ExxonMobil Upstream Research Company
Upstream Technology Webcast
Transcript

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PRESENTATION

Henry Hubble  - *ExxonMobil Corporation - Vice President of Investor Relations and Secretary*

I would like to welcome everyone to this morning’s webcast on how ExxonMobil uses proprietary technology to successfully take on the world’s toughest energy challenges. My name is Henry Hubble, I'm the Vice President of Investor Relations and Secretary for the Corporation.

As we do at all of our events, I would first like to address our safety considerations. As you can see at the display, we are currently located in the room with an X. In case of an emergency, you will exit back out through the doors in which we came and there will be staff there to direct you out through the south of the Training Center and then to the assembly point. If you have telephones or pagers, it would be appreciated if you turn those off so we can avoid any disruptions during the course of this morning's presentations.
Following the presentations, we'll have a question-and-answer period. If you would like to ask a question, please signal one of the attendants and a microphone will be brought to you. It is important to wait for the microphones, so that the people participating on the web will also be able to hear the questions as well as the answers, and I would also appreciate it if you wouldn't mind giving your name and the company that you work for, so that people know who is speaking. The packet in front of you contains the slides that will be used in this morning's presentation. The information is also available on the investor information section of our website for those listening in via the webcast.

I'll draw your attention to our cautionary statement here as well. You'll find this displayed on the screen now. This statement contains information regarding today's presentation and discussions. I ask that, if you haven't read it already, to do so. And, I would please -- also like you to refer to our website at Exxonmobil.com for additional information on factors that affect future results, as well as supplemental information defining some of the key terms that we'll be using today.

Turning now to the agenda for this morning's webcast, we'll begin with Steve Cassiani's overview of Upstream Research. Jeff Johnson and Lee Tillman will then present selected upstream technologies that have a significant impact on our success as a corporation. After that, we will have the question-and-answer period I mentioned and we will be taking questions from those attending here, as well as from those attending via the Internet. For those attending remotely, please submit your questions using the provided link on the website. We'll target to have the webcast completed by 10.30 AM Central Time, about 90 minutes from now.

Following the webcast, those who are present here will tour our lab facility, which has our unique large scale testing equipment. For those of you unable to attend, the supplemental materials on the website provide a description of the facilities that will be viewed. At this point, I would like to turn the podium over to Steve Cassiani, President of ExxonMobil Upstream Research Company. Steve?

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

Thank you, Henry. Good morning, everyone. I would like to welcome everyone who has joined us today, both here in person and those of you who have joined in by way of the Internet. To help put today's presentation in context, it is important for us to remember that our industry is constantly operating at the technological frontier. As our Chairman recently said, "There has never been an era of easy oil. Oil only seems easy after it has been discovered and produced." As Henry indicated, I'll begin with an overview of Upstream Research, and then we will highlight a few of our industry-leading technologies that are pushing back the technological frontier and creating value for our shareholders.

ExxonMobil has long had and continues its commitment to proprietary research, as technology innovation is one of the keys to our success in generating industry-leading
returns. It is the Upstream Research Company's mission to ensure that ExxonMobil's Operating Companies have the highest impact, most distinguishing technology and expertise to be applied to a portfolio of current and future assets and opportunities. While time does not permit us to discuss all of the technologies we are developing, we hope to give you an idea of the breadth and depth of our technical capabilities through today's presentations.

As the graphic indicates, the Upstream Research Company, or URC, has a key role in ensuring the technical excellence across the lifecycles of ExxonMobil's Upstream business. URC is located in Houston in close proximity to the centers of technical excellence in each of our four Upstream functional companies. While URC is dedicated to the Upstream business, we receive support from ExxonMobil's Corporate Strategic Research Company, located in Clinton, New Jersey. Corporate Strategic Research conducts research in fundamental science and is unique to ExxonMobil in the oil and gas industry. Collaborative efforts by URC and Corporate Research, often underpin the development of many of our most advanced Upstream technologies.

URC helps ensure that technical excellence is achieved throughout the Upstream Companies by taking a leadership role in three main areas. The first of these is developing and globally deploying competitively advantageous technologies. As mentioned, Jeff and Lee will highlight some of these technologies later in this presentation. Developing new technologies is probably the most obvious role for a research lab, but while necessary, it is not a fully sufficient part of the process. To be most useful to the business, technologies must also be deployed effectively. ExxonMobil's functional organization, standard computing platforms, and standard software applications enable us to deploy technology efficiently, rapidly, and globally to all of our technical professionals. A second vital role and key strength of URC is the capability of our research staff to provide industry-leading expertise and solutions to address near-term operating challenges when the need arises. Our third area of focus is on technical training, to establish and maintain the highest quality, most capable workforce in the industry. The training and development of Upstream technical staff is a high-priority activity that is essential for ExxonMobil's long-term success.

In 2005, ExxonMobil conducted formal technical training courses in 10 locations worldwide, reaching nearly 6,000 students. Attendance at the nearly 370 technical training sessions represented nearly 25,000 student-days, the majority of which took place in our state-of-the-art training facility where this session is originating today. The training curriculum includes traditional classroom courses, field schools, distance learning in virtual classrooms, workshops that engage teams in solving practical exercises and symposia where experts share recent experiences.

Earlier in my presentation, I emphasized the Corporation's commitment to developing and deploying leading-edge proprietary technology. This has been and will continue to be a mainstay of ExxonMobil's approach to the business. ExxonMobil continues to make significant investments in proprietary technologies. In 2005, research spending exceeded $700 million. And over the past five years, ExxonMobil has consistently...
invested over $600 million annually on research, with approximately one-third being spent for the Upstream. We follow a rigorous prioritization process to ensure that we are working on those things that have the potential to deliver a sustainable and differentiating technological advantage to the business. A significant portion of this funding is devoted each year to higher risk, high reward breakthrough research efforts with the potential for step-change improvements in performance.

Developing these technologies would of course not be possible without our highly capable Research Company staff. Of the approximately 425 research professionals in the Upstream, over 70% have PhDs, with a majority of the remainder having Master of Science degrees. We have a globally diverse team with approximately one-third of our research professionals having home countries other than the United States. Slightly over half of our researchers have engineering degrees, while the rest have degrees in geology, geophysics, and other key disciplines, including chemistry, mathematics, and physics. Many of our researchers also have had hands-on experience in one or more functional operating companies.

Often the key to the development of our proprietary technologies lies in one of a number of unique, world-class laboratory capabilities. For example, we are able to accurately measure reservoir properties under actual reservoir conditions of temperature, pressure, fluid composition, and rates using whole core extracted from the reservoir of interest. To our knowledge, this is a capability unique to ExxonMobil. We can qualify for service, full-scale tubing and casing connections under expected conditions of temperature, pressure, and mechanical load in our state-of-the-art Tubular Goods Testing Facility. Because of our unique capability, this testing is often requested by operators of projects where we have a participating interest. Our Fracturing & Sand Control Facility permits us to conduct unique, full-scale simulations of completion and production operations. These examples of unique capabilities serve to underscore the Company's commitment to proprietary research.

In the area of training, we are very pleased with the uplift we are getting from our 100,000 square foot Upstream Technical Training Center, opened in June 2004. Most of the courses in our training curriculum are developed internally by subject matter experts in collaboration with instructional designers. More than one-third of the Upstream research professional staffs serve as instructors in these courses. This ensures not only that the most current technologies are presented, but also establishes working relationships that continue long after the training session has been completed. In addition, ExxonMobil's ability to tailor training programs to a host country's business and technical needs helps establish the Company as a partner of choice. We are, therefore, confident that through on-going investment in our technology and our people, we are well-placed to remain the technology leader in our industry.

ExxonMobil's long-term commitment to proprietary and distinguishing technology has produced a rich history of technical achievements. Back in the '50s, we invented digital reservoir simulation, the use of the computer to model the flow of fluids in a reservoir, a technology critical to efficient development and production of oil and gas fields. With
recent advances that Lee Tillman will describe later this morning, ExxonMobil continues to lead the industry with our proprietary next generation reservoir simulator that we call the EMpower. ExxonMobil is recognized as the inventor of 3D seismic, with pioneering work done in the laboratory here in Houston in the 1960s.

We have received numerous recognitions from the prestigious Offshore Technology Conference for achievements including the design and construction of the first diverless subsea template, and first compliant tower for deepwater production. On the geoscience side, ExxonMobil researchers were pioneers in sequence stratigraphy, widely accepted today as the best practice approach to the recognition and mapping of discrete reservoir units. More recently, working with Qatar Petroleum, we developed and qualified what will be, by far, the world's largest Liquefied Natural Gas processing trains and ships, when they go into service later this decade.

I am confident that building on this rich history of success, we will continue to bring high impact and distinguishing new technologies, adding value to ExxonMobil's Upstream business. At this point, I will turn the program over to Jeff Johnson, who is Division Manager of our Hydrocarbon Systems Analysis Division Manager, to highlight some of our areas of current focus. Jeff?

Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division

Thank you, Steve. Good morning everyone. Just as technology has led the way for industry advances for more than a century, it will continue to do so in the future. As the technologies we employ become ever more advanced, the premium is not just on individual capabilities, but increasingly on the integration of those capabilities.

Today, Lee Tillman and I will show you some individual technical tools, but our primary focus will be on their integration. That is where much of the value was created, and that is where we believe we are the clear industry leaders and are growing the gap. This chart provides a roadmap of the proprietary research and technology we will discuss today. Our research activities span the Upstream lifecycle.

It all begins with understanding the complex subsurface system that lies many miles beneath our feet. I'll start with new hydrocarbon exploration play concepts and improving our understanding of the subsurface through seismic processing and interpretation. Under optimizing the development, we will look at reservoir connectivity and give you a sense of our research in carbonate reservoirs. We focus on optimizing the development in such a way that we maximize the ultimate value of the resources. Lee will highlight our integrated reservoir management, and what we are doing to determine the physical limits of drilling and well completions, and to operate safely near those limits.

Our end point objective, of course, is commercializing the resource with industry-leading returns. Lee will conclude by touching on some of our research on frontier resources.
We only have time this morning to highlight a subset of our complete program. With that roadmap in mind, let's launch into the examples of the high impact technologies currently under development.

The first prospectors discovered oil by looking for seeps on the surface of the earth. From those humble beginnings, industry activity has exploded. Each wave of advance has been driven by technology, and over the last 100 years, technology has led to tremendous success in discovering oil and gas.

We believe a great deal remains to be discovered and needs to be discovered given the world's growing demand for energy, but to do so now, it is not simply a matter of observing an oil seep and drilling a well. It requires new ideas and understanding of play concepts. These new concepts are developed from a fundamental understanding of how sedimentary basins were created and filled, how fluids migrated in them, and how the fluids and sediments have changed since original formation.

The map shows the continents as they existed some 150 million years ago. To find hydrocarbons today, we have to understand what the earth was like in the distant past, and how it evolved, in some cases, over hundreds of million of years. Our objective is to identify new resources ahead of competition, whether those resources are located in sedimentary basins that have already had some exploration or in relatively unexplored basins.

We call our approach to new play concepts research, "Plates to Pores." That is, we use the fundamental sciences of physics, chemistry, geology, and biology to understand the earth's complex systems. We do this at all scales, from the macro to the micro, in order to enable our explorationists, building on ExxonMobil's unparalleled global database, to identify opportunities early, to understand their associated risk, and to reduce the range of uncertainty.

The graphic shows one time step from a computer-generated plate reconstruction. Unique ExxonMobil software shows the movement of the earth's crust and the formation of basins over time. This image represents hydrocarbons migrating from their source to a reservoir along migration paths created by faults. Our proprietary basin modeling software, called Stellar, lets us model the pressure and fluid migration history of basins in 4 dimensions. We can predict whether sufficient quantities of moveable hydrocarbons formed, whether they migrated and were eventually trapped, and whether enough porosity and permeability have been preserved for commercial production, a key question especially in the deepest parts of basins.

At the bottom is a Scanning Electron Microscope image of pore space within a rock. The pore is a mere tenth the size of a grain of salt. Through our studies of pore-scale phenomena, we have developed new understanding for how original depositional porosity can be protected from total destruction. Where these pores are preserved, they can be filled by oil and gas. Understanding pore-scale processes requires knowledge of
the chemical and kinetic roles that microscopic grain coatings play while sand is deeply buried and transformed into rock.

Again, let me emphasize that it is not just the understanding of the individual elements or processes of the system that are important, it is how they fit together and how they interact. Our new play concepts work has already had an impact. In January 2004, ExxonMobil and co-venturers were awarded 5.25 million acres gross in the Orphan Basin, offshore Eastern Canada. NPC tools and methods contributed to the ideas and confidence that led the Company to bid on and acquire a significant interest in this high risk, high potential wildcat opportunity. Our first well has just spudded.

NPC tools and methods have also identified the extension of an onshore play to the offshore, in the Majunga Basin, Madagascar, again leading to acreage acquisition. Not only have the NPC techniques benefited exploration in unexplored basins, they have also helped identify significant new opportunities near our producing fields such as Mobile Bay, in Alabama and in the Rotliegende formation in Europe. This is just the beginning. The capabilities already developed are being applied today in other areas, and we are continuing to move ahead with even more advanced technology for new play concepts.

Seismic data continue to underpin hydrocarbon exploration. Developing ever more accurate images of the subsurface is a critical element for creating new exploration opportunities, as well as for optimizing the development and for maximizing the value of our production. The image on this chart displays the types of information about a reservoir’s distribution that can be developed from state-of-the-art seismic data and interpretation. Shown here in a rainbow of colors are a number of reservoirs draped over and ponded between structures. Shown in red-orange on the right side of the diagram is a steeply dipping fault. However, in addition, seismic data are increasingly being used to provide quantitative estimates of reservoir properties, such as porosity. We are leading the industry in more effectively using the information that is contained in seismic data.

As the recognized inventors of 3D seismic, we continue to innovate new proprietary techniques. In the example on this chart, we needed to extract more quantitative information about the reservoir despite historically poor seismic data.

To illustrate the imaging impact, the upper image is a horizontal slice through the earth. The image represents an area approximately 2.2 miles across. The reds and yellows generally indicate better reservoir rock, while the blues and greens represent non-reservoir. This reservoir was interpreted to be deposited by a meandering stream, so determining the position of the channel is critical to well placement. If the interpretation is wrong, a well could easily miss the reservoir, or a producer-injector pair of wells might not actually be in good communication.

This conventional approach gives a rather "fuzzy" view of the subsurface. Thus, we applied several new interpretation technologies to sharpen the image of reservoir
porosity and lithology. A horizontal slice from one of these advanced 3D volumes is shown in the lower image. The color scheme is different than the conventional image at the top. Here the colors all represent porous sands, and the black is non-reservoir rock. The sand bodies are much more distinctly interpretable now, and a meandering channel is clearly visible.

Because these techniques rely on fundamental physical relationships, we are confident in this area that they are more robust predictors of physical properties than common empirical methods. Our patented High Fidelity Vibratory Seismic, or HFVS, data acquisition technology was a key enabler for the improvement in this example. HFVS allowed us to cost-effectively collect higher quality seismic data than is typical for land surveys, enabling the near-surface noise to be more effectively removed during data processing.

The resulting rock property predictions in this field have been used to optimize position of development wells. Our new seismic interpretation technologies have already had an impact in Chad, Venezuela, and West Africa, for example.

Let's move to the next area I'd like to show you, reservoir connectivity. Many fields are segmented by faults. The picture on this chart depicts a 3D rendering of a reservoir at the Hibernia Field, offshore Canada, discovered back in 1979. The crest of this reservoir is at the top of the image and contains gas, which is shown in red. Running deeper toward you is oil, shown in green, and below that, water-filled reservoir rock, shown in blue, all as per the pre-2004 interpretation. The thin lines coming out of the reservoir are well paths and the black gaps represent faults.

In general, some faults are permeable, allowing fluids in adjacent blocks to be in communication. Other faults can seal, preventing fluids from moving between fault blocks. When faults seal, adjacent fault blocks can have different oil/water contacts. At Hibernia, we have both kinds of faults, and the challenge is determining which faults seal and which do not.

The potential impact of fault sealing on reservoir development cost and recovery is clear; unnecessary wells may be drilled in some parts of the field, and in other parts, we may fail to recognize an isolated block, thus potentially leaving producible oil in the ground. With some wells costing more than $20 million, the impact can be significant. To improve our ability to place wells in these reservoirs, we have developed a rigorous 3D method for evaluating and predicting fluid contacts, fluid pressures, and fluid distribution, based on stratigraphic and structural controls.

We call this process Reservoir Connectivity Analysis, RCA for short. RCA offers a systematic and logical approach for evaluating how a reservoir is connected. Practitioners of RCA have unique expertise that enables them to analyze all available data in a distinctive way. RCA uses an iterative approach, where we gradually build an internally consistent interpretation of the original state of a field.
In this pre-2004 interpretation of the South Hibernia reservoir, the yellow stars represent two wells that encountered a similar oil-water contact, shown on this diagram as the boundary between the green and the blue. The conventional interpretation assumed that water would be below that level throughout the reservoir, and that no wells should be drilled looking for deeper oil.

RCA was applied to the field, and suggested that the water encountered thus far might be trapped locally at a fault. Additional wells were designed to test our assessment that the true field oil water contact might actually be deeper, and that the oil in place might be significantly greater than the pre-2004 interpretation. One of these wells was drilled this year. It confirmed that the contact in the fault blocks on the left is in fact deeper. The additional in-place oil is shown in dark green.

I can't give you a number today for the reserves addition resulting from this down-dip extension because the affiliate is still working on it, but the volume is significant. RCA has had an impact on many other fields as well. The technique has been responsible for a reserves add at Mobile Bay in the Gulf of Mexico, and has impacted well placement and sequence for offshore fields in Malaysia, Nigeria, and Angola.

Based on internal and external analyses, we estimate that over half the world's discovered oil reserves are in carbonate rocks, limestones and dolomites. Most of the oil and gas in the Middle East is in carbonate rocks, Qatar's North Field, for example. Giant carbonate oil fields outside the Middle East include Kashagan and Tengiz in Kazakhstan, both of which we have a significant interest in.

Carbonate rocks are typically much more complex than sandstone rocks. As you can gain some appreciation from these core samples, the carbonate rock is significantly more variable than the sandstone. This heterogeneity exists not just at the core scale of inches, but from the microscopic all the way to the field scale. The lateral and vertical variability makes the prediction of field performance, and the optimal placement and completion strategy of wells especially complex.

Now, geologists and engineers have been studying carbonate rocks for a long time. However, recognizing our integrating capabilities, we have taken a new, unique approach that provides a significant competitive advantage. Our multidisciplinary approach efficiently integrates all data, geophysical, rock property, fluid and pressure, to create a deeper understanding of the spatial distribution of porosity, permeability, and connectivity than was ever possible before. This means we can design accordingly and develop and produce carbonate fields to extract the maximum value.

Seismic survey design, acquisition, processing, and interpretation technologies provide the initial step in the process. Our process is customized for the type of carbonate field we are imaging. Reservoir properties, such as porosity and permeability, need to be analyzed at multiple scales to understand the full range of heterogeneity.
Fractures are a common feature of carbonate reservoirs, and have been notoriously difficult to predict in sufficient detail to optimize well placement and gas injection. We have developed a distinguishing technology for seismic fracture prediction that derives from this integrated analysis. The creation of geologic and reservoir models that are used for flow simulation is a common industry practice.

One aspect of what we have done at ExxonMobil that we believe is unique, is to develop proprietary methods that allow the iterations between simulations and the geologic model to take place faster and more efficiently than conventional approaches. Additional iterations result in a more insightful view of the reservoir and in optimized development plans, reducing unit cost.

The ultimate test for this approach is the impact it has on the Corporation. In several ventures, even though not the operator, we have been asked to apply our expertise to improve the understanding of the reservoir, for example, in Kazakhstan and Qatar. Earlier this year, we were awarded 28% interest in the Upper Zakum field in Abu Dhabi, which currently produces about 500,000 barrels of oil per day. In response to the question "Why was the Upper Zakum contract awarded to ExxonMobil," ADNOC CEO Yousef Omair bin Yousef stated "This was purely a technical decision. ExxonMobil was definitely the leader."

We aren't done yet, we will be applying our carbonate expertise to optimize the development of the Banyu Urip field in Indonesia, also known as Cepu, just for example. Now, I'll turn the presentation over to Lee Tillman, Offshore Division Manager, who will continue with key selected upstream technologies. Lee?

Lee Tillman - ExxonMobil Corporation - Manager, Offshore Division

Thank you, Jeff. ExxonMobil has achieved success over the years by steadfastly applying a consistent business model. One of the components of this model is the relentless pursuit to maximize the value of each and every asset in our portfolio. Applying new and existing technologies is key to this approach. This not only applies to new assets; we continually apply new learnings and best practices to existing assets to maximize value.

Reserves revisions are only a part of the story, but they are a good indicator of the success of this approach. As shown, ExxonMobil's reserves revisions as reported in the F&O Supplement, have been positive every year since 1996 when some in the industry have seen significant downward revisions. ExxonMobil's effective reservoir management coupled with the application of new technology, has contributed to a yearly upward revisions average of over 570 million oil equivalent barrels during the past 10 years.

Integrated reservoir management allows us to maximize resource recovery while minimizing unit production cost through cost-effective development and depletion planning. ExxonMobil's integrated reservoir management capability is a combination of
our work processes, reservoir properties measurement via world-class laboratories, and depletion planning supported by our industry-leading reservoir simulator.

Using our closely integrated geoscience and engineering approach, ExxonMobil has established a powerful combination of technologies and work processes called Reservoir Evaluation Time Reduction, or RETR. RETR develops fit-for-purpose geologic and reservoir simulation models in parallel. Rapid feedback between our geoscientists and reservoir engineers, enables us to refine our geologic and reservoir models in days or weeks instead of months. 80% of the reservoir simulation models built by the Corporation in 2005, used the RETR process.

As Steve mentioned during his introduction, ExxonMobil maintains unique, proprietary laboratories to measure reservoir properties. Our three-phase relative permeability apparatus can monitor gas, oil, and water saturation distributions under reservoir temperature, pressure, and rates using whole cores up to two feet in length and three inches in diameter. A combination of x-ray and microwave detectors is used to measure the saturation distributions along the length and width of the core. Whole core measurements are particularly useful for heterogeneous and fractured reservoirs, because the scale of heterogeneity may exceed the dimensions of conventional plugs.

The whole core apparatus provides data for more accurate reservoir model predictions. The graph shows the excellent agreement between the field measurement and the prediction using laboratory data collected with the ExxonMobil approach. In contrast, predictions based on laboratory data collected by the conventional industry approach that uses ambient conditions, indicate a significantly lower percent recovery in this case. Leveraging unique laboratory capabilities like these, which replicate the conditions of the specific reservoir, enable us to predict more accurate recovery from established assets.

Since inventing digital reservoir simulation in the 1950s, ExxonMobil has been a world leader in reservoir simulation. Today, we continue to advance the capabilities of our proprietary reservoir simulator, EMpower, to maintain our industry-leading position. Examples of new features include the ability to accurately model naturally fractured reservoirs, to identify optimal production rate allocations for each well, and to conduct rigorous compositional modeling necessary for improved oil recovery. We have invested approximately $70 million in developing the capabilities currently in EMpower, the most advanced reservoir simulator in the industry today.

Even with all of these advanced capabilities, an additional strength of EMpower is that it has been developed for ease of use. At present, over 300 ExxonMobil engineers regularly use EMpower to build detailed reservoir simulation models, making it the most heavily used engineering application in the Upstream in 2005. Since 2001, over 300 models have been built using EMpower, underpinning field development decisions worldwide.
The figure at the lower left shows a simulation for a very complex fractured carbonate reservoir. As Jeff explained in his example, fractures significantly affect the quality of many carbonate reservoirs, impacting flow rates and recovery. Improved identification, characterization, and modeling of fracture distribution and permeability are required to accurately model fractured reservoir behavior. The ability of a model to accurately history match is an indicator of its predictive capability for depletion planning. As you can see from the plot, the predicted production rate from the conventional single permeability model, which only addresses rock matrix permeability, generally follows the trend in measured field data. However, it fails to follow the short-term fluctuations.

Significantly better agreement is achieved with EMpower's dual permeability model, which accounts for both rock matrix and fracture permeability. The improved history match, validating that we can properly model the physics of the reservoir, enables us to forecast production with a high level of confidence. Learning from reservoir simulation enables us to optimize depletion planning of our assets. A recent look back at three field studies conducted in 2005 and 2006 attributed nearly 500 million oil equivalent barrels in resource impact to the advanced capabilities of EMpower.

Maximizing asset value of offshore and remote developments requires that we balance facilities and drilling costs. Facilities cost reduction opportunities may result in fewer offshore platforms or production centers. But, fewer platforms increase drilling challenges and costs due to extended reach wells and/or wells with complex paths to reach multiple targets. In addition, some of these wells must be drilled where the pressure differential between excessive drilling fluid loss and well bore collapse is very narrow. With fewer wells being a typical feature of these developments, the conventional industry approach of making incremental improvements on each successive well is of limited benefit. There is a premium on drilling wells successfully the first time and every time. This challenge has led ExxonMobil to pursue and adopt a physics-limit approach to drilling.

In 2005, drilling expenditures worldwide on ExxonMobil operated and net operated by others wells were $5.4 billion. Regardless of market conditions, ExxonMobil's business approach has always been a relentless focus on all costs. For drilling, reducing the time necessary to drill a well by higher rates of penetration and reduced non-productive time are key. Our physics-limit drilling approach results in lower well costs relative to what others can deliver.

ExxonMobil's unparalleled ability to successfully drill complex wells, like those at Hibernia and Sakhalin Island, is the result of a combination of three main capabilities. First, we begin with an understanding of the fundamental physics limits that nature imposes, so that we can reduce non-productive time. These limits manifest themselves in well bore stability, stuck pipe, hole cleaning, and lost returns.

Second, we use unique, large-scale drilling simulation laboratories to conduct full-scale tests of the drilling process. These laboratory experiments, not only provide real data to add to our understanding of the fundamentals, but also give us an opportunity to test
and validate our models under controlled conditions. Third, to effectively and globally deploy these capabilities, ExxonMobil has developed an industry-leading, integrated, proprietary drilling design software package called ToolPro. This software package was used to design and drill 11 extended reach wells for the Chayvo Field of Sakhalin Island with virtually no hole-related trouble.

The ToolPro software package enables us to drill the well on the desktop, evaluating the impact of various parameters on the probability of success. We can then adjust the parameters, as necessary, to achieve an acceptable probability of success. Because more than three dimensions are difficult to display simultaneously, the plots have been simplified to show drilling mud weight, and mud flow rate in the horizontal plane, and the probability of drilling success on the vertical axis.

ToolPro demonstrated that the conventional drilling approach had virtually zero probability of success. The significant increase in flow rate necessary to achieve success would have dictated the use of a larger, more expensive drill rig. However, the proprietary capabilities in ToolPro enabled the drilling engineer to adjust other drilling parameters to achieve the necessary confidence in our ability to drill the well with the existing rig. The well was successfully drilled without any significant hole quality issues.

We are not aware of any other operator having similar capabilities. In fact, we have used these capabilities to contribute to the designs of several challenging ExxonMobil interest wells operated by our competitors.

We continue to improve all technical aspects of drilling. As many of you are aware, ExxonMobil's Fast Drill Process has enabled us to drill wells up to 35% faster by increasing the rate of penetration by as much as 100%. Real-time measurement of the amount of energy being used to cut through the rock, contrasted to the theoretical physics-based requirement, enables our drill teams to make the necessary adjustments to improve performance and drill faster. Faster drilling translates to lower drilling costs. Learnings from applying our Fast Drill Process, have identified new research opportunities directed toward areas that could build on the successes of this technology.

Through technology application and innovative operational practices, ExxonMobil has achieved overall cost savings of more than 8% on our 2005 drilling program. This savings resulted from reduced non-productive time achieved through use of our proprietary ToolPro software, faster rates of penetration from our Fast Drill Process, and operational changes such as leveraging workloads to complete activities previously requiring higher cost drilling ships.

To capture the efficiencies associated with developments containing fewer wells, we must deal with more complex well completions. The completion is the section of the well where the oil and/or gas enter the tubing string and flow to the surface. With fewer wells per development, individual wells are often required to produce from multiple zones simultaneously and over longer completion intervals. Higher individual well rates, combined with fewer total wells, means that completions must be sufficiently robust to
ensure high reliability. Sand control is also an important consideration, particularly with high-rate wells. Completions failures can result in significant workover costs and deferred or lost production.

The photo shows the hardware for ExxonMobil's patented alternate path gravel packing technology for sand control. The rectangular shunt tubes provide another flow path for the gravel during installation, enabling a more uniform and superior gravel pack completion to be achieved. Superior completion performance optimizes new developments using fewer wells, and maximizes the production from all zones of every well, including those in existing assets.

Our physics-limit approach used for completions starts with an understanding of the fundamental physics limits of production. These limits are determined through our integrated near-well modeling capability, which includes the integration of geomechanics, thermal mechanics, and fluid dynamics.

This approach allows us to define well operability limits that are then used to ensure production integrity. We can define the boundary between the failure region and the no-failure region for a compaction failure as illustrated in the inset box. Production was initially limited by traditional practice based on the pressure difference between the reservoir and that inside the production tubing. Our determination of the well operability limits indicated that the production rate could be increased significantly above this level without well failure. ExxonMobil has not experienced any deepwater well failures since this technology was implemented in 2001, a record unmatched in our industry. In addition, we have achieved sustained high-rate production without the need for intervention for mechanical repairs and/or productivity improvements.

ExxonMobil has also patented completions equipment and completions techniques. Using our patented alternate path sand control technology, in conjunction with our patent-pending non-aqueous fluid gravel packing, or NAFPac, we have now successfully installed over 35 consecutive high-angle, open-hole gravel pack completions in Angola. Our competitors have experienced considerable problems in completing wells in comparable developments. The associated reduction in non-productive time has saved 18% on the total deepwater Angola completions cost, or approximately $70 million.

But, simply being able to mechanically complete the well is only part of the success story. By using alternate path technology with NAFPac, we have experienced increased initial well flow efficiencies of approximately 1.75 times that of the industry average for conventional open-hole gravel packs. This superior initial completion performance is due primarily to a combination of two advances. First, the non-aqueous fluid used during installation of the sand control screen causes less formation damage than the conventional brine. Second, the alternate path hardware dramatically reduces voids in the gravel pack. The combination decreases the potential for plugging that can reduce the well's productivity. As you can see, the result is more produced oil earlier. In
addition, the lower pressure drop across the completion is expected to translate to an increased net recovery from the well over its entire life.

The final technology areas that we have included in today's presentation apply to what we term, "frontier resources". Frontier resources are often called non-conventional, and include resources such as tight gas and heavy oil.

At 73 billion oil equivalent barrels, our total resource base is the largest among the international oil companies. From the chart at the left, you can see that tight gas and heavy oil make up approximately one-quarter of our resource base. Commercializing these resources represents a major production growth area. Technology has a key role in cost effectively commercializing, not only the greater than 30 trillion cubic feet of tight gas in the Piceance Basin, but also the more than 10 billion barrels of heavy oil held by Imperial Oil Limited in Canada, which include Cold Lake, Kearl, and Syncrude. We also intend to leverage these frontier technologies to create additional business opportunities in European tight gas, other heavy oil, as well as new areas.

Our industry-leading patented tight gas stimulation technology, an outcome of our breakthrough research program, has enabled us to commercialize significant acreage in the Piceance Basin of Colorado. With a low permeability analogous to concrete, the gas-bearing Piceance rock requires fracture stimulation to produce at commercial rates. Our award winning multi-zone stimulation technology allows us to quickly and economically fracture and stimulate each gas bearing zone to boost gas recovery per well.

The graph at the upper left shows cumulative production versus time, for wells with ExxonMobil's multi-zone stimulation technology, versus typical industry practice, demonstrating the difference this technology is making. We are routinely using this technology to effectively and rapidly stimulate up to 40 to 50 completion zones in each Piceance Basin well. To date, more than 2,100 zones in 65 wells have been stimulated using this technology as part of the initial development project. Multiplied by the thousands of wells it will take to ultimately develop a resource such as the Piceance Basin; the impact of this technology is enormous. It is also clear why multi-zone stimulation technology was recognized by Platts as the "Most Innovative Commercial Technology of the Year" in 2005.

ExxonMobil has made significant investment in heavy oil research over the past 30 years. We are experienced in all three major types of heavy oil recovery processes, in situ thermal recovery with our patented cyclic steam stimulation and steam assisted gravity drainage, our cold flow processes, as well as mining operations. Ongoing research is focused on these and additional areas.

As you can see by the chart in the lower left corner, the impact of this sustained commitment to research and technology is obvious at Cold Lake, the world's largest thermal bitumen recovery project, which has produced approximately 800 million barrels of bitumen to date. The increase in recovery factor from 13% to over 30% in the last 20
years is a direct result of our continued focus on research and technology development and our industry-leading expertise in thermal operations.

ExxonMobil's industry-leading reservoir simulator, EMpower, includes the full capabilities needed to model steam flood, cyclic steam stimulation, steam assisted gravity drainage, and our patented hybrid steam/solvent methods. We are also combining Upstream, Mid-stream, and Downstream technologies to optimize the overall heavy oil value chain.

During the morning, Jeff and I have described a selection of ExxonMobil technologies and how they interact. The true test of our technology is the impact on the business and how it contributes to our industry leading returns. To gain that perspective, consider the Kizomba A and B deepwater developments, which clearly demonstrate the impact of technology integration on a massive scale.

There are several main components to each Kizomba development. The tension leg platform, or TLP, includes the drilling rig and well slots. Moored nearby is a massive, 250,000 barrel per day floating production, storage, and offloading vessel, or FPSO. On the seafloor, there are wellheads to reinject water and gas, that have been separated from the produced oil on the FPSO, to maintain pressure in the reservoir and maximize recovery.

Rapid and effective implementation of existing and new technologies has permitted ExxonMobil to maintain cost and schedule for projects with increasing size and complexity like Kizomba. Using the asset life cycle, I'd like to draw your attention to some of the technologies that contributed to the Kizomba's success.

Much of our success in the Upstream begins with developing a clear understanding of the subsurface. Our seismic capability resulted in cost-effective, high-quality images of the subsurface, and was an important component of Angola Block 15 development. Stratigraphy, the understanding of how the rock layers were deposited, also played an important role in defining these deepwater reservoirs.

Extended reach drilling from the TLP and close-moored deepwater systems, were both critical in optimizing the development. The drilling capabilities I discussed earlier, enabled us to confidently produce a development plan that included some of the most complex wells ever. These were drilled with virtually no well bore stability issues. The Kizomba projects used our extensive offshore design capabilities, which included not only the close-moored deepwater structures, but also deepwater risers, umbilicals, and subsea wells.

The Kizomba development plans also called for some of the longest deepwater completion intervals ever attempted, approaching 3,000 feet. The NAFPac technology described as part of our physics-limit completions capability was rapidly developed and has been implemented with an unprecedented success rate. We are applying proprietary integrated reservoir management technologies to avoid compaction-induced
well failures, gain a thorough understanding of reservoir performance, and establish operating limits to maximize ultimate recovery. Both NAFPac and integrated reservoir management have had significant impact on maximizing ultimate value of the Kizomba resources.

All of these, and other technologies, contributed to commercializing the resource. Peak combined production capacity at Kizomba A and B exceeds 500,000 barrels per day. At 36 months, Kizomba A set a project execution record for a project of its size, only to have it broken the following year by Kizomba B with 30 months. The "design one, build multiple" execution philosophy implemented by ExxonMobil Development Company, delivered significant value. Both projects were completed on budget and have experienced excellent uptime. Integration of technology on a massive scale clearly contributes to industry leading returns.

I hope that today's presentations demonstrate ExxonMobil's commitment to technology and how we are taking on the world's toughest energy challenges. On behalf of this morning's speakers, I would like to thank you for your attention. And as soon as we reassemble our speakers at the front of the room, we will begin our question-and-answer period.

**QUESTIONS AND ANSWERS**

**Henry Hubble - ExxonMobil Corporation - Vice President of Investor Relations and Secretary**

For those that are in the room, again, if you would indicate if you have question, we will get a microphone to you, and then if you wouldn't mind stating your name and who you work with, that would be helpful. Also for those who are on the Internet, please submit the questions via the link, if you have any questions that you would have addressed. And if you could focus your questions on Upstream technology aspects, that would certainly be appreciated.

**Charlie Ober - T. Rowe Price - Analyst**

Charlie Ober from T. Rowe Price. Early on you discussed the proprietary predicted reservoir porosity. And in that model, I am wondering to what degree or to what depth this proprietary technology has proven successful. Have you been able to apply it, for example, to ultra deep or to Miocene type prospects?

**Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division**

The technology that we described there is to model the porosity and permeability we would expect at a given depth in a given reservoir, given our understanding of the
depositional history. So, we developed a forward modeling capability that is based on kind of a fundamental scientific understanding of the processes. A key element is integrating all the factors that contribute to either preservation or destruction of that porosity.

We are at the stage where we have -- we have now tested it in several cases, and we have accurately predicted what I would say even anomalous porosity, porosity at depths where conventional standard thinking might have predicted porosity not to be there. So, we have done a couple of field tests that are -- that we think are validating our model and our approach. And, yes, it is going into very deep parts of basins.

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**Doug Terreson - Morgan Stanley - Analyst**

Doug Terreson, Morgan Stanley. Reserve revisions have obviously been very positive for you guys, for a decade or so as your chart suggested, and with the specific reserve mix you guys have, it looks like it will continue in the future. On the other hand, a lot of the technology that you guys talked about today appear to represent important but more gradual improvements in technology, rather than step change function improvements in technology like we saw in the '80s and '90s and like the chart showed with heavy oil toward the end of the presentation.

And so, my question was whether or not any of the technology that you referred to today, or that may in the development phase, in your opinion are likely to lead to this next step function change in technology? Or, do you think that we are in an environment that is more likely to render more gradual improvements in technology and productivity gains?

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**Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company**

Referencing back to the presentation that Lee made, the MZST, Multi Zone Simulation Technology is a product of our breakthrough research program. We don't see that as being incremental at all, we think that is breakthrough. We are getting well rates as you saw on the chart that are well in excess of what we would achieve with conventional completion technologies. So, that's one example.

We have a very active research program in breakthrough research, and we are producing results we didn't discuss today because we have discussed in forums like this before, but the R3M technology, Reservoir Resistivity Mapping technology, which is the electromagnetic prospecting fuel imaging technology, also a product of our breakthrough research program. It has been commercialized, and is now available to our operating organizations for its application. So, that's in a completely different arena, that's in the imaging area.
We are continuing to press those boundaries in imaging as we speak, more on the seismic side than on the electromagnetic side, and have for instance a very promising breakthrough drilling technology that we are pursuing that so far looks very good to us. So, really we have some things back in the lab that we didn't bring forward today, because we are at the stage the next meeting, we may have to tell you we don't have that technology. So, we are feeling good about them, and we have the two that I mentioned commercialized. So, I think in the future we'll continue to have these kind of step changes, that's our intent.

**John Herrlin - Merrill Lynch - Analyst**

John Herrlin, Merrill Lynch. One related to what Charlie asked earlier, when you were talking about plates, porous and Stellar, seemed like you were giving examples that were primarily younger in age, will this work say for lower Paleozoic rather than young rocks.

**Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division**

Yes, I think that was purely a coincidence of the examples that we chose. There is nothing in our processes that -- and approaches that's limited to young rocks versus old rocks. So, we are looking -- we think the application really is worldwide in all kinds of basins.

**John Herrlin - Merrill Lynch - Analyst**

The next one from me is on carbonates. I agree with you in terms of everything you said about them, being heterogeneous and difficult to model. Can you see things seismically on a facies basis when you look out, when you do bridge stacks, or process data stacks when you are going through things, are you taking things kind of like in the model basis than applying it to do seismic stratigraphy, and what are you doing that's so different?

**Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division**

I think one of the really key things in our carbonate research is the integration. Just there are two messages really, one is the integration of all the types of data that are available to us, both the seismic data itself, or our ability to interpret the seismic data, our geologic depositional models, the pressure of well fluid data, the integration of all that data. And then, kind of second, the work on understanding the fundamental physical processes, or how the sediments were deposited, how they've changed, what the biogenesis has been?
I think it's really the integration of those two factors that has resulted in, I will say, a breakthrough in our understanding of carbonate reservoirs, our ability to model them, our ability to predict how production will behave. And yes, we are extracting depositional seismic facies in carbonate reservoirs specifically. We have a large team working and the work is really exciting.

And as I had mentioned, the -- in some cases, our co-ventures have recognized the value that we can bring. And if we look at the Abu Dhabi example, which -- often ask us, what's the value in this technology? When we look at Abu Dhabi, the ADNOC is a very sophisticated national oil company that was trying to determine how they could best develop a really important national asset and they looked at the complete package.

But our understanding is that at the end of the day, the aspect of the ExxonMobil proposal that put us a step ahead of the competition, that really made the difference was the technology. And I can assure you that ADNOC looked very deeply into what we can bring to maximize value to resource. We spend a lot of time showing our capabilities.

**Doug Leggate** - Citigroup - Analyst

It's Doug Leggate from Citigroup. My question also relates to the seismic imaging discussion earlier. More specifically, I am thinking in terms of subsalt on the difficulties of visualizing and more deeper reservoirs. Can you give any specific examples of where you think Exxon now stands in terms of addressing that issue, and any successes that you could report as the direct result of the work that you've done?

**Jeff Johnson** - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division

Let me start out by saying that, when we talk about seismic, to make improvements, we need to look for opportunities in the full process. So, whether they can come from the acquisition, whether they can come from the processing of the seismic or the interpretation. And our efforts here -- we are not doing run-of-the-mill seismic here, we focus our research on really the high end, on the really challenging imagining problems, and the areas where we can bring a true, distinctive, competitive differentiating technology.

And whether it be a subsalt imaging challenge, whether it be a very complex structure, a tight fold with a lot of faults, whether it is complicated geometries, in those areas, that's where we are focusing our efforts. And we see around the world, kind of side by side comparisons, there may be an asset where we will bring best efforts there, a co-venture or an operator does, contractor might, and when we have those side by side comparisons, our images are typically better. We can see a difference. So, all of the industry is moving forward, but we think we are at the leading edge. And so, hope that addresses your question, Doug. But, specific examples, Gulf of Mexico, West Africa.
Doug, maybe I can say -- or open up a bit on that. You are probably aware, the biggest problem you have with -- one of the biggest problems you have with having high fidelity seismic data, is dealing with lateral changes in stratigraphy, which produce lateral changes in velocity, and you must be able to decipher all that in order to back that out and get a proper image on the subsurface.

Think about the subsalt that you brought up as one of the most dramatic lateral changes, it's not gradual; you go from non-salt to salt. Salt has much different properties and then you back out the salt again, getting energy through the salt is problematic. And then, understanding where the energy is that does go through the salt where it went to and getting it back, is also very problematic.

So, the key -- one of the keys to this is velocity model, building that velocity model which will then process the data with. We believe we have a very much superior velocity modeling capability it's a package we call Vista. We use it, of course, routinely now inside of ExxonMobil. And we do have examples, unfortunately, it wouldn't be appropriate for me to cite them specifically today, but where we have gone side by sides with the operator's modeling package and their results and ours. And clearly ours is superior, and the project is going forward using our processing stream, being done by a contractor but using our processing stream. So, we do have very specific examples, and the key to that is in that velocity modeling capability.

Good morning. Dan Barcelo from Banc of America. You highlighted Kizomba as a good example of your success. And I don't if you would comment in a little bit more detail of your relative competitive advantages to the likes of BP, Shell, Chevron, Total? And then, specifically what areas do you have the greatest advantage in technology? And then, the real trick I guess is, how do you keep that proprietary?

Well, let me -- let me say a word or two and then, my partners up hear can speak up. Of course, I suspect, as you said, with some of our competition, they would talk about many of the same things -- simple sort of response is that the proof is in the pudding. And Kizomba A and B is one example, we have others. But the project was, as we explained to you, it happened on time, on budget and has performed extremely well. So, what's the key to that?
The key to that is first of all, very careful -- very careful work, technical work, very close integration between the research laboratory here and the operating company, in this case ExxonMobil Development Company, having the right people put on the project to ensure that we are applying the right technologies. And then, we repeat this theme, but if there is a theme that we really want to repeat it is the integration capability, putting all those pieces together, and Lee's chart sort of showed you that at the highest level.

You may have the ability to do the offshore designing piece, but if you don't have the reservoir rights, and the wells are in the wrong place, then you have obviously created a problem for yourself. You may have either drilled too many wells, or you may have drilled too few wells. So, when you start, you have to have the right image, you have to have the right simulation answer, the geologic model. You have to be able to adjust that on the fly, so that you can make the appropriate adjustments as you go along, be able to drill the wells effectively, complete them, not just complete them, but then make sure the completions are going to last -- they are going to be long life and robust.

And of course, continue to do that and do it in the sense of meeting the timeline and the expectation of the project. We think that with the skills we have in the research laboratory and our close relationships that we maintain with all the operating organizations, in this case, ExxonMobil Development Company, allows us to be highly confident that we are bringing the best to bear in a real-time sense to the development of these individual projects. Lee?

Lee Tillman - ExxonMobil Corporation - Manager, Offshore Division

I might just add that beyond just the technology aspect, which I think was very well illustrated in the last chart, where we again walked through the life cycle of an asset, we don't want to downplay the advantage that we gain through execution via the Development Company which in itself is a technology, the ability to go out and execute. And I also don't want to downplay operational excellence by our Production Company, because we can talk about bringing those two facilities online rapidly, the 36 and the 30 months. That sounds really good.

But, what sounds even better is that within the first six months, both of those facilities logged greater than 90% uptime. In fact, considerably better, 92% and 97%. So, I think when Steve refers to the proof being in the pudding is, we have the cost, we have the schedule, and we have the performance. And albeit technology is quite a big role in that, but there was also a large role played by the execution efficiency of the Development Company, as well as the flawless operations from the Production Company as well. And, again, that's kind of taking integration to the next level beyond just integrating technologies, it's integrating all of those functional companies together as well.
Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division

Just to add a word to another part of your question on protecting our intellectual property. And our intellectual property is highly valued, and we spend a lot of time thinking about how we protect it, how we use it. Of course, in a venture that we operate, we have an obligation to maximize the value. So, we bring our best technology to bear. In a venture where we don't operate, we choose very carefully where we might bring our technology in. Typically, our agreements do not require us to show the details of how we got our results. That's our protection.

So, typically, we will show our results and they'll be used. Now, you can say that when a competitor sees results that are remarkably superior to theirs, that may send them down a path of investigation. I think that's unavoidable. I think we have to remember though, by the time that happens, and by the time another company's research heads down a path, we have moved way beyond, I mean that may take years and -- we've stepped much further by that time. So, we think it's manageable, and we manage it very carefully.

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

I think reservoir simulation, in fact to just to follow Jeff's point, is an area in this, you probably know a lot about next generation reservoir simulators from others in the industry, both oil companies and service companies, some of which are working collaboratively on reservoir simulators. This is 2006. We rolled out our EMpower next generation fully unstructured gridded simulator in the spring of 2001. The others are either just talking about rolling it out, or just thinking about rolling it out.

To Jeff's point, we have come a long way in those five years. So, on the assumption, which I think is a fair one, that we are not going to back off reservoir simulation as a key area of focus, we will maintain some five-plus year advantage on the competition in terms of that particular technology. And you can repeat that in other areas that we chosen to focus.

Henry Hubble - ExxonMobil Corporation - Vice President of Investor Relations and Secretary

We have a question from the Internet that asked, our Blackbeard well apparently failed to reach its target depth. What types of technologies are needed to drill the high pressures encountered in that well?
Okay. Let me start out and say a couple of words. Lee may wish to also speak out on it. The Blackbeard well is a -- was a tremendous learning laboratory. It puts yourselves in the position of prior to drilling the well, no one has been there before. So, it was a complete unknown to us. We did all our best work in terms of what the issues might be relative to the drilling of the well, and what the priority of those issues might be -- what might be the most important issue.

I think I can say with some confidence that if we hadn't had the technologies we had and applied them the way they were applied, we probably wouldn't have gotten the well as deep as we got it. We have learned a lot from it; we have a lot to pursue from a technology standpoint, and I think the business, the commercial side has a lot to pursue from a sorting out to future opportunities standpoint.

The issues that we will have to address are not new. They are relative combinations of pressures and temperatures relative to the pore pressure in the formation, the ability to maintain an open hole, maintain a clean hole, control the well, and be able to at the same time drill forward. This is not probably a surprise to most people. Given that we accomplished what we did relative to being able to drill the well below 30,000 feet deepest well below the mud line in the Gulf of Mexico, I think you can be assured we know how to address the next step that we have to take. We are not going to divulge all that, because we would like to maintain that to ourselves. We have reset our priorities, we know what we need to work on.

Thank you. Nicky Decker at Bear Stearns. One on the oil sands maybe, are you happy with current technologies being applied in the oil sands? Or perhaps, what more might be done to enhance value there?

Lee spoke to looking at the entire value chain, and we are doing that. We see opportunities to improve the relative attractiveness of oil sands projects, by doing so we have a joint team at the present time, that's made up of the people from the Upstream, people from our Downstream Research Organization, collaborative with Imperial Oil folks and their research people and their operating people. So, it's a highly integrated project that is looking at that -- across that full value chain.

Obviously, there are opportunities we believe in the upgrading side of the business. We are going to look at those, we are also going to look at opportunities in the -- across the
Midstream, getting it from the field to the refinery, and can we do so and do so where we can also capture some value. So, we have got a full integrated value chain approach to this thing, and we do think there are opportunities to improve the relative attractiveness of all those projects and we are working on it.

Charlie Ober - T. Rowe Price - Analyst

Charlie Ober. Two quick follow-ups, one from Doug's question earlier about subsalt interpretation. A specific case, the ultra deep-waters of Angola, to what extent were the perceived delays in actually getting to that and uncovering that resource, because of the evolution of your subsalt interpretation, or was it in part also because the sizes of the fields were somewhat disappointing or smaller than you had anticipated from the original 2D seismic that you've gotten?

And the other follow-up would be on Kizomba A and B, very successful, but also very repeatable I guess in a lot of ways, because you had similar reservoirs, same basin, similar depositional environments. To what extent can you kind of take that and make a model that works in rest of the world, so that you can actually somewhat standardize your procedures and continue to have that kind of record for bringing in projects on time and on budget?

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

Let me address the second one Charlie, and I will let Jeff speak to your first question. I think there is a -- many examples of taking the sort of Angola practice lessons learned and expanding, and then that would be taking it to Nigeria. We have -- things we have learned in our Angola experience should be, and have been, and are being incorporated into our Erha experience in Nigeria as an example. Now, we are in West Africa, but you are not in the same basin. Things are different.

There is no absolute cookie-cutter approach to this. When you think of the full value chain, as Lee showed at that very last chart, you still have to go back and understand the reservoir, and the reservoirs change. They vary -- need for sand control, what type sand control is all going to be a very specific decision. And at a helicopter-level scale, the "design one, build multiple" approach like we have applied in Angola will work once you understand the front end, and understand what you are designing again.

So, you can't pick up the Angola package and carry it around to Southeast Asia, and just drop it down, because you have to customize and tailor. But, if in that hypothetical Southeast Asia, you had multiple opportunities, once you have established that first phase, you ought to be able to move forward from that as well. Frankly, you ought to be able to do that in an oil sands development.
If you have a multi-phase oil sands development, get it right, understand it the first time, and then take those understandings and improve on them if you can, but phase two, phase three or phase four doesn't have to be a new world. You ought to be able to pick up and learn and apply sort of "design one, build multiples" there as well. And that's very much the mindset that our Development Company is bringing to this multi-phase or multiple-basin opportunities. And of course, from a research side, we are supporting that as need be. Jeff, why don't you speak to that?

Jeff Johnson - ExxonMobil Corporation - Manager, Hydrocarbon Systems Analysis Division

Regarding the first part of the question in the ultra-deep water offshore Angola, let me start with the context -- we have had ideas about the potential of the deepwater and ultra-deep water that go back to decades, a pursuit more than a decade ago was very technically and commercially challenged. So, once acreage has been acquired, we make our evaluation of the potential and understand there are different types of targets, different plays we can pursue. Now, we have to develop a strategy at what pace and what sequence.

There is kind of a balance between pursuing the lowest risk to create a foundation, need to balance that with really step out more higher risk, to determine the extension of the plays and prove whether additional plays are there or not. So, I think the specific answer to your question is kind of a combination really of the technology, both the subsurface technical risk and the commercial risk in combination with a larger exploration strategy for the area. So, it's really all those factors that have dictated the pace at we have stepped out.

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

You probably wouldn't start with the most difficult. So, we have obviously started where we could start quickly, and have been highly successful, and now we are extending those plays, those opportunities into the more complex regimes. And from an exploration technology standpoint, bringing everything we have learned, West Africa, Gulf of Mexico, and trying to almost in the sense of the prior question, the question I tried to answer, trying to replicate what works well, but also understanding what's different. So, we're trying to make those determinations.

Ryan Todd - Deutsche Bank - Analyst

Ryan Todd with Deutsche Bank. A couple of questions. One, first of all, as various technologies and ways to manage reservoirs and various depositional environments around the world are developed, what does Exxon do to ensure that these technologies spread from one regional group to another, so that the technologies aren't isolated from
what's happening in Kashagan, or what's happening in West Africa and Australia and so on?

And the second on reservoir simulation, with the new RETR process. Is it streamlined enough at this point, that you can do multiple geologic scenarios? And how quickly can you -- as drilling and development drilling comes up and production data comes up, how quickly can you reintegrate that and remodel the reservoir?

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**Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company**

Let me address the first one, I will let Jeff and Lee to speak to the second one. We are very aware that, as I think I referenced in my overview, that a good technology improperly or not properly delivered is a missed opportunity. So, we work really hard to develop a technology delivery plan around our new technologies as we roll them out. Part of that plan is to embed them in a series of hub software packages. Lee mentioned ToolPro as being one.

So, as we bring new completions or drilling technologies to bear, they are embedded in that same ToolPro package, so that the drilling engineer in this case doesn't have to be looking around for the latest technology. He or she is going to have it on their desktop, open up ToolPro, and there is the menu, click what you need to work on. So, that's part of it.

Secondly is, that part of what we do in the research lab as new technologies are emerging and entering the operating world, we will be the appliers of those technologies on behalf of the operating companies, with their personnel sitting side by side with us, and then we back away and they pick it up and move forward. So, we do a very hands-on hand over, if I could say it that way, as opposed to a pitch it over to them and hope they do well with it. We are very conscious of that. So, that's either done in the workroom and workshops and other labs.

And then, the third element is where you are sitting today, in the Training Center. We quickly embed the new technologies in our training curriculum, so that as our employees roll through their technology training, they can be sure that when they walk in here, that course that they are in here for a week or two weeks on, is going to have the very latest technologies, workflows and applications that the Research Company has developed. So, it's a kind of a multi-step development plan, there is that hands-on approach to the transfer, and there is the embedding in the training curriculum, I'd say are the three key elements.

To be sure of that the situation you just described doesn't happen, and frankly, we have seen it with some of our competition, where you have one capability embedded in one part of the world, and you go another part of the world and they haven't chosen to adopt it either or it hasn't reached it yet. With our functional company setup, when we deliver a technology into the Production Company, embedded technology organization, they
distribute that to everybody, it goes to everybody at the same time. And if it's a new version, the old version gets off -- is off the screen and the new version gets loaded on the screen. Could you guys speak to the second?

**Lee Tillman - ExxonMobil Corporation - Manager, Offshore Division**

Just maybe coming back to RETR from that end, and that's a great example of demonstrating how quickly we can get penetration of a new technology. We mentioned that 80% of the models in '05 were developed. And really the limit there was we were in the process, we pushed it first to the development company, then to production company, but even doing that with a very, very rapid deployment and utilization. But, if you look conceptually at RETR, the traditional approach is that you start with a very fine geologic model then to upscale that into a core simulation model.

The concept of RETR is to try to get a common scale model, and by doing so, you have the geoscientists and the reservoir engineers working concurrently on that common scale, which gives you a lot more capability to --. Now, I can't give you a month, days, week, kind of number, because all of the reservoir simulations, a lot of difference between a million cell model, versus a 200,000 cell model.

So -- but, the concept is that close interaction, and will certainly provide you significant reduction in time to get your base model in place, which then affords you the capability to leverage off the simulation capabilities of EMpower to do some of the testing and some of the feedback. If you are early in the development, you can do what if sensitivity analysis, optimize. If you are more into the production mode, you are integrating back the data that you are getting from your logs and your production programs. And again, with that common scale approach, it allows you a lot of flexibility to get that optimization and build that new data right back into your model framework.

**Henry Hubble - ExxonMobil Corporation - Vice President of Investor Relations and Secretary**

One last quick question, and then we will cut it off.

**Paul Cheng - Lehman Brothers - Analyst**

Thank you. Paul Cheng, Lehman Brothers. Steve, two quick questions actually. One I think right now, the deepest production well is about maybe over 6,000 feet. Some people have been making discovery in the 8,000 to 10,000 feet. So, the question is from a production capability standpoint, is the industry there to be able to a mass scale commercially produce at the 8,000 to 10,000 feet? If we are not, how far away are we from there? Second question, you were talking about your actual magnetic, R3M, process is now commercial.
Roughly, what's the percent of the reservoir, now that is being applied using the electromagnetic imaging in some of their 3D seismic? Because I think that a certain type of reservoir will be better off using the electromagnetic, others think it would be seismic. Can you tell us what is the distinction that we will need to use one versus the other? Thank you.

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

As to the first question, this is really Lee's main business, I will give you a top level answer, and then he can elaborate if need be. But, with the appropriate incentive, an 8,000, 10,000 foot water depth discovery, obvious -- I'll say obvious, appropriate size large discovery, I think the industry is there. We can develop that discovery. We don't -- we are not sitting here -- and we are not researching development systems with 10,000 feet of water. We think that there may be some changes and adaptations that need -- the industry knows how to do that. We can get the pipelines out there and those developments can be done. So, deepwater of the depth Paul, that you referenced is not waiting on technology, it's waiting on the proper discovery and incentive to apply the technology. Are you okay with that?

Lee Tillman - ExxonMobil Corporation - Manager, Offshore Division

Yes, I think that's a very appropriate response. We feel like the deepwater systems that we have developed and have experience in today, can be extended into those water depths, again, with some design and again, our normal attention to integrity. But, again, the design of the subsea systems and the supporting surface systems, the connectors, the risers, the umbilicals, we don't see as being a technological limit. There may be an economic limit based on our confidence in the quality and size of the resource, and trying to put those systems of course will be costly, just like deepwater systems that we have in 4,000, 5,000 feet of water are costly. So, the economic case will have to be made, but the technology can be qualified and brought along.

Steve Cassiani - ExxonMobil Corporation - President of ExxonMobil Upstream Research Company

As to the second question, real quickly on R3M, I don't have my scoreboard here, but I think we probably -- we being an exploration company now has probably captured something like 35 or 40 surveys on a global basis. Now, I admit upfront, some of those have been collaborative with us, and they had more of a research flavor, than they had of a commercial flavor. But, they have applied the tool in a commercial sense.

Many of those applications have been with 3D seismic, and have been corroborative of the 3D seismic interpretation. And our track record for the R3M success is something better than 80% in terms of correctly predicting. Where we are now pushing that
technology from a research standpoint is in a more standalone mode, where the 3D seismic may give you a structural interpretation, but may not give you hydrocarbon indicators. We want to push the R3M to possibly be that tool that will then provide the confidence of the hydrocarbon accumulation, to go along with the structural interpretation. And that's where we, and the operating world are moving that technology.

Henry Hubble - ExxonMobil Corporation - Vice President of Investor Relations and Secretary

All right. With that, we’ll wrap up and I would like to thank everybody for participating both here and on the web. Thanks again.