



A USEFUL PAUSE IN ARCTIC DRILLING

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Until last year, drilling for oil in the Arctic was the subject of considerable discussion focused not only on the potential impacts of Arctic resources on the oil market, but also on the environmental and geopolitical implications of opening this area to development. Prospects for Arctic drilling dimmed considerably in 2015 when Shell decided to abandon its ambitious drilling efforts in the Burger Field in the Chukchi Sea, writing off several billion dollars in the process. The recent collapse in oil prices has probably put a stop to Arctic drilling for the time being, and this pause may prove useful in resolving some of the outstanding issues.

The following four major factors, in reverse order, are likely to determine the future of oil development in the Arctic:

Fourth: Technology and Operational Capabilities. The Arctic presents daunting challenges for oil drillers, including ice, intense cold, severe ocean conditions, a sensitive environment, and isolation from major industrial centers and sources of help and rescue. Shell's experience drilling in the Chukchi Sea was fraught with problems, including the loss of a drill ship when its towrope broke. Over time, the industry will find creative and effective ways of dealing with these problems through a combination of new technology and new procedures.

Third: Property Rights. Potential Arctic oil and gas resources are located either within the 200-mile economic zones of sovereign states (including the US, Canada, Russia, Norway and Greenland/Denmark) or in international waters. Private oil companies cannot and will not invest the billions of dollars necessary for exploration and development unless they can obtain a clear contractual commitment that will protect their property rights. In most of the countries on the Arctic periphery, environmental concerns make granting these rights politically controversial. In Russia, the participation of western companies is limited by the current sanctions regime imposed in response to Ukraine.

Second: Oil Prices. Shell acquired its \$2.1 billion Chukchi Sea leases in 2008 at a time when oil prices first hit \$100 per barrel. Even if Arctic leases were being offered and could be acquired at a much lower price, the capital and operating costs of Arctic drilling will likely be prohibitive until oil prices recover to levels at least somewhat higher than today's \$30-35 per barrel. In this regard, it's worth noting that the recent massive decline in oil prices has resulted from oversupply and diminished expectations for global economic growth, but not from an absolute reduction in oil demand. The U.S. Energy Information Administration estimates that global oil demand increased by 1.4% in 2015 and projects a further increase of 3% by the end of 2017. The world will continue to need additional oil supplies in the future, and Arctic supplies are likely to come back into the equation at some point.

First and foremost: The Size of the Resources. Of all the problems that led to Shell abandoning its Burger Field program, the disappointing exploration results were the most serious. The U.S. Geological Survey (USGS) estimates that the Chukchi Shelf geological province contains 15.4 billion barrels of oil, but the range is between 2.3 and 40.1 billion barrels. This substantial uncertainty arises because the USGS bases its estimates on analogies with similar geological provinces elsewhere in the world. It is possible to narrow these estimates with the use of modern seismic (sonar) imaging, but only actual drilling can prove the presence of commercial quantities of oil. At \$100 million or more per well under Arctic conditions, the cost of obtaining this information is very high, hence, the high risks and consequent high return ambitions in the oil industry. As a further point, some unknown part of the Arctic hydrocarbon resource base is natural gas, which would require massive and expensive infrastructure to move to market even if large reserves were discovered.

The pause in Arctic activity, however long it may endure, may bring a number of benefits. Low oil prices encourage oil companies to research cheaper and more effective exploration

techniques, better drilling technology, and improved project management. A few years from now, the industry may be better equipped both to find oil and to handle the operational and environmental challenges of the Arctic. Furthermore, the pause will provide an opportunity to sort out some of the political issues regarding access to Arctic resources, particularly those in international waters. As a result, after the pause, the development of Arctic oil resources may be more efficient and more broadly acceptable to both the industry and the public.

About the Authors:

Bruce McKenzie Everett has over 40 years of experience in the international energy industry. He received a BA from Princeton University in 1969 and a Ph.D. from The Fletcher School in 1980. Between 1974 and 1980, he served in the Federal Energy Administration and the US Department of Energy in the Office of International Affairs. He joined ExxonMobil Corporation in 1980 and held a variety of executive positions all over the world in corporate planning, oil, natural gas, coal, business development and government relations. Since retiring from ExxonMobil in 2002, he has taught oil market economics as Adjunct Associate Professor of International Business at the Fletcher School.