Statement of

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Introduction

Mr. Chairman and members of the Subcommittee, I appreciate the opportunity to testify today. I would like to thank you for this hearing to examine the economic opportunities in the Arctic areas of the United States.

My name is Pete Slaiby. I am the Vice President of Shell Alaska and I lead a team of professionals who since 2007 have been ready to begin exploring for domestic oil and gas reserves off the coast of Alaska. It has long been Shell's belief that Alaska's offshore holds world-class hydrocarbon volumes. Shell has invested more than $3.5 billion for the opportunity to validate that optimism.

Alaska should continue to play a major role in meeting the energy needs of American consumers and American businesses, but achieving this requires action and political will. Developing these Arctic resources will extend the life of the Trans-Alaska Pipeline System (TAPS) and also create thousands of jobs; amass hundreds of billions in revenue for local, state and federal coffers; reduce imports; and improve the balance of trade.

Although regulatory and legal challenges have blocked the drilling of even a single well, I am hopeful that in 2012 we will be able to move forward with exploration wells in the Beaufort and Chukchi Seas. Since returning to Alaska to purchase leases in 2005, Shell has drilled more than 400 exploration wells around the world. I remain hopeful that the barriers to exploring in Alaska's Outer Continental Shelf will be addressed so that Shell can begin its exploration drilling in 2012.

Today I will focus on the economic benefits of developing our nation's Arctic oil and gas resources. Specifically:

- Global energy demand forecasts, and the critical role that oil and gas will play in meeting future energy needs and in fueling the economy.
- Alaska's offshore resource potential, and the benefits to the nation of developing those resources.
- Shell's proposed exploration program in Alaska and the challenges that have blocked the program.
- And finally, recommendations for moving forward.

Global Energy Demand

The world must grapple with the reality that global energy demand is projected to increase by roughly 50 percent over the next 20 years and could double by 2050. The global recession will eventually fade and as economies recover, demand will accelerate. A key driver will be strong economic growth and a vast, emerging middle-class in developing nations.

To address this demand, we will need all sources of energy - hydrocarbons, alternatives, renewables and significant progress in energy efficiency. Oil and gas will be the dominant energy source for decades. Renewables and energy efficiency will play an ever-increasing role. Shell is actively pursuing research and development into next-generation biofuels. We also have a wind business in North America and Europe.

Future growth for alternative energy forms will be paced by the speed of technological development, public and private investment capacity, government policies, and the affordability of energy supply. Still, it takes several decades to replace even one percent of conventional energy with a renewable source. The effort to tip the scale towards more renewable sources of energy is worthwhile but even unprecedented growth in renewables would leave an enormous energy gap that must be filled with oil and gas.

As we move to meet the world's energy needs, environmental challenges must be met and policies kept in place to ensure responsible energy development that allows our economy to grow.

Governments have a role to play in defining policies to foster a viable, efficient and workable marketplace that allows technology and innovation to move forward. Industry – and most particularly the energy industry – has an important role to play as well.

U.S. Oil and Gas Resource Potential

The President recently acknowledged that reducing dependence on imports was a national policy imperative. We agree. The U.S. is resource-rich in many ways, especially in oil and gas. Yet, in recent years our country has imported more than 60 percent of its petroleum.

This comes at a significant cost. According to the EIA:

- Petroleum net imports will average 9.7 million barrels per day in 2011 and 10 million barrels per day in 2012, comprising 50 percent and 52 percent of total consumption, respectively.
- Imports cost the U.S. more than $350 billion last year.

Producing more oil and gas in our own country is a "win-win" proposition. It provides real economic and security benefits. With increased domestic production, less money is exported from the U.S., more money is invested here and federal revenues increase through royalties and taxes. Resources can be developed with appropriate environmental protections based on solid science and an understanding of ecosystems and the impact of oil and gas activities on them.

I offer an example from the OCS:

According to the U.S. government, 420 trillion cubic feet of natural gas and more than 86 billion barrels of oil are yet to be discovered on the OCS, including Alaska.

The greatest offshore resource potential lies in four key areas: the Gulf of Mexico, Alaska and the Atlantic and Pacific Coasts.

- **Gulf of Mexico -** This has been the heartland of U.S. offshore activity. The industry has been in the Gulf for more than 60 years, producing more than 10 billion barrels of oil and more than 73 trillion cubic feet of natural gas. Estimates state there are at least 45 billion barrels of oil and more than 233 trillion cubic feet of gas remaining.

- **Alaska OCS - World Class Potential -** The Alaska offshore likely holds some of the most prolific, undeveloped conventional hydrocarbon basins in the world. Conservative estimates from the Bureau of Ocean and Energy Management Regulation and Enforcement (BOEMRE) place roughly 27 billion barrels of oil and more than 120 trillion cubic feet of gas in the Alaska OCS.

- **Atlantic and Pacific Coasts –** Assessments of these areas have not been updated in decades, but the estimate is that the Atlantic Coast holds 4 billion barrels of oil and 37 trillion cubic feet of gas and the Pacific Coast holds 10 billion barrels of oil and 18 trillion cubic feet of gas.

History of Alaska OCS

The world has long been aware of the Arctic's vast resources. In total, more than 500 exploratory, production, and disposal wells have been drilled in the Arctic waters of Alaska, Canada, Norway and Russia. As a result of federal OCS lease sales in the 1980s and 1990s, more than 35 wells have been safely drilled in the U.S. Beaufort and Chukchi Seas.

Shell is proud of its offshore legacy in Alaska, having produced in the state waters of Cook Inlet in Alaska for more than 30 years beginning in 1964. In the late 1970s and mid 1980s, Shell drilled exploration wells offshore in the Gulf of Alaska, St. George Basin and the Bering Sea. In the late 1980s and early 1990s, Shell drilled exploration wells in the Beaufort Sea and later drilled four of the five exploration wells ever drilled in the Chukchi Sea.

Although oil and gas were found, Shell chose not to proceed to development. We plugged and abandoned those exploratory wells for economic reasons – including the fact that, at that time, TAPS was already running near capacity.

Since 2005, the federal government has held several more OCS lease sales in Alaska. Shell participated in these lease sales and, in fact, is now the majority leaseholder in the Alaska offshore. Shell has paid the federal treasury nearly $2.2 billion for ten-year leases in the Beaufort and Chukchi Seas. Additionally, Shell has invested more than $1.5 billion and six years preparing for an exploration drilling program with unparalleled mitigation and safety measures. Shell's work includes multiple years of 3D seismic data collection, first-of-its-kind baseline science, shallow hazard surveys, geotechnical programs, numerous social investment initiatives and hundreds of meetings with North Slope residents.

The Benefits of Developing the Alaska Offshore

The benefits of developing Alaska's offshore oil and gas resources are many - not only to Alaska, but also to the Lower 48. Development would fuel US economic growth for decades to come.

A study conducted in 2010 by Northern Economics and the Institute for Social and Economic Research (ISER) at the University of Alaska (using USGS resource data) details the potential national benefits of developing the oil and gas resources of the Alaska OCS:

- An annual average of 54,700 new jobs would be created and sustained through the year 2057, with 68,600 jobs created throughout decades of production and 91,500 at peak employment;
- A total of $145 billion in new payroll would be paid to employees through the year 2057, including $63 billion to employees in Alaska and $82 billion to employees in the rest of the U.S.; and
- A total of $193 billion in government revenue would be generated through the year 2057, with $167 billion to the federal government, $15 billion to the state of Alaska, $4 billion to local Alaska governments, and $6.5 billion to other state governments at a modest oil price.

Several important implications for national policy and domestic supply are raised in the study including:

- Alaska OCS development maximizes the value of Alaska's and the nation's oil and gas resources by enhancing both value and volume. Using TAPS' existing infrastructure, which is currently operating far below capacity, would enhance value by lowering transportation costs. Further, the new expanded infrastructure needed to connect to TAPS would enable potential development of satellite fields such as the National Petroleum Reserve-Alaska (NPRA).

- Alaska OCS development would extend the operating life of TAPS and increase the viability of an Alaska gas pipeline, due to greater certainty of the available gas resource base to fill it.

To elaborate, Alaska's OCS likely has at least one-third more oil than has been produced in Prudhoe Bay, moved through TAPS and used to fuel the U.S. for the past 30 years. It is two-and-a-half times what has been produced in the Gulf of Mexico since 1990.

An independent assessment of industry-wide development of Alaska's Beaufort and Chukchi Sea OCS concluded that an average of about 700,000 barrels of oil per day would be produced for 40 years. This is equivalent to our 2010 oil imports from Iraq (506,000 bbl/day) *and* Russia (137,000 bbl/day) combined. This same study found that Alaska OCS production would peak at 1.45 million barrels of oil per day in 2030 (and 2.1 billion cubic feet of gas per day in 2050). This is more than our 2010 oil imports from some of our major importing nations, e.g, Mexico (1.03 million bbl/day), Saudi Arabia (958,000 bbl/day), Nigeria (996,000 bbl/day), or Venezuela (827,000 bbl/day).

Such production numbers, which could potentially eliminate the need for imports from one of our largest foreign suppliers, is significant, and even more so in a world of increasing geopolitical instability.

A major benefit from Beaufort and Chukchi development would be the long-term viability of TAPS. Since 1977, Alaska has supplied the U.S. and its refineries with vast quantities of domestic oil via TAPS, totaling roughly 17 billion barrels through 2010. The construction and operation of the pipeline has also provided hundreds of thousands of high paying jobs in Alaska and the nation, helping lift America out of one of its worst economic downturns. A generation of Americans worked to build TAPS; and it remains not only an economic engine, but a symbol of American know-how and ingenuity. Unfortunately, without a reliable new resource base, TAPS' future is uncertain.

Production in Prudhoe Bay has fallen significantly in recent decades. At its height, TAPS supplied the nation with 2.1 million barrels of oil per day or about one-third of the nation's oil production.

Today, TAPS supplies only 600,000 barrels per day; still 11 percent of our domestic supply but far from its peak throughput of more than 2-million barrels a day in the early 1990s. If the throughput in the pipeline continues to decline and no new supplies are developed, TAPS will eventually be shut down, cutting access to one of the largest sources of domestically produced oil in the country. A recent low-flow impact study sponsored by TAPS operator, Alyeska Pipeline Service, concluded that corrosion, wax build-up and potential freezing of the pipeline could occur at 350,000 barrels per day. At the current rate of decline, that number could be reached in less than 15 years. In a shutdown scenario, our already increasing dependence on imported oil will accelerate and the U.S. balance of payments and federal revenues will both get worse.

Unfortunately, we have already witnessed a preview of life without TAPS. A temporary shutdown of TAPS earlier in 2011 had an immediate impact on crude prices, jeopardized the continuity of the U.S. West Coast refinery infrastructure, and resulted in a spike in U.S. reliance on Russian crude supplies. This could be a harbinger of things to come unless we develop new resources in Alaska.

Fortunately, the U.S. has an opportunity to prevent this scenario from reoccurring. According to Northern Economics and ISER at the University of Alaska in the report previously discussed, if OCS oil is transported through TAPS, the higher volume of throughput would reduce the TAPS tariff and extend the life of TAPS for decades. Doing so would require new pipelines that connect offshore fields in Camden Bay and the Chukchi Sea to TAPS. These projects would certainly rank among the largest private sector construction projects in U.S. history.

It is clear that resource development, such as OCS oil and gas production, is the first step in wealth creation. It has an enormous economic multiplier effect. Jobs and revenues created by oil and gas development reverberate throughout our economy, producing long-term, high paying jobs. It creates a need for domestic manufacturing capabilities, steel production, transportation, infrastructure development, electronics and high-tech components. Alaska OCS development is a genuine long-term economic stimulus plan.

In addition, by exploring and developing our Alaska OCS resources, the U.S. has an opportunity to reaffirm its global role as an Arctic nation. It is no secret the Arctic is becoming a critical location from a geopolitical and strategic perspective. Arctic nations are increasingly interested in international boundaries and opportunities for resources and economic development.

Recently, Norway and Russia signed a maritime border delimitation agreement that settled a long-standing seaward boundary dispute in the Barents Sea. The motivation for the agreement was mutual cooperation that would allow the development of offshore Arctic oil and gas resources. Elsewhere, Arctic nations are asserting their claims to continental shelf borders in accordance with the United Nations Convention on the Law of the Sea. For instance, reports indicate Denmark is considering claiming the North Pole as an extension of Greenland territorial waters. Even nations outside the Arctic are positioning themselves for Arctic resource development.

Without action, our country risks falling even further behind the rest of the world in developing its Arctic resources. In Norway, Russia, Greenland and Canada, Arctic resources are highly valued and new exploration is already underway. We have an opportunity to develop our own Arctic resources and the infrastructure appropriate to facilitate our presence in this valuable region, especially during tough economic times.

Offshore Safety Standards

Before moving to a discussion of Shell's Alaska OCS exploration program, it remains appropriate to acknowledge the *Deepwater Horizon* incident in the Gulf of Mexico. The incident forced a re-examination of offshore operations and led to new regulatory requirements that have raised the bar on safety and led to substantial changes in the way the industry operates. There is no question that the industry must be held to the highest standards for protecting the environment and the health and well-being of our workers and the communities in which we operate.

The following are just a few of the new regulatory requirements systems recently adopted by the federal government and industry:

- The Interim Final Drilling Safety Rule is focused on minimizing the likelihood of an incident and addresses barriers that should be in place to prevent a hazard. Preventing an incident is a top priority.
- Responding to an incident is now substantially enhanced with new requirements for containment capability. The Marine Well Containment Company (MWCC), which Shell initially formed in partnership with three other oil and gas companies, is designed to do just that. The MWCC is a stand-alone organization committed to improving capability for containing a potential underwater well control incident in the Gulf of Mexico.
- A new Center for Offshore Safety will be created to promote the safety of offshore operations and enhance the government's regulatory role. The Center will provide an effective means for sharing best practices. Members will be subject to independent, third-party auditing and verification to ensure integrity. The Center will operate around an existing safety framework known as RP75, or

"Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities."

- Industry has also greatly increased its resources to respond to a major oil spill by adding vessels, equipment and personnel. Significant research and development is ongoing for oil spills in ice.
- Shell has taken the lead as operator of the Subsea Well Response Project (SWRP) to be based in Stavanger, Norway. Nine major oil and gas companies will work pro-actively and collaboratively progress development of subsea well intervention and oil spill response equipment that can be deployed swiftly to different regions in the world.

In addition to regulatory requirements, a company must foster and promote safety relentlessly each day. At Shell we call this Goal Zero. Everyone who works for us – both employee and contractor – is expected to comply with the rules; intervene when anything looks unsafe; and respect people, the environment and our neighbors. Compliance is not optional.

We have personal safety systems and procedures with clear, firm rules; simple "do's and don'ts" covering activities with the highest potential safety risk, such as getting proper authorization before disabling safety-critical equipment and protecting against falls when working at heights.

We have process safety systems to ensure the safety and integrity of our operations and assets. Process safety is also managed through a variety of tools, such as well and facility design standards; established "operating envelopes" not to be exceeded; maintenance and inspection intervals for safety critical equipment; and an effective Management of Change process.

Our approach also requires that all our drilling contractors develop a Safety Case to demonstrate major risks are properly managed. A Safety Case shows how we identify and assess the hazards on the rig; how we establish barriers to prevent and control the hazards; and how we assign the critical activities needed to maintain the integrity of these barriers. Further, it guides the rig and crews in risk management; and ensures staff competency, especially for those new to the rig.

Shell's Alaska Exploration Program

Shell is planning an offshore oil and gas exploration program in Alaska's OCS in 2012 during the four-month open water season. This program could include drilling multiple wells in both the Beaufort and Chukchi Seas, site clearance surveys and baseline science studies. It is important to note that an exploration program, unlike a development and production program, is a temporary, short-term operation. In the Alaska OCS, an exploration well is anticipated to take approximately 30 days to complete, at which time the well will be permanently plugged and abandoned and the site cleared. Shell's exploration program will meet or exceed all applicable regulatory requirements for the protection of health, safety and the environment.

Shell has been committed to employing world-class technology and experience to ensure a safe, environmentally responsible Arctic exploration program – one that has the smallest possible footprint and no negative impact on North Slope stakeholders or traditional subsistence hunting activities. Aspects of the 2012 program have been under evaluation by federal agencies since 2006. At every step**,** Shell has worked with federal agencies, the State of Alaska, and local communities to develop a program that achieves the highest technical, operational and environmental standards.

My discussion here focuses on the following points:

1. The currently available science regarding the Arctic is extensive and more than adequate for an exploration program;
2. The shallow water, low pressure Alaska OCS wells differ significantly from Gulf of Mexico deepwater exploratory wells; and
3. The oil spill prevention, containment, mitigation and response plans included in Shell's 2012 Arctic exploration plan are robust and comprehensive and were largely in place even before the BP Macondo incident.

Arctic Baseline Science

Some argue that there is insufficient scientific data regarding the Arctic and, therefore, exploration in the Chukchi and Beaufort Seas should not go forward. This is not accurate. In fact, the available scientific data is more than adequate to identify and evaluate the impacts of an exploration program that is, by definition, a short-term, temporary operation.

The recent release of the United States Geologic Survey (USGS) scientific gap analysis commissioned by Secretary Salazar does not differentiate between exploration and development, nor does it satisfy the original mission of accurately cataloguing existing scientific data specific to the Arctic. The cursory review that was done is merely a compilation of selected reports done over the years but does not analyze the present landscape.

The report also fails to acknowledge the data available from years of Arctic oil spill response research, technology development, as well as the tested tools, techniques and assets capable of Arctic oil spill recovery and response. Regional Alaska Native Corporations, North Slope and Northwest Arctic communities, federal agencies, marine mammal commissions and industry have volumes of current scientific data that were not considered as part of this analysis.

The categories of scientific data available include: tides and ocean currents, weather (e.g., wind and its effect on currents, precipitation), ice conditions, baseline environmental data related to species found in the arctic (e.g., benthic, fish, birds, marine mammals, etc.), assessments regarding the impacts of oil and gas exploration activities on those species, and, specifically, information assessing the impacts of an oil spill on those resources, in the highly unlikely event of an incident during exploration drilling.

Since 1973, federal agencies have performed more than 5,000 environmental studies to better understand the Alaska OCS and coastal environment, and document or predict the effects of offshore oil and gas activities. The former Minerals Management Service Environmental Studies Program spent more than $600 million dollars (more than $1 billion in inflation adjusted dollars) for studies under the guidance of the OCS Scientific Committee, which advises the Secretary of Interior. About half of these funds have been directed to Alaska.

The advancement of scientific knowledge will continue. This expanded knowledge is critical because it informs government regulators who must issue permits, it informs policymakers who must develop sound energy and environmental policy and it informs our operational decisions. In fact, Shell is contributing to advancing Arctic science in several ways. Since returning to Alaska in 2005, Shell has spent $60 million engaging in an aggressive environmental studies program in the Arctic offshore. Shell has worked in a collaborative manner with a wide range of stakeholders, including industry partners, local, state, and federal governments, universities, and non-government organizations to share resources and facilitate the further development of our understanding of the Arctic marine ecosystem.

Shell has also taken the lead in the development and implementation of new technologies, including unmanned aerial systems, acoustic recorders, and integrated ecosystem studies to advance capacities to

work in this challenging offshore environment. Shell fosters and funds such diverse research as computer assisted identification of marine mammal calls, greatly enhancing the capacity to utilize acoustic sampling technologies, satellite tagging of whales and seals, ice and weather forecasting and physical oceanography.

Recently, the North Slope Borough (NSB) and Shell entered into a multi-year collaborative science agreement that will enable impacted North Slope communities to build capacity for scientific research and independent review of studies, exploration and development plans and regulatory documents. The research program established under this agreement will be guided by an Advisory Committee of representatives from each of the coastal communities (Point Hope, Point Lay, Wainwright, Barrow, Nuiqsut and Kaktovik), scientists from the NSB and Shell, and independent scientists. This committee will be responsible for identifying critical issues, setting investigative priorities, and integrating traditional knowledge with science. The current agreement is between the NSB and Shell, but it anticipates expansion of the studies program through additional funds from third parties, which may include private or public sources.

If exploration leads to a commercial discovery, even more science will be needed. Consistent with the Outer Continental Shelf Lands Act's (OCSLA) multi-stage process, development and production activities will build on the information gathered through the exploration stage. The first development in the Arctic OCS will require the preparation of an additional environmental impact statement. The issues to be addressed in that document will be determined during a public scoping process. Since 2006, Shell has spent almost $90 million pre-investing in data acquisition, studies, and research and development that will support environmentally sound offshore development. Information gathered during these earlier OCSLA stages (including exploration) will form the basis for that scoping process, as well as the identification of any issues that may require additional research or study before informed decision making.

This approach was recently validated in the final version of the President's Oil Spill Commission report, which states: "The need for additional research should not be used as a *de facto* moratorium on activity in the Arctic, but instead should be carried out with specific timeframes in mind in order to inform the decision making process."

Exploration in Alaska's OCS Compared to Exploration in Deepwater Gulf of Mexico

The drilling conditions for Shell's proposed 2012 Alaska OCS exploration program are typical of wells that have been safely drilled for decades in shallow water around the world. The Alaska OCS wells are in shallow waters and have much lower reservoir pressure, which is vastly different from the conditions found in the deep waters of the Gulf of Mexico. This increases the safety margin.

The *Deepwater Horizon* was drilling the Macondo well in 5,000 feet of water and down to a depth of 18,000 feet. The pressure encountered in the Macondo well was about 15,000 psi based on mud weight at total depth. The water depth, well depth and pressure make the Macondo well and other deepwater Gulf of Mexico wells far more technically complex than the shallow wells that will be drilled off the coast of Alaska.

In Alaska's Beaufort Sea, the wells will be in 150 feet of water or less. The wells will be between 7,000 to 10,000 feet deep. We have reservoir pressure models based on previously drilled wells in the Chukchi and Beaufort Seas that show the pressure at total depth in our initial exploration wells will be no more than 6,000 psi.

With lower anticipated bottomhole pressure in the Alaska wells, all of the mechanical barriers in Shell's well design have higher overall safety margins between operating pressure and mechanical barrier design pressures. Even if the riser from the drill rig to the blow-out preventer on the seafloor was breeched, as it was in Macondo, the weight of the drill mud in the downhole pipe would maintain well control and prevent a blowout. To reiterate, Shell's 2012 Arctic well program is exploratory. The well will not be converted to a production well. It will be permanently plugged and abandoned per federal regulations.

Oil Spill Prevention and Response

Oil spill prevention and response planning remains a top priority. Shell's Oil Discharge Prevention and Contingency Plan is robust. We have invested in an unprecedented oil spill response capability to support our drilling plans in the Beaufort and Chukchi Seas. Our spill recovery equipment is state-of-the-art, widely acknowledged by experts as proven and effective under cold-climate conditions and designed to remove the worst-case discharge.

Shell developed a three-tier or layer system for use in the Alaska OCS in 2007.

1. The first tier is located on site, always less than an hour from the drilling rig. It is a dedicated fleet of purpose-built vessels and specialized oil containment equipment, which will be on-site 24/7 before a drill bit ever touches the sea floor.
2. The second tier is located to capture oil that might move away from the drill rig; termed near-shore recovery.
3. The third layer involves pre-staged shoreline protection. This, along with the first two tiers involves extensive use of both local residents and traditional knowledge.

Shell's oil spill response personnel routinely practice and conduct spill response drills. The response system consists of dedicated oil spill response assets including:

- Offshore recovery vessels with skimmers and boom,
- Near-shore barges with skimmer and boom,
- Shallow water vessels with skimmers and boom,
- Pre-identified protection strategies and equipment for environmentally and culturally sensitive sites, and
- Onshore oil spill response teams to deploy and support the above.

These assets are staffed during operation around the clock with trained crews provided by Alaska Clean Seas, Arctic Slope Regional Corporation, and Ukpeaġvik Iñupiat Corporation.

Design Prevention, Containment and Spill Response

Shell has design standards and practices that have enabled us to safely drill many deepwater and shallow water wells worldwide in a variety of conditions, including the Arctic. Shell will rigorously apply these standards in all well operations on the Alaska OCS. As described above, the conditions of the well mean that prevention through the mechanical barriers built into the design have a high margin of safety.

The blow out preventers (BOPs) that Shell will use have been extensively maintained, inspected and tested by third party specialists. The BOPs have been validated to comply with the original equipment manufacturer specifications, in accordance with API Recommend Practice No. 53. Shell's BOPs will have two sets of shear rams and comply with all regulatory requirements and NTLs (Notice to Leaseholders).

We will also maintain the ability to mechanically cap the well in the unlikely event of a BOP breach. In fact, all existing Shell wells in deep water around the globe can be capped. The design and construction of these wells allows them to withstand the pressure build-up that results when the well is capped. If the blow-out maintains mechanical integrity in the borehole and wellhead, a "capping and containment" operation would be employed. Mechanically capping the well, for example with an additional pre-engineered BOP, has the ability to reduce or even stop the flow, but may require a surface collection system. The benefit of this response methodology is that it reduces or completely halts the flow of oil entering the water column. This capping method was eventually proven successful in terminating the well bore flow even at Macondo, and has been an integral part of well control descriptions in industry's recently approved permits in the deepwater Gulf of Mexico return to drilling.

In the extremely unlikely event that the wellhead integrity is compromised and an uncontrolled flow occurs, we would employ a pre-fabricated "subsea collection" system. This would consist of a capping stack that would be located on top of the blowout preventer, collecting fluids to a surface barge where gas, oil and water can be separated prior to storage and disposal. Separated gas would be flared; separated oil and water would be stored in tanks for subsequent disposal offsite or flared.

Collecting the flowing fluids close to their source of origin prevents or limits the flow of oil into ocean waters, and optimizes the suite of surface oil spill response capabilities by engaging the problem at its source. This is a key part of the strategy that Shell has employed in Alaska, even pre-dating the Macondo blowout. Surface oil spill response equipment would remain on station in the immediate area. Given we will have two functional drilling vessels in our 2012 exploration operations, each drilling rig will act as the relief backup well drilling unit for the other. Each can immediately stop operations and respond to drill any ultimate relief well.

Oil in Ice

A significant amount of oil-in-ice research has been completed over the last 30 years and more is underway. A four-year program known as the Joint Industry Project (JIP), under the management of SINTEF Norwegian Research Institute, was sponsored by six international oil companies, including Shell, and involved a host of international scientists including those from the Department of the Interior.

The purpose was to advance knowledge, tools and technologies for oil spill response in ice-covered waters. The program examined:

- The fate and behavior of oil spilled in Arctic conditions;
- In-situ burning of oil in Arctic and ice-covered waters;
- Mechanical recovery of oil in Arctic and ice-covered waters;
- Use of chemical dispersants in Arctic and ice-covered waters;
- Monitoring and remote sensing of oil in and under ice;
- Preparation of a generic oil spill contingency plan; and
- Field experiments at Svalbard, Norway, in offshore ice-covered waters.

In May 2009, the group spent two weeks in the pack ice in the Norwegian Barents Sea to study the behavior of oil spills in Arctic waters and to test various response options in realistic oil-in-ice conditions. The tests proved that ice can act as a natural boom or protective barrier to confine and reduce the spread of an oil spill and to provide a longer window of opportunity in which clean-up technologies can be used effectively. These tests are the most wide-ranging research and development programs ever undertaken to evaluate Arctic oil spills.

These real-world offshore tests marked the final stage in the largest and most wide-ranging international research and development program ever undertaken to enhance detailed understanding, to further improve and develop spill-response technologies and to increase the ability to react rapidly in the event of an accidental oil spill in ice-covered conditions. The summary of that research showed that by using a suite of available tools (all of which are part of Shell's Alaska tool kit), including Arctic-tested booms and skimmers, and in-situ burning and dispersants, the majority of oil could be cleaned up in a variety of Arctic conditions; including broken ice and slush.

Shell has already committed to several more years or oil-in-ice research in Norway. Beyond those large-scale field trials, we are also pursuing test projects in Alaska that will better inform our approach to oil spill response. In Situ Burning is well-proven in open water conditions and in an effort to expand our ability to ignite a large pool of oil using a fixed-wing aircraft, Shell recently conducted a "Proof-of-Concept" test program at the Beacon Training Center in Kenai, Alaska in 2010. The tests were successful in showing that safe and effective ignition was possible from a fixed wing aircraft. That's key as we consider the long distances our aircraft may have to travel if an in situ burn is necessary offshore.

Shell is also a leading sponsor of a Joint Industry Project that will help determine the sensitivity of key Arctic species to chemically and physically dispersed petroleum under Arctic conditions. Partners in the project include the University of Alaska Fairbanks and Barrow Arctic Science Consortium, with all dispersant testing being done at the Barrow Arctic Research Center in Barrow, Alaska.

Regulatory Challenges in the Arctic OCS

Shell participated in several Alaska OCS lease sales at the invitation of the federal government. Although the leases were issued to Shell, the government's permitting and regulatory process has not been equipped to deliver. As a result, Shell has been blocked from drilling even a single exploration well.

Let me stress that this is *highly* unusual. The federal government's decision to hold a sale is, in effect, a decision that OCS exploration and development is desired. The federal government performs years of in-depth analyses before holding an OCS lease sale. Therefore, an exploration or development plan that meets regulatory requirements is approved. In the case of Shell in Alaska, we have met and exceeded the regulatory requirements and still have not been able to drill a well.

Each of our 414 leases in the Beaufort Sea and the Chukchi Sea has a ten-year term. A lease will expire and return to the federal government at the end of its term, if substantial steps to develop it are not taken.

So, Shell is in a "Catch-22." We have invested more than $3.5 billion in leases and in supporting infrastructure -- equipment, support vessels, baseline studies, and workforce training -- in order to take the first step to explore for oil and natural gas. We have assembled what is arguably the most environmentally sensitive and thoroughly responsible exploration plan in history. Yet, for reasons largely beyond our control, permits have not been issued. Since our leases are only valid for a limited time, we are ready to move forward.

A Robust Regulatory Process Is Critical

Let me be clear, Shell fully supports a robust permitting process. Shell does not seek lower environmental standards for Arctic OCS activities or a less exhaustive public permitting process. Such a process protects people and the environment and ensures safe and responsible operations. The bar is high in the Arctic, and it should be. Shell fully understands and supports this. We are ready to proceed with an exploration program that does precisely that.

But the regulatory framework should be clear and consistent; and the regulatory process should be properly funded, efficient and robust. The process should lead to timely decisions. Regardless of one's views on oil and gas development, we can all agree that endless delays by our government are wasteful to the taxpayer and should not be tolerated. Permitting for oil and gas activity must be done thoroughly and to the letter of the law. Without that, legal challenges are likely and can also act to block a program.

The recent formal creation of federal working group dedicated to pursuing domestic energy solutions in Alaska is welcome news to Shell and builds on conversations we have had with this administration related to responsible offshore exploration in the Arctic. We're hopeful this effort to coordinate various regulatory workstreams will lead to more data, a more efficient permitting process and ultimately, a stronger permit.

Recommendations: How Do We Move Forward?

Now I would like to look forward - to where we go from here and what policymakers should do.

Developing the oil and gas in our nation's Arctic OCS will require governments at all levels – federal, state and local – to work together to develop a workable regulatory framework and to provide focused funding and staff for the work.

Specifically:

- Federal permitting agencies must have adequate, trained staff with appropriate expertise and direction to execute the program. Alternatively, the agencies must be given the authority and the direction to do the permitting work through outside experts. This can be accomplished through arms-length funding from pre-approved third-party contractors. Lack of staff should be no excuse for delaying permitting work.

- The Federal government must pursue data collection and analysis necessary for environmental studies, ecological characterization and baseline science required for potential development activities. I stress that existing data is available for exploration. This critical work is required by various statutes and underpins permitting of work in the Arctic OCS. Again, if funding is an issue, the government should be allowed to do the work through arms-length funding from third parties.

- Federal and state regulatory agencies must work through a coordinated permitting process. Multiple agencies are now involved in issuing multiple permits for a single offshore project. Duplication and inefficiency lead to delay and waste.

- Statutes and regulations should be clear and the permitting process transparent. Agencies should be forced to set and meet milestones for reviewing and processing permit applications. They should have firm timelines for permit delivery. These activities should be coordinated through one office that works with all needed agency participants and contractors to ensure timelines are followed. In short, the government must respond to permit applications in a timely and competent manner.

Second, looking more broadly to Arctic economic opportunities for our country, the U.S. should ratify the Law of the Sea Treaty. While Shell's Alaska OCS program is not dependent upon this action, U.S. ratification of the Treaty is in the best interest of both national and economic security. The Treaty provides a clear and well-accepted framework for resolving maritime border questions and for ensuring that the U.S. controls the OCS off its coast.

Ratification could lead to international cooperation (such as the maritime border delimitation agreement recently signed between Norway and Russia). Ratification could also provide future protection for the import and export of petroleum and production and improved capabilities for search and rescue and environmental protection.

Third, policymakers should consider what physical presence the federal government should have along Alaska's Arctic coastline. At a time when nations both in and out of the Arctic are mapping the Arctic surface and seafloor, it seems appropriate to develop a strategic plan for how and when U.S. manpower will be deployed in the U.S. Arctic and what the U.S. government's contribution will be to that deployment.

Even though the lack of a U.S. government presence and infrastructure in the Arctic does not inhibit or hinder Shell's proposed exploration program, we support funding for the U.S. Coast Guard and other federal agencies to identify and pursue resources needed to ensure responsible development of economic opportunities in the Arctic.

Conclusion

Oil and gas will remain critical sources of energy for decades to come. There are broad and sustained benefits in developing our own resources in the Arctic OCS. The U.S. Arctic is resource-rich and tapping those resources will create jobs, power the economy, put billions into dwindling government coffers, provide energy security, reduce imports and reduce our trade deficit. We can ill afford not to embrace this momentous economic opportunity.

Thank you. I am happy to answer any questions.