Shell Oil Company
Marvin E. Odum
President
One Shell Plaza
P. O. Box 2463
Houston, TX 77252-2463

October 21, 2010

The Honorable Bob Graham
The Honorable William K. Reilly
Co-Chairs
Bipartisan National Commission on the
BP Deepwater Horizon Oil Spill and Offshore Drilling
One Thomas Circle, N.W. 4th Floor
Washington, D.C. 20005

Dear Chairmen Graham and Reilly,

I write to provide you additional information explaining why working to meet the national imperative for domestic energy production by exploration in the Arctic does not mean comprising on safety or the environment. Below I will discuss:

1. The extensive economic benefits of OCS development spurring tens of thousands of new jobs;
2. The Beaufort Sea and Chukchi Sea characteristics and how both theaters are critical to energy security through development of domestic resources;
3. The available baseline science in the Arctic and how currently available science is extensive and adequate for an exploration program;
4. How our program differs significantly from Gulf of Mexico (GOM) deepwater exploratory wells in light of water depths and pressures; and
5. Shell's robust and comprehensive oil spill prevention, containment, mitigation and response plans included in our 2011 Arctic exploration plan.

Shell is planning an offshore oil and gas exploration program during the 2011 open water season in the Beaufort Sea, Alaska. Shell's exploration program meets or exceeds all applicable regulatory requirements for the protection of health, safety and the environment. The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) has reviewed and evaluated Shell's Arctic exploration drilling programs in 2007 and 2010 and is currently evaluating Shell's permit to drill (APD) in 2011. 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.

Offshore exploration activities have occurred in the Arctic Outer Continental Shelf (OCS) for over thirty years with no significant or lasting impact on the environment.

Several thousand environmental, ecological, and socio-economic studies applicable to oil and gas activities in the Arctic OCS have been completed during this period. The information gathered regarding the marine environment allows for informed decision-making in regard to Shell's proposed project. Over this period, exploration drilling techniques and technologies has continuously advanced, giving Shell a high degree of confidence that it can complete a safe and environmentally sound Arctic exploration project.

Shell has also worked hard to address the concerns of local communities on Alaska's northern coast, which are heavily dependent upon traditional subsistence resources and activities. Shell has traveled across the region and met with local residents and leaders on more than 400 occasions. Shell has developed a comprehensive Plan of Cooperation (POC) to coordinate its exploration activities with local subsistence activities to avoid and mitigate potential impacts. Shell's POC includes call centers in each local community to facilitate communication, as well as Alaska Native subsistence advisors.

Shell has also adjusted its planned activities to address local concerns regarding the level of activity in the area. Shell is currently pursuing a very limited exploration program in the Camden Bay area of the Beaufort Sea. Shell will use a single drilling vessel and suspend drilling activities during the local Fall bowhead whale hunt. Shell's drilling vessel will be supported by attending oil spill response vessels, with a second backup drilling vessel staged in Alaska.

1. Economic Impacts from Arctic OCS Development

Conservative estimates from BOEMRE place roughly 25 billion barrels of oil and over 120 TCF of gas in the Alaska OCS. Against the backdrop of the roughly 16 billion barrels of oil that have been produced over the last 30 years on Alaska's North Slope, that kind of materiality is significant not just for Shell and Alaska, but the entire Nation as we consider the associated jobs and energy security that could come as a result of offshore domestic production. Clearly, the Alaska offshore is important to the United States. The US currently imports over 60 percent of our oil, approximately 12 million barrels a day. In monetary terms, oil imports equal roughly $400-600 billion a year, representing the largest cash transfer in the modern world.

The OCS could prove to be the next chapter in Alaska's oil and gas history and an economic multiplier for decades to come. Recently, Northern Economics and the Institute of Social and Economic Research, University of Alaska Anchorage, produced an economic study that estimates the build-up of offshore activity could create an annual average of 35,000 direct and indirect jobs a year for up to 50 years (estimates include development in Beaufort Sea, Chukchi Sea, and North Aleutian Basin). That equates to $72 billion in payroll. If the Alaska OCS proves material, it will go a long way in extending the life of the Trans-Alaska Pipeline (TAPS) and underpin the capital and capacity needed to make an Alaska gas pipeline a reality.

The entire Arctic will play a critical role in the world's energy development as noted in a 2008 U.S. Geological Survey study that reported "mean estimates for each province indicates that 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids may remain to be found in the Arctic, of which approximately 84 percent is expected to occur in offshore areas." (USGS 2008 -Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle).

2. Beaufort Sea and Chukchi Sea Characteristics

Some have suggested that exploration is only appropriate in either the Chukchi or the Beaufort. Such a choice is not warranted; it is not supported by the fact that both basins have been leased by the Federal government and both likely hold material resources. The resource base is split between the two OCS

areas within the US sector of these basins, with the Chukchi Sea holding a majority fraction of the undiscovered yet to find oil and gas potential.

The Chukchi has a diversity of resource play types, all of which are proven on the developed North Slope where in excess of 20 billion barrels of oil has been discovered. The expectation that a large percentage of the yet to find volume resides in large prospects that will demand commercial development is testament to the prolific potential and resource density of the province. By global standards, the sub-surface risk profile is moderate. The sum of the high bids ($2.6 billion) in Lease Sale 193 is the best indication of Shell's (and industry's) commitment to perceived materiality and potential for commercial success in the Chukchi Sea.

There are some key differentiators which make the Chukchi Sea exploration, appraisal and subsequent development programs different from those envisaged in the Beaufort Sea, but no less attractive or practical from an operational perspective.

The open water season for access and operations is longer on average per annum in the Chukchi Sea. Most operations will take place some 80-120 miles offshore from the NW Alaska coastline, with less proximity to the local subsistence stakeholder activities. Shell's already robust Alaska oil spill response program continues to build on our learning from previous spills such as the BP Macondo spill. We will have response capabilities on site in less than an hour. In the unlikely event of a spill or blow-out, the elapsed time to potential coastal impact is much greater in the Chukchi Sea than in the Beaufort Sea, given the distance from the coastline.

The Camden Bay leases in the Beaufort Sea have proven hydrocarbons from previous exploration phase drilling campaigns, the last cycle of which terminated for Shell during the 1980's. Material oil volumes found here are not to be dismissed because they appear less significant than the Chukchi Sea. They will have lower unit development costs due to closer proximity to existing North Slope infrastructure, and have disproportionately higher value per barrel. Also, taking a successful discovery to production will be shorter given proximity to infrastructure.

Both the Chukchi Sea and Beaufort Sea leasehold warrant prosecution through relatively low risk exploration campaigns. Shell understands the differences between the operating environments and has designed technical/operational programs and response plans to optimally meet those differences, and awaits approval to permit the first of these campaigns to commence in 2011.

3. Arctic Baseline Science

Some argue that there is insufficient data regarding the Arctic and, therefore, that exploration in the Chukchi and Beaufort Seas should not go forward. This is not true. It is inaccurate to say that the quality and quantity of the baseline scientific understanding is inadequate, incomplete or dated.

In Attachment A, we provide an overview of some of the significant data sets currently available and provide an update on recent and on-going baseline study efforts. 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.

In considering the adequacy of available scientific data, one must recognize the distinctions between an exploration program and a development and production program. The former is a temporary, short-term operation. In the Alaska OCS, exploration wells are anticipated to take approximately 60 days or less to complete, at which time the well will be permanently plugged and abandoned and the site cleared.

The scientific data available is more than sufficient to identify and evaluate the impacts of such limited and temporary operations. Consistent with the Outer Continental Shelf Lands Act's (OCSLA) multi-stage process, if a commercial discovery is made, any subsequent 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 environmental impact statement. The issues to be addressed in that document will be determined during a public scoping process. Information gathered during the 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 can occur.

A full inventory of information currently available for the Alaskan Arctic OCS would be voluminous. Attachment A provides a brief summary of some of the more significant studies programs and data sets available. A complete bibliography from one recent National Environmental Policy Act (NEPA) analysis of Shell's 2010 Beaufort Sea Exploration Plan can also be found at http://alaska.boemre.gov/ref/EIS%20EA/mms2009_052_ea/2009_1015_EA.pdf. There are numerous other NEPA analyses of various oil and gas activities in the Arctic OCS, including full environmental impact statements for the Chukchi Sea Lease Sale (Sale 193 and the Beaufort Sea Lease Sales (Sales 186, 195 and 202), the sales in which Shell acquired its current leases.

As these examples demonstrate, there is a wealth of data on the Arctic OCS. Certainly data gaps exist and research and study will continue; that is the nature of science. But the data currently available is more than sufficient to evaluate the current level of industry activity in the Arctic OCS and does not preclude informed decision making on exploration projects such as Shell's 2011 program.

4. Differences between Shallow Water Exploration in Alaska and Deepwater Exploration in the Gulf of Mexico

Drilling conditions for Shell's proposed 2011 program are typical of well conditions that have been safely and effectively drilled for more than 30 years. They are much different than those in the GOM deepwater, most notably in terms of water depth and downhole pressure. The Deepwater Horizon was drilling in 5,000 feet of water to a depth of 18,000 feet. This type of well is far more technically complex than the shallow wells drilled in the Arctic Beaufort, such as Shell's planned well for 2011. The pressure encountered in the GOM Macondo well was about 15,000 psi based on mud weight at total depth. This is approximately 3 times greater than what Shell expects to encounter in the Beaufort Sea, where 2011 drilling will be in approximately 150 feet of water to a depth of approximately 7,000 to 10,000 feet, with an expected pressure at total depth of no more than 4,000 psi.

Shell has developed extensive reservoir pressure models based on previously drilled wells in the Chukchi and Beaufort Seas, including wells drilled very close to where we plan to drill this summer. Knowing the pressure profile of the previously drilled wells reduces uncertainty in pore pressure prediction for the 2011 wells. Because of Shell's knowledge of the downhole pressure profile and substantially lower bottomhole pressure Shell expects to encounter, Shell's margin to safely operate in Alaska is much greater than that experienced by the Deepwater Horizon. Shell's biggest safety and operational advantage is the much shallower water depth at our Beaufort Sea well location, which will allow us to detect and respond to an event quickly and appropriately.

5. Oil Spill Mitigation for Prevention, Containment and Response

Shell has design standards and practices that have enabled us to successfully and 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. Because of lower anticipated bottomhole pressure in the planned 2011 Alaska well, all of the mechanical barriers included in Shell's

well design (including contingency equipment) have inherently higher overall safety margins between operating pressure and mechanical barrier design pressures. Shell's 2011 Arctic well program is exploratory and the well will not be converted to a production well, thus production casing will not be installed, and the well will be permanently plugged and abandoned per BOEMRE regulations.

Shell's Blow Out Preventer (BOP) has been and continues to be extensively maintained, inspected and tested by third party specialists. The BOP has been validated to comply with the original equipment manufacturer specifications, in accordance with API Recommend Practice No. 53. Further inspection and testing has been performed to assure the reliability of the BOP and that all functions will be performed as necessary, including shearing the drill pipe. Shell's BOP will also comply with NTL 5 and the BOEMRE Interim Final Rule.

The following items are some of the safety aspects of our 2011 plan

a) An increase in the frequency of subsea BOP hydrostatic tests from once each 14 days to once each 7 days;
b) The installation of a second set of blind/shear rams in the BOP stack;
c) Relocation of the BOP stack remotely-operated vehicle (ROV) hot stab panel from the bottom of the BOP to the top to improve its accessibility since the stack in the shallow Arctic must be protected in a mud line cellar some 41 ft below the sea floor;
d) A redundant ROV hot stab panel on a seafloor sled located a safe distance away from the well to provide a means to operate the BOP if the ROV hot stab panel on the BOP is inaccessible;
e) Redundant ROV and diver capabilities on a support vessel along with launch and recovery systems for each;
f) A specific relief well drilling plan for the well and a designated standby relief well drilling vessel capable of responding if the original drillship is incapable of drilling its own relief well;
g) Prefabricated subsea collection system with surface separation capability to capture and dispose of oil from a flowing well before it reaches the surface;
h) A plan for the use of subsea dispersant at the source of any oil flow, if needed;
i) Response capability to respond with on-site oil spill response assets within one hour of notification; and
j) A Critical Operations Curtailment Plan.

Other safety features to Shell's program include a family of subsea intervention devices to attach to the wellhead for capping multiple barriers, such as casing strings, cement, a well-specific mud program designed to provide constant overbalance and multiple BOPs available to shut-in a flowing well quickly.

Oil Discharge Prevention and Response Plan

Oil spill prevention and response is of the highest priority for Shell. Since we originally began planning for exploration drilling in 2007 we have taken unprecedented steps to ensure we can operate safely and responsibly in the Arctic. We recognized even then that any low probability, high impact event warranted this kind of consideration.

Shell has an approved Oil Discharge Prevention and Contingency Plan (ODPCP) that is no "paper tiger". This has been the case since Shell returned to the Alaska Arctic OCS in 2007. It did not take the Deepwater Horizon event for Shell to develop comprehensive plans for, as a first priority, preventing an oil spill, and, in the unlikely event of an incident, effectively responding to an oil spill. Shell has the resources to respond with on-site oil spill response assets capable of deploying to the spill site within one hour of notification. Shell has an unprecedented three-tier system to respond to a spill offshore, near shore, and onshore/shoreline with trained personnel that 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 (e.g., Nanuq), 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.

Should direct, mechanical capping fail to fully contain a subsea blowout, Shell is preparing a subsea collection system that would capture oil flowing from a leaking well as close to the source as possible, then pipe it to a dedicated surface separation/storage equipment barge and properly and safely dispose of all collected hydrocarbons. By capturing the oil below the surface, interference with ice would be avoided and surface oil spill containment and collection efforts would be simplified. The current basis of design involves a subsea dome that would be suspended over a leaking well. Gas would be piped to a surface flare system and oil would be piped to separator(s) on a barge. Recovered water would be separated to remove oil and disposed of properly. Oil would be temporarily stored aboard the barge in tanks for offsite disposal, or flared with the gas. In this system there would be no direct connection to the wellhead or BOP, but oil escaping from the leaking well into the water column would be captured near the leak and not allowed to flow to the ocean's surface in an uncontrolled manner. Surface oil spill response equipment would remain on station in the immediate area to capture any remaining oil that may escape the collection system.

Conclusion

Shell is ready for exploration drilling during the open water season of 2011. Since the President's announcement on May 27, 2010, that no exploration drilling would occur in 2010 in Alaska, we have received no guidance on changes to the regulatory path forward for Alaska's OCS. This highlights Shell's concern that the regulatory framework creates a "de facto" moratorium in Alaska going forward – with substantial adverse impacts on much critical OCS exploration efforts, the oil and gas industry, its suppliers, and regional economies that threaten to be felt far longer than the limited suspension.

Shell submitted comprehensive plans for exploration in the Chukchi and Beaufort Seas during 2010. Those plans exceeded regulatory requirements, especially in regard to primary well control and oil spill response. The Department of Interior (DOI) correctly approved those plans. After DOI issued those approvals, Secretary Salazar announced that the agency would not process APDs because of some generalized concern about oil spill risks following the Deepwater Horizon event, an event the cause of which has no relevance to Shell's approved Alaska projects. Last week, we submitted our APD for a single well in Camden Bay in 2011. We also responded to all of DOI's additional questions regarding safety. This exploration plan, which reflects 60 years of experience conducting exploration and development drilling in the offshore (including many wells in the Beaufort and Chukchi Seas), meets the highest operational and environmental standards. It is time to get back to work.

Please let me know if you have any additional questions.

Sincerely,

Marvin E. Odum, President
Shell Oil Company

Enclosure

ATTACHMENT A

Although oceanographic studies in the Alaskan Chukchi and Beaufort Seas have occurred for nearly 100 years, the results of the Outer Continental Shelf Environmental Assessment Program (OSCEAP), a program operated from its inception in 1975 through until the early 1990's, provides a solid basis of historic baseline information for the Chukchi and Beaufort offshore environments. This program was funded through a joint agreement of the Bureau of Land Management (subsequently operated by the Minerals Management Service) and the National Oceanographic and Atmospheric Administration. OSCEAP generated a large multidisciplinary data set incorporating physical oceanography, marine chemistry, biological assessments of birds, mammals, plankton, benthos, and fisheries. While many of the studies were conducted one to two decades ago, this data set generated hundreds of valuable reports and publications accessible through http://www.arlis.org/resources/ocseap-reports/. Subsequent studies utilize this important data set as a basis for evaluating change but largely re-verify the findings of this program.

As a continuation of the OSCEAP process the BOEMRE has carried out an Environmental Studies Program to collect baseline and applied science data on the Chukchi and Beaufort Seas. Environmental, social, and economic data have been gathered and synthesized specifically to support decision-making for the offshore oil and gas program. The BOEMRE uses information from the studies program to evaluate potential environmental problems associated with all levels of oil and gas activities. A list of completed studies is available at http://alaska.boemre.gov/ess/completed/complete.pdf and the studies can be downloaded for review at http://alaska.boemre.gov/reports/2010rpts/2010rpts.HTM. Studies have focused on: oil spill risk estimation and effect; socioeconomics including traditional knowledge, subsistence and whaling; oceanography including circulation, ice and sediment quality; and biological resources including marine mammals, seabirds, fish, lower trophic organisms and special habitats such as boulder patches. Key data sets include the Bowhead Whale Aerial Survey Program (BWASP), Arctic Nearshore Impact Monitoring in the Development Area (ANIMIDA), and the Chukchi Offshore Monitoring in Drilling Area (COMIDA) program.

Arctic Nearshore Impact Monitoring in the Development Area has been a continuous program since 1998, at first designed to characterize the pre-construction environment at offshore oil and gas infrastructure development locations such as Northstar and Liberty in the Beaufort Sea, and monitor selected parameters over time to assess potential changes related to oil and gas development. It continues post-construction as the Continuation of Arctic Nearshore Impact Monitoring in Development Area (CANIMIDA) program.

BOEMRE conducted aerial surveys for bowhead whales and other marine mammals in the Beaufort Sea and Chukchi Sea from 1987 to 2007 as part of BWASP. The survey program is aimed at evaluating the distribution and habitat use of bowhead whales during the fall migration period. Similar BOEMRE-supported surveys have been conducted during the bowhead migration in the Beaufort Sea and Chukchi Sea since 1979. Beginning in 2007, the surveys are being conducted with

BOEMRE support by the National Marine Fisheries Service (NMFS), National Marine Mammal Laboratory through an interagency agreement. Data from all of these surveys are combined in a single database referred to as the BWASP database. The historical database is currently available for 1979-2006 at http://alaska.boemre.gov/ess/bwasp/xbwasp.htm.

In 2008 MMS initiated the Chukchi Offshore Monitoring in the Drilling Area (COMIDA) initiative which, to date, includes aerial surveys of marine mammals and an extensive lease-sale wide evaluation of sediment chemistry, benthic ecology, and food web analysis. As the operator of the COMIDA Chemistry and Benthos program, the University of Texas also contracted with the Oil and Gas industry to add fisheries in 2009 and fisheries, marine birds and marine mammals in 2010 to the multi-disciplinary evaluation of the offshore environment.

In the 2000's a National Science Foundation funded initiative, the Shelf Basin Interaction program, has utilized an extensive network of independent scientists to "understand physical and biogeochemical processes that link the arctic shelves, slopes, and deep basins with the context of global change." SBI links data from the various disciplines including benthic ecology, plankton, microbiology, primary productivity, water chemistry, hydrography, ice evaluations, and meteorology in a system level evaluation of the Arctic offshore:
http://www.eol.ucar.edu/projects/sbi/index.html .

Since 2004 the Russian-American Long-term Census of the Arctic (RUSALCA) operates under the auspices of two Memoranda of Understanding between NOAA and, respectively, the Russian Academy of Sciences and Roshydromet. RUSALCA is another multi-year / multi-disciplinary investigative program that utilizes international teams of scientists aboard scientific cruises, the establishment of long-term moorings, and modeling to understand the causes and consequences of reductions in sea ice cover. While RUSALCA is not specifically tied to the interpretation of potential impacts of offshore exploration and development, it provides a critical link to historic data sets and a means for understanding and predicting current changes in the Arctic ecosystem:
http://www.arctic.noaa.gov/aro/russian-american/ .

Since the 1970's, the Oil and Gas community has been a significant contributor to science in the Alaskan onshore and offshore. Studies have been conducted, either as mandated by permit as needed to support NEPA processes, or as efforts to understand and operate appropriately. Significant among these historic studies are evaluations of marine mammals in the Chukchi Sea from the 80's, thirty-plus years of nearshore fisheries data for the Beaufort Sea, and acoustic evaluation of impacts of an offshore production facility, to name a few. Thousands of miles of marine mammal surveys have provided new data on these species as well as supporting the implementation of protective and mitigation measures required by regulatory authorizations.

Since 2005 there has be a significant increase in industry funded studies in the Alaskan Arctic OCS. Of note among these many studies is a joint studies program operated by ConocoPhillips, Shell, and Statoil has made a three year intensive evaluation of high priority lease hold areas in the Chukchi

Sea. In addition to the integrated interdisciplinary systems evaluation, including physical oceanography, sediment chemistry, benthos, plankton, nutrients, marine birds and marine mammals, the joint studies program has established and maintained an extensive network of acoustic recorders in both the Chukchi and Beaufort Seas. The 45 recorder network in the Chukchi provides an understanding of seasonal movements of marine mammals and of interactions between industry activities, the acoustic environment, and marine mammals. The 35 recorder array in the Beaufort Sea is focused upon tracking the migratory movements of the bowhead whale and evaluating effects of industry activities.