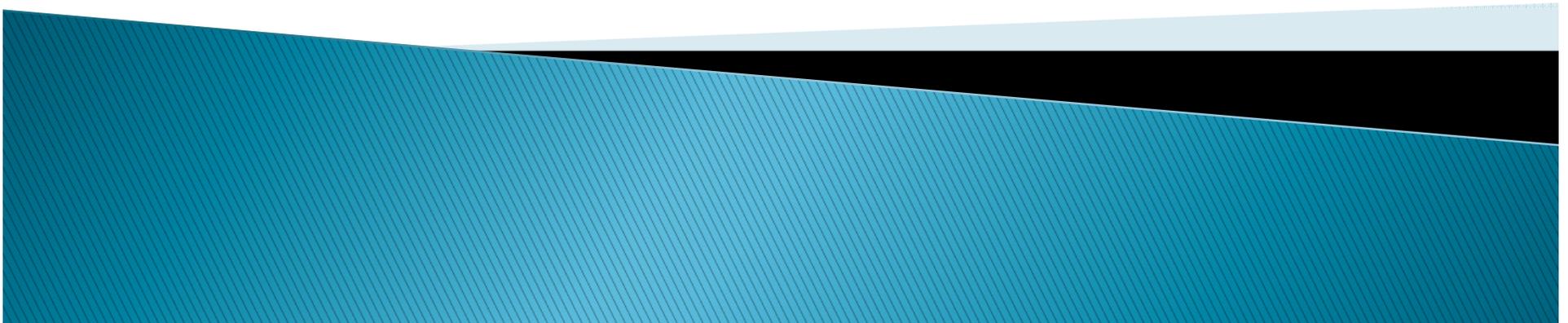


2012 Peer Review Panel Recommendations

Open Water Meeting
March 2012

Presented by: Robert Suydam



Monitoring requirements of the Marine Mammal Protection Act

- ▶ Increase understanding of:
 - marine mammals (MM) in the project area
 - potential exposure and response of MM to potential stressor(s)
 - impacts of stressors to (1) fitness or survival of an individual or (2) species/population/stock



MMPA

- ▶ increase in understanding of the effectiveness of mitigation and monitoring
- ▶ better understanding of compliance with the incidental take authorization
- ▶ increase in the probability of detecting marine mammals (through improved technology or methodology)



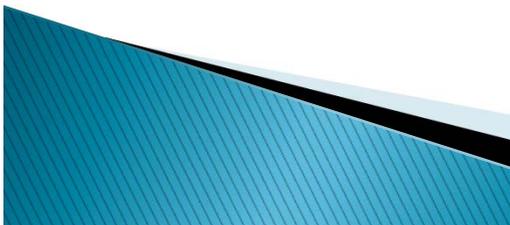
NMFS Questions

- 1) Will the stated objectives effectively further the understanding of the impacts of the activities on marine mammals?
- 2) Are the stated objectives achievable based on the methods described?
- 3) Are there technical modifications to the proposed monitoring techniques that should be considered?



NMFS Questions (continued)

- 4) Are there techniques not proposed that should be considered?
- 5) What is the best way to present data and results?



2012 Panel Members

- ▶ Harry Brower
- ▶ John Burns
- ▶ Doug Nowacek
- ▶ Tim Ragen
- ▶ Brandon Southall
- ▶ Robert Suydam
- ▶ Facilitator: Robyn Angliss



Reviewed IHA applications–2012

- ▶ BP Simpson Lagoon Seismic Survey
- ▶ Shell Drilling—Beaufort Sea (Camden Bay)
- ▶ Shell Drilling—Chukchi Sea

- ▶ ION Beaufort Seismic Survey (reviewed in 2011)



BP Seismic Survey

▶ Objectives

- a) Implement mitigation measures
- b) Record data to estimate the # of animals potentially affected
- c) Compare the distance and distribution of marine mammals relative to the source vessel (with and w/o seismic)
- d) Obtain data on the behavior and movements of marine mammals (with & w/o seismic)



BP Seismic

- ▶ Question 1 (Objectives):
 - Objective a: Not help with understanding impacts as objective is for mitigation.
 - Objective b: Should provide some information but limitations of MMOs and only on source vessels
 - Objectives c & d: Further understanding but limitations because of “seismic” vs. “non-seismic”



BP Seismic

- ▶ Question 2 (objectives achievable with proposed methods)
 - Objectives a & b: Limited because—only 1 MMO and only on source vessels
 - Objectives c & d: Able to obtain some information re: impacts from seismic
 - Multiple source vessels
 - Conflicting tasks of MMOs



BP Seismic

- ▶ Question 3 (Improvements to monitoring)
 - Crew members as observers
 - Training
 - Scanning
 - Behaviors
 - MM on land
 - Recording data
 - Analyses
 - Seismic vs. non
 - Estimating takes



BP Seismic

- ▶ Question 4 (Other techniques)
 - Aerial surveys would improve but probably not needed
 - Acoustic monitoring
 - Dipping hydrophone
 - Bottom mounted hydrophones
 - Observational aids for darkness and inclement weather



Shell Drilling (Camden Bay)

- ▶ Question 1 (Objectives):
 - Vessel Based:
 - generally appropriate but limited because of MMO limitations
 - Aerial Survey:
 - Appropriate
 - Acoustic:
 - Appropriate
 - Disturbance to subsistence is minimized?



Shell (Camden Bay)

- ▶ Question 2 (objectives achievable with proposed methods)
 - Vessel Based: Generally objectives can be met—
 - MMOs have authority to implement mitigation
 - Species identification
 - Best observation spot
 - sampling of the relative near-field around operations be interpreted correctly to avoid biases
 - Aerial Survey: Approach adequate (dependent on weather)—
 - Comparisons—still, HD video, & observers
 - Power analysis of survey lines
 - Acoustic:
 - SSV—not adequate for directionality of sound fields?
 - DASARs—good modifications



Shell (Camden Bay)

- ▶ Question 3 (Improvements to monitoring)
 - Vessel Based:
 - Maximize time watching water (vs. recording data)
 - Cross vessel communication & visualization
 - Night vision in Arctic conditions
 - Independence in MMO program
 - Aerial Survey:
 - Cow/calf pairs
 - Sampling approach
 - Photography consistent across season, use 20 mm lens
 - Acoustic:
 - Improved sampling scheme
 - Improved propagation models for ZVSP and ice management



Shell (Camden Bay)

- ▶ Question 4 (Other techniques)
 - Vessel Based:
 - Improved methods for monitoring in dark/inclement weather
 - Aerial Survey:
 - Agrees with photographic comparison with observers
 - Acoustic:
 - Integration of acoustic and visual data
 - Provide DASAR data to BP re: Simpson Lagoon Seismic



Shell Drilling (Chukchi Sea)

- ▶ Question 1 (Objectives):
 - Vessel Based:
 - generally appropriate but limited because of MMO limitations
 - Aerial Survey:
 - Coastal surveys helpful for impacts in those area
 - Photography good addition but not replacement for observers
 - Acoustic:
 - Generally appropriate



Shell Drilling (Chukchi Sea)

- ▶ Question 2 (objectives achievable with proposed methods)
 - Vessel Based:
 - MMOs authority to implement mitigation
 - Species identification
 - Best observation spot
 - sampling of the relative near-field around operations be interpreted correctly to avoid biases
 - Aerial Survey:
 - Flown earlier in season to detect belugas
 - Offshore photography good addition but untested
 - Acoustic:
 - SSV—not adequate for directionality of sound fields?
 - Adjusting hydrophones to reduce vocalizing animals nearer operations a concern
 - Recommendation to add instruments nearer operations



Shell Drilling (Chukchi Sea)

- ▶ Question 3 (Improvements to monitoring)
 - Vessel Based:
 - Maximize time watching water (vs. recording data)
 - Cross vessel communication & visualization
 - Night vision in Arctic conditions
 - Independence in MMO program
 - Aerial Survey:
 - Coastal surveys begin earlier
 - Coastal surveys analyzed for assessing nearshore impacts
 - Offshore photography good addition but untested
 - Acoustic:
 - Improved sampling scheme
 - Improved propagation models for ZVSP and ice management



Shell Drilling (Chukchi Sea)

- ▶ Question 4 (Other techniques)
 - Vessel Based:
 - Improved methods for monitoring in dark/inclement weather
 - Aerial Survey:
 - Agrees with photographic comparison with observers
 - Acoustic:
 - Integration of acoustic and visual data
 - Provide DASAR data to BP re: Simpson Lagoon Seismic



ION Beaufort Sea Seismic

- ▶ Review from 2011 (based on old plan)
- ▶ ION: Trade-off between shooting earlier in season (avoid subsistence hunts) and darkness/inclement weather/ice
- ▶ May result in few (if any) of monitoring objectives being achievable
- ▶ Not a lot known about marine mammal distribution and relative abundance in autumn/early winter



ION Seismic

▶ Recommendations

- Acoustic recorders
- Aerial surveys (in October)
- Change timing of survey (western portion during open water period but before bowhead hunting/migration; eastern section after bowhead hunting/migration)



General Recommendations

- ▶ See 2010 and 2011 Reports
 - Acoustic monitoring and assessment of impacts
 - Aerial surveys
 - MMOs
 - Near- vs. far-field monitoring
 - Improving peer-review process
 - Baseline
 - Cumulative impacts
 - Take estimation
 - Reporting

