



The 8th Conference of
Parliamentarians of the Arctic Region

Fairbanks, United States, August 12-14, 2008



(Speeches from the Conference can be found at
<http://www.arcticparl.org/conferences.aspx>)

Front cover illustration from presentation of Adm. Henrik Kudsk, available at
http://www.arcticparl.org/_res/site/file/080812HenrikKudsk1.pdf,

Rear cover illustration from presentation of Mr. Robert Mills, MP, Canada; available at
http://www.arcticparl.org/_res/site/file/080813RobertWMills1.pdf

Other illustrations were taken from the presentations of the speakers with which the illustrations are associated.

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Foreword

The timing of the Eighth Conference of Arctic Parliamentarians could not have been more apt for the discussion and deliberation of its major themes: human health in the Arctic, maritime policy, climate change, and energy. As the world looks for answers on these issues, it will turn its gaze increasingly northward. We know better than anyone the daunting nature of some of these challenges and it is up to us to show the world that within them, lie opportunities for growth and development in the Arctic region.

It is also our charge to remind the world that while there is vast potential in the north, we cannot forget about another important type of resource: the human resource. We must take into account the impact our actions might have on the people who live in the high north.

I was incredibly proud of the research and perspective that Alaskans were able to share with our counterparts who traveled to Fairbanks from around the world, just as I know that we benefited from the intelligent and thought-provoking discussions and presentations shared with us.

I hope that many of the connections made during our brief time together help stimulate sound policy around the Arctic and I look forward to

seeing the spirit of collaboration and elevated debate continued when the Parliamentarians meet again in Brussels.

Senator Lisa Murkowski



U.S. Senator Lisa Murkowski (left), host, and head of U.S. Delegation, and Norwegian Parliamentarian Hill-Marta Solberg (right), Chair, Standing Committee of Parliamentarians of the Arctic Region

Eighth Conference of Parliamentarians of the Arctic Region

FAIRBANKS, ALASKA, UNITED STATES

12-14 AUGUST, 2008

Introduction

The Conference of Parliamentarians of the Arctic Region is a parliamentary body comprising delegations appointed by the national parliaments of the Arctic states (Canada, Denmark/Greenland/Faroe Islands, Finland, Iceland, Norway, Russian Federation, Sweden, and United States of America) and the European Parliament. Representatives of indigenous peoples are Permanent Participants. The indigenous peoples groups are the Aleut International Association, the Arctic Athabaskan Council, the Gwich'in Council International, the Inuit Circumpolar Council, the Saami Council, and the Russian Arctic Indigenous Peoples of the North. In addition there are several observers, including non-Arctic nations, and non-governmental organizations, interparliamentary groups, and academic institutions. The Conference meets every two years; the Eighth Conference was held in Fairbanks, USA, on August 12-14, 2008.

The Standing Committee carries on Arctic parliamentary cooperation between conferences. The Conference and the Standing Committee work to further Arctic cooperation, and act as a parliamentary forum for issues relating to the Arctic Council, as stated in its

charter “high level intergovernmental forum [providing] a means for promoting cooperation, coordination and interaction among the Arctic States;” which also provides for indigenous participation, and focuses on common Arctic issues, particularly sustainable development and environmental protection. Between Conferences, the Standing Committee also serves as an observer in the work of the Arctic Council.

The Eighth Conference of Parliamentarians of the Arctic Region took place in the United States, in Fairbanks, Alaska, 175 km south of the Arctic Circle, at the confluence of the Chena and Tanana Rivers. The immediate area is home to Athabaskan Indians, an inland Native people of both Alaska and northern Canada. The Conference was held on the campus of the University of Alaska – Fairbanks, overlooking the city and south to the snow-covered peaks of the Alaska Range. It was hosted by U.S. Senator Lisa Murkowski of Alaska, the U.S. member of the Standing Committee of Parliamentarians of the Arctic Region (SCPAR).

Over 130 people participated in the conference. The simultaneous meeting on campus of the Dialogue and Commission on Arctic Climate Change, under the auspices of the Aspen

Institute, allowed a rich and informal interaction of the scientists and other participants in the Commission with the participants of the Interparliamentary Conference, to the apparent benefit of both groups.

Major themes of the conference were

- Human health in the Arctic region
- Arctic marine policy
- Adaptation to climate change
- Development of rural energy resources in the Arctic

In addition, other themes recurred in many presentations. These included the results of the International Polar Year (IPY), and the need to preserve the benefits of the IPY international research effort as well as to preserve the actual data, the concern over the consequences of many more people entering this region for many ends and purposes than ever before, the possibility of unexpected fossil fuel resources in the Arctic region, and the unity of participants over the appropriateness of increased attention to Arctic matters generally.

Tuesday, 12 August 2008

The conference began with a welcoming lunch, and the singing by Jennifer Oden of *Alaska's Flag*. Also the Pavva Inupiat dancers performed several Native dances to welcome the assembly.

Sen. Lisa Murkowski, the U.S. member of SCPAR, gave the first welcoming speech, observing that while Alaskans all know that the United States is an Arctic nation, she finds herself occasionally reminding Americans outside of Alaska of this fact. She welcomed participants to Alaska, and noted that the distances traveled by so many delegates underlined the importance they assign to Arctic issues and opportunities. She further commented on the rapid pace of change in the Arctic, from the melting of permafrost to the providing of services ranging from transportation to health care for the various circumpolar peoples. Yet she noted that the rapid changes create not only problems but also opportunities: the opening of the Northwest Passage, a recent report by the U.S. Geological Survey on the potential for large amounts of undiscovered fuels, from oil, natural gas, natural gas liquids, in all areas north of the Arctic Circle. She also pointed to the challenges of protecting Arctic resources as development proceeds. As a result of such changes, she expects that she may no longer have to reinforce the fact that the United States is an Arctic nation.

Commenting that the assembly represented a wealth of knowledge concerning the Arctic environment, its peoples, its problems, and its future, she acknowledged that the citizens of Alaska particularly needed to be able to learn and benefit from that knowledge. The conference, the Senator said, would allow participants to learn from each other, to be proactive, and to return to their respective nations, there to form better policies for the future. She thanked the University of Alaska for serving as host, the State of Alaska, the City of Fairbanks and its citizens. She then thanked Hill-Marta Solberg, Chair of the Standing Committee of the Parliamentarians of the Arctic Region, and lauded Ms. Solberg's years of contributions to the organization.

Mark Hamilton, President of the University of Alaska, welcomed the conference to the campus, and charged the delegates to choose ambitious goals, and to "pick science over sophistry," given the importance of the topics to be covered, and the fact that many of the topics concern the survival of the peoples of the Arctic in a changing environment. He urged delegates to seek collaboration and wished them luck in all their efforts.

Patricia Cochran, Chair of the Inuit Circumpolar Council (ICC) welcomed the conference on behalf of the ICC, and according to Inuit tradition, began with offering traditional thanks to the Creator and remembering elders. She noted that the U.N. Environmental Program urged nations to look North for the barometer of environmental change. She reported the U.S. National

Aeronautics and Space Administration says that the Arctic Ocean may soon be like the Great Lakes between the United States and Canada, freezing and thawing every year. Are northern governments and indigenous people ready for the scale of change and development that is likely to follow? Do northern governments have the laws, institutions, and policies to handle what is coming? Are interested parties working together to assure that development is environmentally and culturally sustainable? In this setting and others, the ICC may raise questions that others might prefer to avoid, and she feared that Native peoples may be pushed aside in decisions concerning the Arctic Region. While the five nations of the Arctic Ocean rim recently agreed in Illulisat Greenland that no additional laws or treaties are needed to manage Arctic development, Native peoples were excluded from sessions which drafted that statement. Ms. Cochran argued that the ICC should have had a seat in that forum, and in all future discussions of the Arctic Region.

She asked Arctic parliamentarians to demonstrate their laudable commitment to Native participation by expanding the Native role in the Arctic Council and in other fora. With the movement of many organizations – scientific, regional, national, non-governmental, and others -- into a role in the Arctic, it is clear that many non-Arctic interests are attempting to play a role in the Arctic. While welcoming any attempts to strengthen the functioning of the Arctic Council, Ms. Cochran offered the hope that Arctic parliamentarians would ask newcomer entities (a) what

resources those entities might bring to the Arctic Council that would assist indigenous peoples in expanding their roles in the Council, and (b) how those entities have demonstrated their past commitment to indigenous peoples? Finally, she stated that Arctic Native people are planning an indigenous peoples' summit in April 2009 in Anchorage on Arctic climate change. Her hope was that the results of the summit would be discussed at the Copenhagen meetings on climate change in 2009, and that Arctic parliamentarians -- especially those from Denmark -- would ensure that the results of the Anchorage summit would be considered in Copenhagen.

Next, Alaska *Governor Sarah Palin* welcomed parliamentarians to the Land of the Midnight Sun --- an honorific shared by the other member nations as well. Focusing on energy, she argued that the varied northern energy resources in Alaska (wind, biomass, geothermal, tidal, solar, and non-renewables) might even be called ample, and can be developed responsibly and safely. Even so, realities such as harsh climates, challenging geography, and long distances can and do make life very difficult for rural communities. The high world energy prices, plus high delivery costs make the challenges even greater in Alaska than elsewhere. These costs have made subsistence hunting too expensive to continue in some instances. She held that the world's energy crisis imperils Native culture, and supported inviting Natives to participate more fully in forming energy policy.

Gov. Palin also alluded to recent findings of the U.S. Geological Survey which she cited as offering evidence that at least 20% of the world's recoverable fossil fuels are in the Arctic region. She saw a need to work with a new generation of energy explorers to find, develop, and produce these resources and to do so in a manner that protects subsistence and natural resources, with development of new response techniques to protect pristine coastlines. The effort to do so would require cooperation not only within Alaska, but also with the rest of the United States and the rest of the Arctic nations and peoples. In the partnership supporting Arctic development, she averred that the advancement of one partner supports the advancement of others.

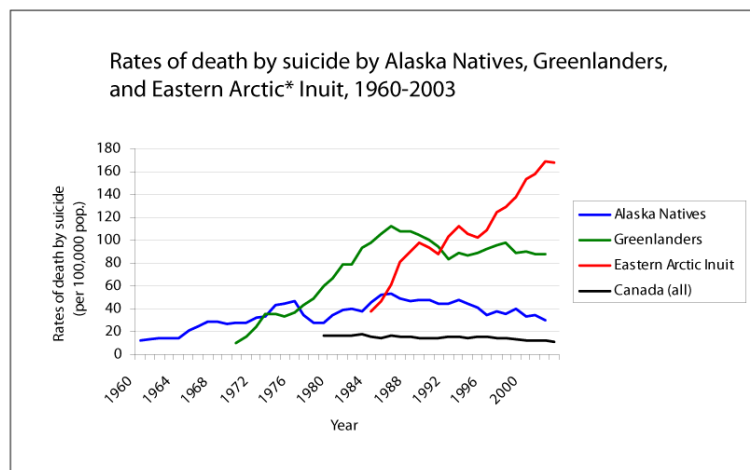
Sen. Murkowski closed the session, thanking all of the panelists for their remarks.

Human Health in the Arctic Environment

Dr. Alan Parkinson, Deputy Director of the Arctic Investigations Program (AIP) of the National Center for Infectious Disease at the U.S. Center for Disease Control and Prevention spoke first, and gave a broad overview of the state of knowledge concerning human health in the Arctic and gave a set of recommendations for improvement in this arena. His base is the Alaska

Native Medical Center in Anchorage. The Center works to prevent infectious disease morbidity and mortality in the region, emphasizing those diseases that are most frequent and of greatest concern to indigenous people. They give highest priority to vaccination, elimination of health disparities among Native groups (compared to the general population), emerging infectious diseases, preparedness and response, and circumpolar health promotion. He noted the participation of many partners, and the international, national, tribal, state, and private levels.

Dr. Parkinson gladly described the drop in infant mortality and morbidity in Alaska over the last 50 years, attributing much of the drop to childhood vaccinations, a trend also found in other Arctic nations. Vaccines against forms of bacterial meningitis, pneumonia, and Hepatitis B, have all played a role. In addition, there have been contributions from improved sanitation in some areas (through safe water supplies and better sewage disposal), community medicine, medical access for treatment of injuries and



illness, and smoking cessation programs.

Unfortunately, there are still substantial health disparities for Native people compared to the entire U.S. population: life expectancies more than 11 years shorter, injury-related mortality 3.3 times greater, suicide deaths 4.2 times more frequent, and other discrepancies. (See **Figure 1**, Rates of Death by Suicide.) Additional concerns include higher rates of cancer, infant mortality, and infectious disease. Moreover, certain other problems are not unique to Alaska, but are common among many Arctic populations: environmental contaminants (including organochlorines in traditional foods), and cultural shifts from traditional to global economies. He pointed out that the latter lead not only to increases in diabetes, hypertension, etc., but also socio-medical problems such as drug abuse, child abuse, alcoholism, domestic violence, and suicide.

Global climate change, much discussed in the Arctic, can result in direct health effects, from the introduction of new zoonoses and injuries related to crumbling sea ice, to the stress of rapid cultural change. He argued that in all likelihood, those living closest to the land would be most vulnerable.

International cooperation in the polar region is extensive and strong. The International Union for Circumpolar Health (IUCH) brings together five national or transnational health agencies from the U.S., Canada, Nordic countries, Siberia, and Greenland/ Denmark. In addition, the Northern Dimension

Partnership in Public Health and Social Wellbeing, with members from 13 countries, works to (a) reduce major communicable diseases and prevent non-communicable diseases or those resulting especially from risky behavior or social distress; and (b) promote healthy and socially rewarding living.

Dr. Parkinson reported that there are several other groups active on health and related matters in the region. These include the Barents Euro-Arctic Council's program, which focuses on communicable diseases and promotion of healthy living, as well as delivery of primary health care services. The Northern Forum, an organization of regional or subregional Arctic governments, focuses on healthy lifestyles, telemedicine to improve health care, improved professional training, and disease monitoring. Last, the Arctic Council includes within its structure a Human Health Assessment Group (HHAG) as part of the Arctic Monitoring and Assessment Program. HHAG focuses on contaminants and their effects on human health. Also within the Arctic Council, another group, the Sustainable Development Working Group, has projects on children and youth in the Arctic, telemedicine, surveillance for emerging infectious disease, and the Arctic Human Health Initiative. The last is a broad effort concerning health networking, collaboration, education, and direction after the end of the IPY.

Dr. Parkinson noted that health issues have not been particularly visible as an Arctic issue, and this problem has limited planning and development of

long term strategies. He concluded with four major recommendations:

- Support the development of a strategic plan for human health activities within the Arctic Council.
- Identify human health priorities that require action, and make recommendations to the Arctic Council.
- Provide country support for Arctic networks that enhance collaboration on health concerns of Arctic peoples.
- Promote forums to exchange information on best practices.

Leannandra Ross spoke next on “Southcentral Foundation’s NUKA Model: Customer Owned – Customer Driven Health Care.” She characterized the previous system of health care delivery to Native people and other residents of south central Alaska around Cook Inlet as “a disaster.” The system was impersonal, and patients rarely saw the same provider; dissatisfaction among both providers and patients was rampant. In 1982, Southcentral Foundation was established by Alaska Natives of the Cook Inlet Regional Corporation to provide services to this region, under contract with the federal government. She touted the high performance of and satisfaction with the new system, a view shared by both providers and patients. She reported their mission of working with the Native Community to achieve wellness through health and related services, with a focus on shared responsibility, quality, and family wellness. She cited 13 operating principles on which the health system is

based. These far-reaching principles included fostering relationships among the customer-owner, the family, and the provider; integrating services throughout the system, to eliminate disparate islands of care and avoid duplication; and supplying culturally appropriate care to build on the strength of Native cultures.

Dr. Douglas Eby, Vice-President of Medical Services at the Foundation, explained that over 26 years of service, the system has grown to 1,350 staff and 45,000 owner/customers; of the latter, 10,000 live in 55 remote villages. The management of Southcentral is currently 62% Alaska Native or American Indian. This structure helps the Foundation emphasize major health disparities in the Native community, such as cancer, obesity, diabetes, domestic violence, child neglect and abuse, substance abuse, dental health, and suicide incidence. Moreover, the Foundation encourages growing its own leadership, practitioners, and expertise.

A critical aspect of the program is its tie to Native culture and values. Culturally appropriate Native medicine is available, and a “Call to Warriors” program helps in recruiting partners in the challenges of family wellness. In addition, the Foundation also strongly emphasizes avoiding the common problems of emergency care, instead turning to long-lasting relationships between health practitioners and the patient/client/owners.

In the question and answer session that followed, a common thread was how the Southcentral Foundation and other Arctic region health providers

can keep costs down. Dr. Eby explained that their model was more similar to European health care delivery than a typical American community, which would tend to serve only a small segment of health problems, usually in a crisis setting. He added that methods of payment control had to change or health outcomes will not change. In response to a question regarding suicide rates, Dr. Parkinson noted that these rates correlate with rates of integration of Native people into the larger society. Other participants noted their concerns over effects of global climate change on Arctic peoples, and the stresses these changes put on human health. Substance abuse was seen partially as a response to a lack of control in a socially and physically changing environment.

Special Reports on Arctic Marine Policy

Rear Adm. Henrik Kudsk, Commander of the Greenland Command of Denmark, gave a sobering analysis of Maritime Safety in the Arctic. Among the statistics he cited about Greenland were these:

- Current population: ~57 000, with ~15 000 in Nuuk; the remainder in 16 settlements; most people speak the Native language, with Danish as a second language.
- Fishing is the most important industry, though sheep are also raised.
- The area has significant oil potential.

- Tourism, primarily via cruise ship, is increasing.
- The coastal surveys are poor in many areas.
- The island's northern and eastern coasts are closed by sea ice, and many not have open water every summer; populations are concentrated in areas that usually become ice-free.
- Winter limits outside activities.
- Oil development seems increasingly likely.

Search and rescue (SAR) missions are daunting efforts in this setting. There are no dedicated SAR resources. Instead, any available civilian, government, or military resources may be called in, but these resources are spread extremely thin, with the nearest backup in Iceland. Their headquarters are in Nuuk; while there are several stations on the west coast, the east coast has only two landing strips (including one on the far north coast) and a dog sled patrol unit. There are some icebreakers; the only helicopters are civilian (Air Greenland), and are based on the west coast. They cannot be operated at night (i.e., months at a time in Greenland).

Emerging challenges include (a) future and current mining and offshore activities; (b) new international shipping routes that will open seasonally as ice recedes; (c) new scientific research; and (d) cruise ship tourism (23,000 people in 2007; 55,000 expected in 2008). Adm. Kudsk noted that, in 2008, the expected number of visitors is close to the entire population of Greenland.

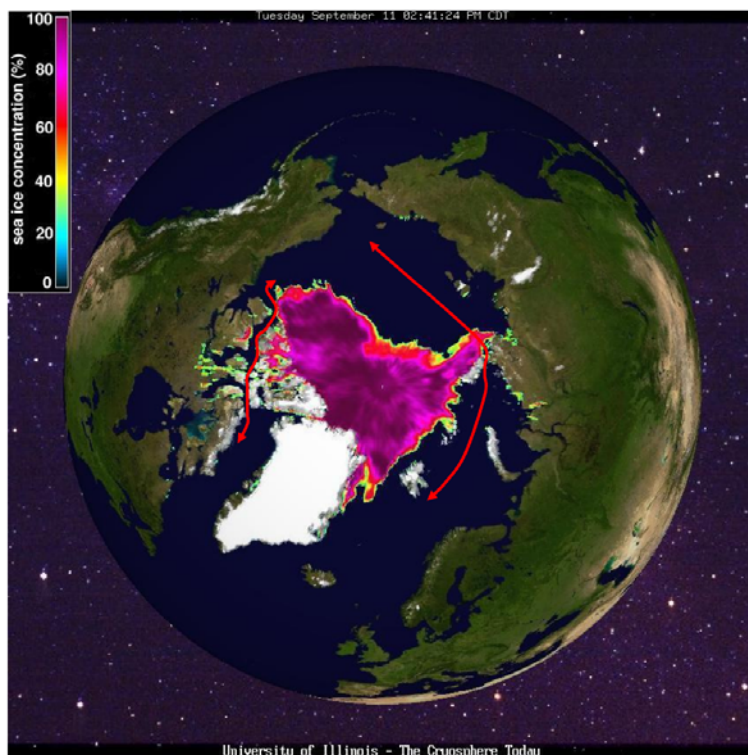
In sum, current SAR resources are not only well short of future needs, but also of current needs. He argued that it is simply not possible to rescue people from even one big cruise ship: a grounding of a cruise ship off the King George Island in Antarctica avoided catastrophe only by the presence of other vessels able to take on passengers.¹ There are fewer resources available around Greenland. Adm. Kudsk has sent letters to cruise ship owners, asking them in light of the danger to coordinate with other vessel owners to pair their ships, and thus add some margin of safety in these hazardous waters. He also noted that no directive from the International Maritime Organization exists for traffic in this area.

For the future, Adm. Kudsk and the Greenland command are working to monitor commercial and cruise ship activities. The Danish Maritime Authority seeks help from national governments to develop standards through the International Maritime Organization (IMO) for cruise ships and other marine traffic, including (1) mandatory standards for ship reporting systems, and (2) recommended guidelines for ships in Arctic waters. The latter would include guidelines for operations in ice-covered waters, voyage planning for cruise ships, and enhanced contingency planning for cruise ships operating when remote from SAR facilities. He hoped that Arctic region

parliamentarians might work with their own governments to support such standards. On a final note, he added that he did not want to see an actor playing “Adm. Kudsk” in an Arctic disaster movie a few decades hence.

Dr. Lawson Brigham, Chair of the Arctic Marine Shipping Assessment (AMSA), under the auspices of the Arctic Council, and a member of the U.S. Arctic Research Commission, provided an update on the activities and findings of the AMSA. He first reminded the conference that although sea ice in the Arctic is changing, the pole is still encased in an ice layer for much of the year. But in September 2007, a ship might have traveled, ice-free, from Norway, past Svalbard and Murmansk along the Russian coast to the Bering Sea, as well as from New York, through the Northwest Passage between Canada and Greenland, to the Bering Sea. (See **Figure 2**, Two Polar Routes.) While there is interannual variation, even traffic straight across the pole, from Churchill to Murmansk could be possible for a short time each summer in the next few years. He showed data demonstrating that average annual sea ice extent has been trending downward over the last 100 years, especially beginning about 50 years ago. The annual average, however, conceals the fact that the bulk of the decline is due to reductions in summer. Yet the decline is not monotonically decreasing: summer ice extent in 2008 is greater than it was in 2007. At least 75 ships have made their way to the North Pole in recent years.

¹ Lindblad *Explorer*, Nov. 23, 2007. The National Geographic research vessel *Endeavor*, the Norwegian cruise ship *Norde Norge*, a Brazilian Navy vessel, and a Chilean helicopter were all in the vicinity and assisted in recovering people from the 100-passenger ship.



Today's shipping use of the Arctic Ocean comes from exploitation of hardrock minerals, marine tourism, major fisheries, oil and gas exploration or development, summer sealift to supply northern settlements and installations, and scientific exploration. (See **Figure 3**, Arctic Ocean Uses.) The Assessment is expected to be complete in April 2009. Information sources also include electronic data collected from Arctic nations, and town hall meetings with the Council's Permanent Participants. An array of workshops has been held, including one on wrecks and collisions. Evidence is also in that some parts of the Arctic marine environment are more important than others. Dr. Brigham stated that the Bering Strait, for example, is clearly a key area for bowhead whale (*Balaena mysticetus*) migration. The prospect of increasing oil exploration and development also brings additional uncertainty to

addressing shipping challenges. He cited several areas as "wild cards" in estimating the future of Arctic shipping. These include:

(a) management and enforcement on access to living resources (e.g., whale and fisheries habitat);

(b) increased ship traffic bringing the prospect of additional CO, CO₂, ozone, and NO_x emissions in a relatively pristine environment, potentially making them comparable to emissions in industrialized countries, according to reports he cited;

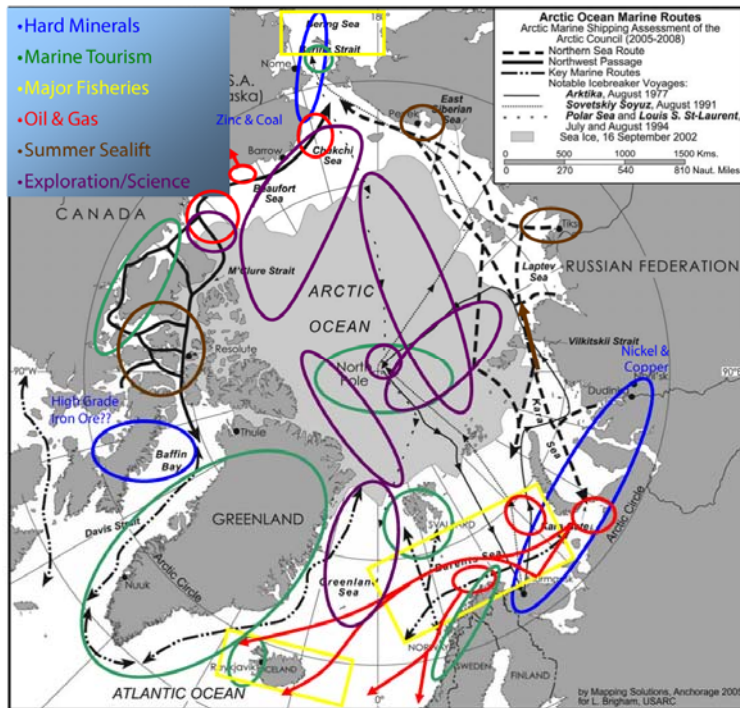
(c) potential for resource discoveries, e.g., a July 2008 report by the U.S. Geological Survey estimating that a significant portion of the world's undiscovered oil, natural gas, and natural gas liquids lie within the Arctic region²; and

(d) technology improvements in shipping to increase movement and access in the Arctic.

A complication arises from the wealth of participation in the AMSA: many participants have no real stake in the Arctic, either as an oceanic habitat, or as a place where people live. This widespread interest is a sign of the

² U.S. Geological Survey, 2008. *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*. Available at <http://pubs.usgs.gov/fs/2008/3049>. (Hereafter referred to as the *Circum-Arctic Resource Appraisal*.)

growing globalization of the Arctic Ocean – a phenomenon that is relatively new to the Arctic Council, at least in its intensity.



The final document is expected to contain Findings, a Research Agenda, and Recommendations, and will be negotiated among the parties to the AMSA. Dr. Brigham concluded by citing these likely recommendations in the final document:

- support the work of the International Maritime Organization;
- support the implementation of AMSA recommendations and research agenda;
- encourage infrastructure investments by Arctic nations and the global maritime industry

- support development of an SAR agreement, to be carried out by the maritime and aviation organizations of the eight Arctic nations.

Mr. Bjorn Bjarnanson, the Icelandic Minister of Justice and Ecclesiastical Affairs spoke on the Civilian Role for Safety in the North Atlantic. He cited first the actual and potential energy resources in the North Atlantic, and region's significance as a transport corridor, setting the stage for the area to become a key region in the global economy. This regional importance is long-standing, and includes Iceland's role in World War II as a transit point for ships bound from the United

States to Murmansk, and as a frontier in the Cold War when the United States maintained a military base in southwestern Iceland.

But Iceland has no military force, though it maintains a civil defense, Coast Guard, and immigration and border patrol. Mr. Bjarnanson said that these organizations play a role in the three priority contributions he defined for security in the North Atlantic:

- increasing capacity of key security institutions;
- coordinating national security operations;
- collaborating in the work of key Icelandic security operations

with that of neighboring countries.

These efforts at civil collaboration have recently included an agreement between Iceland and Norway for a specially designed tender for long range search and rescue helicopters; two or three would be based on the Icelandic coast. Historically, conflicts such as the “Cod War” between Iceland and Great Britain in the 1960s and 1970s might have suggested a military aspect to the controversies, but negotiated solutions were found. Boundary disputes may be frequent, but Mr. Bjarnanson argued that the 1982 U.N. Convention on the Law of the Sea (UNCLOS) and other treaties have provided a legal framework for resolving disputes.

Iceland, for example, extended its Exclusive Economic Zone (EEZ) to 200 nautical miles in 1975, but only in 2007 did agreement come between Iceland and its neighbors: the Norwegians on Jan Mayen to the north, the Danes and Greenlanders to the west, the Danes and Faroese to the east and the British to the south. As a party to UNCLOS, Iceland is also submitting its claim for continental shelf lands beyond 200 NM to the U.N. Commission on the Limits of the Continental Shelf (CLCS), in compliance with the May 2009 deadline for such submissions. The three areas at issue are one in the Ægir Basin in the “Banana Hole” north-east of Iceland, one on the Reykjanes Ridge south-west of Iceland and one in the Hatton-Rockall Area to the south.

In September 2006, leaders of Denmark, Norway, Iceland, and the Faroe Islands signed an agreement on

the division of the continental shelf beyond 200 NM; he characterized the preceding discussions as “extremely positive and constructive”, and further noted that he knew of no other multi-state agreement on division of the Outer Continental Shelf. Mr. Bjarnanson held that, as in this example, disputes on Arctic maritime zones could be resolved under UNCLOS, and observance of three principles:

- neighboring countries should resolve disputes on their EEZs and continental shelves; including the baselines for claiming these zones;
- for areas beyond 200 NM, countries must also reach agreement, either by complete division or joint exploitation agreements; and
- neighboring countries should jointly or separately submit their arguments to the CLCS; and on the basis of the CLCS determine the limits between the OCS and the international seabed beyond that, in a binding manner.

He further welcomed movement by the United States government toward ratification of UNCLOS, which he viewed as particularly likely since ratification would form part of the basis for Alaska’s claim to resources beyond the EEZ. With the existing mechanisms, peaceful resolution of disputes can be achieved, especially when disputes are approached in an inclusive manner. He noted further the formation in October 2007 of the North Atlantic Coast Guard Forum as an emerging example of inclusive cooperation. This informal

organization of the nations of the North Atlantic and Baltic states has working groups dealing with cross-boundary issues ranging from maritime security and fisheries enforcement, to environmental response.

With expansion of such examples of civilian cooperation, he hoped to see innovations such as a multinational standing coast guard force in the North Atlantic and Arctic. He also suggested creation of civilian Regional Maritime Security Operations Centres to track and possibly react to maritime threats. He closed with emphasizing Iceland's interest in the peaceful and safe development in the new circumstances being created by climate change.

Rear Adm. Gene Brooks, of the U.S. Coast Guard, spoke on the "Emerging Arctic: a New Maritime Frontier."³ In one example of change, he saw the Bering Strait as a new world choke point – in an area that has seen little previous marine traffic. Another significant change is the loss of coastal protection from Arctic storms due to loss of sea ice.

Other changes can be foreseen, from the evidence of major hydrocarbon resources, as well as mineral deposits (manganese, copper, nickel, cobalt, etc.), and the zinc and lead already being mined at Kivalina, Alaska, where the ore is loaded onto ships several miles offshore. Large cruise ships are entering the Arctic far more commonly, with attendant risk of collisions, accidents,

and major loss of life in an area of little or no infrastructure. In Alaska, there are no major North Pacific ports north of Unalaska. Nome has a small port, as does Barrow, but no roads connect the two towns. Fisheries stocks are moving north – to areas where some species have never been seen before. The U.S. North Pacific Fisheries Management Council has no plan for managing fisheries in the Chukchi Sea due to an absence of data – and even if some fishing were restricted, it is hard to imagine how restrictions could be enforced.

Change is occurring so fast that Native elders scarcely have time to adjust their hunting techniques and practices to support conservation and sustainable harvests. The Alaska Eskimo Whaling Commission, the Eskimo Walrus Commission, and the Nanuk Commission (polar bears) are among the Native organizations working to develop new policies.

Many Arctic species are protected or managed under U.S. domestic laws such as the Marine Mammal Protection Act and the Endangered Species Act. And management programs for these species are often involved in court cases.

In sum, these problems, changes, and controversies are causing a northward migration of the Coast Guard as well – all missions supported in southern Alaska are expanding into northern Alaska; helicopters are being moved from Kodiak to Nome, and a new temporary base was opened in Barrow. In the opinion of Adm. Brooks, while

³ This talk was originally scheduled for Wednesday morning.

others will balance development and environment, the Coast Guard will be charged with maritime safety and security, in any event. The United States' federal, state, and local agencies will need to prepare for full season operations in the Arctic.

markedly illogical and counterproductive. Another commented that the geography of the Arctic Ocean and the harshness of its environment would make it difficult for those outside of the Arctic Council to play a role in the area.

Statements, Questions, and Answers

General discussion following the presentations was lively. Among the audience, some noted that the pace of change in the Arctic region continues to accelerate, and so today's efforts may not keep pace with changes in shipping, and that a more comprehensive regime may be needed in the region. From the panel, Adm. Brooks noted that (speaking for himself only) he had not considered the possibility of an entirely new regime, and speculated that a U.S. signing of UNCLOS may be sufficient to address many emerging issues. He noted that UNCLOS already has provisions for innocent passage in territorial waters, and that the International Maritime Organization (IMO) has had some success in recent years in addressing emerging problems.

Other audience members speculated that the IMO may need stricter rules for the ice environment, or that current guidelines may need to become mandatory, or that the IMO might require Arctic Sea vessels to travel in pairs. Another observer expressed surprise that estimates of conflict were so low, while also noting that any armed conflict would severely hamper development, and therefore would be

**Wednesday, 13 August
2008**

***Progress Reports from the
Arctic Council and SCPAR***

Mr. Robert Kvile, Senior Arctic Official for the Norwegian Ministry of Foreign Affairs, provided an update on activities of the Arctic Council.⁴ He noted the fortunate timing of the Conference, since the Council's six Working Groups will present draft reports and recommendations to the Senior Arctic Officials (SAO) meeting in November. Discussions on the *Ministerial Declaration* and the *Senior Arctic Officials' Report to Ministers* will start soon afterwards. The Ministerial Meeting itself is scheduled for Tromsø, Norway, on 28–29 April 2009.

Climate change is at the top of the Council's agenda, and efforts are concentrated in three areas. First is a project on Snow, Water, Ice, and Permafrost in the Arctic (SWIPA), to assess both physical and human impacts of changes. A progress report is expected in 2009, and a final report in 2010. A report of experts on the Greenland ice sheet will be presented at the Conference of Parties to the UN Framework Convention on Climate Change in Copenhagen in December 2009.

⁴ The current chair of the Arctic Council, the Norwegian Minister of Foreign Affairs, Jonas Gahr Støre, was unable to attend the conference.

The second project concerns short-lived drivers of climate change: black carbon, methane, and tropospheric ozone. Reductions in these pollutants might have a significant impact in slowing Arctic ice melt and global warming. Workshops are being held in conjunction with this project.

The third project concerns adaptation to climate change. It will identify and share adaptation expertise, best practices, and possible actions tailored to the Arctic. Workshops are bringing together representatives from the Council and key stakeholders to prepare recommendations for action.

In the area of sustainable development, Norway is proposing that the Council begin a project to identify best practices for ecosystem-based management of the Arctic Ocean. A recent Norwegian project in the area of the Barents Sea and Lofoten Islands was inspirational for this proposal.

Health disparities between indigenous and non-indigenous peoples is another focal point. He noted increased cooperation among experts on human health, and the establishment of the Arctic Human Health Expert Group to support practical responses to these concerns.

Mr. Kvile reported that an Oil and Gas Assessment Report, prepared under the Arctic Monitoring and Assessment Program (AMAP) is expected shortly, after resolution of earlier concerns among the Council over its contents. The report will call for

strict regulation of drilling operations and emergency responses, though individual countries may seek stricter regulations in their own waters.

The Council agreed to encourage long-term monitoring of climate change, including the creation of a monitoring network, which led to the creation of the Sustaining Arctic Observing Network (SAON), of 13 partners. The goal is a scientific network to support conservation and sustainable management of the Arctic.

The International Polar Year (IPY) has been valuable to the Council. But he reported concern over the legacy of the research effort, the application of its findings, and improvement of scientific access to the Arctic (especially Russia). A Norwegian proposal to maximise the IPY legacy in these areas was not approved by all parties, so interested Council parties decided to implement certain portions of the proposal and present their preliminary results to the Council in November 2008. Mr. Kvile also mentioned progress in an Integrated Hazardous Waste Management Strategy.

He argued that increasing access to the Arctic has also increased interest in its resources. He noted the declaration in May 2008 in Illulisat Greenland by Canada, Denmark/Greenland, Norway, Russia, and the United States that UNCLOS is sufficient as a legal regime for management of the Arctic Ocean. In addition, this interest has led to more applications for observer status to Council: China, Italy, and South Korea

have applied. These applications and their implications are under discussion.

Deputy ministers, senior Arctic officials, permanent participants, and others will gather in Tromsø in October 2008. The focus will be new scientific findings on climate change, their consequences, and cooperation on SAR activities and oil and gas activities.

He ended by stressing the importance of the Council's dialog with Arctic parliamentarians.

Ms. Hill-Marta Solberg, Chair of the Standing Committee of Parliamentarians of the Arctic Region (SCPAR), thanked U.S. Senator Lisa Murkowski for serving as host to the conference, and noted the appropriateness of meeting at the University of Alaska, given its role in Arctic science and its cooperation with the University of the Arctic.

She began by noting that the Statement issued by PAR at the last meeting in 2006 in Kiruna, Sweden required close cooperation with the Arctic Council. After Kiruna, SCPAR met with the Council Chair, Mr. Støre, the Norwegian Minister of Foreign Affairs. She thanked the Chairman for constructive cooperation between the two groups and looked forward to the incoming Danish Chairmanship.

As a result of the Kiruna Statement, SCPAR joined the United Nations Environmental Programme (UNEP) in hosting a seminar on "Multilateral Agreements and Their Relevance for the Arctic" in September

2006. Then Ms. Solberg met with Ms. Annebeth Rosenboom, Chief of the Treaty Section at the UN; as a result the UN Secretary-General has agreed to include treaties relevant to the IPY in the Annual Treaty Event. In addition, she met with representatives of indigenous peoples and the UN Division on Sustainable Development.

SCPAR hosted a seminar on “The Arctic: a Barometer for Global Climate Change” at the UN on 4 June 2008. Small, low-lying island nations were especially interested, due to likely impacts on their coasts – or their entire countries. The Arctic Region may gain from clarifying its relevance to global climate change in the rest of the world, and to that end, increased contacts with UN and its members would be helpful, especially with the approach of climate negotiations in Copenhagen in December 2009.

SCPAR has worked with the Northern Dimension of the European Union (EU), a partnership of the EU, Norway, Iceland, and Russia, along with Canada and the United States as observers. She argued that SCPAR must play an important role in the Northern Dimension Parliamentary Forum, being prepared by the European Parliament for spring 2009. In addition, she recommended that SCPAR work with the EU in its preparation of a forceful policy on the Arctic. The Committee has already contributed to EU establishment of a marine policy.

She highlighted the role of SCPAR in working with and promoting the virtual University of the Arctic, and

its role in advancing academic cooperation on research in the North. The Committee has appointed rapporteurs on human health and on information and communication technology, to keep the Committee abreast of these areas.

Ms. Solberg stressed the importance of cooperation between PAR and the Arctic Council, but noted that the Council meets every two years – relatively infrequently in her view, given the growing importance of the Arctic Region. She recommended greater involvement not only of each nation’s Senior Arctic Officials but also of their Foreign Ministers, in order provide greater leadership for emerging issues.

She noted the importance of involving observer states while simultaneously insuring input of parliamentarians in the work of the Arctic Council. The Council must, in her view, involve countries outside the region, since most pollution in the Arctic comes from outside the region. She contrasted the early history of Fairbanks, developed during a frantic gold rush, with the future she hoped to see in the Arctic region: a future of peace, careful development under law, and sustainability for the benefit especially of the people living there.

Statements, Questions, and Answers

Members of the audience agreed with the observation of growing interest in the Arctic region; one commenter noted his concern about ice melt leading

to greater outside involvement in the area, comparing some interests as “a group of circling sharks.” Others saw only some chance of annual meetings of the Arctic Council, and if they do occur, whether they would draw participation at the highest levels of government. One participant suggested that annual meetings might be held, provided that in midterm years participation might be below the ministerial level. There was discussion of the Illulisat meeting and the fact that Iceland, Sweden, and Finland were not invited, though all three are full members of the Arctic Council. One speaker noted that the meeting was not convened under the Arctic Council.

Ms. Margaret Hayes, Director of the Office of Oceans Affairs, U.S. Department of State began by noting the strategic importance of the Arctic generally, with a special focus on Alaska, its people and resources, plus terrestrial and marine research. There is currently a comprehensive review of U.S. Arctic policies. The review is led by the State Department, but all affected U.S. agencies are participating. Issues being considered include national and homeland security, international governance, extended continental shelf and boundary issues, scientific cooperation, shipping environmental protection and conservation, oil, gas, and mineral resources, with release expected in a few weeks.

The State Department leads U.S. participation in the Arctic Council; she noted a strong U.S. commitment to the organization. She also described U.S. participation with the five other Arctic

coastal nations in the Illulisat meeting, convened by Denmark/Greenland. She noted the participants’ commitment to the existing legal framework for the area, including UNCLOS; at the same time, she noted U.S. commitment to working with all other partners interested in the Arctic. She observed that Norway and Russia have submitted claims under UNCLOS to portions of the continental shelf, and Canada and Denmark are also expected to make submissions in coming years. The United States is gathering data on its own continental shelf and the U.S. Coast Guard has sent research vessels into the Chukchi Sea and the area of the U.S.-Canada boundary.

She mentioned the release of a recent report by the U.S. Geological Survey on energy resources in the Arctic.⁵ The report estimated that 22% of the world’s undiscovered oil and gas resources are found north of the Arctic Circle. She also noted that with increased tourism, there is a need for increased SAR coordination, and shipping regulation.

Regarding climate change, she noted dramatic changes at the poles, with strong impacts on people, plants, animals and resources. With large investments (about \$45 billion) in research on climate change, the United States is attempting to provide a better scientific basis for decision-making. There will also be \$40 billion in loan guarantees for private sector research on climate change and response.

⁵*Circum-Arctic Resource Appraisal.*

The U.S.-sponsored Arctic Impact Assessment has elevated public awareness of polar climate change and its impacts. The Arctic Marine Shipping Assessment has had U.S. support as well. The Arctic Human Health Assessment brings many stakeholders under the banner of the IPY, to examine a variety of health concerns, many affected by climate change.

The U.S. also strongly supports the IPY, including the first joint session of the Arctic Council with the Antarctic Treaty Consultative Parties on April 6, 2009 – the first day of the U.S.-hosted Consultative meeting, among the Antarctic Treaty parties and the Arctic nations. The Antarctic meeting will take place primarily in Baltimore, in the United States, but the joint meeting will be in Washington, at both the U.S. State Department and the National Academy of Sciences. The joint meeting may help bring greater public attention to the critical polar areas.

Adaptation to Climate Change

Sen. Yoine Goldstein (Canada) chaired the session, and began by noting the ironic contrast between the strong impacts of climate change on the polar regions, and the fact that both poles have extremely sparse populations and themselves contribute very minimally to greenhouse gas emissions.

Mr. Mead Treadwell, Chair of the U.S. Arctic Research Commission (ARC), reported on “How Alaska is

Adapting to Climate Change.” The ARC encompasses a research program of approximately \$400 million per year, through 15 U.S. agencies, in cooperation with over 12 nations. The speaker began by noting the five objectives emphasized by ARC:

- Environmental change in the Arctic and Bering Seas
- Human health in the Arctic
- Civil infrastructure
- Natural resources assessment and earth sciences
- Indigenous languages, identities, and cultures

The speaker said that Alaskans generally have four agenda items regarding global climate change: (a) they want more information on global warming; (b) they seek help in stopping it; (c) they hope to adapt to inevitable changes; and (d) they want to learn how to profit from that change, where possible. With global warming affecting virtually every imaginable sector of Alaskan life, ARC is studying these four areas especially.

In keeping with the first item, ARC is studying how loss of Arctic sea ice cover and its albedo add to global warming as much as all human activity - - partly through warming of adjacent permafrost with resulting release of methane, a very powerful greenhouse gas. Positive feedback loops in the Arctic region lead to an ever-deepening hole from which the planet must dig itself. He asked Arctic parliamentarians to commit to increasing support in their own governments for the Arctic Observing Network which has been

gathering data in this area. Chairman Treadwell argued for parliamentarians to support greater access for research vessels, as provided at the South Pole in the Antarctic Treaty.

Second, in the Alaska contribution to stopping global warming, he stated the importance of determining the goals for greenhouse gas emissions. For example, some studies he cited suggest that there may be levels of emissions that might stop sea level rise, but might not be sufficient to prevent habitat loss at the poles. Whether a carbon tax, or cap and trade, or some other approach is chosen, he argued that innovation and research will be key to a real solution. In the Arctic, where energy is already costly, there may be an arena for testing new approaches.

Third, Alaskans are attempting to adapt to global warming through participating in the Arctic Marine Shipping Assessment, increasing health monitoring, and responding to challenges to infrastructure. In addition, he cited changing needs in search and rescue capacity, icebreaker capacity, oil and gas development and associated environmental protection, and other areas.

Fourth, Alaskans hope for some chance to profit – in the largest sense -- from inevitable change. He specifically mentioned forestry (as a potential carbon sink in carbon trading), and hydrogen production (based on wind, water, and geothermal resources). The speaker saw considerable hope for the future in Alaska, given its history of rising to every challenge in the past.

Mr. Robert Mills, MP, Canadian Parliament, and Chair of Environment Committee, spoke concerning “New Ideas to Deal With Climate Change.” He began with describing his frustration in attending similar conferences, with their emphasis on one problem or another. In response, he preferred to focus on solutions for dealing with global climate change. He saw hope if Arctic nations identify their vulnerabilities, and if the work of the IPY is not only continued but also maintained. He saw further hope in the Danish chairmanship of both the Arctic Council and the Copenhagen Conference on global warming in 2009.

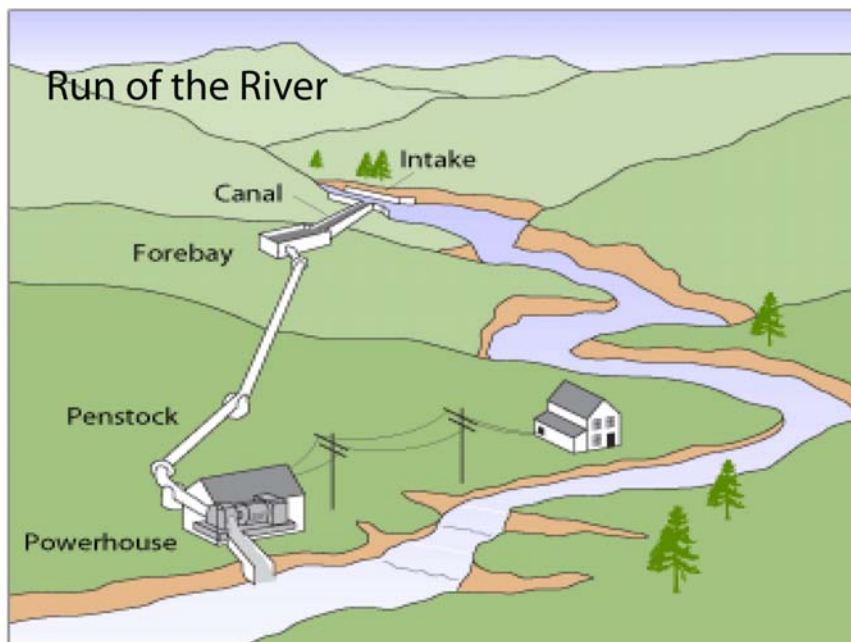
Mr. Mills saw opportunities in solar and renewable power, when solar producers (such as the speaker, at his own home) could sell electric power into the grid – which may require parliamentarians to change laws in their own countries. He noted garbage as a friendly and seemingly inexhaustible supply of power, even at an industrial scale. Parenthetically, he observed the countervailing forces to such innovation: (a) politicians are afraid the programs won't work; and (b) bureaucrats fear being fired.

Yet serious innovation in solar power is still young, with thin films holding great promise. His own experience in adding solar power to his own home was trying in the extreme – occasionally to the point of comedy – and a homeowner who was not a parliamentarian might well have given up when faced with requests to, for example, analyze the noise impacts of a

photovoltaic system. In the end, he succeeded in changing the system (down to a two-page application form), rather than allowing the system to change his project. The project added \$1 per month to his 30-year mortgage. He argued that much of Alaska holds as much promise for solar power as his own home.

Landfills, in his view, are “caveman technology” and a waste of a useful resource. Composting, incineration to generate power, and gasification to create cleaner-burning methane are all more useful responses to garbage disposal. In the case of gasification, he cited added benefits: a nitrogen supply for fertilizer, destruction of dangerous PCBs, mineral recovery, and production of potable water, all without releasing anything into the environment. Such a plant is already operating in Canada, and Los Angeles is planning one.

Hydropower designed as a run of



the river (rather than dam construction) offers promise, as does geothermal. (See **Figure 4**, Run of the River.) He argued against nuclear power until the problem of waste disposal is solved and similarly, that hydrogen derived from natural gas seems self-defeating. Clean coal technology is currently prohibitively expensive, but he argued that innovation may bring the costs down eventually. He foresaw an integrated power grid from Alaska, through Canada, down to southern California.

In his very positive vision, he foresaw a shift to a discussion of real solutions as the next stage in a climate debate.

Mr. Mikail Nikolaev, Deputy Chairman, Council of Federation, Federal Assembly of the Russian Federation spoke on “Problems of Global Warming and Human Challenges.” He described a number of scientific observations in recent years

that seem discouraging: the loss of about half the forests, wetlands, and plains; and forest cutting and forest fires that add to CO₂ emissions, and pollution. Predictions that 40% of the Arctic summer ice cover will be lost have fallen by 50 years, from 2100 to 2050. He further described global

climate change as *the* most important world policy issue: IPCC scientists agree that climate change is real, and that substantial measures are essential to avoid catastrophe and a legacy of disaster for the next generation.

In Russia, he has seen for himself the changes in permafrost, and the disruption of life cycles of Native people and other residents of the Arctic. Despite such portents, Kyoto targets for CO₂ reductions are not being met. Russia has contributed research on these problems; Arctic parliamentarians can contribute by supporting their own governments' research efforts. He argued for special attention to long term effects, and support for models that may reach 100 or even 1 000 years into the future.

In his view, there should be development under U.N. auspices for adaptation of infrastructure facilities to address global climate change. He noted that the problems of the Arctic region are the problems of the world, and the malfunctions in the region affect entire ecosystems, communities, and nations. Among those affected are frequently people who are among those least responsible for the world's problems.

He closed by asking for international cooperation to address global climate change: no one nation, acting alone, can solve these problems.

Statements, Questions, and Answers

Several themes arose during this segment. Many speakers called for a successor agreement to the Kyoto Protocol on global climate change, and stressed the importance of the Danish chairmanship for the conference. The use of boreal forests as carbon sinks or at least as carbon maintenance centers was discussed. Another speaker described the extreme effects of change on indigenous peoples. Resulting problems include substance abuse, unemployment, greater effects of chronic and hereditary disease, etc. Other stresses include the appearance of trees in the tundra, newly arrived fish species, disappearing lakes and other problems. Governments have paid little attention except during elections. Vulnerable indigenous populations should not be forgotten.

Other speakers stressed the importance of regional and local governments, and their need for assistance in developing strategic plans for addressing climate change. One also expressed concern that an increasing number of observers are being added to the Arctic Council, even though they have no direct role in the Arctic region. Indigenous governments also seek a role, especially in their contribution of long term, traditional knowledge of the Arctic. The speed of change is lending urgency to their requests for action.

Several speakers commented on the importance of new policies on shipping in the Arctic region, and management of marine resources. One

noted the need for the Arctic region and its residents to chart their own course, even while working with others. And speakers asked again what Arctic parliamentarians can do to aid Danes in providing a strong Arctic voice in the Copenhagen Meeting on global warming in 2009.

Thursday, 14 August 2008

Energy Resources in the Arctic: Development of Rural Energy Resources

Mr. George Cannelos, Chair of the Denali Commission, spoke on the Commission's experiences in Alaska. He stated that he would focus more on solutions than problems. He noted that half of Alaska's population is rural, with most Native people remaining on their lands. Their lands and cultures depend on a cold climate. Most have Third World characteristics: no roads and no power grids, poor health, high TB rates, high infant mortality, poor drinking water, etc. In addition, outside of Anchorage, diesel and wood dominate as heating sources; in many rural areas, half of income is spent on heating. Rural areas are losing population, with young people (20-29 years) being most likely to leave. Rural schools are closing.

The intergovernmental Denali Commission was founded as a broad partnership of federal, state, Native, academic, municipal, business, and labor groups to take a strategic approach to the problems of rural Alaska. In the energy field, the rural approach was to replace bulk fuel systems, upgrade power plants, support conservation, increase renewable energy, build human capacity, and ultimately develop a sustainable rural economy.

In a number of communities, such as Buckland and Little Diomedé, the Commission has already replaced small or outmoded bulk fuel tanks, allowing annual fuel shipments to be reduced to one. About 90 of 170 projects are complete, with funding being an obstacle to future progress.

Waste heat is another source for warming many villages; this project is about ¼ complete. "Run of the river" power plants (e.g., in Skagway) serve some towns and villages. Modular diesel/hydro power plants are also in use. So are wind/diesel plants and geothermal plants (like the one visited by Arctic Parliamentarians at Cheena Hot Springs the previous evening).

Training of rural technicians is key to these efforts. Wind power technicians from rural Alaska were sent to Vermont for training and certification, thereby helping to provide not only power for their communities, but also stable jobs where such jobs are in short supply. An in-river hydrokinetic turbine in Eagle, Alaska, is an experimental venture – a first attempt to operate such technology in a river (the Yukon) that ices over and presents hazards during spring break-up.

Conservation-minded construction techniques are also improving and expanding. In terms of project placement, in Koyukuk, on the lower Yukon River, bulk fuel storage and an electric plant have both been built to withstand rising river levels, and can be used even if the village itself may have to relocate. A number of construction projects are in progress

involving wind, biomass, and geothermal throughout the state; others (including solar and hydro as well) are at a pre-construction phase.

Fairbanks, with large coal deposits, hopes to build a large coal gasification plant, capable of supplying fuel to much of interior Alaska. While the technology seems sound, and permits could be obtained, very large capital costs are an obstacle. Small nuclear plants may be an option, perhaps in Galena. In the end, the speaker argued that every area of Alaska needs at least one private sector anchor to be viable. The lead/zinc mine in Red Dog, Alaska, has served as such an anchor in the northwest.

Sustainable development must meet several tests. Is it desirable at the local level? Does it have an adequate business plan and can it comply with policies? Are there multiple funding partners, and does it comply with the Commission's processes? Is the location safe, and will the project contribute to its community or region? Together, these responses help to answer the basic question: can rural villages survive? The respondents to the final question will be the children and grandchildren of rural Alaska.

Mr. Cannelos commented on the transformation of Iceland from a relatively poor member of the community in Europe to a prosperous nation in one generation. It is an example of the speed with which profound changes are occurring. The future focus of the Denali Commission is likely to include green building,

renewable energy, continuation of current programs, participation in larger issues of Arctic policy, and sharing of lessons learned.

Mr. Gudni A. Johannesson, Director General of Iceland's National Energy Authority, spoke on "Geothermal Energy: the Icelandic Experience and Potential for Other Countries." As part of the planet's geological "Ring of Fire", Iceland has abundant, but hardly unique, geothermal resources. The speaker noted that one of the best contributions that Iceland can make is to share the lessons of its own experiences with renewable energy.

He contrasted figures for global power sources with those of Iceland. Globally, 81% of electricity generation is from non-renewable sources: 40% coal, 20% gas, 16% nuclear. Electricity from renewables provides 19% (16% hydro, and all other renewables less than 1% each). Yet the planet's geothermal resources are vast, and likely to remain so for billions of years. While geothermal power might produce 1-2 % of energy needs currently, globally the figure could rise to as much as 30%. In Iceland, by 2020, geothermal energy generation may be as high as 40 GW. Japan, New Zealand, Italy, United States, Philippines, and Indonesia are also leaders in geothermal electricity production.

Geothermal exploration is complex and multidisciplinary. Better mapping of structures and their geologic history improve the economics of the projects. Seismic activity allows greater production in the geothermal wells.

The development of the Icelandic fields has been occurring since 1900. District hot water heating began in 1928 in Reykjavik. By 1970, 40% of all homes were heated with hot water. The oil crisis of the early 1970s accelerated the trend, and by now, 90% of homes are heated with geothermal power, and 10% with electricity. The goal is to convert all homes to geothermal heat. A geothermal heat storage tank – with a restaurant surmounting it – is now a Reykjavik landmark. (See **Figure 5**, Reykjavik and Thermal Storage Tanks.)



Geothermal heat is used for many purposes in Iceland: space heating (57.4%), electricity generation (16%), fish farming (10%), snow melting (5.4%), industry (5%), swimming pools (4%), and greenhouses (3%). Compared to fossil fuels, these geothermal heat applications now save from 1.5 to 4.4 million tons of CO₂ per year, depending on the fossil fuel being compared.

The first attempt to use geothermal heat for electricity production was in 1950, and in the 1970s a

geothermal power plant was built. Volcanic eruptions set the first plant back but the associated problems were overcome, and now power plants generate nearly 3600 GW of electricity annually. And now, without subsidies, the total generating capacity is expected to rise further. Because the geothermal source is renewable and competitive, not only is it meeting demands for rising general consumption, but it is also attracting power intensive industries, such as aluminum smelters. Use of geothermal electricity also gives these industries a relatively clean carbon footprint, which may give a competitive advantage in some markets.

New technologies are improving the economics of the projects. Some techniques, such as directional drilling, are borrowed from the oil industry. Higher temperature (500° C) sources are also used now, leading still more efficient power generation. And low temperatures are also proving usable. Deeper drilling offers more challenges, but may be productive eventually. Iceland has run a geothermal training program with over 30 students per year from developing countries. And Icelandic experts have been consultants in dozens of other countries.

While the planet will stay hot for billions of years, a given geothermal field may become exhausted, and need to “rest” for a number of years before further harvesting. In the end, geothermal energy is good business, and can attract large investors. Stable

geothermal fields are reliable, and produce substantial returns. He concluded by noting the interest of Chena Hot Springs Resort in using geothermal technology to make electricity from a new source – the water produced in oil fields.

Mr. James Hemsath, Senior Fellow for Energy, Institute of the North (sanctioned by the Arctic Council) spoke on the “Arctic Energy Action Team.” The Institute of the North (ION) addresses infrastructure and connectivity, including land, air, and marine transportation, as well as telecommunications and energy supply. Traditionally, there are two basic types of energy resources: renewable and non-renewable. And deployment of the resource is either internal (used near the site of production) or external (shipped or sent for end-use elsewhere). Oil and gas are abundant in Alaska, but largely shipped elsewhere for use. Methane hydrates in Alaska may be more promising than elsewhere, but more accessible, since they are relatively shallow, and not under many fathoms of water. Renewable sources include geothermal, hydropower, and others.

ION proposed to the IPY that it host a summit of Arctic people to discuss and develop an approach to developing extractive, and renewable rural power, to help eliminate rural energy poverty. The IPY and the Arctic Council approved the project.⁶ The summit has three components: (a) an ongoing program of education and

outreach; (b) energy technology conference in October 2007; and (c) the Arctic Energy Action Team.

The conference featured Sen. Murkowski and well as the President of Iceland, among others. Speakers considered the many renewable and non-renewable resources broadly, as well as infrastructure. Even such uses as snow as a power source for cooling were covered. This application is important in fish processing, and use of “snow power” may allow more processing jobs to remain in Alaska.

The October 2007 conference also considered eight factors to promote sustainability in rural areas: policy, human resources, rural energy, shipping and transportation, environment, infrastructure, impacts on northern people, and security. Experts with many viewpoints, from many countries, and from many groups of indigenous peoples were represented on discussion panels. The discussion led to the formation of the Arctic Energy Action Team (AEAT).

Fifty participants formed the first gathering under the AEAT to make recommendations to the Arctic Council. The team now communicates with only a few physical meetings and instead emphasizes web, email, and Internet communications. The first project regarding extractive energy concerned Arctic coal. A key question is the adverse effects of coal use that might harm the Arctic environment even if it is used elsewhere. All technologies relate to transformation of coal to some useful energy project: preprocessing, in situ

⁶ See www.arcticenergysummit.org for more information.

generation, coal-to-liquids, and coal gasification.

In renewable energy, the AEAT is focusing on tidal generation of power. They ask what technologies might best benefit the Arctic, whether the technologies benefit wave technologies or in-river hydro power. However, they also consider what special problems might exist if this technology is used in the Arctic. For example, which technologies might be more robust in ice conditions? Can some technologies operate below ice cover?

To assist rural areas, AEAT will examine transportation problems and the development of alternative transportation fuels. In rural Alaska, about 1/3 of energy use is in transportation fuels. An ability to use alternative fuels, such as natural gas, could make an enormous difference when these alternatives can be locally obtained.

Next steps for AEAT include a determination of the maturity of each technology and its risks, consideration of the eight sustainability factors as they relate to a given technology and finally, preparation of a report, expected sometime in October, for delivery to the Arctic Council.

Statements, Questions, and Answers

Several commenters noted an abundance of fuel sources in the Arctic region, but also observed that while renewable resources might be desirable,

many technologies for renewables are difficult to use in the Arctic. At the very least, some technologies may require modification to be applicable. One speaker commented on a small capacity floating nuclear power plant that might be barged to an area of temporary demand. It might even be placed on icebreakers for transport. A further comment was that the Arctic, having little energy infrastructure now, is an excellent area for development of new technologies, which can compete on a nearly equal footing with older technologies, since all technologies lack much of the necessary infrastructure.

Other speakers, noting the experiences described by Mr. Mills, said that support for alternative technology use in residential or small applications, was no better in their own countries. One commenter remarked on the absence of any discussion of peat as a fuel, while another noted that in Sweden interest is focused on more efficient technologies for burning, to get more useful energy out of each unit of fuel. Several speakers also agreed that time is short, and that *all* technologies must be tried, even if some lead to failure.

Adoption of Conference Statement

Ms. Hill-Marta Solberg, Chair of SCPAR, distributed a final draft of the conference statement, noting that it had been revised to meet the concerns of various parties. One speaker sought further declarations concerning global climate change. This was tabled, and

this was followed by unanimous agreement on adopting the statement. It will be forwarded to the Arctic Council, national governments, parliaments, and other relevant organizations. It will guide the Standing Committee until the next Conference in 2010.

Ms. Diana Wallis of the European Parliament offered a welcome on behalf of the European Parliament, host of the next gathering. While (gently) lamenting the lack of pictures of glacier-covered mountains and fiords to the conference, she noted the vast experience of the EU in hosting international meetings and offered the hope that the EU experience as a major transnational organization will benefit Arctic parliamentarians when they convene in Brussels in two years.

Sen. Lisa Murkowski offered a closing farewell, and observed that she had been honored to have the United States -- and Fairbanks -- serve as the host of the meeting. After she graciously thanked the many parties involved in the preparation and conduct of the meeting, the Eighth Conference of Parliamentarians of the Arctic Region adjourned until it reconvenes in 2010.

Study Visits

On Wednesday evening, Conference participants visited Chena Hot Springs Resort, northeast of Fairbanks, for a highly informative tour of its geothermal power plant -- the first low temperature power plant ever built in Alaska. The power generated helps to

warm a greenhouse which produces many of the vegetables served at the resort's restaurant. With cold water supplied by a source upstream, the operating costs are extremely low, and plans are underway for expansion.

On Thursday afternoon, participants could choose to visit either the TransAlaska Pipeline and a nearby permafrost tunnel, or the Museum of the North. Those at the pipeline were able to observe the elaborate precautions taken to keep the transported oil warm for its shipment from the North Slope production area to Valdez, Alaska, where it is loaded on to tankers. The particular portion of the pipeline was above ground, and visitors could see the structures that allowed the pipeline to move and bend slightly in the event of seismic activity. The permafrost tunnel, dug in the mid-1960s in terrain frozen for at least 40 000 years, has allowed scientists and engineers to study the geology of central Alaska, as well as to examine mining and construction techniques applicable to permafrost areas.

The Museum of the North, on the campus of the University of Alaska, offered Conference participants a tour that was guided by the Director, Dr. Aldona Jonaitis. Its extensive collections of natural history specimens, Native art, modern art, and outstanding architecture were discussed, and behind the scenes, participants spoke with researchers about ornithology, mammology, botany and anthropology. An anthropologist emphasized the museum's desire to work in a culturally sensitive manner -- with Native people to

assist them in preserving their own cultures and languages. The room called “the Place Where You Go to Listen” was particularly fascinating, because the lights and sounds in the room are tied to the weather, moon phases, time of day, aurora borealis, and seismic activity of Alaska. “Unique” seemed to be inadequate to describe the impression left by the small room.



Participants of the 8th Conference of Parliamentarians of the Arctic Region, Fairbanks, United States of America, August 12-14, 2008.

Conference Statement

We, the elected representatives of Canada, Denmark/Greenland, the European Parliament, Finland, Iceland, Norway, Russia, Sweden, and the United States of America;

In collaboration with indigenous peoples of the Arctic;

Meeting to discuss maritime policy, human health, renewable energy, and adaptation to climate change in the Arctic region;

Ask governments in the Arctic Region, the Arctic Council and the institutions of the European Union:

Regarding human health in the Arctic, to

1. Form a strategic plan on human health policy in the Arctic Council where the synergies from existing work on this issue are utilized to provide for better human health in the Arctic in harmony with cultural values.
2. Provide an assessment of the positive and negative effects of a changing climate on human health in the Arctic.
3. Continue to support exchange programmes for young people in the Arctic Region.
4. Urge the Arctic Council to give priority to the prevention of alcohol and drug abuse and suicide, and to exchange best practices on how to

deal with these problems, with the participation of states, regions and indigenous peoples.

5. Commission the University of the Arctic to provide specialized training for health care personnel, with special focus on Arctic conditions.
6. Place the issue of alcohol and drug abuse, and best practices from efforts to reduce this problem, on the agenda of the UN Permanent Forum on Indigenous Issues and the World Health Organisation.
7. Further engage relevant NGOs in the Arctic Region in the work of human development, risk reduction, access to health care, preventive health care and disaster preparedness in the sparsely populated areas in the Arctic.

Regarding development of an Arctic maritime policy for safety at sea, to

8. Work to develop harmonized, effective regulations to reduce all forms of pollution from ships sailing in the Arctic Ocean.
9. Strengthen cooperation, consultation and coordination among nations regarding search and rescue matters in the region to ensure an appropriate response from states to any accident.
10. Take an active role in updating the "Guidelines for Ships Operating in Ice-covered Waters" within the International Maritime Organisation, and making these guidelines mandatory.
11. Strengthen existing measures and develop new measures to improve the safety of maritime navigation.
12. Support the completion of the Arctic Council's Arctic Marine Shipping Assessment and develop an action plan on the basis of its findings.
13. Support action and investment by Arctic nations, and the maritime industry, to put appropriate resources in place to provide for emergency response capability, search and rescue capability, and spill response capability, as the Arctic opens to marine shipping, and to take preventive measures to avoid shipping accidents.
14. Make concerted efforts to develop environmentally friendly technology

for transport and economic activity in the Arctic to protect its vulnerable nature and the way of life for the Arctic peoples.

15. Support the solid foundation for responsible management of the Arctic Ocean by all Arctic States and other users of the Arctic Ocean through the existing, comprehensive international legal regime that governs the Arctic Ocean.

Regarding adaptation to climate change, to

16. Raise a strong Arctic message to combat climate change at the COP 15 negotiations in Copenhagen in December 2009.
17. Support the "Indigenous Peoples Global Summit on Climate Change" and promote the inclusion of the summit report at the COP 15 and other related venues.
18. Speed up the promotion and conduct, by the end of IPY 2008, of the International Conferences "The Arctic – a region of global cooperation" and "Global climate changes and human challenges" under the auspices of the UN.
19. Provide an assessment on how Arctic nations can prepare for new opportunities as a result of a changing Arctic.
20. Further build capacity in Arctic communities to adapt to climate change, including the development of new education programmes and

skills training initiatives, to allow individuals in these communities to be prepared for new job opportunities and to implement projects at a local level.

21. Increase research on adaptation to climate change with a focus on the social and economic needs of the people living in the Arctic.
22. Ensure availability of data, including research data and accessibility to geographical areas for research purposes.
23. Implement the recommendations from the International workshop in Helsinki in October 2008 on “Sustaining Arctic Observing Networks”, (SAON), as a legacy of the International Polar Year 2007 – 2009.
24. Ensure the inclusion of an appropriate contribution from elected representatives of the Arctic region to the COP 15 in Copenhagen in 2009.

Regarding development of renewable energy resources, to

25. Promote and invest in research, development and deployment of alternative and renewable energy sources suitable for the Arctic region. Special emphasis should be placed on the replacement of fossil fuels by solar, wind, biomass and other alternative energy sources.
26. Address the challenges of access to energy by communities in the Arctic

given the vast distances between communities, limited infrastructure, and smaller economies of scale for investment opportunities.

Ask the Standing Committee of Parliamentarians of the Arctic Region, to

27. Work to promote the 2010 targets to reduce the loss of biodiversity in the Arctic.
28. Promote the Fairbanks Statement in the development of an Arctic policy in the European Union and the Arctic states, and involve the national parliaments and the European Parliament in this process.
29. Take note of the intention of the European Commission to release a Communication on Arctic policy in the autumn of 2009.
30. Actively support the development of a Northern Dimension Partnership in Transport and Logistics, and the further strengthening of the existing partnerships in Environment and in Public Health and Social Well-being.
31. Encourage the Arctic States and the European Union to work together on an agenda for issues of Arctic and northern interest, and to promote it on a global level in cooperation with international organizations and forums, which are taking a growing interest in Arctic issues of global importance.
32. To continue the discussion on legal regimes that impact the Arctic, and

in particular to promote ideas to strengthen the legal and economic base of the Arctic Council.

33. Take initiatives on a domestic level, where necessary, to draw up national strategies for northern regions.
34. Encourage the University of the Arctic to build practical capacity in the north to address the challenges of adaptation to climate change, and to solve the Arctic's needs for energy, from technical, cultural, economic as well as environmental perspectives, and to provide further education of health care personnel with special focus on Arctic conditions.

Furthermore the Conference

35. Acknowledges the interest and presence of parliamentary observers and representatives from governments and non-government agencies at this Conference, and recognises their important role in relaying the messages and supporting the actions herein discussed.

36. Underlines the growing geopolitical and strategic importance of the Arctic.

37. Is convinced that the political role of the Arctic Council should be enhanced given the many challenges facing the region, particularly by ensuring more regular ministerial meetings with all participants, no less than once a year, and to ensure its full engagement with other international bodies working on the same issues, particularly the United Nations.

38. Welcomes the forthcoming Danish Chairmanship of the Arctic Council and looks forward to continued cooperation with the Arctic Council.

39. Notes the information from the Danish delegation concerning the Ilulissat Declaration, and the concerns of the Icelandic delegation regarding full participation of all states of the Arctic Council.

40. Welcomes and accepts the kind invitation of the European Parliament to host the Ninth Conference in 2010.

Programme

Monday 11 August

- 1300 – 1430 SCPAR Members lunch
Downtown Fairbanks – Gambardella’s Pasta Bella
- 1530 *Coach transfer from Bridgewater Hotel to UAF for
SCPAP members*
- 1545 *Coach transfer from Springhill Suites by Marriott to UAF
for SCPAP members*
- 1615– 1700 SCPAR Members meeting to go over the Conference
Schedule and draft Conference Statement (Globe
Room)
- 1700 – 1800 Joint meeting – SCPAR and Aspen Institute (Globe
Room)
- 1730 *Coach transfer from Bridgewater Hotel to reception*
- 1745 *Coach transfer from Springhill Suites by Marriott to
reception*
- 1800 *UAF Shuttle transfer for SCPAR members from UAF to
reception*
- 1800 – 1930 Reception at Mark & Patty Hamilton’s residence
President, University of Alaska
- 1930 *Return to hotels*

Tuesday 12 August

- 0900, 0930, 1000 Coach departures from Bridgewater Hotel to UAF*
*0915, 0945, 1015 Coach departures from Springhill Suites by Marriott to
UAF*
- 1000 – 1200 Registration (Wood Center Ballroom)
- 1115 – 1215 Lunch Reception (Wood Center Ballroom)
- Alaska Flag Song
 - Pavva Inupiat Dancers

- 1200 - Registration continues (Great Hall)
- 1230 – 1315 **Opening of the Conference & Welcome Speeches**
(Davis Concert Hall)
- Senator Lisa Murkowski, US member of SCPAR
 - Mark Hamilton, President, University of Alaska
 - Patricia Cochran, Chair, Inuit Circumpolar Council
 - Sarah Palin, Governor, State of Alaska
- 1315 – 1445 *THEME ONE:*
Human Health in the Arctic Region
(Davis Concert Hall)
- “Human Health in the Arctic”
Dr. Alan Parkinson, Deputy Director of the Arctic Investigations Program of the National Center for Infectious Disease, Center for Disease Control and Prevention
 - Preventative Work on Health of Indigenous Peoples – “The Southcentral Foundation NUKA model of Care: Customer Owned, Customer Driven Health Care”
Katherine Gottlieb, President/CEO, Southcentral Foundation
- 1445 – 1500 Coffee break (Great Hall)
- 1500 – 1700 **Special Reports on Arctic Marine Policy**
(Davis Concert Hall)
- “Maritime Safety in the Arctic”
Admiral Henrik Kudsk, Commander Greenland Command, Denmark
 - “Update on the Arctic Marine Shipping Assessment”
Dr. Lawson Brigham, Chair of the Arctic Marine Shipping Assessment
 - “Civilian Role for Safety in the North Atlantic”
Mr. Björn Bjarnason, Minister of Justice & Ecclesiastical Affairs, Iceland

- “The Changing Arctic & Coast Guard Operations”
Admiral Arthur Brooks, U.S. Coast Guard

1700	Conference Statement Drafting Committee (Kayak Room)
1715, 1800	<i>Coach departures from UAF to Riverboat Discovery</i>
1800 -	Boarding begins at Riverboat Discovery
1830 –2100	All Aboard! Evening Welcome Dinner/Reception for all Participants on Riverboat Discovery
2100	<i>Return to hotels</i>

Wednesday 13 August

0700, 0730, 0800 Coach departures from Bridgewater Hotel to UAF
0715, 0745, 0830 Coach departures from Springhill Suites by Marriott to UAF

0730 – 0900	Continental Breakfast (Great Hall)
0800 – 0900	Conference Statement Drafting Committee (Kayak Room)
0900 –0945	Progress Reports from the Arctic Council and SCPAR (Davis Concert Hall) <ul style="list-style-type: none"> • Mr. Robert Kvile, Senior Arctic Official, Ministry of Foreign Affairs, Norway • Ms. Hill-Marta Solberg, Chair of the SCPAR
0945 – 1000	Recent Developments in US Arctic Policy <ul style="list-style-type: none"> • Ms. Margaret F. Hayes, Director, Office of Oceans Affairs, U.S. Department of State
1000 – 1100	<i>THEME 2:</i> Adaptation to Climate Change (Davis Concert Hall)

- “How Alaska is Adapting to Climate Change”
Mr. Mead Treadwell, Chair, U.S. Arctic Research Commission
- "New Ideas to Deal with Climate Change."
Mr. Robert Mills, MP, Chair of the Environment Committee, Canadian Parliament

1100 – 1130 Coffee break (Great Hall)

1130 – 1300 **Adaptation to Climate Change** (continued)

- “Problems of Global Climate Warming and Human Challenges”
Mr. Mikhail Nikolaev, Deputy Speaker of the Council of Federation of the Federal Assembly of Russian Federation

1300 – 1400 Lunch (Wood Center Ballroom)

1400 *Coach transfers from UAF to hotels*

1530 *Coaches depart for Chena Hot Springs*

1630 *Arrive Chena Hot Springs*

1630 – 1730 Optional tours (Ice Museum, Geothermal Plant)

1800 – 2000 Dinner & Entertainment

2000 – 2100 Hot Springs Swimming

Approx. 2100 Return to Fairbanks

Thursday 14 August

0700, 0730, 0800 Coach departures from Bridgewater Hotel to UAF

0715, 0745, 0830 Coach departures from Springhill Suites by Marriott to UAF

0730 – 0900 Continental Breakfast (Great Hall)

0800 – 0900 Conference Statement Drafting Committee
(Kayak Room)

THEME 3:

0900 -1030	<p>Energy Resources in the Arctic - Development of Rural Energy Resources</p> <ul style="list-style-type: none"> • “Denali Commission on Alaska Experiences” <i>Mr. George Cannelos – Executive Director, Denali Commission</i> • “Geothermal Energy - The Icelandic Experience and Potentials for Other Countries” <i>Mr. Gudni A. Jóhannesson, Director General for the National Energy Authority in Iceland</i>
1030 – 1100	Coffee break (Great Hall)
1100 – 1230	<p>Energy Resources in the Arctic (continued)</p> <ul style="list-style-type: none"> • “Arctic Energy Action Team”, IPY project <i>Mr. James Hemsath, Institute of the North,</i>
1230 – 1300	<p>Adoption of Conference Statement Closing of the Conference</p>
1300 – 1400	Lunch (Wood Center Ballroom)
1300	SCPAR Meeting (Kayak Room)
1400	<p><i>Coach departures from UAF to tours</i> <i>Coach departure to hotel</i></p>
1400 – 1600	<p>Optional Tours (choose one): Permafrost Tunnel and Pipeline Tour University of Alaska Museum of the North (guided tour)</p>
1600	<i>Return to hotels</i>

List of Participants

Speakers

Bjarnason, Björn, *Minister of Justice & Ecclesiastical Affairs, Iceland*
 Brigham, Dr. Lawson W., *Chair, Arctic Marine Shipping Assessment*
 Brooks, Admiral Gene, *U.S. Coast Guard*
 Canelos, George, *Federal Co-Chair, Denali Commission*
 Cochran, Patricia, *Chair, Inuit Circumpolar Council*
 Dr. Douglas Eby, MD, MPH, *Vice President of Medical Services, Southcentral Foundation*
 Hamilton, Mark, *President, University of Alaska*
 Hayes, Margaret F., *Office of Ocean Affairs, U.S. Department of State*
 Hemsath, James, *Senior Fellow for Energy, Institute of the North*
 Jóhannesson, Gudni A., *Director General for the National Energy Authority, Iceland*
 Kvile, Robert, *Senior Arctic Official, Ministry of Foreign Affairs, Norway*
 Kudsk, Henrik, *Commander, Greenland Command, Denmark*
 Mills, Robert, *MP, Chair of the Environment Committee, Canadian Parliament*
 Murkowski, Lisa, *U.S. Senator, Member of SCPAR*
 Nikolaev, Mikhail, *Deputy Speaker of the Council of Federation of the Federal Assembly of Russian Federation*
 Palin, Sarah, *Governor, State of Alaska*
 Parkinson, Dr. Alan, *Deputy Director of the Arctic Investigations Program of the National Center for Infectious Disease,*

Center for Disease Control and Prevention

Ross, Leandra, *Southcentral Foundation*
 Solberg, Hill-Marta, *MP, Chair of SCPAR, Norway*
 Treadwell, Mead, *Chair, U.S. Arctic Research Commission*

Parliamentary Delegations

Canada

Bevington, Dennis, *MP*
 Goldstein, Yoine, *Senator, Substitute to SCPAR*
 Mills, Robert, *MP, Member of SCPAR*

Denmark/Greenland

Bonnesen, Ehrling, *MP*
 Brodersen, Henrik, *MP*
 Dahl, Bente, *MP*
 Henningsen, Juliane, *MP, Member of SCPAR*

Finland

Gestrin, Christina, *MP*
 Karvo, Ulla, *MP*
 Manninen, Hannes, *MP, Member of SCPAR*
 Ojala-Niemela, Johanna, *MP*
 Skinnari, Jouko, *MP*
 Vehkaperä, Mirja, *MP*

Iceland

Bjarnason, Jon, *MP*
 Kristjansson, Sigurdur Kari, *MP, Member of SCPAR*
 Matthiasson, Karl, *MP*
 Svavarsson, Gunnar, *MP*

Norway

Ryan, Inge, *MP*
 Loenning, Inge Johan, *MP*
 Mandt-Bartholsen, Sonja, *MP*
 Nistad, Thor Aksel, *MP*

Sorfonn, Ingebrigt, *MP*
 Solberg, Hill-Marta, *MP, Chair of SCPAR*

Russia

Nikolaev, Mikhail, *MP, Member of SCPAR*

Sweden

Arkelsten, Sofia, *MP*
 Bohlin, Sinikka, *MP, Member of SCPAR*
 Brodén, Anita, *MP*
 Eriksson, Erik, *MP*
 Jonsson, Peter, *MP*
 Petersson, Helene, *MP*

United States

Murkowski, Lisa, *Senator, Member of SCPAR*

European Parliament

Bilyana, Raeva, *MEP, Member of SCPAR*
 Budrekaite, Danute, *MEP*
 Schmidt, Olle, *MEP*
 Virrankoski, Kyosti, *MEP*
 Wallis, Diana, *MEP*

Permanent Participants

Baer, Lars-Anders, *Vice-President, Sami Parliamentary Council*
 Cochran, Patricia, *Inuit Circumpolar Council*
 Gofman, Victoria, *Executive Director, Aleut International Association*
 Haruchi, Sergey, *President, RAIPON*

Observers

Bozhedonova, Anastasia, *Deputy Director, Northern Forum*

Chen, Guomin, *Minister Counselor of the Embassy of the People's Republic of China*

Crump, John, *Polar Issues Coordinator, UNEP/GRID Arendal*
 Fraenkel, Amy, *Director of the Regional Office for North America, UN Environment Programme*
 Górecki, Ryszard, *Senator, The Senate of the Republic of Poland*
 Helgesson, Ulrica, *Senior Advisor, Nordic Council*
 Hik, David, *Vice-President, International Arctic Science Committee (IASC)*
 Jüssi, Mart, *MP, Estonian Parliament, Baltic Assembly*
 Knutson, Geir, *Consultant, The International Federation of the Red Cross*
 Ljungberg, Johan, *Director, Nordic Investment Bank*
 Nikora, Evgeny, *Speaker, Murmansk Regional Duma*
 Olofinskaya, Natalia, *Head of Environment Unit, UNDP, Russia*
 Saksina, Tatiana, *Arctic Governance Program Officer, WWF*
 Schweitzer, Peter, *IASSA*
 Sindal, Niels, *MP Danish Parliament, Nordic Council*
 Snellman, Outi, *Director of Administration and Outreach, University of the Arctic*
 Thorarinsson, Thordur, *General Secretary, West-Nordic Council*
 Wang, Rui, *Staff of the General Office of the Environment Protection & Resources Conservation Committee, NPC of the People's Republic of China*
 Wang, Fengchun, *Deputy Director-General of the Legislation Office, NPC of the People's Republic of China*

Wilshire, David, *MP, House of Commons, UK*
 Wohl, Priscilla, *Executive Director, Northern Forum*
 Yuan, Si, *Standing Committee NPC, Vice-Chair, Environment Protection & Resources Conservation Committee, NPC of the People's Republic of China*
 Ödemark, Helena, *Senior Arctic Official, Sweden*

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 Lindstrom, Guy, *Deputy Director of International Department, Parliament of Finland*
 Mangush, Kirill, *Counsellor, International Department, The Council of Federation, Russia*
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 Olsen, Henrik, *Head of Secretariat, European Parliament*

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 Rey, Sally, *Legislative Correspondent, U.S. Senator Lisa Murkowski*
 Robstad, Bjørn Willy, *Secretary General, SCPAR*

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 Kolesnikova, Elena, *Interpreter, Ubiquis*
 Kolesnikova, Vladimir, *Interpreter, Ubiquis*

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