There is a rapidly growing body of knowledge regarding the size and extent of large potential hydrocarbon resources throughout the Arctic region. Increased attention to the region is driven by a combination of factors including: the melting of the Arctic ice cap enabling ease of access to formerly difficult operating areas, the need for new sources of energy due to geopolitical issues such as difficulties in the Middle East, the depletion of existing hydrocarbon resources and the significantly increased demand for existing resources brought on by the energy needs of China and India which have become major importers of energy.

The melting of the Arctic ice cap in combination with developments elsewhere concerning future energy security are creating scenarios that range from low level friction to potential conflict between the eight nations surrounding the Arctic region. Russia and the US, the two most powerful regional military powers in the Arctic, view the Arctic as an area of the highest geostrategic importance for their future national security. Canada therefore cannot afford to be either slow or late in ensuring that its national security concerns are well known to all concerned and well represented through increased presence and capability in the region.

The region known as the Canadian Arctic is a vast area encompassing almost three million square kilometers. The Canadian Arctic land mass extends from approximately 60 degrees North latitude, the Latitude above which trees no longer grow, to the northern tip of Ellesmere Island, which is only 800 kilometers short of the North Pole, and from the Labrador Sea in the east to Alaska and the Beaufort Sea in the west. Even though the surrounding ice cap is melting the environment is harsh with severe cold and many weeks of complete darkness in the winter months.

As the Arctic ice cap melts providing increased ease of access to potential oil, coal and gas deposits how is Canada addressing the question of energy security, that is to say how should Canadian interests proceed with the development of dependable supplies at market prices, in such an immense area that is sparsely populated in relatively isolated communities?

There has already been oil, coal and gas deposits found and to some degree developed in the Mackenzie Delta and Western Arctic Islands of the Canadian Arctic. The potential for finding new deposits of natural gas and oil in these areas is quite high. Canada, the largest external supplier of oil and petroleum products to the US, exports approximately 2 million barrels per day of crude oil to the US, which is between 10% and 15% of US requirements. Canada consumes

about one million barrels of its own crude oil per day for domestic use. At present the Canadian Arctic region is only a minor contributor to this production. Anticipated increases in natural gas consumption in the coming decade due to higher oil and petroleum costs will heighten the need for new natural gas deposits to be found. Many think these new deposits will be found in the Arctic regions. This will bring additional pressures on the Canadian and US governments to control exploration, drilling and shipping.

These developments highlight the importance of energy security in the Canada-US relationship and point out that its importance can only increase given any significant finding of new oil and gas resources, either within the Canadian Arctic or across the Canada-US border areas in the Arctic. This could result in either mutual cooperation or become a source of friction depending on how both governments react to any new discoveries and in responding to internal domestic pressures.

In all there are eight countries that have lands within the Arctic region. They have formed the Arctic Council, an intergovernmental forum for addressing common concerns and challenges faced by the Arctic countries, namely: Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States of America. These countries have together sponsored the International Polar Year (IPY), a major Arctic and Antarctic science research initiative that ends in March 2009 (the Arctic Energy Summit forms part of IPY).

While all eight countries participate in and are engaged at high levels in all Arctic issues, Canada has been and will be one of the most significant Arctic actors given its region’s size, location and potential for finding new resources as the ice cap melts and new areas become open to exploration and exploitation of these new resources. The Canadian government has made Arctic energy security a high priority; however, in order to be successful the government must deal with many challenges such as: territorial disputes, human resource development, rural energy, shipping and transportation, environmental concerns, introduction of energy infrastructure, and the impact of climate change on people in the area.

All of the eight countries mentioned above have territorial and boundary disputes with their neighbours, but I will focus on the disputes involving the Canadian Arctic in particular. Canada and Denmark cannot agree over the ownership of Hans Island in the sea between Greenland and Baffin Island. The year round ice barrier previously prevented any direct confrontation and minimized the significance of Hans Island, but given the recent ease of access for shipping and potential claims for the surrounding seabed the two countries are in dispute over ownership of the island. The seabed north of Greenland and Baffin Island that also contains a ridge running

north from the Russian side of the Arctic is also presently in dispute as to the size and extent of each countries' ownership. In the Western Canadian Arctic, Canada and the US have a longstanding dispute over claims to territory on the adjacent seabed under the Beaufort Sea where it is anticipated significant oil and gas deposits will be found.

In order to address the issue of energy security in the Canadian Arctic the Canadian government is developing policies and programs that try to meet some of the challenges. At present these involve:

- mapping the Canadian Arctic and adjacent seabed areas in detail so as to be prepared for international disputes regarding boundaries and sovereignty issues;

- shipbuilding projects for both the Navy and the Coast Guard so as to ensure presence and sovereignty, especially with respect to the proposed increased use of the Northwest Passage, both for transport of any oil and gas but also any other shipping using the route;

- participating in circumpolar gatherings aimed at discussing Arctic issues; and

- funding research into the effects of climate change, for example the impact of melting permafrost, as well as the effect of economic development such as through extraction of oil and gas on the Arctic environment.

Canada is undertaking, sometimes in cooperation with adjacent countries such as the US, a major hydrographical project aimed at mapping Arctic coastlines and the adjacent seabed. This is a highly expensive effort involving the use of aircraft, ships, satellites and autonomous underwater vessels that can operate over long distances under the ice and out into the Arctic Ocean as well as the Beaufort Sea. The Canadian government assesses that territorial claims will be resolved based on hard mapping data that can be presented in international courts. Canada has had good results in the past in resolving such disputes in a similar manner with France over territorial claims surrounding the islands of St Pierre and Miquelon south of Newfoundland. That said Russia has already indicated that they may not agree with following such a course of action as they planted a Russian flag on the seabed at the North Pole and claim that the Lomonsov Ridge, which leads there, is an extension of their territory. The US has also demonstrated that international courts are not always their preferred way to deal with some

issues, especially those affecting national security issues.

In addition to national territorial claims a company based in the US has filed a claim with the United Nations to act as the sole "development agent" of Arctic seabed oil and gas. The company believes that Arctic petroleum deposits are for sharing between all mankind and that the polar region requires private development by a multinational consortium of oil companies to extract undersea resources responsibly and equitably. The Canadian government has dismissed the company's claim over Arctic oil as having no legal basis, but experts in polar issues have raised alarms about these actions, saying they could disrupt efforts to create an orderly regime for exploiting resources and protecting the Arctic environment under international law, rather than following a marketplace model.

Canada has announced plans to build a new icebreaker for the Canadian Coastguard and the procurement of six to eight armed icebreakers for the Canadian Navy. These vessels will be dedicated to establishing and maintaining a presence in the Canadian Arctic as well as in supporting the enforcement of Canadian laws within the Northwest Passage which is expecting to see increased flows of shipping, both in support of energy exploitation and as a shorter route for shipping between destinations along the shores of the Atlantic and Pacific Oceans. The issue of control and presence within the Canadian Arctic sea lanes is a sensitive topic for the Canadian government as historically there have likely been more presence and transit by US nuclear submarines than by any Canadian vessels given the previously permanent ice cover. The US policy is one of freedom of navigation for its Navy through what it defines as international straits and waters, including at present the Northwest Passage. While Canada currently believes the Northwest Passage comprises internal waters, there has been open discussion of perhaps modeling a solution with the US based on the agreements covering the St Lawrence Seaway.

Canada has in many cases either lead or been a major player over the past decades in international gatherings formed to address Arctic issues. The most recent of these is the Arctic Council, a "high level forum" established in September 1996 through a political declaration signed in Ottawa by representatives of the governments of Canada, Denmark/Greenland/Faroe Islands, Finland, Iceland, Norway, Russian Federation, Sweden, and the United States of America. The Council has four programmes aimed at environmental protection, an environmental monitoring and assessment program, conservation of Arctic flora and fauna, emergency preparedness, and protection of the marine environment. There are also indigenous Arctic people’s councils. In Canada’s Arctic the Inuit Circumpolar Council is of particular importance in dealing with the issues surrounding indigenous peoples.

In almost all cases the Canadian government is meeting the challenges needed to support energy security in the Arctic through active programs and policies; however in the case of

environmental impacts brought about by climate change and the need to extract and move oil and gas there must first be a significant effort to try and measure and then predict expected outcomes from these developments. To that end the Canadian government is funding a large number of research activities, both domestic and international. Some of these include measuring and assessing the impact: of the melting permafrost on infrastructure such as buildings, roads and pipelines; upon the well being and health of indigenous peoples as well as flora and fauna; on the seabed and marine life; and upon other resources such as fresh water. There is also the issue of methane gas which is presently trapped under the Arctic ice cap. As the cap melts, there is the potential for this gas to be released into the atmosphere. Scientists estimate that the amount of gas which could be released is equivalent to the amount of methane presently in the atmosphere. If such a gas release would occur the result would be increased global warming and potential reduction of the levels of oxygen needed by marine animals. It should be pointed out however that this issue requires significant further study. The completion of these environmental assessments is crucial to the further development of energy resources in the Canadian Arctic.

There is a certain irony in the fact that the Arctic environment above ground is one of very low energy, but underground, and undersea, there is a potentially very high amount of latent energy. The secure exploitation and transportation of oil and gas will be dependent on the Canadian government's success in meeting all of the challenges mentioned above. That said, it is most likely that, as history has often shown, the exploration for and development of oil and gas will proceed faster than anticipated politically motivated developments since it is driven by external factors such as high prices and the greater than expected rapid thawing of the Arctic ice cap. Current and previous Canadian governments, who perhaps admirably try to resolve such high profile matters through processes aimed achieving consensus, either internally or internationally, have always experienced a less than rapid approach to resolving such challenges. Many former Canadian governments have announced Arctic initiatives aimed at sovereignty and presence issues, including the acquisition of nuclear submarines, but few have met any of their objectives.

Given the present economic environment in which governments will be pushed to spend large amounts of money for projects that inject cash into the pockets of Canadians, it may appear that the time is ripe for the Canadian government to fund large projects in the Canadian Arctic. In the past in such dire economic times the Canadian government has tended to spend on projects that either directly affect or are of importance to the 80% of the Canadian population who live along the US border in the south of Canada; however, the melting ice cap and eager claimants to Arctic oil and gas will not allow Canada to stand idly by in hopes of putting off to the future any large expenditures in support of Arctic sovereignty. Thus the push for exploitation of any oil and gas found will challenge any Canadian government's ability to act quickly in successfully addressing many of the above challenges. Energy security in the Canadian Arctic may therefore rest upon either private companies or international agreements. This may be the greatest challenge of all for Canada and for energy security in the Arctic.

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