

# CHUKCHI SEA OIL AND GAS DEVELOPMENT

## Summary

Offshore drilling for oil and gas in Alaska's Chukchi Sea has both great economic potential and a significant risk of adverse environmental impact.

### Storm battered Chukchi coast



*Hard wind drives waves against cliffs on the Chukchi Sea.*

The Chukchi Sea forms part of the Arctic Ocean, bordered in the east by northwestern Alaska between the Seward Peninsula and Barrow, and the west by Wrangel Island and northeastern Siberia. Estimates of oil and gas reserves on the US portion of the Continental Shelf, including both the Chukchi and the neighboring Beaufort Sea, range up to 30 billion barrels of oil equivalent, a reserve even greater than Alaska's famous Prudhoe Bay oil field.

The U.S. government began offering oil and gas leases in the Chukchi in the 1980s, but little exploration and no development occurred on them, and all these older leases have expired. A lease sale in 2008 prompted a new fight over offshore drilling in the Arctic. There is significant opposition to exploration/drilling in the area.

Environmental concerns include effects on wildlife, risks of a major spill, and effects on climate change. In July 2010, a federal judge halted exploration activities in the region, citing inadequacies in the Environmental Impact Statement (EIS). In August 2011, a revised version of EIS was made public by the government, paving the way for exploration to proceed. Dramatic issues with Shell's exploration operations in 2012, including the grounding of drill rig Kulluk in late 2012, halted exploration plans for two years. In August 2014 Shell announced new plans for exploration in summer of 2015.

## **Chukchi Oil and Gas Leases**

In 2008 the Federal government held an Outer Continental Shelf (OCS) lease sale in the Chukchi Sea for the first time since 1991, offering over 29 million acres. The sale successfully auctioned off 2.7 million acres of oil and gas leasing blocks in the Chukchi Sea and garnered over \$2.6 billion, of which \$2.1 billion was paid by Shell Gulf of Mexico Inc., and most of the rest by ConocoPhillips Company.

The Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), formerly known as the Minerals Management Service (MMS) and now broken into BOEM and BSEE, managed the sale. BOEMRE is responsible for managing and regulating oil and gas leases in all federal waters—those waters between the 3-mile state-owned line and the 200-mile exclusive economic zone. While many of these leases have been abandoned, Shell retains its claims, and the federal government is aiming for new lease sales in 2017.

Numerous environmental organizations and local residents filed lawsuits in opposition to the sale. Earth justice, representing 15 environmental and native groups, alleged that the MMS had not sufficiently considered the environmental impacts of the lease sale, persuading a federal judge to order the a halt in exploration in July 2010. As of 2014, drilling was still disallowed under an April 2014 injunction, however BOEM plans to deliver the required EIS by March 2015, clearing the way for Shell's 2015 drilling plans.

The MMS estimated the resources present in these future leases in the range of 0.15-12 billion barrels of oil and 0.5-54 trillion cubic feet of natural gas. The EIS that the MMS prepared for the lease sale only analyzed development of 1 billion barrels, the lower end of what is economically feasible. The minimal study was one reason cited in the 2010 injunction halting exploration on the leases.

While oil production on Alaska's North Slope began in 1977, all oil production to date has been on state lands and in near shore waters of the Beaufort Sea.

### **Chukchi coast**



*The Chukchi Sea coast has long sections where ribbons of barrier spit enclose shallow lagoons and other sections where cliffs drop straight into the sea.*

## **Environmental Concerns**

Concerns about drilling for oil and gas in the Chukchi Sea fall primarily into four categories:

- Direct impacts on wildlife
- Risk and impacts of a catastrophic spill
- Difficulty of cleaning up a spill in a remote and ice-choked ocean
- Effects on and from climate change

Ice has historically made marine operations and logistics difficult in the Chukchi Sea. Response to oil spills and other accidents can be severely hampered by unstable or moving sea ice (as occurs in freeze-up and break-up), darkness, extreme cold, and strong winds. With the retreat of sea ice in recent years, drilling has become more feasible in the area.

The region has not permanent major ports, tugboats, salvage vessels, or other major response assets. Infrastructure is very limited, without roads between settlements. Airports and harbors have limited facilities. Current drilling operations must be self-supported. This raises the concern that there are few available assets to respond to environmental accidents. Shell oil's Chukchi drilling plans were delayed 2012-2014 in part by difficulty in providing sufficient response forces.

### **Impacts on wildlife**

A common objection to drilling and seismic exploration in the Chukchi Sea is that very little is understood about the ecosystems that are present there. It is known that the Chukchi Sea is an important breeding and/or feeding ground for bowhead whales, beluga whales, polar bears, walruses, and a huge variety of bird species. However, very little is understood about the populations of these animals, their interactions, and the wealth of smaller organisms that make up the food web and ecosystem.

Our ignorance makes it very difficult to predict the impact of oil and gas resource development on wildlife. The EIS prepared by MMS for the 2008 lease sale noted the lack of data for many of the species of concern, and the recent court decision halting exploration in the Chukchi cited this as one of the primary objections to the sale—MMS noted the absence of information, but did not determine whether the information was necessary, or whether it could be obtained without exorbitant cost.

Several aspects of the Chukchi Sea ecosystem make it especially vulnerable to potential impacts of oil development. Many species in the region, like polar bears and bowhead whales, are long-lived with a low reproductive rate. Longevity makes them more vulnerable to toxin accumulation, and low fecundity means they are slower to recover population size after a disaster. Ecological activity is concentrated at ice edges and in narrow ice openings, where oil is expected to concentrate in the event of a spill. And arctic ecosystems are already under stress due to climate change.

Explorers for oil and gas often employ seismic surveys, which can disturb bowhead whales and other marine animals. Bowhead whales will avoid areas of excessive noise from seismic surveys and vessel traffic, potentially abandoning important feeding and migration areas.

Displacement could have an especially large impact during spring and fall migrations in the Chukchi, when bowheads are confined to a relatively narrow corridor. From the EIS for the lease sale:

*"We note that the period of just a single 3-D seismic survey could be half or more of the bowhead Beaufort Sea open water autumn migration/autumn feeding habitat use period. If another company or companies are interested in the same area (this is especially likely to occur in the Chukchi Sea evaluation area where there are no active leases) seismic survey activities could potentially exclude, through avoidance, bowhead whales from survey areas for the entire Beaufort Sea open-water autumn migration/autumn feeding period. .... Concentrations of loud noise and disturbance activities during the open-water period have the potential to cause large numbers of bowheads to avoid using areas for resting and feeding for long periods of time (days to months) while the noise producing activities continue."*

Bowhead whales are unlikely to be the only species affected since for example both seals and dolphins also rely on sound for navigation. Displacement of all these species makes them less available to local hunters. This is particularly important for Inupiaq villages along the coast that subsist on these animals.

## **Risks of a spill**

Drilling for oil and gas is more technically challenging offshore than on land and the cleanup of spills is far more difficult. The 2010 Deep water Horizon spill has garnered much media attention and political intervention, but it should also be noted that there have been 573 other offshore well blowouts or releases since 1955. Many of these were relatively small, but in total they have resulted in the spillage of many hundreds of thousands of tons of oil into the ocean.

Mediation of a large spill or blowout in the Chukchi Sea would be dramatically different from the response to the mess in the Gulf of Mexico in 2010. The nearest Coast Guard base is over 900 miles away and the nearest current oil company cleanup assets are also hundreds of miles away. There is almost no infrastructure along the northwestern Alaska coast; no deep water ports, no large airports, few helicopters, limited accommodations for emergency responders, and many fewer boats to assist in a cleanup operation. The Chukchi Sea is often subject to violent storms, extreme temperatures, and gale force winds. It is covered by ice and darkness much of the year. Drilling of a "relief" well such as the ones undertaken for the Deep water Horizon spill could be delayed for many months under these conditions, particularly in winter.



### Chukchi coast bird rookery



*Towering spires and cliffs host giant rookeries on Cape Thompson.*

*"We estimate the chance of a large spill greater than or equal to 1,000 bbl. occurring and entering offshore waters is within a range of 33-51%. ... If a large spill were to occur, the analysis identifies potentially significant impacts to bowhead whales, polar bears, essential fish habitat, marine and coastal birds, subsistence hunting, and archaeological sites."*

(From the Environmental Impact Statement prepared by the then-MMS for the 2008 OCS lease sale)

While the Federal government concludes that the risk of a "large spill" is quite high, they are still willing to accept the now-famous claim of both BP and Shell Oil that:

*"A large oil spill, such as a crude release from a blowout, is extremely rare and not considered a reasonably foreseeable impact."*

In May 2011, the BOEMRE released a revised EIS for the lease sale in which they estimated that a "large" spill could take up to 74 days to be contained and could release over 2 million barrels of oil.

### **Oil spill impacts**

Research on past oil spills, including the Exxon Valdez, have increased our understanding of the long term consequences of a spill. Oil has been shown to persist following a spill for decades and to continue to exert toxic effects. Recovery of affected organisms may be more difficult in the Arctic where many organisms are slow growing. Oil degrades more slowly in cold water; it would likely persist far longer than oil from spills like the Deepwater Horizon rupture.

Oil particularly impacts the eggs and larvae of many marine organisms. Fish may be affected for many generations after the spill, as was the case with salmon and herring after Exxon Valdez. Effects on critical species such as the Arctic Cod would have a major impact on the entire food web in the Chukchi Sea. Marine mammals are at risk through the oiling of fur and the inhalation of volatile compounds from the oil, which killed thousands of otters and hundreds of seals during the Exxon Valdez spill. Also at risk in the Chukchi Sea would be walruses, whales, and polar bears, all of which could suffer direct effects as well as long-term toxicity from the bio magnification of contaminants in their prey.

## **Climate change**

Both the production and consumption of fossil fuels such as oil and natural gas result in increased atmospheric levels of carbon dioxide and other greenhouse gases. The effects of the resultant climate change are not felt equally in all places; the Arctic is an area that is already seeing dramatic changes including coastal erosion, changing weather patterns, ocean acidification, melting permafrost, and retreating glaciers and sea ice.

Within the arctic, scientists believe that warming may have an accelerating feedback loop: as sea ice retreats, the exposed, dark ocean absorbs solar heat more efficiently than white ice. The ocean warms further, and ice melts more quickly. Likewise, larger expanses of Open Ocean allow larger waves to form, which in turn help break up sea ice. In September 2012, unprecedented 16-foot waves were measured in the nearby Beaufort Sea, at location which is believed to have been permanently covered by ice in the recent past.

Source:<http://www.groundtruthtrekking.org/Issues/AlaskaOilandGas/ChukchiSeaOilandGasDevelopment.html>