'Quest for Oil' free at www.questforoil.com.

More than half of all oil is used to make over **6,000** different products you know from your everyday life



# Products made from oil

Anaesthetics Car battery cases Antifreeze Cassettes Antihistamines CD Player Antiseptics CDs & DVDs Artificial limbs Clothes Clothesline Asoirin Balloons Cold cream Ballpoint pens Cortisone Bandages Crayons Basketballs Curtains Bicycle tyres Denture adhesive Boats Deodorant Cameras Detergents

Dishwasher parts
Drinking cups
Dyes
Eyeglasses
Fertilizers
Fishing lures
Floor wax
Folding doors
Food preservatives
Football helmets
Footballs

Etc....



**OIL FACTS** PAGE 17

# What is oil?

Crude oil is the term used for unprocessed oil. It is a fossil fuel found in oil reservoirs formed in the earth's crust. The formation of an oil or gas reservoir requires a sedimentary basin that passes through four steps: deep burial under sand and mud, pressure cooking, hydrocarbon migration from source to reservoir rock, and trapping by impermeable rock. If there are no traps, oil will escape.

The oil is created by the remains of tiny plants, algae and animals (plankton) that died in ancient seas between 10 million and 600 million years ago. After the organisms died, they sank into the sand and mud at the bottom of the sea. Over the years, the organisms decayed in sedimentary layers. In these layers, little or no oxygen was present. Microorganisms broke down the remains into carbon-rich compounds to form organic layers. The organic material mixed with the sediments, forming fine-grained shale, or source rock. As new sedimentary layers were deposited, they exerted intense pressure and heat on the source rock, reaching temperatures of more than 50 to 70 °C. The heat and pressure distilled the organic material into oil and natural gas.

The oil flowed from the source rock and accumulated in thicker, more porous limestone or sandstone, called reservoir rock. Movements in the earth trapped the oil and natural gas in the reservoir rocks between layers of impermeable rock, or cap rock, such as granite or marble.

Oil varies in color from clear to tar-black, and in viscosity, from water to almost solid, and consists of the following components:

Carbon 84%

Hydrogen 14%

Sulphur 1 to 3%

(hydrogen sulphide, sulphides, disulphides, (nickel, iron, vanadium, copper, arsenic) elemental sulphur)

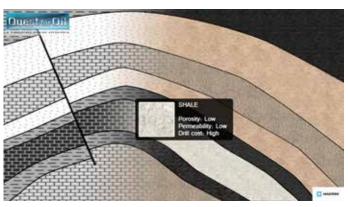
Nitrogen less than 1% (basic compounds with amine groups) Oxygen less than 1%

(found in organic compounds such as carbon dioxide, phenols, ketones, carboxylic acids)

Metals less than 1%

**Salts** less than 1% (sodium chloride, magnesium chloride, calcium chloride)







OIL FACTS PAGE 18

# Guide to exploring for and producing oil

Drilling an oil well is a massive project involving large teams of workers and specialists. Here is a basic guide to the steps required to drill for oil.

## Seismic analysis

Geologists are responsible for finding oil reservoirs. An oil reservoir is a subsurface pool of hydrocarbons contained in porous or fractured rock formations. The naturally occurring hydrocarbons, such as oil, are trapped by superjacent rock formations with low permeability.

The geologist's job is to find the right conditions for an oil trap by analyzing an area's surface features, terrain, and rock and soil types, as well as the earth's magnetic and gravitational fields. Usually, a geologist uses seismology.

A seismic survey is conducted by creating a (seismic) shock wave on the surface along a predetermined line, using an energy source. Seismic surveys may cover many square miles of land, and before survey data can be used, they must go through a series of computerized processes.

The proper interpretation of seismic data is a critical step in the process. All seismic data are subject to interpretation, and no two experts will interpret data identically. Although dry holes have been greatly reduced by modern seismic technology, they have not been eliminated.

# Reservoir identification

After discovering a reservoir, a petroleum engineer will seek to build a better picture of the accumulation. Appraisal wells can be used to determine the location of oil-water contact and with it, the height of oil-bearing sands. Coupled with seismic data, the information from appraisal wells is used to estimate the porosity of the rock. This can give information on the actual capacity.

The recovery factor is commonly 30-35%, giving a value for the recoverable reserves.

The difficulty is that reservoirs are not uniform. For this reason, computer modelling of economically viable reservoirs is often carried out. Geologists, geophysicists and reservoir engineers work together

to build a model which allows the flow of fluids in the reservoir to be simulated, leading to an improved estimate of reserves.

# Placing and drilling wells

Once it has been determined that the reservoir is economically feasible, scientists survey the area to determine its boundaries, and conduct environmental impact studies, obtain the necessary permits, lease agreements, titles, etc., needed to drill in the area. The drilling unit then drills down into the ocean floor to find oil deposits. First, from the starter hole, the team drills a surface hole down to a pre-set depth, which is somewhere above where they think the oil trap is located. The part of the drill that extends below the deck and through the water is called the riser. The riser allows drilling fluids to move between the floor and the rig. Engineers lower a drill string, a series of pipes designed to drill down to the oil deposit, through the riser.

A blowout preventer (BOP) is located on the sea floor. The blowout preventer has a pair of hydraulically-powered clamps that can close off the pipe leading up to the rig in the case of a blowout.

When rock cuttings from the mud reveal the oil sand from the reservoir rock, the crew may have reached the well's final depth.

# Setting up and optimizing production, including getting the oil ashore.

Once the drilling unit hits oil, engineers must seal the well to prepare it for a production rig. The engineers use a pair of plugs to seal off the well bore. The bottom plug sits near the oil deposit.

When the oil is produced it must be transported to refining onshore. Pipelines are the most efficient method to transport oil from the wellhead to the gathering and processing facilities and from there to refineries and tanker-loading facilities.

The pipeline operator sets the date and place for the oil to be received and determines when the oil will arrive at its destination.

Oil tankers are also used to transport oil from fields in the Middle East, the North Sea, Africa, and Latin America to refineries around the world.



GAME FACTS PAGE 19

# Quest for Oil facts

# Quest for Oil is all about gaining and applying detailed insight into the geographical underground and global oil and gas industry.

# Genre

Real-time strategy and resource management game with action elements.

### Platform PC and mac

Mouse-controlled, one player, challenge mode.

### Price

Free, downloadable from www.questforoil.com

### Release

10 June 2013.

# **Publisher**

Maersk Group

# Developer

FRND, Quartz+Co and Serious Games Interactive

# Watch Quest for Oil animation videos

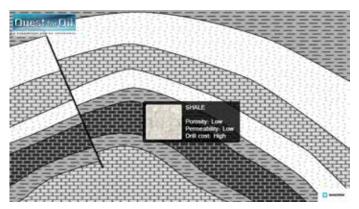
Generation of Oil in Maersk's Quest for Oil http://youtu.be/nrvlabfQuic

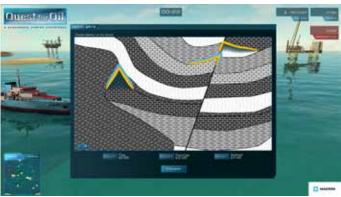
Drilling for Oil in Maersk's Quest for Oil game http://youtu.be/iVXyrjrDo7I

Striking Oil in Maersk's Quest for Oil game http://youtu.be/Opmjdlai-go

### Music

Game music editor: Andrew Oye.







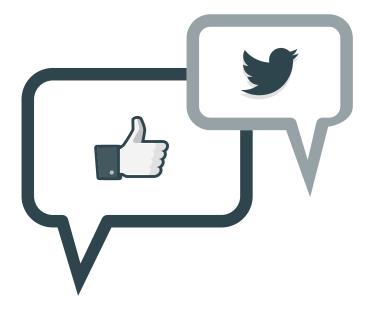
JOIN THE QUEST PAGE 20

# **Tweets**

# Use these premade tweets to spread the word and join the quest

- The clock is ticking, are you in the game?
   http://mrsk.co/questforoil#QuestforOil#Energy#Game
- Your ability to understand the key challenges of the oil industry is essential. Game on.
  - http://mrsk.co/questforoil#QuestforOil#Oil
- Winning comes down to your ability to use your knowledge.
   Make the right calls.
   http://mrsk.co/questforoil #Questforoil #Knowledge
- Test your geology knowledge in Maersk's Quest for Oil challenge now!
   http://mrsk.co/questforoil#Questforoil#Maersk#Geology

- Embark on a subsurface journey and unlock oil reserves in the Quest for Oil game.
   http://mrsk.co/questforoil #Questforoil #geology #learning
- We know oil is hard to find. Find out why and try for yourself in Quest for oil.
  - $http://mrsk.co/quest for oil \, \pmb{\#Quest for Oil \, \#Exploration}$
- Tired of sitting at your desk all day? Join the oil universe with Maersk.
   http://mrsk.co/questforoil #Questforoil #Exploration
- Innovative thinking and quick action are needed to win this game. Are you in?
   http://mrsk.co/questforoil#Questforoil #game #Oil





# Safety first at all times

Safety is at the core of Maersk's business, including of course our core business units Maersk Oil and Maersk Drilling. We believe that each and every accident can and should be avoided.

That is why in developing 'Quest of Oil' we included the safety check as a fully integral aspect of the game. 'Quest for Oil' mirrors reality: not a single task can start without a safety check. The message is unmistakably clear: safety first at all times.

When we talk about safety in the oil and drilling industry, it covers everything from the personal safety of the employees at sea carrying out challenging manoeuvers to watching their step as they walk up the stairs on the way to the office. Of course, environmental protection is also at the heart of our safety awareness.

With the knowledge that offshore oil and gas production can affect the environment in various ways, we have integrated eco-efficient practices into our activities so that we can reduce our environmental footprint. We take our responsibility for constantly safeguarding people and nature very seriously, by working with highly-skilled experts and the best trained personnel to ensure that we comply with our extremely demanding safety measures.

It is essential for both Maersk Oil and Maersk Drilling to identify, control and minimize emissions, discharges, and waste from exploration and production activities. We comply with

environmental legislation and often go beyond compliance, recognizing that individual contributions make a difference. As part of this, we also move forward with projects that help mitigate climate change.

## Continuous training and reviews

Maersk never puts oil production or economic efficiency over safety. We spend many resources at all levels of training of our onshore and offshore personnel and constantly review our safety procedures to ensure they are up to date with regulations, international standards, industry best practices and technological developments. We measure and openly publish the results of these reviews.

Maersk strives to create an open, trusting culture in which ideas are welcome and people feel empowered to express themselves on health and safety issues. This means that we always encourage and support the input from our employees and our business partners if and when they raise an issue – even the smallest detail – that could in the slightest way impair the overall operational or occupational safety.

In brief, the message is crystal clear: safety is paramount to our staff, the environment, our reputation and our business. Our goal is to run an incident-free operation as our safety record gives us our licence to operate.





# Maersk Oil

Turning marginal and challenging fields into commercial successes has been a cornerstone of Maersk Oil's business since the company was founded in 1962.

Maersk Oil operates production process of 600,000 barrels of oil equivalents per day from Denmark, the UK, Qatar, Kazakhstan, Brazil and Algeria. Exploration activities are ongoing in Angola, Norway, the US Gulf of Mexico, and in the producing countries.

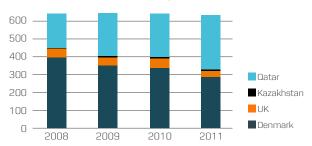
Maersk Oil is experienced in geological environments such as chalk and shelf carbonates, fluvio-deltaic and deepwater clastics and presalt. The company is also developing expertise in difficult operating conditions, such as deepwater and high pressure, high temperatures.

# Key figures 2012, USD million

Maersk Oil revenue:	10,154
Exploration costs:	1,088
Profit before depreciation – EBITDA:	7,156
Profit after tax:	2.444

## Total operated production

1,000 bbls oil equivalents per day



# A rewarding performance culture

Maersk Oil offers a powerful proposition for professionals who wish to be at the forefront of global challenges, technologies and innovation in the oil and gas industry.

We have a culturally diverse, stimulating environment where our employees are empowered and supported to make valuable contributions.

- 3,900 employees with over 1,000 engineers and geoscientists. 1/4 of our employees work offshore.
- Competitive remuneration and global mobility programmes, reflecting the market and the high skill levels of our employees.
- Maersk International Technology and Science Programme (MITAS) develops top talent for both technical leadership and specialist careers within the A. P. Moller - Maersk Group.

# Executing projects on time and on budget

### Fast movers and decision makers

Thanks to minimal bureaucracy, we are decisive and act fast, enabling agility and timely execution of our projects.

In Oatar, we produced first oil in 1994 – just two years after taking over the Al Shaheen field which was deemed economically unviable by others.

In Denmark, we produced first oil at the Halfdan field barely a year after its discovery in 1999.



# Maximising oil recovery

We are recognised for our ability to maximise oil recovery in mature assets such as in the North Sea. We also have a successful track record of exploration in mature regions.

For example, we turned around the abandoned field of Dumbarton in the UK. It has produced over 40 million barrels of oil.

# Mastering technology

We beat the odds on several projects that few wanted to touch, turning them into commercial successes. Our tradition of creative problem solving and innovation has come from our experience with the challenging conditions of the North Sea.

With our technical focus, we have patented dozens of methods that have helped improve the development of difficult and marginal reservoirs.

We developed and mastered horizontal well drilling, giving us unprecedented access to oil in thinly-spread tight reservoirs. From 1994-2010, Maersk Oil broke old and set new world records for drilling the longest horizontal wells. The last Maersk Oil record stood at 12.3 kilometres (40,320 feet) in Qatar.

We are researching biotechnological solutions to the challenges of mature field operations. And we have turned to nanotechnology to better explain our chalk reservoirs and find a way of increasing oil recovery.

**Maersk Oil** - the natural upstream oil and gas partner; navigating complexity, unlocking potential







# Maersk Drilling

Maersk Drilling supports global oil and gas production by providing safe, highly efficient drilling services to oil companies around the world.

Today we are a leader in the North Sea, where we operate the world's largest and most advanced harsh-environment jack-up rigs. In the Deepwater segment we are growing a strong position in US Gulf of Mexico and in West Africa with our semisubmersible and drillship rigs.

Our focus on state-of-the-art engineering and our expertise cover many drilling areas from high pressure and high temperature drilling to technical limit drilling and subsea work. Our in-house engineering department develops newbuildings and modifies existing rigs, ensuring that our equipment delivers exactly what our customers need.

We are committed to delivering lower total well costs for our customers by means of our safe and efficient operation, and we continuously monitor and evaluate customer satisfaction and feedback.

Our employees distinguish us from the competition. Therefore, we invest in the latest training equipment and apply the most efficient training methods to ensure that our staff are always properly trained to undertake operations in a safe manner.

We are focused on our employees' continual development and longterm career opportunities as we continue our journey to grow our business and support global oil production.

# Our strategy

Maersk Drilling's overall business objective is to become a significant and stable contributor to the A.P. Moller-Maersk Group profit by developing and growing our business within the ultra deepwater and ultra harsh-environment segments. We aim to build scale in these segments implying a doubling of our fleet and hiring 3,000 new employees by 2018.

# Maersk Drilling in brief

- Established in 1972
- Headquarters: Copenhagen, Denmark.
- Offices: Australia, Brunei, Malaysia, Singapore, South Korea, Azerbaijan, Denmark, Norway, UK, Angola, Cameroun, Venezuela and USA
- Own and operate 26 offshore drilling units
- Employees: approx. 3,300, of which 600 work onshore and 2,700 offshore. 52 nationalities
- Involved in a 50/50 joint venture named Egyptian Drilling Company (64 land/workover rigs and 5 jackups)

# Fleet information

Maersk Drilling has one of the youngest and most advanced rig fleets in the industry. We currently operate 26 drilling units including the largest harsh-environment jack-up rigs in the world and a number of deepwater semi-submersible rigs.



We are expanding our fleet with four drillships which are able to operate in depths that exceed 3,500 metres. They have advanced features for high-efficiency operation. We are also building the world's most advanced jack-up drilling rigs XL Enhanced 1, 2 and 3. These jack-up rigs are purpose-built for weathering the ultra harsh environment of the North Sea, and their technical features are beyond current state-of-the-art.

# Our fleet status

- 6 Ultra Harsh Enrivonment jack-ups + 3 on order for delivery in 2014 and 2015
- 4 Harsh Environment jack-ups
- 2 Premium jack-ups
- 3 Ultra Deepwater semisubmersibles
- 1 Mid-water semisubmersibles
- 4 Ultra Deepwater drillships on order for delivery in 2013 and
- 2014
- 10 Drilling darges
- Management of 1 standard semisubmersible

# Safety and Sustainability

Our deeply embedded safety culture takes a zero-tolerance approach to accidents. We have an array of measures in place to safeguard our people and our operations, to protect the environment and ensure compliance with applicable regulations, covering everything from the way we work at sea to the design of our equipment and vessels.

At Maersk Drilling, we are dedicated to ensuring that we act as good corporate citizens and are proud of the publication of our Sustainability Report. The report covers the areas of safety, environment and social responsibility.





# Maersk Tankers

# Background

Maersk Tankers owns and operates a large fleet of crude oil carriers, product tankers, and gas carriers – all built and operated in accordance with the highest standards for quality and reliability.

We acquired our first dedicated tanker in 1928, and we have been expanding and improving our fleet to meet changing customer needs ever since. Today, the Maersk Tankers fleet is one of the largest and most modern, independent fleets in the world.

At Maersk Tankers, safety and environmental protection are always our top concern. To ensure safety, our state-of-the-art tankers are all double hulled and comply with the latest industry standards and demands.

Driven by our innovative spirit and commitment to first-class service, we strive to offer safer, more environmentally friendly and more cost-effective transport solutions to our customers around the world.

Maersk Tankers is part of the A.P. Moller - Maersk Group.

# **Activities**

Maersk Tankers is involved in the transportation of crude oil, refined oil products and gas around the world. We are market leaders in many of the segments in which we operate and we believe we add real value for our customers by having a large, fully certified fleet of modern vessels, all of which live up to or exceed the latest safety standards.

On average we can offer our customers more flexible solutions due to our sizeable fleet. We strive to be 'easy to do business with' on all fronts, therefore our staff are empowered with the necessary responsibility and authority to take business decisions, i.e. the person who answers the phone can meet your needs or solve your problem.

**Maersk Tankers** is the trade name for the large VLCCs and the gas carriers (VLGCs).

**The LR2 pool,** founded in 2001, operates a large fleet of modern double-hulled coated Aframaxes trading both clean and dirty. The LR2 Pool offers unparalleled flexibility for both single cargoes and volume contracts.

**Handytankers** is one of the world's largest pool managers for modern double-hulled product tankers between 27-51,000 dwt and trades all over the word. Handytankers is a market leader in its handy segment and we offer our customers safe, flexible and cost-effective transportation of petroleum products worldwide.

**Broström**, a Swedish tanker company acquired in 2009, covers the small and intermediate product-tanker segments. Being a market leader in the regions where we operate (north-west Europe and south-east Asia), we have the ability to meet customer demand with flexibility and knowledge.

**Nova Tankers** operates 50 quality VLCCs, with an average age of only 3 years. The flexibility of a large, young and reliable fleet ensures that Nova Tankers, at all times, can offer relevant vessels of the highest standard to cater for customer needs for safe and environmentally friendly marine transportation.



### Career

# In Maersk Tankers, no two days are alike.

We are known for our flat organisation, where all employees are empowered with the authority they need to do their job well. We encourage open communication and expect people to speak their mind.

With employees from countries around the world, we offer a dynamic, international environment. We are always looking for talented, motivated people.

So if you think a career at Maersk Tankers might be for you, check out the current status of vacancies on our job portal. We look forward to hearing from you!

For more information and to see our vacancies, please visit us at www.maersktankers.com/career





# Qatar

Maersk Oil entered into an Exploration and Production Sharing Agreement (EPSA) with Qatar Petroleum (QP) in 1992. The ESPA included an oil-bearing reservoir - the Al Shaheen field, which had been deemed uneconomic by others as its reservoirs were extremely thin and stretched across vast distances. Despite that, Maersk Oil produced the first oil just two years later and is now producing over one-third of Qatar's daily oil production, some 300,000 barrels of oil per day.

# Major milestones

The first oil from the Al Shaheen field was produced in 1994 from a well that was drilled during the field's initial appraisal and exploration stage. A second Field Development Plan (FDP) was sanctioned in 1996, and the first permanent offshore facilities were inagurated in late 1998. In 2001, the field's next FDP included additional production platforms, production and water injection wells, facilities for gas compression and a gas export pipeline to QP's North Field Alpha Platform.

The single largest development plan to date, the 2005 FDP, comprised a major expansion of the field infrastructure with 15 new process and wellhead platforms, and more than 160 new production and water injection wells, increasing field production to 300,000 bopd.

In 2012 the most recent development plan was approved. The 2012 FDP comprises an additional 51 new wells and debottlenecking of

existing production facilities. The plan aims to optimize recovery and stabilize the long-term production plateau from the Al Shaheen field.

## Development

Al Shaheen field contains a large number of further development opportunities and these are being evaluated with our partner QP.

## **Exploration**

Exploration ongoing with primary focus and appraisal at different stratigraphic intervals in the EPSA area.

## Maersk Oil added value

The Al Shaheen discovery, made in the 1970s, was well known to major oil companies but thought to be impossible to develop commercially as the low-permeable reservoirs were extremely thin – down to 1-2 metres in some areas, and stretched across a vast area. A traditional development approach was out of the question due to the number of vertical wells and infrastructure that would have been needed.

The basis for developing these commercially and technologically challenging reservoirs has been the application of the drilling, stimulation and completion techniques that Maersk Oil developed intensively during the 1980s and 1990s to unlock the tough chalk reservoirs of the Danish North Sea.





# North Sea

Maersk Oil is the operator of all licences held by A.P. Moller - Maersk A/S in Denmark. The joint venture Danish Underground Consortium (DUC), which comprises Maersk Oil as operator and Shell, Chevron and the Danish North Sea Fund as partners, produces 85% of all oil and gas extracted in Denmark.

## **Major Milestones**

The first oil production came from the Dan Field in 1972. Since then, 15 other fields have been brought on stream: Gorm, Skjold, Tyra, Tyra South East, Rolf, Kraka, Dagmar, Regnar, Valdemar, Svend, Roar, Harald, Lulita, Halfdan and Halfdan Northeast. A third-party field, Trym, in the Norwegian North Sea, has been tied in to Harald's infrastructure.

Maersk Oil has also acquired a number of licences outside the DUC, currently operating Licences 9/95, 8/06 and 9/06. In July 2012, the state-owned Danish North Sea Fund entered the DUC with a 20% interest, diluting the shares of Maersk Oil (31.2%), Shell (36.8%) and Chevron (12.0%).

## Development

Material projects include Tyra SE development followed by development of the Lower Cretaceous in Adda and Tyra. Longer term projects are assessing the potential for novel hydrocarbon recovery in DUC acreage.

### **Exploration**

Dedicated studies and geological/geophysical assessments have led to the maturation of several opportunities. Focus has recently expanded from exploration and appraisal at the Upper Cretaceous level to the deeper stratigraphic intervals of primarily Jurassic age. A programme with three firm wells to be drilled in the Contiguous Area during 2013 and 2014 has been committed. Furthermore a firm well targeting Upper Jurassic sands in the Maja license is planned for spud in December 2013.

# Maersk Oil added value

Maersk Oil's raison d'être was the need to develop Danish oil and gas after a discovery was made in 1966. Maersk Oil's production has exceeded total Danish consumption of hydrocarbons every year since 1992 and Maersk Oil is a valuable contributor to the Danish state.

Danish oil and gas reservoirs are characterized by high porosity, low permeable chalk. Faced with such tight fields, Maersk Oil developed technological solutions to raise the recovery factor from 10% to 30%. It has a leading edge in extended-reach horizontal drilling and well-stimulation techniques thanks to its experience in the Danish North Sea.



