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Responses to Written Questions

Received From

The Honorable Ed Markey

Chairman, Subcommittee on Energy and Environment

Committee on Energy and Commerce

United States House of Representatives

In Advance of the Subcommittee Hearing

“Drilling Down on America’s Energy Future:

Safety, Security and Clean Energy”

To Be Held on

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Q 1: Please detail the amount of capital investments Shell has made in oil and gas exploration in each of the last three fiscal years. Of these investments, please detail how much was spent on exploration of new fields.

Shell's total exploration expenditures were: 2009, \$3.8 billion; 2008, \$3.6 billion; 2007, \$3.2 billion. Total capital investment in Shell's Upstream business segment was as follows: 2009, \$ 21.1 billion; 2008, \$28.9 billion; 2007, \$18.6 billion. Our Upstream businesses explore for and extract crude oil and natural gas, often in joint ventures with international and national oil companies.

Q2: How much money has Shell invested in each of the last three years on research and development generally? Of these research and development investments, how much was focused on the research and development of safer offshore drilling technologies? How much was focused on technologies related to rig safety and accident prevention? How much was focused on spill response technologies? How much was focused on research regarding renewable and alternative energy sources? Please break down that investment by renewable type (e.g. wind, solar, etc.).

Total research and development spending for 2009 - \$1.1 billion; 2008 - \$1.2 billion; and 2007 - \$1.2 billion. The investment for research and development is not broken out by business or category. Although we do not have a separate R&D budget for safety, I can say that safety is a core focus of everything we do. Identifying safer "ways of working", such as improvements in processes, procedures and training, is a strong focus. Developing improvements in technology that lower risks to the environment and to our people and reduce our footprint are valuable business drivers.

Q3: How much has your company invested in deployment of renewable and alternative energy in each of the last three fiscal years? Please break down that investment by renewable energy type (wind, solar, etc.). What proportion of your revenue is currently derived from renewable or alternative energy production?

Over the past five years we have spent \$2 billion on alternative energies, including biofuels and carbon capture and storage (CCS) technologies. In related investment, we have announced Shell's intention to form a circa \$12 billion downstream joint venture with Cosan in Brazil for the production of ethanol, sugar and power, and the supply, distribution and retail of transportation fuels. Shell is actively pursuing research and development into advanced third generation biofuels. Shell is involved in 8 wind projects in the United States, with a total capacity of almost 900 megawatts.

Q4: What steps do you believe the United States and private industry should take to reduce the threats posed by climate change? Does Shell support an economy wide cap on greenhouse gas emissions that includes transportation fuels? Would Shell be able to pass any of the costs of purchasing emission allowances through to its customers? If so, what percentage would be passed through?

The United States should pass market-based legislation that caps emissions economy-wide and tightens the cap at a rate that balances the need to preserve and create jobs with the need to meet emissions reduction targets proposed by the Administration. Appropriate market-based legislation allows businesses to reduce emissions at the lowest possible cost to the economy and consumers because businesses will be able to choose lower-cost abatement technologies first. A price on CO₂ will stimulate job creation by providing incentive for the development/deployment of technology and increase the development and use of clean energies such as natural gas, nuclear power and renewable fuels.

Private industry has a critical role to play in advising Congress and the Administration on the policies that will protect American enterprise and global competitiveness while creating jobs and growing the economy.

Additionally, private industry has a responsibility to improve energy efficiency and reduce its greenhouse gas emissions on its own. Shell seeks opportunities around the world to improve the efficiency of our operations while reducing a broad spectrum of emissions, including greenhouse gas emissions.

Does Shell support an economy wide cap on greenhouse gas emissions that includes transport fuels?

USCAP's Blueprint for Legislative Action, which Shell helped to write, calls for the inclusion of emissions from transport fuels under the cap. Shell supports fuels under the cap as long as this policy is accompanied by complimentary measures to reduce demand such as new CAFE standards and policies to reduce vehicle miles traveled. We support the hybrid approach to tailpipe emissions in the pending Kerry-Lieberman legislation which keeps fuels under the cap and requires fuel providers to buy allowances for these emissions from the government at a fixed price.

Would Shell be able to pass any of the costs of purchasing emission allowances through to its customers? If so what percentage would be passed through?

Shell could likely pass through some of the costs of purchasing allowances for direct emissions from facilities, although the level of pass-through will vary by region and will depend on several conditions, including elasticity of both supply and demand, competition from finished product imports and competition from alternative fuels. Shell anticipates being able to pass-through more of the costs for the purchase of allowances to cover tailpipe emissions. The percentage of pass-through would depend on the characteristics of the purchase program and competitive market forces.

Q 5: Is it the view of Shell that the world oil market is a free market where oil prices are dictated solely by supply and demand? If no, what other factors determine the global price of oil?

Oil is a global commodity. The current and future global supply of oil and the global demand for oil are two key factors that influence price. When there is an imbalance in supply vs. demand, the market reacts usually through price movements, to rebalance the market. There are many other factors that influence the market and that affect oil prices, such as perceptions about weather and political instability. Whether the market is a "free market" is a question open to interpretation. For example, the existence of OPEC and the fact that most of the world's proven oil reserves are held by state-owned oil companies may be seen as evidence that a significant proportion of global supply can be driven to some extent by non-commercial considerations.

Q6: How many offshore leases does your company hold under the Deep Water Royalty Relief Act that are not subject to the suspension of royalty relief based on market price? How much does Shell project to avoid in royalty payments on these leases over the next five years and over the next twenty-five years?

Shell owns a full or partial interest in 422 federal Gulf of Mexico OCS leases. Twenty-eight of those are subject to the Deepwater Royalty Relief Act ("DWRRA"), which requires that limited volumes of production be royalty free. Only four of those 28 leases are currently producing.

Shell has and always will pay all royalties that it is legally obligated to pay. In fact, Shell had agreed to pay royalties on 1998 and 1999 deepwater leases for which price threshold provisions had been inadvertently omitted, pending a determination as to whether those price threshold provisions were contrary to the DWRRA. As a result, Shell paid royalty on all leases during periods of high oil and gas prices. Because federal courts ultimately ruled that those price thresholds were unenforceable under the DWRRA, the royalties were returned.

Further, predicting the value of future royalties is too speculative and extremely difficult because such an analysis depends on a number of highly variable factors (including the current moratorium, exploration success, price variables (e.g., whether proposed price thresholds are met in any given year, etc.). More importantly, it is incorrect to assume that lessees are avoiding royalties that would otherwise be paid on deepwater leases because there is no way to determine whether, in the absence of the DWRRA, those leases would have been purchased.

Q7: What impact would drilling by Shell in the US Atlantic and Pacific Outer Continental Shelf areas previously under moratoria have on U.S. motor gasoline prices in 2020 and 2030? What impact would it have on total U.S. oil production and consumption?

While increased access to potential crude sources may put downward pressure on prices, the specific impact cannot be predicted. Ultimately, the price of gasoline and the price of crude are driven by the marketplace. Furthermore, there is no way to know today what factors will influence the market in 2020 and 2030, e.g., what are the fundamentals of the global oil market; what is the U.S. demand for oil and for gasoline as a motor fuel.

What we do know is that producing more oil and gas domestically will create jobs, fuel the economy, contribute to energy security and reduce the balance of trade deficit.

Q8: In responses to post-hearing questions from this committee in 2008, Shell stated that “Shell supports a level playing field...Shell does not believe in supporting one business at the expense of another one of its businesses...Shell does not support legislation that gives competitors a competitive edge at its expense.” In light of these comments, do you support the elimination of subsidies for oil and gas companies identified in the President’s Budget Request for the Fiscal Year 2011?

A tax policy that encourages economic growth, creates jobs, and increases America’s energy security is what America needs at this time. Given the current economic climate of sluggish growth and high unemployment, we believe that any new tax proposals should create or promote, rather than constrict, economic activity. API estimates that the total impact of the Administration’s FY 2011 budget on the oil & gas industry would amount to a tax increase of over \$80 billion over a 10-year period. Although such tax increases, on a superficial level, may be used to reduce projected budget shortfalls, we believe these tax increases will generally have a negative impact on economic growth. These increased taxes would mean less capital available to invest in U.S. energy production, resulting in fewer American jobs, both of which are desperately needed.

Q9: How many deep water oil rigs does your company operate in the Gulf of Mexico; how many does it operate around the world? In which countries are these rigs located? What are the major differences in regulatory, royalty, and tax policies between these countries that affect your operations and how do they compare to the United States?

Shell currently has four mobile offshore drilling units (MODUs) and six platform/TLP drilling rigs under contract in connection with its deepwater Gulf of Mexico operations. Shell’s Upstream businesses outside the US have the following number of rigs under contract: 2 – Brazil, 2 – Norway, 1 – Brunei, 1 – Philippines.

As to differences in regulatory, royalty, and tax policies between the countries in which Shell operates and how they compare to the United States; it is extremely difficult, if not impossible, to make comparisons with fundamentally different approaches to regulation and fiscal regimes.

Q10: What is the maximum worst-case spill scenario Shell is prepared to respond to from offshore oil operations in the Gulf of Mexico? Please outline the emergency plans you have in place to deal with deepwater blowouts.

Current calculated worst case discharge (as defined by MMS regulations at 30 CFR 254 pursuant to the OPA '90) in its Regional Oil Spill Response Plan (as approved by MMS) is 205,000 barrels/day. The particular location/scenario would be a deepwater blowout at approximately 3,000 ft water depth and 55 miles from nearest land. Mechanical recovery equipment currently under contract through the Marine Spill Response Corporation (MSRC) and other oil spill cooperatives is approximately 260,000 barrels/day de-rated recovery capacity, defined by regulation to be 20% of skimmer pump capacity. Initial response time is approximately 10 hours. Shell also has dispersant and in-situ burning capability through MSRC with an initial response time of approximately five hours. New dispersant quantities can be manufactured at an adequate rate and additional dispersant aircraft are available but not under contract.

Shell has a Spill Management Team (SMT) in place trained to manage an event in the Unified Command mode with the U.S. Coast Guard (Federal On-Scene Coordinator), other Federal agencies, and applicable State agencies. Shell's Emergency Operations Center is located in New Orleans, LA. The SMT has experience in managing spill events and in various drills, including a recent un-announced drill initiated by the MMS for sea-floor blowout at a similar location.

For source control operations to stop a well blowout, Shell has a separate Well Control Contingency Plan with a management team and equipment identified. Shell has access to deepwater rigs that are capable of drilling a relief well(s) if needed. A containment dome was previously fabricated and used successfully to contain pipeline leaks.

Shell was one of the companies that funded and participated in the DEEPSpill Joint Industry Program (JIP) in 2000 and 2001 in which oil and natural gas was released in deepwater off the coast of Norway and observed with remote operated vehicles and sampling equipment to determine the fate and trajectory of a deepwater blowout. Using the data acquired, the JIP, working with NOAA, developed deepwater spill model that provides fate and trajectory information from a deepwater blowout.

Going forward, industry and government will not only apply learnings from the incident investigations; they will also work to advance oil spill response capabilities and technologies and to incorporate those advancements into standards and operations.

Q11: What dispersants does Shell have stores of and why were they selected? How much of each formulation do you have? Where are such stores kept? What are the logistical and implementation challenges, if any, associated with changing type of dispersant?

The majority of the dispersant to which Shell has access is maintained by the Marine Spill Response Corporation (MSRC), which is an oil spill response organization (OSRO) approved by the U.S. Coast Guard. MSRC maintains the largest stock of dispersants in the U.S., with the majority being Corexit 9500 and 9527. The stock is warehoused at various locations throughout the US. It should be noted that the initial stockpile has been utilized and MSRC is re-stocking that dispersant with mostly Corexit 9500, which is the newer formulation and able to work effectively in a wide range of oil types – both crude oil and refined products. MSRC also has agreements with other OSROs that provide mutual aid access to their stockpiles here in the US and overseas.

Shell maintains a stock of 25,000 gallons of Corexit 9500 in Alaska for its planned operations in the Chukchi Sea. This dispersant is kept in a warehouse and on vessels.

Shell participates with its OSROs to select the dispersant that has low toxicity and the best effectiveness over the range of conditions that can be expected. Corexit 9500 has been extensively tested in laboratories, test tanks and in the ocean environment and found to be the best choice of dispersants that can be made available in the quantities needed. If a new dispersant is developed with lower toxicity and higher effectiveness, Shell would work through its OSROs to purchase and stockpile the product. See question #13 for more on this.

Q12: Does Shell conduct any evaluations regarding the efficacy or toxicity of dispersants and if so what are the results?

There is expansive and publicly available scientific literature on these issues. Many academic, industry, and agency scientists have conducted fundamental research on the efficacy and the toxicity of dispersants for application in areas like the Gulf of Mexico for decades, and Shell has been a partner in some of that research. In 2005, the National Research Council, part of the National Academy of Sciences, published an excellent review of scientific research on dispersants: [Oil Spill Dispersants: Efficacy and Effects](#) that updated their 1989 review [Using Oil Spill Dispersants on the Sea](#).

Shell is participating in several projects to advance oil spill technology and knowledge about response methods and efficacy. For example, Shell was a primary sponsor of the multi-year project known as the SINTEF Joint Industry Project. The results of this project have been widely shared. Peer-reviewed technical papers related to this study are being developed in order to further disseminate the results and to inform the scientific and policymaking communities. Shell is currently working with industry and others to develop a set of additional oil spill response projects that build on this study.

Q13: Does Shell believe that Corexit is the most effective EPA-approved dispersant for south Louisiana crude oil to respond to the current spill in the Gulf of Mexico? Does Shell have a financial interest in or other relationship with any companies that manufacture or sell and EPA-approved dispersant?

Based on extensive testing and actual applications of dispersants, the Corexit 9500 and 9527 products have been proven to be effective when responding to spills. Tests have been conducted by the manufacturer (Nalco), by Government agencies (like MMS, NOAA, and EPA) as part of studies, and by industry (as part of Joint Industry Projects and by individual companies). The keys in selecting an effective dispersant are: a) passing the EPA testing protocol (which includes toxicity) and being listed by EPA as an acceptable product, b) the effectiveness of the dispersant when applied to a variety of oil types (API gravity, viscosity, temperature when applied, energy required to mix in to the oil, etc.) to break up the oil into small droplets, c) being stockpiled as part of a shared volume that can be used by industry, and d) capability of the manufacturer to produce quantities to meet the demand and quality of the product required to be effective.

Shell does not have any financial interest in any dispersant company.

Q14: What recommendations does Shell have for improving the safety of offshore drilling and the efficacy of oil spill response?

As requested by Interior Secretary Salazar on April 29th, I sent a letter to Secretary Salazar that provides very specific recommendations to improve safety of offshore drilling. Shell's drilling experts participated on the Joint Industry Task Force, which offered suggestions to Secretary Salazar to consider in the formulation of his 30-day Safety Review and Report.



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Shell is participating in the USCG Incident-Specific Preparedness Review (ISPR) which will be starting shortly and conclude by year-end 2010. We have nominated a staff member with this particular expertise to assist. API has assembled several task forces to review the issues raised by the incident and to make safety and policy recommendations. We expect that the incident investigations and reviews will yield findings and learnings that will be acted on by OSROs and industry. We recommend that government, OSROs, and industry work together in these reviews and task forces to avoid duplication and to generate sound recommendations that can be implemented in an expeditious manner.

Shell continues to closely monitor the Deepwater Horizon incident and resulting oil spill. We're confident that the incident is being thoroughly investigated, and that the findings will be communicated and applied across the industry to prevent such events from occurring in the future. Although the cause of the incident may not be known for months, we have taken a number of proactive steps to reinforce safety and prevent a similar incident from happening in our offshore operations. Shell considers prevention of major incidents paramount and robustly applies multiple control barriers to prevent a loss of containment. This includes the maintenance, inspection and testing of safety critical systems with the aim of ensuring that they function in accordance with pre defined performance standards. Shell is also participating in an industry task force and looking at recommendations on improvements or precautions that will help prevent an incident like this from happening again.