Arctic/Frontier Drilling: Safety, Regulation, & Environmental Issues

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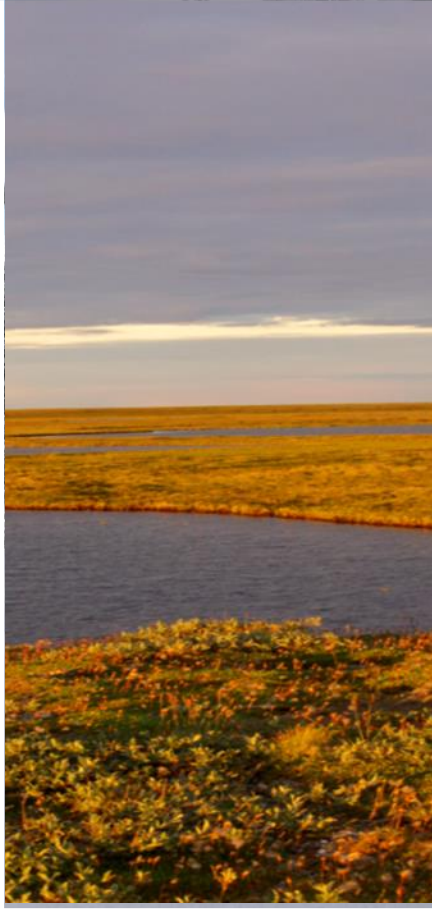


The Wilderness Society

- Public Interest, Membership Organization
- Mission: Protect wilderness and inspire Americans to care for our wild places
- Founded: 1935
- Arctic conservation has been part of our work since the beginning
- **We work to protect "special places" and ensure oil and gas operations are as safe and environmentally sound as possible**

What Characterizes "Special Places" in the Arctic?

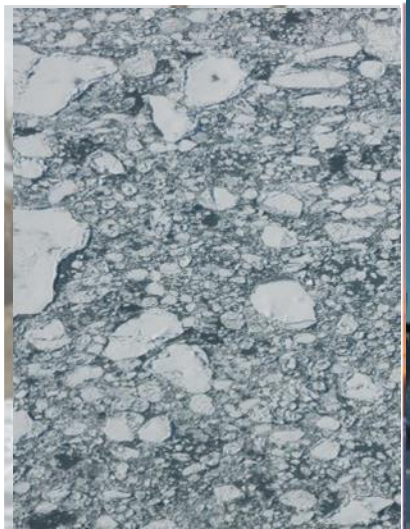
- Areas of high ecological importance
- Areas important to subsistence
- Areas of high cultural value
- Areas important because of their wilderness, recreational, or visual qualities

My Background

- Licensed engineer
- 14 years in Alaska, before that DC
- S.B., MIT; M.S., Stanford
- Member of several federal advisory committees on oil operations (refineries, pipelines, offshore); former board member, Pipeline Safety Trust
- Cook Inlet, Alaska oil and gas operations (sub-Arctic, microcosm of the industry as a whole)
- Arctic Alaska oil and gas operations

THE WILDERNESS SOCIETY

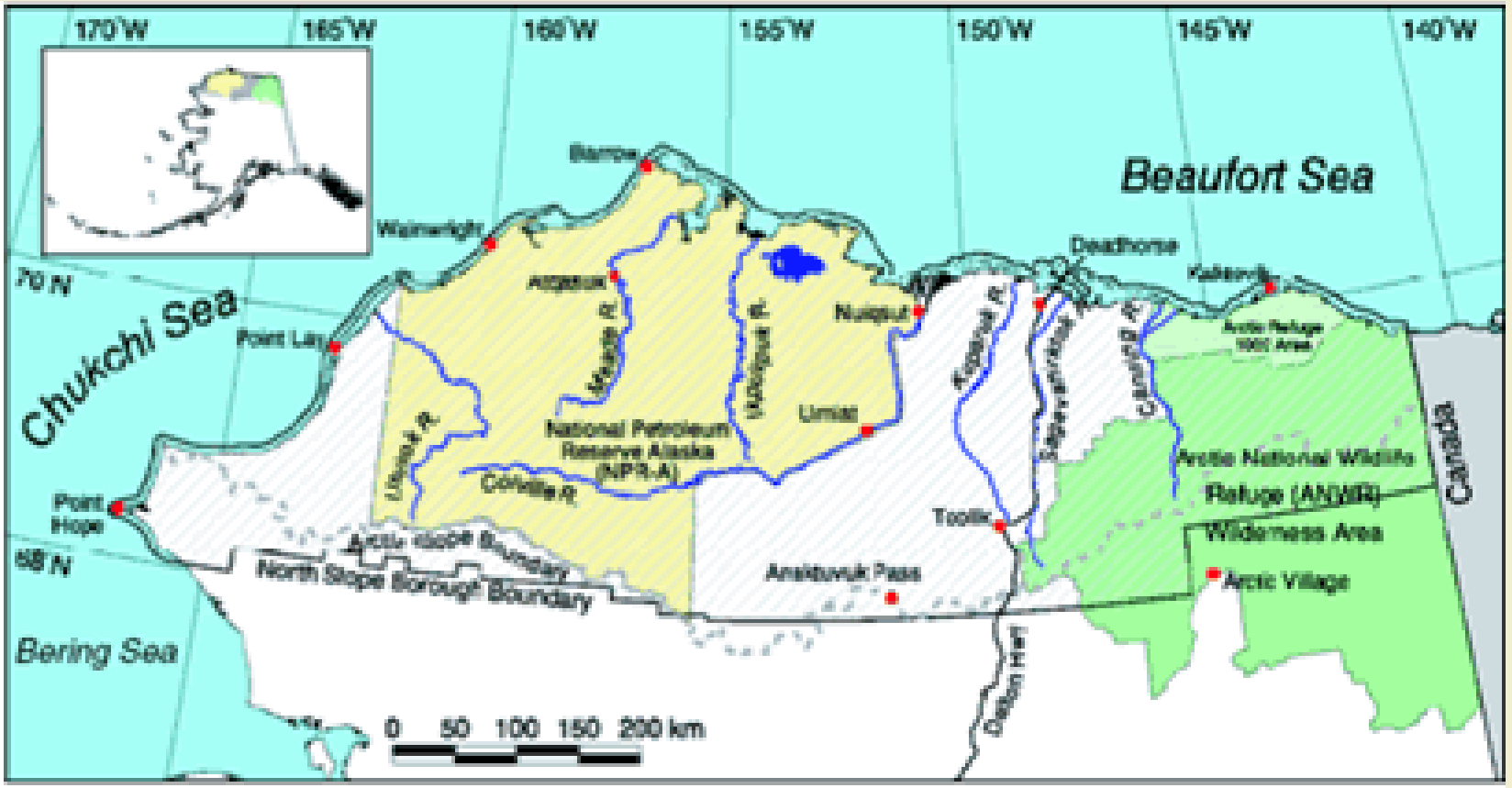
Cook Inlet



THE WILDERNESS SOCIETY

Arctic Alaska

Arctic Alaska



North Slope of Alaska (Source: NAS 2003)

Arctic Alaska

- Complete ice coverage in winter
- Current offshore drilling only from islands; planned offshore platforms
- Extensive pipeline infrastructure, nearly all oil or oil/gas/water mixture (i.e., few gas lines)
- Small populations in villages, mostly Alaska Native (>4,000 in Barrow)
- Communities not connected by roads, supplied by barges in summer and by air
- Subsistence users of offshore and onshore resources
- Whales, seals, caribou, marine and freshwater fish

Arctic Offshore Drilling: Key Issues

- Ice movement and scouring (note: not an issue for current Arctic operations in Norway)
- Lack of infrastructure to address safety and environmental problems and emergencies
- Minimal at-sea cleanup ability, in general and especially with broken ice
- Extreme weather: high winds, waves; fog; cold
- Mobilization can be very challenging
- Darkness, including human factors
- Space use conflicts involving fishing, whaling
- High cost operating environment
- Near-pristine conditions will be compromised

Spill Recovery Under Ice Conditions

Figure 4. Photograph showing boom failure due to ice flowing under the boom.

Arctic Onshore Drilling: Key Issues

- Terrestrial and freshwater contamination
- Air pollution, noise, and safety (e.g., fire) issues
- Limited infrastructure to address safety and environmental problems and emergencies
- Direct wildlife habitat disruption from oil/gas operations (much > than often portrayed in the media and in DC)
- Subsistence impacts (for many Arctic residents, that's 50-75% of their food sources)
- Indirect impacts from road development including water use for ice roads, gravel mining, loss of habitat, disruption of migrations, increased hunting
- High cost operating environment
- Near-pristine conditions will be compromised

Offshore/Onshore Pipeline Impacts: Key Issues

- Construction-related ecosystem damage, particularly stream crossings
- Minor and major oil spills from corrosion, third-party damage (including anchors), human error, maintenance failures, earthquakes/landslides, infrastructure failure (e.g., valves, fittings), freezing
- Inadequate leak detection/valve placement lead to bigger spills
- Cleanup with ice-on-water conditions is nearly impossible

Major Pipeline Spill at a Caribou Crossing

BP pipeline spill of over 250,000 gallons (1 mill. liters), 2006

Indirect Impacts of Arctic Oil/Gas Operations

- Population increases
- Temporary workers, especially men
- Potential social problems, e.g., increased crime
- Housing shortages, increased costs
- Legal and illegal competition for wildlife
- Changed way of life

Offshore Operations in the Atlantic/Deepwater: Key Issues

- Atlantic
  - substantial changes to the oceanic noise environment: seismic, seafloor operations, etc.
  - coastal economies will be impacted by new infrastructure and potential spills
- Deepwater
  - challenging geology, high pressures, difficult access at depth
  - have ecologically sensitive areas been identified and protected?

Key Statutory/Regulatory Issues

- Offshore Oil/Gas Operations
  - Post-*Deepwater Horizon* gaps include relatively low liability cap, no whistle-blower protections, lack of improved well control and Arctic-specific regulations
  - Systems integration: drilling *and* mobilization are important
- Onshore Oil/Gas Operations
  - Non-regulation and under-regulation of particular types of pipelines, esp. gathering and produced water lines and oil sands lines
  - Methane releases, flaring and fugitive
  - Safety culture implementation

BSEE's OCS Incident Statistics

Category of incident/spill	2010	2011	2012	2013
Loss of well control	4	3	4	8
Fires/explosions	126	103	134	97
Spills more than 50 bbls	5	3	8	UNK

Questions? Discussion?