Statement of

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Summary

Shell has been prepared to explore in Alaska's OCS since 2007, but regulatory and legal challenges have prevented the drilling of a single well.

Alaska OCS holds an estimated 27 billion barrels of oil and more than 120 trillion cubic feet of gas.

Benefits of developing the Alaska offshore include reducing imports; extending the life of TAPS; creating 54,700 jobs per year, $145 billion in payroll and $193 billion in government revenue by 2057.

Shell's Alaska exploration program, unlike a development and production program, is a temporary, three-month, short-term operation. The shallow water, low pressure Alaska OCS wells differ significantly from Gulf of Mexico deepwater exploratory wells; and the oil spill prevention, containment, mitigation and response plans are robust and comprehensive.

The federal government held OCS lease sales in Alaska, a decision that indicates exploration and development is desired. Shell participated and paid nearly $2.2 billion for 10-year leases, but the government's permitting and regulatory process has not been equipped to deliver.

The government has a responsibility to the leaseholder when it holds an OCS lease sale. Companies will not bid on leases if the government is not prepared to do the work that allows for exploration and development.

Shell fully supports a regulatory process that is thorough, competent and robust. It must also be fair and lead to timely decisions. Of the 35 permits needed for the program, most are issued without delay; some are not.

After five years, EPA has not issued a useable air permit for Shell's temporary, mobile source of emissions. The EPA Administrator testified that the emissions do not present human health concerns.

EPA has little or no experience with OCS oil and gas activities and has failed to set clear guidelines for issuing air permits for offshore oil and gas facilities.

Federal agencies should have funding to do permitting work in a timely and thorough manner.

Congress should ensure that OCS air permitting is rational by making clear that:

- The focus is on the air quality at onshore locations, not air quality at offshore locations. This is consistent with the purpose of the Clean Air Act, i.e., to protect public health and the environment.

- The drilling vessel becomes a "source" to be regulated when it begins drilling. Further, while the emissions of vessels associated with and operating near the drilling rig are considered when analyzing the impact of the drill rig on air quality, those vessels are regulated as mobile sources.

- EPA should take final agency action within six months of receiving a complete application, which would provide for judicial review of final permits in the D.C. Circuit Court of Appeals.

Introduction

Mr. Chairman and members of the Committee, I appreciate the opportunity to testify today. I would like to thank the Chairman for having this hearing to examine the resource potential in Alaska's Outer Continental Shelf (OCS).

I am Executive Vice President of Shell Exploration and Commercial. I lead a team of professionals who identify, invest in and explore for oil and gas resources around the world. The Arctic, including Alaska's offshore, holds world-class resource volumes. That is why Shell has invested in leases off the coast of Alaska.

Alaska can play a major role in meeting the energy needs of American consumers and American businesses but achieving that result requires action and political will. Developing Alaska's OCS will also create thousands of jobs; hundreds of billions in revenue for local, state and federal coffers; reduce imports; improve the balance of trade; and extend the life of the Trans-Alaska Pipeline System (TAPS).

Shell has been prepared to explore in Alaska's OCS since 2007, but regulatory and legal challenges have prevented us from drilling even a single well. In the five years since first seeking to explore in Alaska, Shell has drilled over 400 exploration wells around the world. I remain hopeful that the barriers to exploring in Alaska's OCS will be addressed in the short term.

Today I will discuss:

- Global energy demand forecasts, and the fact that oil and gas will play a critical role in meeting future energy needs and in fueling the economy.
- Alaska's OCS 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, some 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. As the global recession fades and economies recover, demand will accelerate. A key driver will be strong economic growth and a vast, emerging middle-class in the developing nations.

To address this demand, we will need all sources of energy - hydrocarbons, alternatives, renewables and significant progress in 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, for which I am responsible.

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. We must recognize and provide the amount of energy that will be required to grow the economy; and also have a framework in place that ensures we do so in an environmentally sustainable way.

Governments have a role to play in defining the policies that will 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. Human ingenuity combined with business acumen and political will has helped us clean up rivers, improve air quality, and make acid rain a thing of the past. This same human ingenuity will solve the issues of the future even as we power our economy.

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, the U.S. imports more than 60 percent of its petroleum.

Consider the enormous costs created by importing oil. According to the EIA:

- Liquid fuel net imports will average 9.7 million bbl/d in 2011 and 10 million bbl/d in 2012, comprising 50 percent and 52 percent of total consumption, respectively.
- Imports cost the U.S. more than $350 billion last year.

I applaud the President for highlighting the need to reduce imports. 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 in the U.S. and federal revenues increase through royalties and taxes. This can be done in a way that provides 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. To put that into perspective,

that is enough natural gas to heat 100 million homes for 60 years and enough oil to fuel 85 million cars for 35 years**.**

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 North America. Conservative estimates from the Bureau of Ocean and Energy Management Regulation and Enforcement (BOEMRE) place roughly 27 billion barrels of oil and over 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 several 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 be an economic engine for decades to come.

The jobs growth and economic benefits of Alaska OCS exploration and development are well understood. A study conducted in 2010 by Northern Economics and the Institute for Social and Economic Research (ISER) at the University of Alaska 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 during 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.

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: reduced transportation cost (from existing infrastructure operating below capacity) enhances value, and expanded infrastructure enables development of satellite fields; and
- Alaska OCS development can help extend the operating life of TAPS and increase the probability 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 a 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 found that an average of just under 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 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 Mexico (1.03 million bbl/day), Saudi Arabia (958,000 bbl/day), Nigeria (996,000 bbl/day), or Venezuela (827,000 bbl/day).

An additional average increased production of 700,000 barrels of oil per day for 40 years, at a peak production of 1.45 million barrels per day is no small feat. It is tantamount to eliminating the need for imports from one of our largest foreign suppliers. This is especially helpful in a world of increasing geopolitical instability.

Domestic energy production is critical for the security and prosperity of the U.S. Money spent on domestic energy cycles in the U.S. economy, increases domestic economic activity and jobs. Alaska OCS activity will also help address our national debt, bringing in hundreds of billions in federal revenues from taxes and royalties from oil and gas production and the economic activity that is stimulated as a result.

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 to lift America out of one of its worst economic downturns. A generation of Americans worked on building TAPS and it remains an economic engine as well as a symbol of American know-how and ingenuity.

Unfortunately, production in Prudhoe Bay has fallen significantly in recent decades. At its height, the pipeline supplied the nation with 2.1 million barrels of oil per day or about 1/3 of the nation's oil production.

Today TAPS supplies only 600,000 barrels per day; about 11 percent of our domestic supply. If the throughput in the pipeline continues to decline and no new supplies are found, it will eventually be shut down, cutting access to one of the largest sources of domestically produced oil in the country. This would quickly accelerate our already increasing dependence on imported oil and negatively impact the U.S. balance of payments and federal revenues. Production of Alaska's oil has provided tens-of-billions of dollars in tax revenues and will in the future, but only if it remains viable.

The recent temporary shutdown of TAPS 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.

Fortunately, the U.S. has an opportunity to prevent this scenario from reoccurring. According to Northern Economics and ISER at the University of Alaska, if OCS oil is transported through TAPS, the higher volume of throughput would reduce the TAPS tariff and would extend the life of TAPS for decades. Doing so would require a major pipeline expansion to meet offshore pipelines in Camden Bay and in the Chukchi Sea. Those 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. Jobs and revenues created by oil and gas development have strong reverberations across 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.

Finally, by exploring and developing our OCS resources, the U.S. has an opportunity to reaffirm its global role as an Arctic nation. It is no secret that 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 stimulus 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. Even nations outside the Arctic are positioning themselves for Arctic resource development.

Due to U.S. inactivity, our country risks falling even further behind the rest of the world in developing its Arctic resources. As we are seeing in countries like Norway, Russia, Greenland and Canada, such resources are highly attractive and new exploration is already underway. We have an opportunity to develop our Arctic resources and the infrastructure appropriate to facilitate our Arctic presence.

Offshore Safety Standards

Before moving to a discussion of Shell's Alaska exploration program, it is 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. This was appropriate and has resulted in substantial changes in the way the industry operates. There is no question that the industry must be held to the highest standards both for protecting the environment and protecting the health and well-being of our workers and communities in which we operate.

Let me highlight a few of the new regulatory requirements systems 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.
- The industry announced that 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 created by the American Petroleum Institute in 1993, known as RP75, or "Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities."

- Industry has also significantly increased its resources to respond to a major oil spill by adding vessels, equipment and personnel.

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 – are 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 contractors, including drilling contractors, develop a Safety Case to demonstrate major risks are properly managed. A Safety Case in deepwater drilling 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 2012 during the three-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 is 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.

I will discuss here:

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.

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.

Several thousand environmental, ecological, and socio-economic studies applicable to oil and gas activities in the Arctic OCS have been completed over the last 30 years. 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, 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 either 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 where it 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 vs. 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 and effectively drilled for more than 30 years. The Alaska OCS wells are in shallow waters and have much lower downhole 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 extensive 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, less than one-third the pressure of Macondo.

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 from happening. 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 is 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.

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

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.
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, as well as 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 (BOP) 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 comply with all regulatory requirements.

We will also retain 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 still requires 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 subsea dome located on top of the wellhead, 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. 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 looked at the fate and behavior of oil spilled in Arctic conditions; the in-situ burning of oil in Arctic and ice-covered waters; the mechanical recovery of oil in Arctic and ice-covered waters; the use of chemical dispersants in Arctic and ice-covered waters; monitoring and remote sensing of oil in and under ice; the 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 acts 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 is now leading industry efforts to perform another JIP to continue advancing the technology and research for oil spill response in ice.

Regulatory Challenges

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 does years of in-depth analyses before holding an OCS lease sale. Therefore, an exploration or development plan that meets regulatory requirements is permitted. 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 keen to move forward.

A Robust Regulatory Process

Let me be clear, Shell fully supports a robust permitting process. Permitting work and regulatory requirements protect people and the environment and ensure safe and responsible operations. Shell fully understands the need to provide exploration plans that safeguard the environment and Arctic ecosystem and we are ready to proceed with an exploration program that does precisely that. At the same time, Shell believes the regulatory process should also be thorough, competent and robust. In an era when oil and gas activity is heavily scrutinized, it is critical that the permitting work be done to the letter of the law. Without that, legal challenges are likely and can also act to block a program.

The process should also be valid, fair and lead to timely decisions. Regardless of one's views on oil and gas development, we can all agree that endless delays and inefficiencies in our government are wasteful to the taxpayer and should not be tolerated. Such inefficiencies undermine confidence in the U.S. offshore program and ultimately force investment out of the U.S.; depriving American people of the many benefits I identified earlier --- jobs, economic prosperity and energy security.

Permits Required for Alaska OCS

There are many regulatory agencies at the federal and state level which must review and permit any offshore program. In Alaska, our proposed exploration plan requires more than 35 federal permits from agencies that have a say in what the plan of exploration will look like. Most permits are issued without delay; however, several federal permits have been problematic; none more so than the permit needed from the Environmental Protection Agency (EPA) for air emissions.

History of Shell Alaska Air Permit Efforts

Shell's exploration activity currently involves a temporary, mobile source of emissions. During the five years of working with EPA to obtain permits, we have spent thousands of man-hours and tens of millions of dollars in extensive pre-application consultation, voluntary emissions limitations, significant equipment upgrades, and four separate air permit applications encompassing two different air permitting approaches. Today, Shell still does not have a single effective air permit, despite the fact that the Administrator of the EPA recently testified before the Senate that the emissions from Shell's exploration program off the coast of Alaska do not present human health concerns.

February 2006

- Shell began the initial pre-application dialogue with EPA's Regional Office in Seattle, known as Region 10 or R10. Among the many things discussed was whether to pursue

major source or minor source permits. A decision was ultimately made to pursue minor source permitting.

December 2006

- Shell applied to R10 for minor source permitting for two drilling units, the *Discoverer* and *Kulluk*.
- Permits issued in spring 2007; subsequently a request for review was made to the Environmental Appeals Board (EAB). NOTE: The EAB was delegated authority to review air permits by the EPA Administrator. Any person who has commented on the air permit application has standing to request review. The permit cannot be used until 30 days after issuance; and if a review request is filed within those 30 days, it cannot be used until the EAB validates the permit.

September 2007

- EAB remanded both permits to R10. The primary reason for remand was an "inadequate analysis and record support" by R10 on issues related to potential aggregation of separate stationary sources. In other words, the EAB did not deny the permit, but asked for more information to demonstrate decisions made by R10 regarding it.

June 2008

- Nine months after the remand, R10 reissued the *Kulluk* Minor Source permit.
- This permit was again the subject of a request for review at the EAB.

Fall 2008

- While the *Kulluk* minor source permit was pending at EAB, R10 indicated that it no longer felt the minor source permit approach was the best approach for Shell to take regarding its Arctic OCS permitting program.
- R10 advised Shell to seek major source permits, or OCS Prevention of Significant Deterioration (PSD) permits, for its Arctic program.
- In an effort to support this different permitting track, Shell agreed to submit new major source PSD permit applications for the *Discoverer* drill ship. This required that Shell commit $26 million to install selective catalytic reduction and oxidation catalyst on the *Discoverer*.

December 2008

- Nearly three years after our initial dialogue with R10, Shell filed a PSD application for the *Discoverer* drill ship in the Chukchi Sea.
- At R10's request, the PSD application for the *Discoverer* in the Beaufort Sea was held back until May 2009.
- In March 2009, Shell withdrew the *Kulluk* minor source permit while it was still pending at EAB.

March 2010

- After 15 months, R10 issued the Chukchi PSD permit for the *Discoverer.*

April 2010

- After 11 months, R10 issued the Beaufort PSD permit for the *Discoverer.*
- Both *Discoverer* permits were subject to a review request at the EAB.
- Shell requested that EAB expedite review of the permits.

May 2010

- EPA requested that EAB hold the permits "in abeyance" for an indeterminate period, expressing concern about OCS exploration following the BP/Macondo incident.
- After four months of preliminary proceedings, including interim hearings and postponements, EAB ultimately heard oral arguments on three main issues associated with the permits l on October 7, 2010.

December 2010

- EAB remanded the permits as a result of "clear error" on the part of R10. Again, the error by R10 was an inadequate explanation in the administrative record regarding the definition of OCS source, as well as issues related to the R10's insufficient environmental justice analysis. The EAB also alluded to the fact R10 should evaluate whether new air limits proposed after the filing of Shell's permit applications, and effective after the permits were issued by R10 should be used in any reissued permit. Finally, a subsequent ruling by the EAB has added one issue (PM 2.5 analysis) to the list of remanded issues requiring further attention by R10.

In short, the EAB remand of Shell's air permit did not indicate the EPA came to an incorrect conclusion on the impact of Shell's air permit or that our activities would adversely impact the air shed; the EAB simply stated that the EPA did not sufficiently explain how it arrived at certain determinations. It's the roadmap that's in question and as a result, Shell was forced to cancel its 2011 exploration program and cancel tens of millions of dollars in local contracts, in large part because the EPA permits were stalled.

Today, the permits for the *Discoverer* are back in the hands of R10. Shell has filed a minor source permit for the *Kulluk* drill vessel in the Beaufort. Shell is pleased that EPA has dedicated additional resources to the permit work and is hopeful that the permits will be delivered in a timely manner.

What was the Problem at EPA?

Based on the history of dealing with EPA in trying to permit our offshore Alaska program, it seems clear that EPA was not equipped to permit OCS oil and gas activities. Every year, EPA, state and local permitting agencies issue many Clean Air Act permits for major stationary sources. Undoubtedly, some of these permits take considerable time to develop and to gain final approval – but we would estimate that very few of these permits have required the amount of time and expense associated with obtaining a Clean Air Act permit for a single drilling vessel – five years and $50 million dollars.

The contrast between permitting an onshore air emissions source and an offshore oil and gas activity is striking. Let me explain.

In any given year, onshore air emissions permits may be required for major modifications for industrial facilities, changes in large petrochemical facilities, new manufacturing plants and new or modified power plants. The permits may be needed to allow the emission of tens of thousands of tons per year in conventional air pollutants; and a single facility may have scores of separate emission points. All this permitting generates a large, recurring volume of Clean Air Act permitting actions. Those actions involve very complex technical analyses, engineering judgments and the resolution of sometimes difficult legal issues. Yet, most of these permits do move through the Clean Air Act permitting process.

By contrast, permitting the air emissions of an offshore exploration operation with the EPA in the Arctic has proved to be a far more daunting effort than anyone could have imagined when discussions between Shell and EPA began in 2006. The emissions from a temporary, mobile, offshore drilling vessel using diesel-fuel motors and equipment are miniscule in comparison to the emissions from a large industrial facility. In addition, drilling vessels for the most part operate far offshore and away from population centers. In states like Alaska, they are obviously not in or near large urban areas. Even so, we have not received a Clean Air Act permit that can be used to begin drilling.

This contrast between onshore and offshore air permitting is even starker when you consider this: a drilling vessel does not need to have an air permit when it is engaged in normal movement on

the water. It only requires an air permit when it attaches to the sea floor, prepares to drill and therefore changes from a sea-going vessel into a stationary "OCS source." At that point, the vessel is subject to Section 328 of the Clean Air Act.

We were heartened by EPA Administrator Jackson's recent statement that Shell's Alaska exploration plan "will not cause air pollution that will endanger public health." But it is simply unacceptable that the process to permit the operation has taken over five years, especially when the Agency itself does not believe there is a serious health threat from vessel emissions.

We believe that there a number of reasons for this excessive delay.

First, as an entity, EPA has little or no experience with OCS oil and gas activities. In the Central and Western Gulf of Mexico, where the overwhelming majority of OCS oil and gas activity has occurred to date, the Clean Air Act provides that the Department of Interior (DOI) reviews air emissions as part of its review of Exploration Plans.

Second, although EPA has held responsibility for permitting OCS activity outside the Central and Western Gulf for over 20 years, the Agency has failed to develop sufficient expertise and failed to set clear guidelines for issuing air permits for offshore oil and gas facilities. Congress recognized this in 2009. In the FY 2010 appropriations bill for the EPA, the Conference Report for EPA's 2010 funding included a clear statement of concern about EPA's inability to deliver offshore air permits and directed EPA to address the issue.

OCS Air Permits

> The conferees are concerned about the ability of the Agency to effectively carry out its responsibilities to process oil and gas permits in the Outer Continental Shelf (OCS) in Alaska and the Eastern Gulf of Mexico. The Agency is directed to allocate sufficient funds and personnel to process OCS air permits in a timely manner consistent with all environmental laws. Within 90 days of enactment of this Act, the Agency is directed to report to the House and Senate Appropriations Committees on its progress to comply with this directive, provide a detailed timeline for issuance of the pending permits, and submit its plan to address this issue consistently among all affected regional offices. Lastly, the conferees expect the Agency to set clear, reasonable national guidelines for issuing OCS air permits." **Conference Report for HR 2996, DEPT OF THE INTERIOR, ENVIRONMENT, RELATED AGENCIES APPROPRIATIONS ACT, 2010, page 45.**

Third, with respect to OCS permits off the coast of Alaska, EPA R10 has limited experience in writing air permits, generally. Under the Clean Air Act, most "new source" permits are written by states which either have delegated air permitting authority or implement their own state program that EPA has approved as part of their State Implementation Plan. Thus, R10 simply has not had the amount of direct CAA permitting experience that would assist them in timely processing OCS permit applications.

Fourth, from our experience, it appears that EPA Region 10 did not have adequate staff levels to process Shell's OCS permits. While this situation may have improved recently, having

sufficiently trained staff available for permit review is integral to the process and beneficial to both companies seeking to obtain permits and to the public review process. Further, in developing permits, there needs to be regular interaction and dialogue with reviewing staff to proactively find solutions to any issues that arise – this process can help to produce a permit that meets Clean Air Act requirements, is operationally workable for the permittee and allows for full public participation.

Finally, the EAB process creates uncertainty and delay, particularly given that an air permit cannot be considered "final and effective" until the EAB process is completed. As was stated previously, any commenter has standing to ask for a permit to be reviewed at EAB. Further, other than some time periods for initial filings, the EAB has no mandated deadlines to conduct hearings, or make decisions. In practice this has meant that even after an EPA Regional Office issues a permit, that permit can be ineffective for months or years afterwards as the EAB often issues remand orders and additional reviews are taken. In this regard, I would note that ongoing litigation in the U.S. District Court for the District of Columbia has recently raised the issue of whether the EAB process must be completed with the overall one-year time limit under the CAA within which EPA must issue or deny a final PSD permit.

To be clear, Shell has no desire to lower environmental standards for OCS activities or to not have a fulsome public permitting process. The bar is high in the Arctic and it should be. Instead, we are interested in a regulatory framework that is properly funded, efficient and accountable. For our part, Shell has made clear that we will be responsible for any work we perform on every project in which we participate. Ours is a culture of accountability, safety and respect for people

and the environment. Given the chance, we look forward to adding to our excellent record in the Arctic, creating a value proposition for Alaskans and delivering to the nation much-needed domestic supplies of energy.

Recommendations: How Do We Move Forward?

I have discussed the need for and benefits of developing the vast offshore oil and gas resources off the U.S. coast, particularly in Alaska. Now I would like to look forward - to where we go from here and what policymakers should do.

The federal government has a critical role to play as a steward of our oceans. It also has a role to play in supporting the OCS leasing program and the sustainable development of its natural resources.

In areas where OCS leasing has occurred, the government has done literally years of environmental analysis in advance of the lease sale. It has invited companies to buy the leases, and it has accepted bonus bids from companies. In return, the government bears responsibility to the leaseholder. As stated previously, companies will not bid on leases if they believe that the government is not prepared to do the work that allows for exploration and development.

Supporting the leasing program involves a number of potential actions:

- Federal agencies should be adequately funded so that permitting work can be done in a timely and thorough manner.
- Funding for environmental studies and other requirements should be provided, because such work by DOI's Environmental Studies Program and others underpins robust and defensible agency actions.
- Congress should also consider legislative solutions to ensure that OCS air permitting is rational. We believe that the discussion draft circulated in advance of this hearing can help accomplish this end.

First, Congress should clarify the air quality it is seeking to protect when permitting OCS emissions sources. For purposes of OCS air permits, the focus should be on the air quality at onshore locations, not air quality defined at offshore locations. This approach is consistent with the EPA's interpretation of Section 328 and the general purpose of the Clean Air Act, i.e., to protect public health and the environment. Further, it is consistent with the approach taken when assessing the effect of facilities onshore.

Under EPA regulations, "ambient air" is the "atmosphere, exterior to buildings to which the general public has access." (40.CFR.50.1(e)) Ambient air quality standards are developed to protect public health. And the impact of single facilities, for example, may be measured at the "fence line," the area where the general public has access.

To state the obvious, offshore drilling facilities have no fence line and the public can be many, many miles away from the vessel. But in the case of the Shell's OCS permit off the coast of Alaska, after much deliberation, EPA has currently decided that Shell must prove that the "public" - in this case people in boats – will effectively be excluded from some zone around the drill ship in order to establish the equivalent of a fence line that defines where ambient air starts. Without proof of such an exclusion zone, emissions measurements for Shell's rig must be made at the rail of the ship – many miles out at sea.

We believe that this is not in line with the purpose of the Clean Air Act or the intent of Section 328. Indeed, when EPA proposed its OCS regulations, it stated that "the intent of Congress in addition section 328 was to protect ambient air quality standards onshore and ensure compliance with the PSD requirements. EPA is to accomplish this **by controlling emissions of pollutants from the OCS that can be transported onshore and affect ambient air quality.**" EPA also indicated that Section 328 was to create a "more equitable regulatory environment" between onshore sources and OCS sources within 25 miles of land. EPA's approach to the Shell permit accomplishes neither of these objectives.

Second, Congress should clarify when a drilling vessel becomes a "source" to be regulated under the Clean Air Act. We agree with the definition provided in the discussion draft. A bright-line, common sense definition is when a floating exploration rig begins drilling.

In addition, consistent with Section 328, Congress should more precisely define an "OCS source" to clarify that only the drill rig is to be regulated. We understand and agree that the

emissions of vessels associated with and operating near the drilling rig are considered when analyzing the impact of the drill rig on air quality. However, relevant control measures under PSD should only apply to the drilling rig. EPA otherwise regulates marine diesel engines under Title II of the Clean Air Act as mobile sources.

Third, Congress should address the uncertainties created in the OCS air permitting process, which undermine the offshore program that is so important to our nation's energy security. Specifically, we support a provision that would require EPA to take final agency action on an OCS air permit within six months of receiving a complete application, which would centralize judicial review of final permits in the D.C. Circuit Court of Appeals. As I have outlined in this statement, substantial delays have occurred even after an OCS permit was approved by EPA's regional office. The multiple reviews and remands have prevented receipt of a permit that the Agency considers "final" and that Shell can rely on to commence operations. Congress should streamline this process without cutting off the ability of those who disagree with a final permit to challenge EPA's decisions in court.

Conclusion

In closing, I am gratified by the President's recent energy speech in which he recognized the daunting energy challenge facing the nation. Although some of our opinions differ, we agree that it will take all possible energy sources – including energy savings -- to meet demand.

Oil and gas will remain critical sources of energy for decades to come. Rather than viewing this as a liability or a negative, I urge you to consider the broad and sustained benefits of developing our own domestic resources. By tapping our resources here, we will create jobs, power the economy, put billions into dwindling government coffers, provide energy security, reduce imports and reduce our trade deficit. Keeping this economic value here at home, we can at the same time move forward with the investments in the next generation of technologies and energy solutions that will power the future.

Thank you for the opportunity to speak with you. I am happy to answer any questions.

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