Coming challenges of the Arctic Region

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U.S. Arctic Research Commission
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Naples Council on World Affairs
Naples, Florida - January 11, 2010
Check from U.S. to Purchase Alaska from Russia

August 1, 1868
Shifting magnetic north pole

Magnetic north pole has been moving at an increasing rate across the Arctic Ocean towards Russia.

- 2005
- 2001
- 1994
- 1984
- 1972
- 1948
- 1904
- 1831

Detail area

CHARLES ATKINS / Anchorage Daily News
Red Dog Mine near Kivalina, Alaska
Arctic Sea Ice Extent
(Area of ocean with at least 15% sea ice)

Extent (millions of square kilometers)

- 2009
- 2007
- 1979–2000 Average

May | Jun | Jul | Aug | Sep

National Snow and Ice Data Center, Boulder, CO
Last Trip Under the Polar Ice Cap
Challenges of an Accessible Arctic
Why the Arctic Matters:

1. National security/sovereignty

2. Economics: energy, trade, transport

3. Environment: climate, critters, sustainability
2007

HARPER'S

COLD RUSH
The Coming Fight for the Melting North
Mary McCormick Funk

Fifty Years

TIME
Who Owns the Arctic?
As global warming shrinks the ice to record lows, the global battle for resources heats up

SEAPOWER

THE NEW COLD WAR?
U.S., Canada, Russia, Denmark Rush to Stake Arctic Claims
Sovereign Rights and Jurisdiction

1) North Pole
2) Lomonosov Ridge
3) 200 nautical mile line
4) Russian-claimed ECS
5) EEZ & CS Dispute
Where Is Our ECS?
New US Arctic Policy

• National security/homeland security needs
• Protect environment/conserve biological resources
• Environmentally sustainable resource management and development
• Strengthen institutions for international cooperation; ratify Law of the Sea
• Involve indigenous communities in decisions
• Enhance scientific monitoring and research into local, regional and global environmental issues
• The United States must maintain its global maritime capability—as a government AND as a Nation.
• If the U.S. does not exercise its visible maritime presence in the Arctic Ocean—we cede it to whomever wants it!
Challenges of an Accessible Arctic

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Probability of Presence of Undiscovered Oil and/or Gas Fields

Coastal Seas

PROBABILITY (percent)

- 100
- 50–100
- 30–50
- 10–30
- <10
- Area of low petroleum potential

USGS (2008)
Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle

- 13% Undiscovered Oil
- 30% Undiscovered Natural Gas
- 20% Undiscovered Natural Gas Liquids

http://pubs.usgs.gov/fs/2008/3049/
Potential Arctic Shipping Routes

= Chokepoint

- Bering Strait
- Greenland
- Thule AB

North America

(http://NASA.GOV)
Future Convoy Requirements?

Icebreaking (Double Acting) Container Ship
Norilskiy Nickel in the Kara Sea
March 2006
Build a shipping regime that is “safe, secure, and reliable.”
Arctic Council
Arctic Marine Shipping Assessment 2009 Report
Icebreaker Transits to the North Pole & Trans-Arctic Voyages (1977-2008):

- 77 Transits to the North Pole (65 Russia, 5 Sweden, 3 USA, 2 Germany, 1 Canada, 1 Norway)
- Single Non-summer NP Voyage (Sibir Voyage May-June 1987)
- 33 Ship Transits to the NP in 2004-2008

‘Clear Evidence of Central Arctic Ocean Navigation’

25 May 1987 ~ North Pole
Soviet Nuclear Icebreaker Sibir
‘A Walk Around the World!’
“Stricken cruise ship off Antarctic evacuated”

MSNBC - 11/23/07
Oil industry pays eight cents a barrel to response fund

Interagency committee seldom meets

US spill research program is way behind promise of Oil Pollution Act of 1990
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Beaches erode...
Methane spikes...
Is soot causing Arctic amplification?

Arctic Council Black Carbon Task Force, 2009
Ocean Acidification - Potential Fishery Effect

- Larval blue king crab, Kodiak Alaska, pilot experiment
- Tested range of projected global ocean pH change over the current century.
- ~15% reduction in growth and ~67% reduction in survival when pH was reduced 0.5 units.

M. Litzow and J. Short, AFSC
Ice-dependent seals

**Ringed seals**
- Pups in under-snow lairs in coastal fast ice
- Feeds in water column/under ice

**Bearded seals**
- Pups/feeds in pack ice zone over shelf, in areas of rich benthic productivity

**Ribbon seals**
- Pups/molts in marginal ice zone, perhaps as a predator avoidance strategy

**Spotted seals**
- Pups in pack ice – uses land haulout sites during summer
“People, people’s needs, and nature...”

Resource / biological sustainability

Economic sustainability

Social equity
The ruling powers in the early Aztec Empire believed they could affect the weather by ripping out a few hearts!

In today's advanced society, we now understand all it takes is a lot of billfolds!

We must help the sun grow hotter!

We must stop global warming!
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