[redacted] | Head of Europe and Central Asia Economics Team | Economics Unit | Foreign and Commonwealth Office | London SW1A 2AH [redacted]

From: [redacted]
Sent: 09 February 2011 15:20
To: [redacted]
Subject: FW: Russia press lines - Key Facts to update - Deadline 12.00 Thursday

[redacted]

See request below - happy to help if needs be.

[redacted] | Economist for South Asia and security issues | Economics Unit | Foreign and Commonwealth Office | London SW1A 2AH | [redacted]

From: [redacted]
Sent: 09 February 2011 15:18
To: [redacted]
Subject: Russia press lines - Key Facts to update - Deadline 12.00 Thursday

[redacted]

I'm updating the Russia Press Lines ahead of the visit of Russian Foreign Minister Lavrov.

Could you check that this section on key facts is still up to date for me?

I've been asked to update the Press Lines by tomorrow, so could you get back to me by 12.00 or 13.00 on Thursday?

Many thanks, and sorry for the short notice.

[redacted]
Russia Team
[redacted]

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6. **2/2/2011: FCO brief on Russia Energy/Climate Change for Lavrov Visit to UK (extract)**

Energy/Climate Change briefing for the PM/FS bilateral with Russian Foreign Minister Sergei Lavrov, 14-15 February 2011

Points to make:

Energy

[redacted] Welcome the new partnership between BP and Rosneft. [redacted]

- Note recent oil price rises. Oil price volatility is in no-one's interest. Hope we can work together on deepening the dialogue between producers and consumers, and so contributing to global energy security.

If raised:

- The **TNK-BP shareholders dispute** is a matter for courts or for arbitration.
- **Proposal by Russia for an International Energy Convention**. The EU is considering the proposal.

Background:

Energy

1. The UK is the largest foreign investor in the Russian energy sector. Shell has a 27.5% share in the Sakhalin-2 gas field project while BP owns 50% of TNK-BP, Russia's third largest oil company. Both companies are looking to expand operations in Russia and we are considering how best to support them.

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7. Jan 2011: FCO Accompanying Note to Lord Howell on Arctic Energy

1. One of the FCO's energy advisers [redacted] has recently produced a paper on Arctic energy (attached). Lord Howell may appreciate a summary of the main developments, and why this should matter to the Foreign Office.

2. On-shore Arctic oil production has been going on for decades, but more recently the possibility of increased *offshore* Arctic hydrocarbons has been exciting the industry. The media latched onto the issue following Russia's planting of a flag on the Arctic Ocean floor in 2007, and the issue has re-surfaced following BP's share swap with the Russian energy giant, RosNeft on 12 January. According to the US Geological Survey about 22% of the world's undiscovered but recoverable oil is to be found in the Arctic Ocean, with gas three times more abundant than oil. However significant production is unlikely in the short term (estimated in 20 years at the earliest).

3. Off-shore Arctic exploration and production is becoming increasingly attractive to industry because:

- **Global oil demand is predicted to grow by about 20% by 2030.** To meet this, new oil will be sought from increasingly difficult to reach places (e.g. the Brazilian "pre-salt" finds) or technically challenging and/or "dirty" (e.g. Canadian oil sands). New finds also help companies book the reserves they need on their books to keep share their value high;

- **Oil prices** are high and are predicted to continue rising (touching $100/barrel this year) which makes increasingly complex and expensive operations commercially viable;
- **Technology** is getting better (partly because of the incentive to invest in it) though comprehensive offshore Arctic capability is still not in place and production is not expected until 2030 at the earliest;
- **The melting ice cap** means that previously inaccessible areas are becoming accessible and new shipping routes are likely to open.

4. Considerable challenges remain. The most significant of these is environmental - and the possibility of a second Gulf of Mexico type event. The impact of such a spill in the Arctic would be proportionally higher due to the lower temperatures and (in winter) lack of sunlight that will inhibit oil-eating bacteria (which played a large role in cleaning up the Macondo spill). The Arctic ecosystem is particularly vulnerable, and emergency responses would be slower and harder than in the Gulf of Mexico due to the area's remoteness and the difficulty of operating in sub-zero temperatures. A situation compounded by the response lag resulting from the vast distances between points of habitation and at certain times, winter ice. Following its spill, the US has suspended plans to issue further exploration licences in its Arctic waters. WWF and Greenpeace have both called for a moratorium on Arctic exploration until these issues are resolved.

5. Higher atmospheric emissions from energy generation using Arctic hydrocarbons might well lead to international friction, especially if development is unconstrained; [redacted]. Although we do not expect a conflict, neither do we know how the dynamics will play out in the long term. However, the prospect of lucrative exploration rights seems to have been one of the main factors in Norway and Russia resolving their 40-year maritime border dispute in the Barents Sea in September 2010.

6. The main players in Arctic exploration are Russia, Canada, Denmark (due to its sovereignty over Greenland), Norway, the US and Sweden. The UK per se has no claim in the Arctic. However, the UK is a world leader on off-shore drilling regulation and has already been working closely with Norway on several off-shore safety initiatives including by the EU, G20, Oil Spill Response and Advisory Group (OSPRAG); and the Convention for the Protection of Marine Life. We also have extensive academic and commercial research interests and observer status at the Arctic Council.

7. As importantly, British companies would be well placed to take advantage of any commercial openings due to their technical expertise in complex deep water drilling. For example, Edinburgh-based energy company Cairn has won exploration rights in Greenland and plans to invest over £1bn over the next three years there. Additionally, the largest oil field in the US is in the Arctic (Prudhoe Bay on the Beaufort Sea) and operated by BP, which also has rights to on-shore arctic oil reserves in its Russian joint venture TNK-BP. Shell also have significant interests.

[redacted]

Comment

9. The commercial opportunities need for investment in new oil production and strong environmental campaign (likely to grow) all mean that the Government will be drawn into the debate. The oil companies will operate regardless, so the issue is how best to ensure the most responsible exploration, whilst ensuring maximum opportunities for UK (including Scottish SMEs) businesses, including the City and its financial and legal services industry.

10. Russia, the US, Canada and Norway are all priority energy countries and we already have good foundations for engagement on the Arctic. Norway, which has demonstrated its eagerness to improve links by locating Statoil's Business Development Unit in London, classes "The High North" as a foreign policy priority and could become a strong ally on this. Lord Howell will be visiting Norway on 3-4 February, and this would be a good opportunity to demonstrate our interest and willingness to work with the Norwegians.

[redacted]

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8. **Jan 2011: FCO Paper on Arctic Energy, produced by external energy adviser**

ARCTIC ENERGY – THE LAST PHYSICAL FRONTIER

PART ONE

1. EXECUTIVE SUMMARY

1. This paper has been written to try and identify and differentiate between the key questions that are starting to be raised in connection with the opening of the Arctic to hydrocarbon exploration. The paper will not therefore provide a guide to specific actions, but instead attempt to put forward the key issues that UK Government policy must address, especially through foreign diplomacy; the balance between protecting the environment and the rising global demand for hydrocarbons; the opportunity that development could bring to UK companies with decades of North Sea oil experience, against the UK's low carbon agenda. The paper is also an attempt to encapsulate all the issues in order to provide a single source point for the debates that are going to develop over the coming months and years.

2. It is necessary, therefore to note that Arctic Energy is by no means a new phenomenon; indeed Russia, Norway, the U.S. and Canada have been producing onshore oil and gas from within the Arctic Circle for decades. But a number of factors are now causing oil and gas companies to consider offshore Arctic development more seriously. Opportunities to access

undeveloped onshore oil and gas reserves worldwide are diminishing and offshore extraction technologies have improved. Meanwhile the Arctic ice cap is shrinking, exposing new sea routes and areas that can be explored for the first time. This is resulting in:

- a push to move north by oil and gas explorationists into deeper more hazardous and previously inaccessible waters
- growing competition between rival companies for access to the Arctic Ocean's remote but increasingly accessible oil and gas reserves
- willingness of both Arctic and non-Arctic nations to become involved in either the exploration activity or the debate; a debate that pitches environmentalists against those who seek to develop what could be the world's last frontier for unexplored petroleum resources.

3. This rising interest has now been given an additional impetus with the recently concluded deal between BP and Russian oil company RosNeft. A deal through which BP hopes to gain access to Russia's Arctic hydrocarbon reserves by offering its expertise, technology and finance. Whether this acts as a signal for further and increased interest in the Region has yet to be determined, but what it does do is demonstrate the perceived value of the opportunity to access Arctic reserves. Less well publicised, are the likely timelines for BP's ambitions – [redacted] – highlighting the scale of the challenges to offshore Arctic development.

4. Proposals to develop offshore Arctic energy are therefore not only pushing new frontiers of technology and political intervention, but are also generating new levels of environmentally concerned reaction. Indeed, Greenpeace have been quoted as stating, 'By drilling for oil in ever more dangerous, difficult to reach places the oil companies are taking us in the wrong direction'. While the WWF has called for a moratorium on Arctic oil extraction until proven safety technologies and adequate emergency response capacities are in place.

5. Yet if in the Arctic High North we do not seek the resources to satisfy growing global energy demand, it is unclear where else these resources might be found. It is important therefore to seek a sustainable and workable solution for development of the area's resources, a solution that satisfies as many interests as possible. For the UK, this raises the question of whether it has a role to play within the process and if so, how is that role to be defined and supported?

6. Commentators have played up the significance of the in the Arctic High North,Russian flag planting at the North Pole on the floor of the Arctic Ocean during a submarine expedition in 2007. This symbolic act was variously interpreted as provocative, neo-colonialist, and flouting international law. But more recent actions and rhetoric by the Arctic States have done much to allay

these earlier concerns. With the Illulisiat Declaration in 2008, Arctic States affirmed their commitment to the UN Convention on the Law of the Sea (UNCLOS) and to "the orderly settlement of any possible overlapping claims." In September 2010, Russia and Norway agreed on the delimitation of a disputed area in the Barents Sea (paving the way for future offshore petroleum development - see Section 5.)

2. SIGNIFICANCE TO THE UK OF ARTIC OIL DEVELOPMENT:

1. To a large part, the UK is an observer to the issues concerning the development of Arctic energy resources. The question being, however, is to what extent it can develop a role and to what end. Should it support its IOCs in developing deepwater operations in remote locations, or should it look to protection of the environment? Are the two objectives compatible, and if so, how? Equally, if the country is to support its IOCs, especially BP, how can it leverage the North Sea experience to help safely develop the Arctic's reserves?

2. When considering all the questions, the UK has to recognise first that it has no direct political decision-making role, but as a party to numerous conventions relating to the Arctic Ocean, we have a legitimate interest in the continued well-being of the Arctic and the sustainable future development of the region's resources. Balancing these international legal and environmental interests are potential economic and financial benefits.

3. British companies are already invested in Arctic petroleum exploration (see Section 8) and there are further opportunities on the horizon as global warming continues to melt the ice caps and thereby facilitates access to new areas. The UK could therefore also benefit from secondary support business, such as upstream supply chain equipment and services, shipping, refining, insurance and financial services.

4. It should also be recognised that it is unlikely that any of the issues or scenarios being discussed currently present the kind of opportunity to UK plc that the North Sea offered. But North Sea comparisons are certainly valid and North Sea experience will be at a premium should large scale development go ahead. In this story the UK has an opportunity to be a bit player, but first an overriding political question needs to be addressed. At what price – can the UK risk losing business opportunities for the sake of environmental protection? Weighing potential business benefits against certain international criticisism.

5. For the UK, interest in Arctic oil is therefore marginal and likely to be focused through the international debate over protection of the Arctic marine

environment and the fact that the UK is home or host to some of the world's largest IOCs.

6. Environmental protection and sustainable development of the Arctic is a legitimate concern for the UK. We have an interest in working with other countries to share knowledge and best practice that we have developed in licensing and regulation of UK offshore oil and gas production. In response to the Gulf of Mexico spill, for example, we have been consulting closely with Norway in several international initiatives to explain the "Gold Standard" for regulation in the North Sea. These initiatives include OSPRAG (Oil Spill Prevention and Response Advisory Group), the OSPAR Convention for the Protection of the Marine Environment, the European Commission, and the G-20.

7. Edinburgh-based Cairn Energy PLC has won offshore exploration rights in Greenland where the company is currently drilling exploration wells. At least one discovery of oil and gas has been made during the 2010 summer drilling season. This has attracted both Greenpeace protesters and UK media attention with questions about drilling safety and oil spill risk. Cairn plans to invest $1bn over the next three years in its Greenland programme.

8. Norway's Statoil, which has offshore Arctic acreage in the Barents Sea and Chukchi Sea, has special technical expertise in the harsh Arctic environment. Statoil have relocated their global Business Development Unit to the UK (effective from 1 January 2011). John Knight, a British Citizen, will head up the Unit. The Statoil Board of Directors also includes two British Citizens, Roy Franklin and Lady Barbara Judge.

[redacted]More significant commercial interests will undoubtedly rise following BP's recently announced RosNeft deal. [redacted] Potentially these opportunities are worth tens of billions to the majors. [redacted]

10. The UK also has an interest in Arctic energy research and new frontiers for future exploration. In July 2011, the UK will host an international conference on gas hydrates that will bring together industry and academics. Sponsors include the British Geological Survey, University of Birmingham, Heriot Watt University, and the National Oceanography Centre, Southampton.

PART TWO

3. INTRODUCTION

1. Currently there is very limited offshore Arctic oil and gas being produced in commercial quantities. However the rapid pace of both global warming and extraction technological advance means that the world's last frontier for petroleum may be open for exploration much sooner than expected just a few years ago. Given the region's huge potential for hydrocarbon production, the debate is therefore about whether development should be allowed to go ahead; whose voice in the debate has a right to be heard; and what is the acceptable risk to the environment should large scale development go ahead.

2. The main players are the Arctic Coastal States, in terms of size; Russia, Canada, Denmark, Sweden, Norway and the U.S. In Denmark's case, it is its sovereign control over Greenland that marks it out as an Arctic State.

3. It can be argued that the current high level of interest in the potential hydrocarbon wealth of the Arctic Region, and especially its oil, was triggered in August 2007 when a Russian submersible planted a titanium flag below the North Pole.

4. Seen by some commentators (especially in the U.S. and Canada) as a provocation, a neo-colonialist act, and a challenge to international rule of law, the Russian flag planting below the ice of the North Pole rapidly brought to world attention the heightened political interest of Arctic States in staking claim to Arctic territory.

5. But why in itself should the apparent symbolic claim by Russia to the Arctic's hydrocarbons bring on such strong emotions? The answer is simple. According to the U.S. Geological Survey, about 22% of the world's undiscovered but technically recoverable remaining hydrocarbons are to be found below the Arctic Ocean. In specific terms, the USGS estimates that the Arctic potentially holds 90 billion barrels of oil and 1,670 trillion cubic feet of natural gas. These unrecovered resources, set against forecasts by the International Energy Agency and others of declining world hydrocarbon reserves and increasing global energy demand, strongly suggest development should begin. Whoever can access and exploit these offshore reserves, aided as they are increasingly by ice melt caused by global warming, could therefore accrue huge dividends.

6. The question is, was the planting of the Russian flag in August 2007 the starting of a race to develop new resources, or the first serious shot at the start of a battle for control over one of the world's last pristine environments?

7. More recently, the case of the environmentalists has been given a considerable fillip through the publicity of BP's Gulf of Mexico spill. This has had the effect of refocused world attention on the environmental devastation that a major spill can bring and forcing a debate of oil exploration, environmental risk and regulation in most major offshore jurisdictions.

8. Even without the spectre of the Macondo well legacy, development of the Arctic's offshore hydrocarbon reserves would be at the extremes of current technology and logistics. Exploration and development would be limited to the summer months, icebergs and pack ice would pose an ever-present danger and all operations would have to be maintained offshore, remote from any onshore support facilities. Any resulting deep-water production would bring its own assortment of technical and environmentally challenging operations, from sub-sea wells and gathering plant, to on surface marine collection, processing and oil stabilisation vessels.

4. WHAT ARE ARCTIC HYDROCARBONS, EXACTLY?

1. Physically, oil and gas produced from below the Arctic Ocean will have the same range of characteristics as any other conventional hydrocarbon source. It is not the chemical composition that makes it unique, but its method of access and production.

2. As well as conventional oil in the sub-structures below the Arctic Oceans are anticipated to be large volumes of natural gas. The U.S. Geological Survey estimates that natural gas is three times more abundant than oil in the Arctic.

3. In addition, the seabed on the marine continental shelf of both Canada and Russia floor (at about 800 metres) are methane gas hydrates. According to one recent estimate by the UNEP / GRID Arendal Shelf Programme this source of methane equates to as much 53% of existing natural gas, worldwide. But as yet no commercial process has been developed to recover these reserves.

5. WHO HAS WHAT INTERESTS IN ARCTIC ENERGY?

1. Russia, the USA, Canada, Norway, Sweden and Denmark all have direct claim over, and a responsibility for, the hydrocarbons to be found below the Arctic Ocean.

2. Russia

With twenty percent of its landmass and over two million of its population within the Arctic Circle, Russia holds by far the largest claim over the region's natural resources, both on and offshore. Indeed its agreed share of the Arctic Circle is twice that of Canada.

Under the 1982 UN Convention on the Law of the Sea (UNCLOS), Russia is claiming sub-sea rights to an underwater formation called the Lomonosov and Mendeleyev Ridges, which runs out 1240 miles from Russian territory in Siberia, through the North Pole to Canada's northernmost point, Ellesmere

Island, which is also where Greenland's claim terminates. Russia publically reinforced its claim by planting its national flag on the Arctic Ocean's floor in the summer of 2007. [looks right, haven't checked the specific figures]

With their signing of UNCLOS, Arctic States established that in addition to an exclusion zone of 200 nautical miles from their individual coasts, each ratifying state has sovereign rights to all sub-sea minerals provided that they can prove that their area of the continental shelf extends beyond the old 200 nautical mile limit. All Arctic States have signed and ratified UNCLOS except for te U.S., whose Senate has yet to ratify the treaty.

Most of Russia's onshore Arctic reserves have already been distributed. Russia currently only distributes offshore reserves to state-controlled companies Gazprom (gas reserves) and Rosneft (oil reserves). [redacted] It responded in late 2010 by changing the law to allow international energy companies to enter into partnership with Gazprom or Rosneft offshore. This paved the way for the BP-Rosneft share swap agreement and has led other IOCs to court Rosneft and Gazprom.

Russia has shown a willingness to cooperate and compromise to resolve Arctic territorial disputes by reaching an agreement with Norway in September 2010 on a maritime demarcation in the Barents Sea. The new border agreement, which resolved a 40 year-long dispute, appears to have been at least partly motivated by a mutual desire to develop offshore oil and gas. Alongside the agreement, Russia and Norway also agreed a Memorandum of Understanding on trans-boundary field development. However, production from the area is thought to be at least 10-20 years in the future.

3. The U.S.A.

Perhaps surprisingly for many observers, direct U.S. territorial interest in Arctic Ocean hydrocarbons is limited. One-third of Alaska, on the Beaufort Sea and Chukchi Sea, lies within the Arctic Circle. The largest oil field in North America is located in the Arctic at Prudhoe Bay on the Beaufort Sea and is operated by BP.

Increasing geopolitical interest in the Arctic, including what economic opportunities may arise in the region due to global warming, has influenced the U.S. debate on ratification of the UNCLOS Treaty, which President Clinton signed in 1994.

Pending results of the investigation into the Deepwater Horizon spill, the U.S. has suspended plans to issue further oil exploration licenses in its Arctic territorial waters (including in the Beaufort Sea and Chukchi Sea).

4. Denmark

Denmark's only claim on Arctic reserves is through its sovereignty over Greenland which recently has become a focal point for offshore exploration. Greenland re-opened for offshore exploration in 2007 following a period of test drilling in the 1970s and in 2000. UK-based Cairn Energy announced an oil and gas discovery in September 2010 (see detail in Section 8 below).

5. Norway

The Arctic is a priority region for Norway both in political and economic terms. "The High North," as the Norwegians refer to their territory above the Arctic Circle, is a foreign policy priority region for the current Coalition Government. Practically this means that Norway: supports regional organisations (such as the Barents Secretariat, Northern Dimension, and the Arctic Council) that promote cooperation and development; supports international Arctic scientific research including on the island of Svalbard; prioritises cooperation with Russia in the Barents Sea region; and provides financial incentives to encourage Norwegians to live and work in the High North.

Norwegian companies are active in the upstream Arctic oil and gas sector. Statoil is an industry leader in the application of low-carbon technology to Arctic energy production. The Norwegian State-majority owned company operates the Snøhvit natural gas field located in the Barents Sea (145 KM from Hammerfest). The field came online in 2007 and provides feedstock for the world's first Arctic LNG plant at Melkøye, where Statoil strips CO2 from the gas during production and pipes it back to Snøhvit for sub-sea geological storage. The Aker Group is another technology leader, providing solutions for Arctic drilling, sub-surface infrastructure, and platforms that are resistant to icebergs.

Politically and commercially, Norway has placed priority on developing relationships and exploring new opportunities for energy cooperation with Russia. The Barents Sea demarcation agreement in September 2010 (see Russia section above) was trumpeted as an example of Arctic States applying the rule of law to resolve disputes in an orderly manner and thereby keep geopolitical tensions low. Business cooperation is positive with Statoil a 25% partner with Gazprom to develop the huge Shtokman gas field in the Eastern Barents Sea.

6. Canada

The Canadians opened their Arctic territory to petroleum in the 1960s and by the end of the decade, a gas discovery at Drake Point proved one of the largest fields in Canada. Oil from the Canadian Arctic (including from the technically challenging Beaufort Sea) first came online in commercial quantities by the late 1980s. Following the Gulf of Mexico accident, Canada decided to go ahead with plans to grant new offshore exploration licenses in the Beaufort Sea.

6. WHAT BENEFITS WILL ARCTIC OIL BRING TO THE ENERGY MARKETS?

1. Superficially, the obvious beneficiaries of Arctic hydrocarbon development will be the producer states and the IOCs who operate on their behalf. Consumers, of course, should also benefit as new reserves of oil and associated gas become available to replace depleted onshore reserves (this could prove particularly significant for Russia's aging onshore Arctic gas fields).

2. If development of the offshore Arctic therefore goes ahead on the large scale that some predict, one major beneficiary of the shrinking of Arctic ice cover could well be the gas industry and consequently the consumer. But potential access to new volumes brings its own questions and qualifications. In a world currently enjoying 'a gas golden age', the Arctic could provide huge additional resources. But at a price. It will not be cheap and investors will have to be prepared to take a very long-term view as it is doubtful Arctic gas will be able to compete on price terms for a long time, maybe even a couple of decades from now.

3. For transportation, however, global warming will open new shipping routes through Arctic waters. This will cut transport time from Arctic oil production sites to global markets. The journey time through the North East Passage (along the Russian Arctic Coast) from Europe to Asia is about 5,500 KM and 10 days less than via the traditional sea routes through the Suez Canal.

7. WHO IS INVESTING IN ARCTIC OIL?

1. As has already been noted, onshore hydrocarbon production, especially of oil, has been underway in Russia and the USA (Alaska) for at least two decades. The extension of this to offshore reserves has long been an ambition by both IOCs and NOCs, but until the Arctic ice fields started to shrink, remained little more than an ambition.

2. Already some companies have started to make small forays offshore in Arctic waters. The Chukchi Sea, Barents Sea, Beaufort Sea, and the waters off Greenland are considered the next frontiers for Arctic petroleum exploration. BP, Shell, ExxonMobil, and Statoil are just some of the major IOC's with business interests in the Arctic. Statoil increased its lease holdings in the Chukchi Sea in January 2010 by an asset swap with ConocoPhillips, which acquired Statoil holdings in the Gulf of Mexico. For an overview of British companies' Arctic interests, see Section 8.

8. IS ARCTIC OIL DEVELOPMENT SAFE FOR THE ENVIRONMENT?

1. The question of Arctic Oil production is extremely emotive; simply because of the impact development will have on the largely pristine environment. This is also mixed with the fact that warming is causing Arctic ice melt which is,

paradoxically, enabling exploitation of the region's hydrocarbon reserves to become a reality.

2. That Arctic sea ice is retreating and areas of ocean become accessible to survey vessels and exploration ships does not, however, mean that development will automatically succeed, from either a technical or environmental perspective. A WWF report, "Oil Spill Response Challenges in Arctic Waters," found that harsh Arctic weather conditions, remoteness and technological limitations combined to produce a "response gap" that effectively limits our ability to clean up after an oil spill. WWF has called for a moratorium on Arctic offshore oil development until this "response gap" is closed.

3. Environmental experts have also highlighted the unique qualities of the Arctic (such as extreme cold and long periods of darkness). Some fear that an oil spill would go unchecked for months if it occurred during the nine months of the year when ice prevents oil and gas operations. All agree that the cleanup would be more challenging than in more temperate marine areas.

4. Another consideration is the environmental risk associated with shipping future Arctic oil through new northern sea routes that are opening due to global warming. The Arctic Council looked at this issue in its 2009 "Arctic Marine Shipping Assessment."

9. SUMMARY

1. Arctic energy, while generating a large amount of column inches in journals and debate around the world, in reality has yet to generate much product. But the scale of estimated resources and the rapid pace of climate change that is opening access to those resources make the region of growing geopolitical and strategic importance. And it is the debate and the huge potential of a final frontier for exploration which make the topic so compelling.

2. Environmental risk is a prominent concern given the region's fragile and unique ecosystem. Oil spills are not the only threat. Many have pointed out the paradox that burning petroleum produced from the Arctic will accelerate the problem of melting ice, which may alter the buffering effect the Arctic provides the global climate system.

3. The debate over the development of offshore Arctic energy encapsulates the entire global warming, climate change, impact of hydrocarbons spectrum of issues. It has emotion, over the plight of the polar bears and the indigenous populations; it has geopolitical rivalry among Arctic Coastal States over marine jurisdictions; and it exemplifies the debate over environment versus development. As such, economic development in the Arctic region cannot be