

Paġlagivsi

Welcome

Velkommen



**Statoil 2010 Chukchi Seismic Survey  
Open Water Meeting March 2010**

# Presentation Summary

- Welcome
- Statoil introduction
- 2010 Chukchi Sea seismic survey
- Monitoring & Mitigation plans
- Stakeholder engagement process
- Questions & comments?

# Statoil – who are we?

- A global Norwegian energy company.
- In Norway we operate nearly 40 offshore oil & gas fields.
- We are now also a major acreage holder in the US Gulf of Mexico.
- We have Arctic experience in Norway, Russia, Greenland and Canada.
- We are a leader in carbon capture & storage, and offshore wind technology.

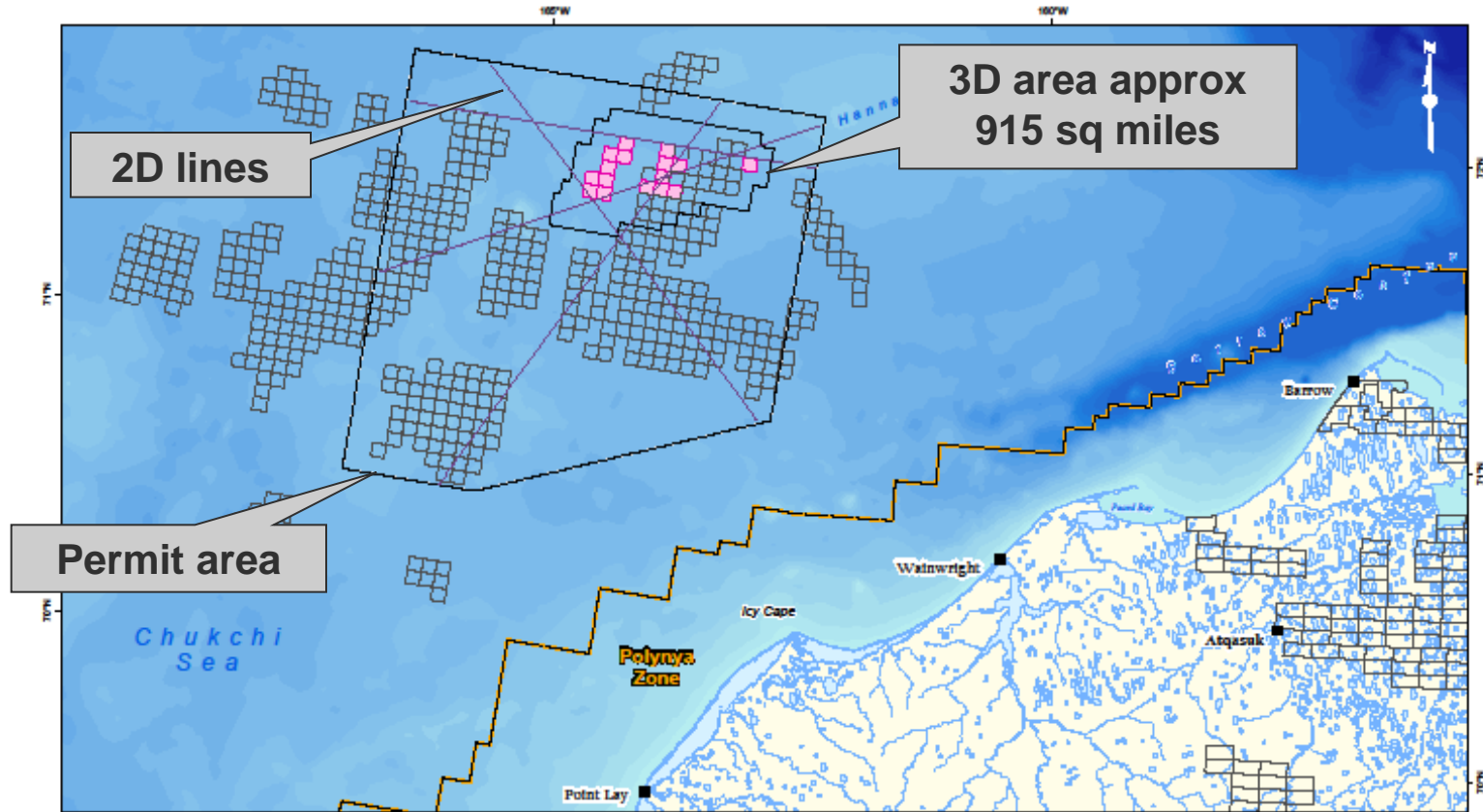
# Statoil's 2010 plans

- Statoil operates 16 leases in the Chukchi Sea, 14 with partners ENI.
- We plan a 3D seismic survey in 2010.
- The seismic contractor will be Fugro GeoTeam.
- We submitted permit applications at the end of 2009.
- We are conducting stakeholder engagement, assisted by ASRC Energy Services.
- We are recruiting MMOs through ASRC & LGL.

# Statoil 2010 Chukchi seismic survey

- Survey location
- The purpose of the seismic survey
- Vessels and equipment
- Timing
- Monitoring & mitigation measures

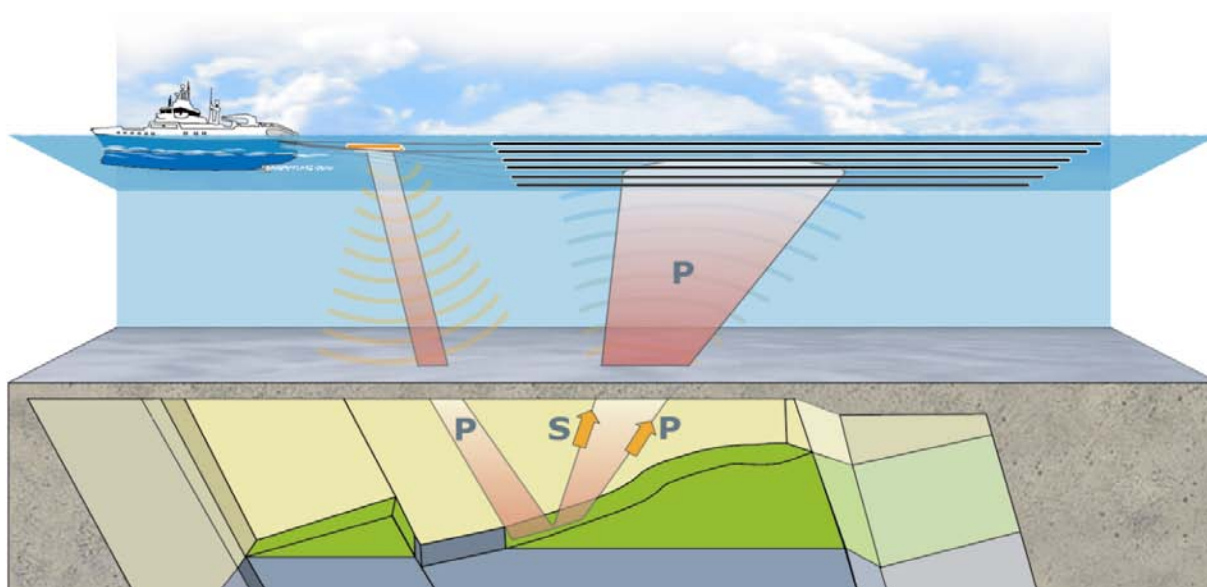
# Lease, seismic and permit areas



- A 3D survey, approx 915 sq miles, over Statoil's leases.
- 3D area largely > 100 miles offshore.
- A small number of 2D lines are also planned.

# Purpose of the seismic survey

- Seismic reflection data enables us to image the subsea geology.
- Existing seismic data in Statoil's Chukchi leases is old, sparse and of inadequate quality.
- Modern data is required to understand the complex geology.
- This data will be used to make decisions on further exploration.





# Vessels

- The seismic contractor is Fugro-Geoteam.
- The main vessel will be the Geo Celtic - a modern seismic vessel.
- 2 smaller vessels for equipment handling, marine mammal monitoring, & crew change



**M/V Geo Celtic**

**Length:** 330.7 feet  
**Breadth (max):** 91.8 feet  
**Net Tonnage:** 3,633 NT  
**Certified to Carry:** 69 persons  
**Function:** Seismic Vessel

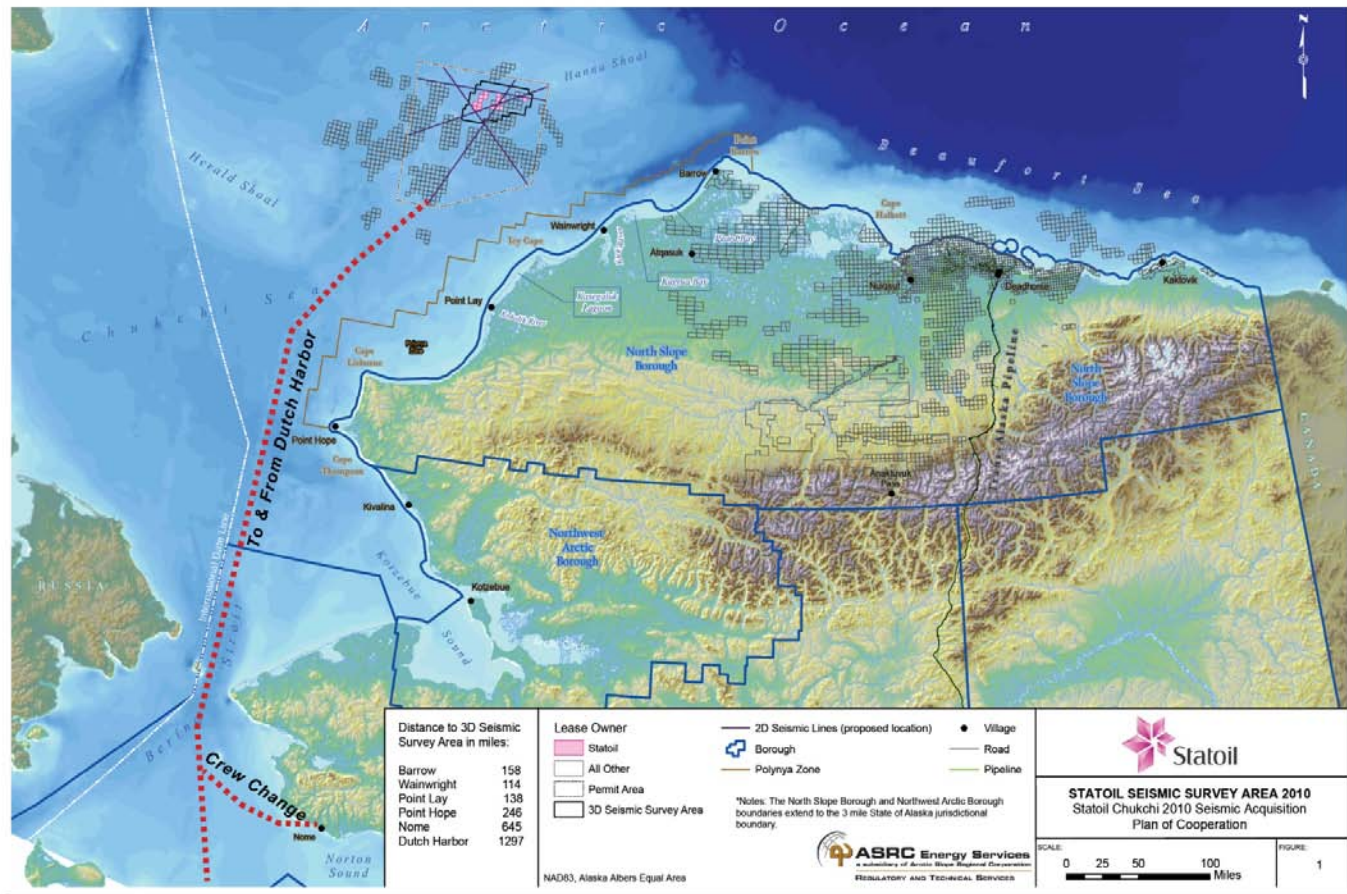


MV Tanux 1

MV Norseman

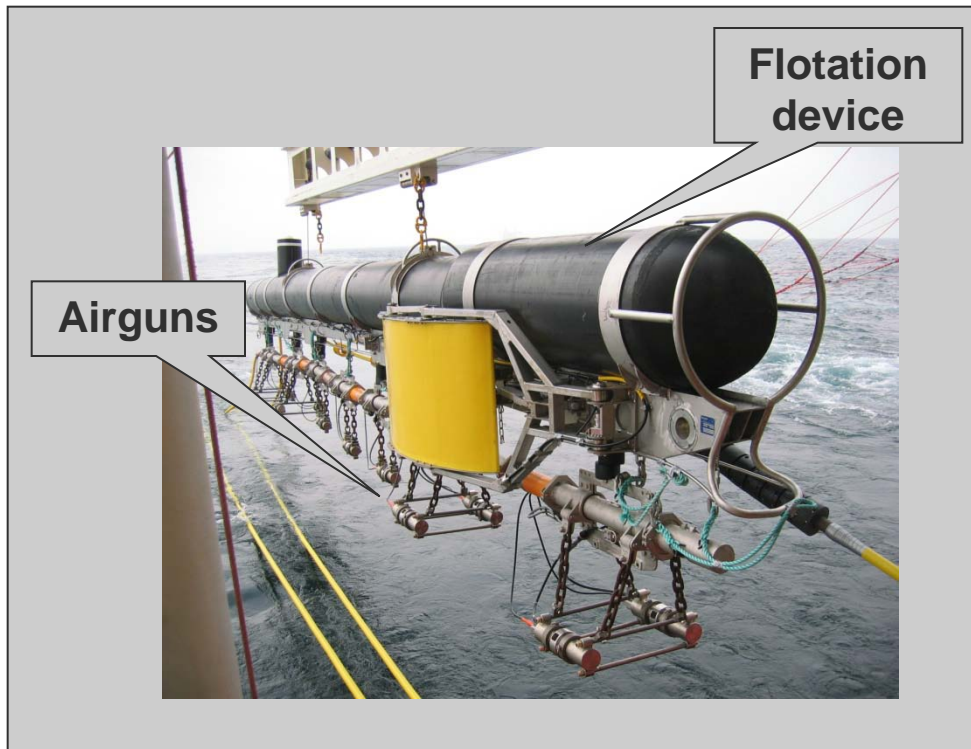


# Vessel transit route

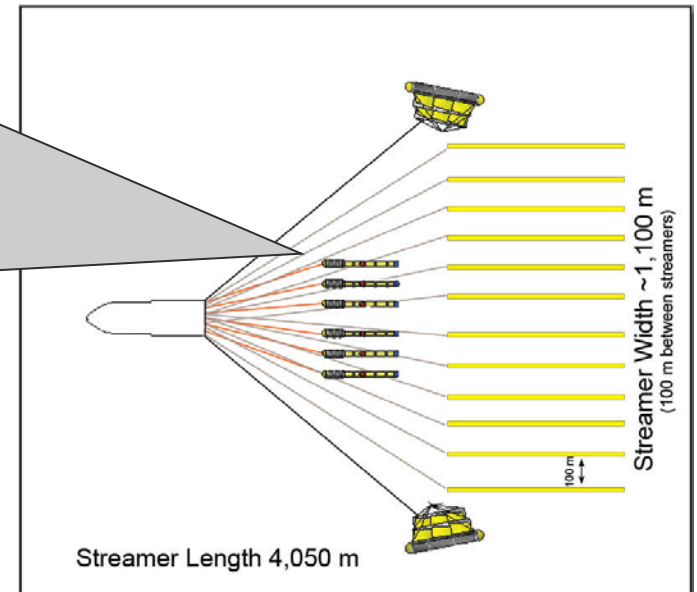


- Survey planned for early August – early October 2010.
- 1 crew change planned through Nome.

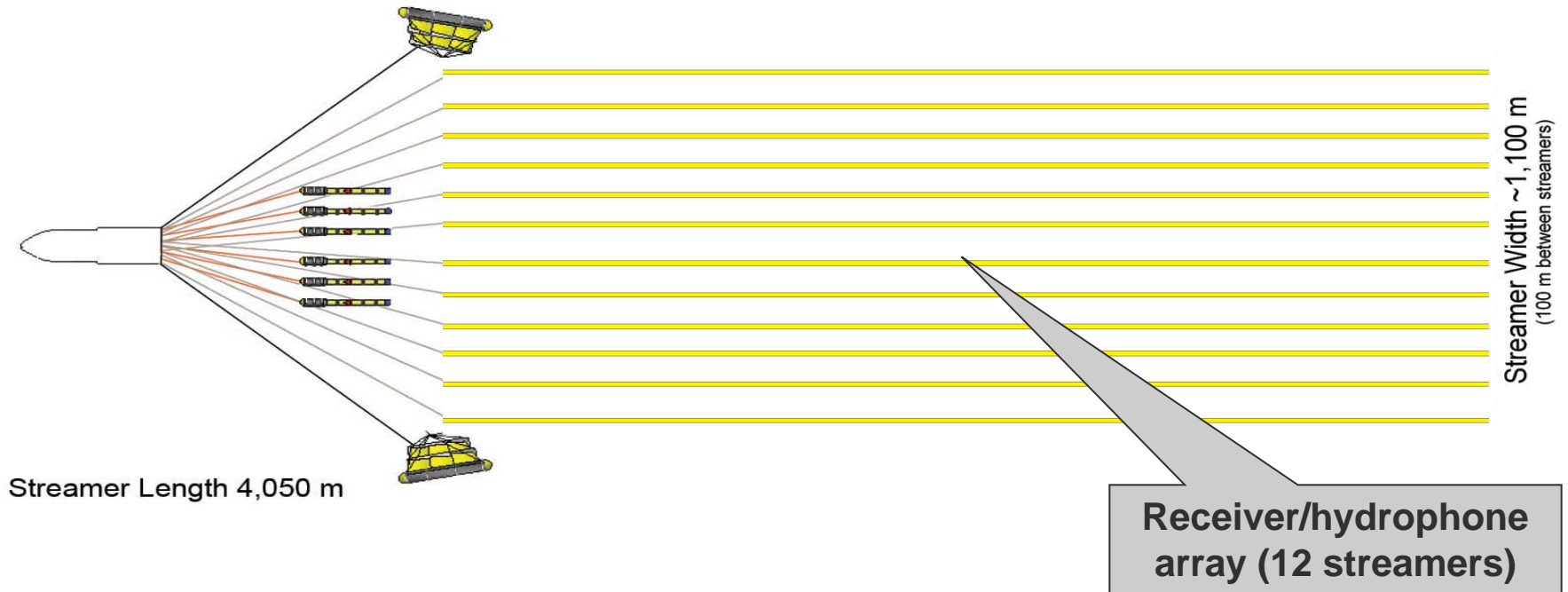
# Equipment - seismic sound source



- Airguns fire compressed air into the water.
- Total volume of airguns 3000 cu in.



# Equipment - seismic receivers



Streamer Length 4,050 m

Streamer Width ~1,100 m  
(100 m between streamers)

Receiver/hydrophone  
array (12 streamers)

- Each streamer is a line of steerable hydrophones
- 12 streamers will be used to reduce survey time
- Solid streamers will be used to avoid pollution

# Measures to Reduce Impact



## Survey Area

The survey area is located far offshore and will not interfere with subsistence activities.

Statoil will prepare a polar bear interaction plan that addresses food and waste management, personnel training, and safety and communication regarding polar bears.



## Ice Management

Ice conditions (radar, satellite imagery) in the project area will be monitored during the seismic survey in order to minimize survey

time and activity close to the ice edge.

## Com & Call Centers

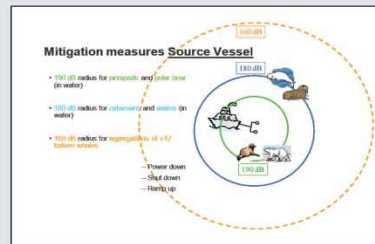
Statoil will, together with Shell and ConocoPhillips, operate a Search and Rescue (SAR) helicopter and shore communication and call centers to improve the area's emergency systems.



## Marine Mammal Monitoring

Vessels operated by Statoil will take every precaution to avoid harassment of marine mammals, including whales, seals, walruses or polar bears in the water when a vessel is operated near these animals.

- Marine Mammal Observers (MMOs) will be employed on all 3 vessels.
- An additional (third) vessel has been contracted primarily to assist with marine mammal observation.
- Scientific and Inupiat MMOs
  - 5 on source vessel until mid-August, then possibly 3 or 4
  - 2 or 3 on support vessels



## Mitigation Procedures

- Establishment of safety radii through sound source verification measurements of airgun array.
- In the established exclusion or safety zone, power down, shut down, and ramp-up procedures will be in place.

## Environmental Baseline Monitoring

Statoil is participating in environmental baseline monitoring with Shell and ConocoPhillips. This includes:

- Seabed and water sampling and analysis over old drill sites
- Fixed seabed acoustic recorders to monitor marine mammal activity in the Chukchi Sea.
- Ecological studies of Chukchi fish populations.



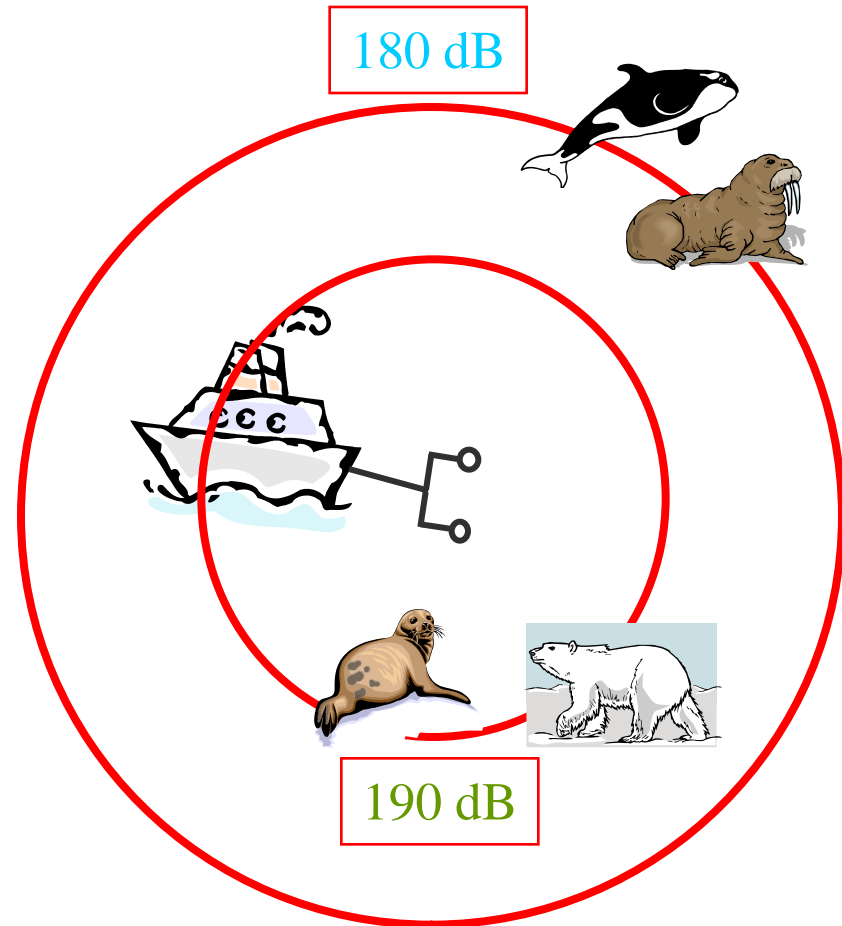
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  - 2 or 3 on support vessels
  - LGL & ASRC will recruit & train MMOs
  - Reporting to agencies during survey



# Procedures to mitigate impact

- Sound source verification will be used to establish safety radii distances
- If marine mammals are observed in or approaching safety radii, then seismic power down or shut down
- 190 dB radius for pinnipeds and polar bear (in water).
- 180 dB radius for cetaceans and walrus (in water).
- 160 dB radius for aggregations of  $\geq 12$  baleen whales.



# Stakeholder Engagement & Plan of Cooperation

- North Slope Borough visit to Norway, March 2009
- October/November 2009
  - North Slope Borough Planning Commission & Wildlife Dept
  - Village Leadership Meetings
- January 2010 – village public POC meetings
- February 2010 – CAA meeting with AEWC
- April 2010 - NMFS Open Water Meeting, Anchorage
- April 2010 – Nanuuq, Ice-seal, Walrus & Beluga Co-mgt groups



# Seismic timeline

- Permit applications made - December 2009
  - IHA, G & G, and LOA permits
- Stakeholder engagement - October 2009 onwards
- Seismic Acquisition early August – early October 2010
- 90 day report to be submitted after survey

**Quyanaqpak!**

**Thanks for your attention!**

**Tusen takk!**