Effects of Oil and Gas Activities in the Arctic Ocean
Draft Environmental Impact Statement

December 2011

Prepared by:
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE OF CONTENTS</td>
<td>i</td>
</tr>
<tr>
<td>LIST OF FIGURES (FIGURES SECTION)</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF APPENDICES</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF ACRONYMS AND ABBREVIATIONS</td>
<td>iv</td>
</tr>
<tr>
<td>VOLUME 3: Chapters 7 and 8; Figures and Appendices</td>
<td>7-1</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>8-1</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td></td>
</tr>
<tr>
<td>FIGURES</td>
<td></td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
</tbody>
</table>
LIST OF FIGURES (FIGURES SECTION)

APPENDIX B FIGURES ......................................................................................................................................... 83

Figure B-1  Measured temperature and salinity profiles, and derived sound speed profiles near 71°30'N 164°30'W in late August 2010. Source O’Neill et al. 2010. .................... 84

Figure B-2  Deep water Beaufort Sea sound speed profile for August at 70°40' N, 138°15' W in 1375 m (4510 ft) water depth. Source GDEM (Teague et al. 1990). .................... 85

Figure B-3  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in (a) endfire direction and (b) broadside direction from 3000 in³ airgun array, and (c) 60 in³ mitigation airgun used for Statoil’s 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth, measured 2 m (6.6 ft) above the seabed........... 86

Figure B-4  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in (a) endfire direction and (b) broadside direction from 3147 in³ airgun array used for Shell’s 2007 3D Camden Bay (Sivulliq Prospect) seismic survey in ~24 m (79 ft) water depth, measured 2 m (6.6 ft) above the seabed. ...................... 87

Figure B-5  Spectrograms of airgun array pulses produced by GXT’s 2006 2D Chukchi Sea seismic survey using a 3320 in³ airgun array in 40 m (131 ft) water depth, measured 2 m (6.6 ft) above the seabed. ................................................................. 88

Figure B-6  Pressure versus time (left) and SEL spectral density (right) of single airgun array pulses received at three distances 460 m (1,509 ft) (top), 1,359 m (4,459 ft) (middle), 80 km (50 mi) (bottom), from Statoil’s 2010 3D Chukchi Sea seismic survey in 38-42 m (125-138 ft) water depth. ........................................ 89

Figure B-7  One-third octave band per-pulse SEL (units are dB re 1 uPa²s) as a function of band center frequency and broadside distance from Statoil’s 3000 in³ airgun array used for its 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth. ................................................................. 90

Figure B-8  RMS-90 integration time window length versus distance from GXT’s 2006 2D Chukchi Sea seismic survey. ............................................................................................................................................. 90

Figure B-9  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in³ airgun array, and from the 20 in³ airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 2.5 m (8 ft) water depth. ....................... 91

Figure B-10 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in³ airgun array, and from the 20 in³ airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 9 m (30 ft) water depth. ...................................................... 92

Figure B-11 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for 10 in³ airgun (top left), 20 in³ array (top right), and 40 in³ array (bottom) used for Shell’s 2009 Site Clearance survey at its .......................................................... 93

Figure B-12 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for GeoPulse 3.5 kHz sub-bottom profiler operating during Shell’s 2009 (top left), 20 in³ array (top right), and 40 in³ array (bottom) used for Shell’s 2009 Site Clearance surveys at its Honeyguide (left) and Burger (right) prospects in the Chukchi Sea, measured 2 m above the seabed in 40 and 46 m water depth respectively. .......................................................... 94
LIST OF APPENDICES

Appendix A: Standard and Additional Mitigation Measures Addressing Impacts to Marine Mammals and Subsistence Activities
Appendix B: Acoustics Technical Report
Appendix C: Final Scoping Report
Appendix D: Cooperating Agencies and Government to Government Letters
# LIST OF ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1D</td>
<td>One-dimensional</td>
</tr>
<tr>
<td>2D</td>
<td>Two-dimensional</td>
</tr>
<tr>
<td>3D</td>
<td>Three-dimensional</td>
</tr>
<tr>
<td>4D</td>
<td>Four-dimensional</td>
</tr>
<tr>
<td>AAC</td>
<td>Alaska Administrative Code</td>
</tr>
<tr>
<td>ACP</td>
<td>Arctic Coastal Plain Physiographic Province</td>
</tr>
<tr>
<td>ACMP</td>
<td>Alaska Coastal Management Act of 1977</td>
</tr>
<tr>
<td>ACP</td>
<td>Arctic Coastal Plain</td>
</tr>
<tr>
<td>ADCCED</td>
<td>Alaska Department of Commerce, Community, and Economic Development</td>
</tr>
<tr>
<td>ADCP</td>
<td>Acoustic Doppler Current Profile</td>
</tr>
<tr>
<td>ADEC</td>
<td>Alaska Department of Environmental Conservation</td>
</tr>
<tr>
<td>ADF&amp;G</td>
<td>Alaska Department of Fish and Game</td>
</tr>
<tr>
<td>ADLWD</td>
<td>Alaska Department of Labor and Workforce Development</td>
</tr>
<tr>
<td>ADNR</td>
<td>Alaska Department of Natural Resources</td>
</tr>
<tr>
<td>AEWC</td>
<td>Alaska Eskimo Whaling Commission</td>
</tr>
<tr>
<td>AF</td>
<td>Arctic Foothills Physiographic Province</td>
</tr>
<tr>
<td>AHRS</td>
<td>Alaska Heritage Resource</td>
</tr>
<tr>
<td>AMNWR</td>
<td>Alaska Maritime National Wildlife Refuge</td>
</tr>
<tr>
<td>AN(SW)T</td>
<td>Ambient-Noise (Surface-Wave) Tomography</td>
</tr>
<tr>
<td>ANCSA</td>
<td>Alaska Native Claims Settlement Act</td>
</tr>
<tr>
<td>ANIMIDA</td>
<td>Arctic Nearshore Impact Monitoring in Development Area</td>
</tr>
<tr>
<td>ANILCA</td>
<td>Alaska National Interest Lands Conservation Act</td>
</tr>
<tr>
<td>ANOs</td>
<td>Alaska Native Organizations</td>
</tr>
<tr>
<td>ANWR</td>
<td>Arctic National Wildlife Refuge</td>
</tr>
<tr>
<td>AO</td>
<td>Arctic Oscillation</td>
</tr>
<tr>
<td>AOOS</td>
<td>Alaskan Ocean Observing system</td>
</tr>
<tr>
<td>APD</td>
<td>Application for Permit to Drill</td>
</tr>
<tr>
<td>APP</td>
<td>Alaska Pipeline Project</td>
</tr>
<tr>
<td>AQRV</td>
<td>air quality related values</td>
</tr>
<tr>
<td>ARRT</td>
<td>Alaska Regional Response Team</td>
</tr>
<tr>
<td>ASNA</td>
<td>Arctic Slope Native Association</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>ASRC</td>
<td>Arctic Slope Regional Corporation</td>
</tr>
<tr>
<td>BACT</td>
<td>Best Available Control Technology</td>
</tr>
<tr>
<td>bbl</td>
<td>barrels</td>
</tr>
<tr>
<td>BIA</td>
<td>U.S. Bureau of Indian Affairs</td>
</tr>
<tr>
<td>BLM</td>
<td>U.S. Bureau of Land Management</td>
</tr>
<tr>
<td>BOEMRE</td>
<td>U.S. Bureau of Ocean Energy Management, Regulation and Enforcement</td>
</tr>
<tr>
<td>BOWFEST</td>
<td>Bowhead Whale Feeding Ecology Study</td>
</tr>
<tr>
<td>BSEE</td>
<td>Bureau of Safety and Environmental Enforcement</td>
</tr>
<tr>
<td>BWASP</td>
<td>Bowhead Whale Aerial Survey Program</td>
</tr>
<tr>
<td>°C</td>
<td>Degrees-Celsius (spelling?)</td>
</tr>
<tr>
<td>CAA</td>
<td>Conflict Avoidance Agreement</td>
</tr>
<tr>
<td>CAH</td>
<td>Central Arctic Caribou Herd</td>
</tr>
<tr>
<td>cANIMIDA</td>
<td>Continuation of Arctic Nearshore Impact Monitoring in Development Area</td>
</tr>
<tr>
<td>CAR</td>
<td>Comment Analysis Report</td>
</tr>
<tr>
<td>CatExs</td>
<td>Categorically Excludes</td>
</tr>
<tr>
<td>CDS</td>
<td>conical drilling unit</td>
</tr>
<tr>
<td>CEQ</td>
<td>Council on Environmental Quality</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response Compensation and Liability Act of 1980</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>CH₄</td>
<td>Methane</td>
</tr>
<tr>
<td>CBS</td>
<td>Chukchi/Bering Seas stock</td>
</tr>
<tr>
<td>CIDS</td>
<td>Concrete Island Drilling Structure</td>
</tr>
<tr>
<td>CLRD</td>
<td>Chronic lower respiratory disease</td>
</tr>
<tr>
<td>cm</td>
<td>Centimeter</td>
</tr>
<tr>
<td>cm³</td>
<td>Cubic centimeter</td>
</tr>
<tr>
<td>cm/s</td>
<td>Centimeters per second</td>
</tr>
<tr>
<td>CO</td>
<td>carbon monoxide</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>CO₂e</td>
<td>carbon dioxide equivalent</td>
</tr>
<tr>
<td>COA</td>
<td>corresponding onshore area</td>
</tr>
<tr>
<td>COMIDA</td>
<td>Chukchi Offshore Monitoring in Drilling Area Survey Project</td>
</tr>
<tr>
<td>CSPA</td>
<td>Chukchi Sea Planning Area</td>
</tr>
</tbody>
</table>
CPAI  ConocoPhillips Alaska, Inc
CPUE  Catch Per Unit Effort
CSEM  Controlled Source Electromagnetic
CWA  Clean Water Act
CZMA  Coastal Zone Management Act
D  Drilling
DAO  Department Administrative Order
dB  Decibel
dBA  A-weighted sound level
dB re 1 µPa rms  Decibels Relative to 1 micropascal Root Mean Square
DCOM  Division of Coastal and Ocean Management
DCRA  Division of Community and Regional Affairs
DDT  dichlorodiphenyltrichloroethane
deg.  Degrees
DEIS  Draft Environmental Impact Statement
Detritus  Dead
DEW  Distant Early Warning
DLI  Daylight Imaging
DMLW  Division of Mining, Land and Water
DO&G  Department of Oil and Gas
DOC  U.S. Department of Commerce
DPEIS  Draft Programmatic Environmental Impact Statement
DS  Deep Seismic Survey
DTAGS  Deep-towed Acoustics/Geophysics System
DPP  Development and Production Plan
DWG  Supplemental Final EIS
EA  Environmental Assessment
Ecotone  salinity transition zone
EEZ  Exclusive Economic Zone
EFH  Essential Fish Habitat
EIS  Environmental Impact Statement
EP  Exploration Plan
EPA  U.S. Environmental Protection Agency
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS</td>
<td>Emergency Medical Services</td>
</tr>
<tr>
<td>EO</td>
<td>Executive Order</td>
</tr>
<tr>
<td>EP</td>
<td>Exploration Plan</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>ERD</td>
<td>Extended Reach Drilling</td>
</tr>
<tr>
<td>ERM</td>
<td>Effects Range Median</td>
</tr>
<tr>
<td>ERL</td>
<td>Effects Range Low</td>
</tr>
<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
</tr>
<tr>
<td>ESP</td>
<td>Environmental Studies Program</td>
</tr>
<tr>
<td>EVOS</td>
<td>Exxon Valdez Oil Spill</td>
</tr>
<tr>
<td>°F</td>
<td>Degrees-Fahrenheit</td>
</tr>
<tr>
<td>FEIS</td>
<td>Final Environmental Impact Statement</td>
</tr>
<tr>
<td>FLIR</td>
<td>Forward Looking Infrared</td>
</tr>
<tr>
<td>FM</td>
<td>frequency-modulated</td>
</tr>
<tr>
<td>FMPs</td>
<td>Fishery management plans</td>
</tr>
<tr>
<td>FOSC</td>
<td>Federal On-Scene Coordinator</td>
</tr>
<tr>
<td>FONSI</td>
<td>Finding of No Significant Impact</td>
</tr>
<tr>
<td>FR</td>
<td>Federal Register</td>
</tr>
<tr>
<td>ft</td>
<td>Feet</td>
</tr>
<tr>
<td>FY</td>
<td>fiscal year</td>
</tr>
<tr>
<td>g</td>
<td>gram</td>
</tr>
<tr>
<td>G&amp;G</td>
<td>Geological and Geophysical</td>
</tr>
<tr>
<td>GAO</td>
<td>Government Accountability Office</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>Gm</td>
<td>geographic mile</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>GTP</td>
<td>gas treatment plant</td>
</tr>
<tr>
<td>HAP</td>
<td>hazardous air pollutants</td>
</tr>
<tr>
<td>Hg</td>
<td>elemental mercury</td>
</tr>
<tr>
<td>HgCl₂</td>
<td>Mercuric chloride</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HRS</td>
<td>High Resolution Seismic</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>HyMAS</td>
<td>Hydrocarbon Microtremor Analysis</td>
</tr>
<tr>
<td>Hz</td>
<td>Hertz</td>
</tr>
<tr>
<td>IAP</td>
<td>Integrated Activity Plan</td>
</tr>
<tr>
<td>IB</td>
<td>Icebreaking</td>
</tr>
<tr>
<td>ICAS</td>
<td>Inupiat Community of the Arctic Slope</td>
</tr>
<tr>
<td>IHA</td>
<td>Incidental Harassment Authorization</td>
</tr>
<tr>
<td>in</td>
<td>Inch</td>
</tr>
<tr>
<td>in³</td>
<td>Cubic Inch</td>
</tr>
<tr>
<td>IMPROVE</td>
<td>Interagency Monitoring of Protected Visual</td>
</tr>
<tr>
<td>ISER</td>
<td>Social and Economic Research</td>
</tr>
<tr>
<td>ITA</td>
<td>Incidental Take Authorization</td>
</tr>
<tr>
<td>IVI</td>
<td>Industrial Vehicle International</td>
</tr>
<tr>
<td>IWC</td>
<td>International Whaling Commission</td>
</tr>
<tr>
<td>Kg</td>
<td>kilograms</td>
</tr>
<tr>
<td>kHz</td>
<td>kilohertz</td>
</tr>
<tr>
<td>KIC</td>
<td>Kikiktagruk Inupiat Corporation</td>
</tr>
<tr>
<td>km</td>
<td>Kilometer</td>
</tr>
<tr>
<td>km²</td>
<td>square kilometers</td>
</tr>
<tr>
<td>kn</td>
<td>Knot</td>
</tr>
<tr>
<td>LACS</td>
<td>Low Level Acoustic Combustion Source</td>
</tr>
<tr>
<td>Lb</td>
<td>pounds</td>
</tr>
<tr>
<td>LBCHU</td>
<td>Ledyard Bay Critical Habitat Unit</td>
</tr>
<tr>
<td>LCU</td>
<td>Lower Cretaceous Unconformity</td>
</tr>
<tr>
<td>$L_{eq}$</td>
<td>Equivalent sound level</td>
</tr>
<tr>
<td>LET</td>
<td>Local Earthquake Tomography</td>
</tr>
<tr>
<td>LME</td>
<td>Large Marine Ecosystem</td>
</tr>
<tr>
<td>$L_{\text{min}}$</td>
<td>RMS maximum noise level</td>
</tr>
<tr>
<td>$L_{\text{min}}$</td>
<td>RMS minimum noise level</td>
</tr>
<tr>
<td>LOA</td>
<td>Letters of Authorization</td>
</tr>
<tr>
<td>LFS</td>
<td>Low-Frequency Spectroscopy</td>
</tr>
<tr>
<td>LRI</td>
<td>lower respiratory tract infections</td>
</tr>
<tr>
<td>m</td>
<td>Meter</td>
</tr>
<tr>
<td>mg/kg</td>
<td>milligrams per kilograms</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>Mg/L</td>
<td>Milligrams per liter</td>
</tr>
<tr>
<td>Mg/m³</td>
<td>Milligrams per cubic meter</td>
</tr>
<tr>
<td>mi</td>
<td>Mile</td>
</tr>
<tr>
<td>min.</td>
<td>Minutes</td>
</tr>
<tr>
<td>MIRIS</td>
<td>Michigan Resource Information System</td>
</tr>
<tr>
<td>mm</td>
<td>Millimeter</td>
</tr>
<tr>
<td>MMbbls</td>
<td>million barrels</td>
</tr>
<tr>
<td>MMO</td>
<td>Marine Mammal Observer</td>
</tr>
<tr>
<td>MMPA</td>
<td>Marine Mammal Protection Act</td>
</tr>
<tr>
<td>MMS</td>
<td>Minerals Management Service</td>
</tr>
<tr>
<td>MMt</td>
<td>million metric tons</td>
</tr>
<tr>
<td>MODU</td>
<td>Mobile Offshore Drilling Unit</td>
</tr>
<tr>
<td>Mph</td>
<td>Miles per hour</td>
</tr>
<tr>
<td>MSFCMA</td>
<td>Magnuson Stevens Fishery Conservation and Management Act</td>
</tr>
<tr>
<td>my</td>
<td>million years</td>
</tr>
<tr>
<td>myBP</td>
<td>million years before present</td>
</tr>
<tr>
<td>µPa</td>
<td>Micro Pascal</td>
</tr>
<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
</tr>
<tr>
<td>NAB</td>
<td>Northwest Arctic Borough</td>
</tr>
<tr>
<td>NANA</td>
<td>NANA Regional Corporation</td>
</tr>
<tr>
<td>NAO</td>
<td>North Atlantic Oscillation</td>
</tr>
<tr>
<td>NCP</td>
<td>National Oil and Hazardous Substances Pollution Contingency Plan</td>
</tr>
<tr>
<td>NEP-A</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>Ng/L</td>
<td>parts per trillion</td>
</tr>
<tr>
<td>NGO</td>
<td>non-governmental organization</td>
</tr>
<tr>
<td>NH</td>
<td>ammonia</td>
</tr>
<tr>
<td>NM</td>
<td>Nautical Miles</td>
</tr>
<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>NMI</td>
<td>nautical miles</td>
</tr>
<tr>
<td>NO</td>
<td>nitrogen oxides</td>
</tr>
<tr>
<td>N₂O</td>
<td>Nitrous Oxide</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NOI</td>
<td>Notice of Intent</td>
</tr>
</tbody>
</table>
NPDES National Pollutant Discharge Elimination System
NPFMC North Pacific Fisheries Management Council
NPR-A National Petroleum Reserve–Alaska
NRC National Research Council
NSR New Source Review
NTL Notice to Lessees
NTU Nephelometric Turbidity Units
NVDs Night Vision Devices
NPFMC North Pacific Fisheries Management Council
NPS National Park Service
NRHP National Register of Historic Places
NSB North Slope Borough
NSB DHHS North Slope Borough Department of Health and Social Services
NSR New Source Review
O3 ozone
OBC Ocean-bottom-cable
OBN ocean bottom node
OCRM Office of Ocean and Coastal Resource Management
OCS Outer Continental Shelf
ODPCP Oil Discharge Prevention and Contingency Plan
OMB U.S. Office of Management and Budget
OPEC Organization of Petroleum-Exporting Countries
OSRB Oil Spill Response Barge
OSRO Oil Spill Removal Organizations
OSRP Oil Spill Response Plan
OSRV Oil Spill Response Vessels
Pa Pascals
PAH polycyclic aromatic hydrocarbons
Pb lead
PCB Polychlorinated Biphenyl
PCH Porcupine Caribou Herd
PDO Pacific Decadal Oscillation
PEA Programmatic Environmental Assessment
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEIS</td>
<td>Programmatic Environmental Impact Statement</td>
</tr>
<tr>
<td>PILT</td>
<td>payment in lieu of tax</td>
</tr>
<tr>
<td>PGS</td>
<td>Petroleum Geo-Services</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>Particulate matter 10 microns in diameter</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Particulate matter 10 microns in diameter</td>
</tr>
<tr>
<td>$P$</td>
<td>Pressure</td>
</tr>
<tr>
<td>$P_1$</td>
<td>Sound having pressure</td>
</tr>
<tr>
<td>POC</td>
<td>Plan of Cooperation</td>
</tr>
<tr>
<td>P$_{ref}$</td>
<td>Standard Reference Pressure</td>
</tr>
<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>ppt</td>
<td>parts per thousand</td>
</tr>
<tr>
<td>PSD</td>
<td>Prevention of Significant Deterioration</td>
</tr>
<tr>
<td>Psi</td>
<td>per square inch</td>
</tr>
<tr>
<td>PSO</td>
<td>Protected Species Observer</td>
</tr>
<tr>
<td>psu</td>
<td>practical salinity units</td>
</tr>
<tr>
<td>PTE</td>
<td>potential-to-emit</td>
</tr>
<tr>
<td>PTS</td>
<td>permanent threshold shifts</td>
</tr>
<tr>
<td>R/B</td>
<td>biomass ratio</td>
</tr>
<tr>
<td>RDD</td>
<td>Resource Development Districts</td>
</tr>
<tr>
<td>RFFA</td>
<td>reasonably foreseeable future actions</td>
</tr>
<tr>
<td>RMS</td>
<td>root-mean-square</td>
</tr>
<tr>
<td>ROD</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>RSC</td>
<td>reduced sulfur compounds</td>
</tr>
<tr>
<td>RUSALCA</td>
<td>Russian-American Long-term Census of the Arctic</td>
</tr>
<tr>
<td>$s$</td>
<td>Second</td>
</tr>
<tr>
<td>SA</td>
<td>Subsistence Advisor</td>
</tr>
<tr>
<td>SAR</td>
<td>Search and Rescue</td>
</tr>
<tr>
<td>SBI</td>
<td>Shelf Basin Interactions</td>
</tr>
<tr>
<td>SBS</td>
<td>Southern Beaufort Sea stock</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective catalytic control</td>
</tr>
<tr>
<td>SEL</td>
<td>sound exposure level</td>
</tr>
<tr>
<td>SEIS</td>
<td>Supplemental Environmental Impact Statement</td>
</tr>
<tr>
<td>SEMS</td>
<td>Safety and Environmental Management Systems</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>SFEIS</td>
<td>Supplemental Final EIS</td>
</tr>
<tr>
<td>SO</td>
<td>sulfur dioxide</td>
</tr>
<tr>
<td>SOPCs</td>
<td>Stressors of Potential Concern</td>
</tr>
<tr>
<td>SQRU</td>
<td>Scenic Quality Rating Unit</td>
</tr>
<tr>
<td>SSV</td>
<td>Sound Source Verification</td>
</tr>
<tr>
<td>SDC</td>
<td>Steel Drilling Caisson</td>
</tr>
<tr>
<td>SLRU</td>
<td>Sensitivity Level Rating Unit</td>
</tr>
<tr>
<td>SPLASH</td>
<td>Structure of Populations, Levels of Abundance, and Status of Humpbacks</td>
</tr>
<tr>
<td>SQRU</td>
<td>Scenic Quality Rating Unit</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually transmitted infection</td>
</tr>
<tr>
<td>TA&amp;R</td>
<td>Technology Assessment &amp; Research</td>
</tr>
<tr>
<td>TAPS</td>
<td>Trans-Alaska Pipeline System</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>TCH</td>
<td>Teshekpuk Caribou Herd</td>
</tr>
<tr>
<td>TCP</td>
<td>Traditional cultural properties</td>
</tr>
<tr>
<td>TK</td>
<td>Traditional Knowledge</td>
</tr>
<tr>
<td>TPY</td>
<td>tons per year</td>
</tr>
<tr>
<td>TTS</td>
<td>temporary threshold shifts</td>
</tr>
<tr>
<td>µPa</td>
<td>Micro Pascal</td>
</tr>
<tr>
<td>ULSD</td>
<td>ultra-low sulfur diesel</td>
</tr>
<tr>
<td>URI</td>
<td>Upper respiratory tract infection</td>
</tr>
<tr>
<td>U.S.</td>
<td>United States of America</td>
</tr>
<tr>
<td>USACE</td>
<td>U.S. Army Corps of Engineer</td>
</tr>
<tr>
<td>USCG</td>
<td>U.S. Coast Guard</td>
</tr>
<tr>
<td>USDOI</td>
<td>U.S. Department of the Interior</td>
</tr>
<tr>
<td>USFWS</td>
<td>United States Fish and Wildlife Service</td>
</tr>
<tr>
<td>USGS</td>
<td>U.S. Geological Survey</td>
</tr>
<tr>
<td>USPS</td>
<td>U.S. Park Service</td>
</tr>
<tr>
<td>VLCC</td>
<td>Very Large Crude Carrier</td>
</tr>
<tr>
<td>VLOS</td>
<td>Very Large Oil Spill</td>
</tr>
<tr>
<td>VOC</td>
<td>volatile organic compounds</td>
</tr>
<tr>
<td>WAH</td>
<td>Western Arctic Caribou Herd</td>
</tr>
<tr>
<td>WCD</td>
<td>Worst Case Discharge</td>
</tr>
</tbody>
</table>
7.0 REFERENCES


Alaska Administrative Code (AAC), 2011. 18 AAC 50 Air Quality Control (As Amended through April 13, 2011).


Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement References 7-3


ADNR. 2011. Five-Year Program of Proposed Oil & Gas Lease Sales. Division of Oil and Gas. March


American Petroleum Institute. [Internet]. 2011. The Alaskan Outer Continental Shelf [OCS], the importance of developing our oil and natural gas resources: Alaska OCS In Brief, January.


References


Babaluk JA, Reist JD, Johnson JD, Johnson L. 2000. First Records of Sockeye Salmon (Oncorhynchus nerka) and Pink Salmon (O. gorbuscha) from Banks Island and Other Records of Pacific Salmon in Northwest Territories, Canada. Arctic 53(2):161-164.


Bel’voitch VM, Sh’ekotov MN. 1990. The Belukha whale: Natural behavior and bioacoustics. USSR Academy of Science, Moscow, Translated by Woods Hole Oceanographic Institution, 1993.


References


Buist I. 2003 Oil spill response offshore, in-situ burn operations manual. United States Coast Guard, Research and Development Center and Anteaon Corporation.


BLM. 1990. Western Arctic Resource Management Plan, Subsistence Management Situation Analysis. Anchorage, AK: USDOI, BLM.


BOEM. 2011b. Chukchi Sea Planning Area Oil and Gas Lease Sale 193 in the Chukchi Sea, Alaska Revised Draft Supplemental Environmental Impact Statement. Anchorage, AK: USDOI, BOEM, Alaska OCS Region


References


Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement
References


DOSITS. [Internet]. 2011b. Introduction to Signal Levels. Website maintained by the University of Rhode Island. Available from: http://www.dosits.org/science/advancedtopics/signallevels/


Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement

References


EPA. 2011q. Outer Continental Shelf Title V Air Quality Operating Permit, ConocoPhillips Company Jackup Rig – Chukchi Sea Exploration Drilling Program, Permit Number R10OCS020000, EPA Region X, Draft July 22.

EPA. 2011r. Outer Continental Shelf Permit to Construct and Title V Air Quality Permit, Shell Offshore, Inc., Shell Kulluk - Beaufort Sea Exploration Drilling Program, Permit Number R10OCS030000, EPA Region X, Draft July 22.


References


Finley KJ, Evans CR. 1983. Summer diet of the bearded seal (Erignathus barbatus) in the Canadian High Arctic. Arctic 36:82-89.


Finley KJ, Miller GW, Davis RA, Greene CR. 1990. Reactions of belugas, Delphinapterus leucas, and narwhals, Monodon monoceros, to ice breaking ships in the Canadian High Arctic: Canadian Bulletin of Fisheries and Aquatic Sciences. 224:97-117.


Grebmeier JM, Cooper LW, Feder HM, Sirenko BI. 2006. Ecosystem dynamics of the pacific influenced northern bering and Chukchi seas in the amerasian Arctic. Progress in Oceanography 71 (2-4) (12):331-61.


Hopson E. 1976. Mayor Eben Hopson’s Warning to the People of the Canadian Arctic. Testimony to the Berger Commission.


References


December 2011


References


Jonsson H, Sundt RC, Aas E, Sanni S. 2010. The Arctic is no longer put on ice: evaluation of polar cod (Boreogadus saida) as a monitoring species of oil.


Kelly BP, Burns LL, Quakenbush LT. 1988. Response of ringed seals (Phoca hispida) to noise disturbance. p. 27-38 In: Sackinger WM, Jeffries MO, Imm IL and Treacy SD (eds.) Port and


Kessler JD; Valentine DL; Redmond MC; Du M, Chan EW; Menesd SD; Quiroz EW; Villanueva CJ; Shusta SS; Werra LM; Yvon-Lewis S; Weber TC. 2011. A persistent oxygen anomaly reveals the fate of spilled methane in the deep Gulf of Mexico. Science 331: 312-315


Khan RA, JF Payne. 2005. Influence of a crude oil dispersant, Corexit 9527, and dispersed oil on capelin (Mallotus villosus), Atlantic cod (Gadus morhus), longhorn sculpin (Myoxocephalus octodecemspinuosus), and cunner (Tautogolabrus adspersus). Environmental Contamination & Toxicology 75(1): 50-56.


Koski WR, Miller GW. 2009. Habitat use by different size classes of bowhead whales in the central Beaufort Sea during late summer and autumn. Arctic 62: 137-150.


References


Ljungblad RW, Moore SE, Clarke TJ, Bennett JC. 1986. Aerial surveys of endangered whales in the Northern Bering, Eastern Chukchi and Alaskan Beaufort Seas, 1985: with a seven year review.
References


Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement

References


Melzer D, Rice N, Depledge MH, Henley WE, Galloway TS. 2010. Association between Serum Perflourooctanoic Acid (PFOA) and thyroid disease in the US. NHANES. Environmental Health Perspectives 118:686-692.


References


MMS. 1983. Official Transcript, Proceedings of Public Hearing on the DEIS for Proposed Oil and Gas Leasing in the Diapir Field Lease


References


Monnett C. 2010. Maps of tagged belugas. e-mail report from R. Suydam, NSB Wildlife Department, Barrow, AK to C. Monnett. Subject: maps of tagged beluga locations and note of an observation of 500-1000 belugas in Elson Lagoon from Plover Point in late July of 2010.


Morseth MC. 1997 Twentieth-century changes in beluga whale hunting and butchering by the Kanigmiut of Buckland, Alaska. Arctic 50(3):241-255.


NMFS. 2010d. Environmental Assessment for the Issuance of Incidental Harassment Authorizations to take marine mammals by harassment incidental to conducting open water seismic and marine surveys in the Chukchi and Beaufort Seas. USDOC, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, MD


References


References


Olesiuk PF, Ellis GM, Ford JKB. 2005. Life history and population dynamics of resident killer whales (Orcinus orca) in British Columbia, Canadian Science Advisory Secretariat, Fisheries and Oceans, Canada.


References


Roseneau D. 2010. E-mail to Jeff Denton at BOEM from D. Roseneau, Maritime NWR, FWS; note dated October 15, 2010. Subject: Marine mammal observations from D. Roseneau field seasons over the last several years.


Sameoto D. 1984. Review of current information on Arctic cod (Boreogadus saida Lepechin) and Biobilography. Bedford Institute of Oceanography, Canada Fisheries and Oceans, Ocean Science and Surveys Atlantic. 71 p.


Selkregg LL. 1976. Alaska Regional Profiles: Arctic Region. Anchorage, AK: UAA, AEIDC.


Shell Offshore Inc (Shell). n.d. Drillship (Frontier Discoverer Photo) Available from: http://www.shell.us/home/content/usa/aboutshell/projects_locations/alaska/exploration


Sherwood KW, Craig JD, Cooke LW. 1996. Endowments of undiscovered conventionally recoverable and economically recoverable oil and gas in the Alaska Federal offshore: U.S. Department of the
References


References


URS Corporation. 2009. Petition for promulgation of regulations pursuant to Section 101 (a) (5) of the Marine Mammal Protection Act for oil and gas activities in the Beaufort Sea and Adjacent North Slope of Alaska 2011-2016. Polar bear (Ursus maritimus) and Pacific walrus (Odobenus rosmarus divergens). Prepared for Alaska Oil and Gas Association by URS Corporation, Anchorage, AK.


USFWS. 2008a. Final rule. Marine Mammals; Incidental Take during Specified Activities. Regulations that would authorize the nonlethal, incidental, unintentional take of small numbers of polar bears
and Pacific walruses during oil and gas industry exploration activities in the Chukchi Sea and adjacent western coast of Alaska. Federal Register vol. 73, pp. 33212-33255.

USFWS. 2008b. Programmatic Biological Opinion for Polar Bears (Ursus maritimus) on Chukchi Sea Incidental Take Regulations.


USFWS. 2011c. 12-Month Finding on a Petition to List the Pacific Walrus as Endangered or Threatened. 76 FR 7634-7679, published 10 February 2011.


References


Weir CR. 2008. Overt responses of humpback whales (Megaptera noaeangliae), sperm whales (Physeter macrocephalus), and Atlantic spotted dolphins (Stenella frontalis) to seismic exploration off Angola. Aquatic Mammals 34(1):71-83.


Welch HE, Crawford RE, Hop H.1993 Occurrence of Arctic cod (Boreogadus saida) schools and their vulnerability to predation in the Canadian High Arctic. 46:331-339


8.0 GLOSSARY

Acute—Sudden, short term, severe, critical, crucial, intense, but usually of short duration.

Anadromous fish—Fish that migrate up river from the sea to breed in fresh water.

Annelid—Worm with a cylindrical body segmented both internally and externally.

Annular preventer—A component of the pressure control system in the Blowout Preventer that forms a seal in the annular space around any object in the wellbore or upon itself, enabling well control operations to commence.

Anthropogenic—Coming from human sources, relating to the effect of humankind on nature.

Aphotic zone—Zone where the levels of light entering through the surface are not sufficient for photosynthesis or for animal response.

Archaeological resource—Any material remains of human life or activities that are at least fifty years of age and that are of archaeological interest.

Aromatic—Class of organic compounds containing benzene rings or benzenoid structures.

Attainment area—An area that is shown by monitored data or by air-quality modeling calculations to be in compliance with primary and secondary ambient air quality standards established by the USEPA.

Barrel (bbl)—A volumetric unit used in the petroleum industry; equivalent to 42 U.S. gallons or 158.99 liters.

Benthic—Literally, living on the bottom. Refers to material, especially sediment, at the bottom of an aquatic ecosystem, or it can be used to describe the organisms that live on, or in, the bottom of a water body or the sea.

Benthos—A region that includes the bottom of the sea and the littoral zone; also refers to the benthic invertebrate community, which is a group of animals that lives on or in the bottom sediments.

Biological Opinion—The FWS or NMFS evaluation of the impact of a proposed action on endangered and threatened species, in response to formal consultation under Section 7 or the endangered Species Act.

Block—A geographical area portrayed on official BOEMRE protraction diagrams or leasing maps that contains approximately 2,331 ha (9 mi2).

Blowout—An uncontrolled flow of fluids below the mudline from appurtenances on a wellhead or from a wellbore.

Blowout preventer (BOP)—One of several valves installed at the wellhead to prevent the escape of pressure either in the annular space between the casing and drill pipe or in open hole (i.e., hole with no drill pipe) during drilling completion operations. Blowout preventers on jackup or platform rigs are located at the water’s surface; on floating offshore rigs, BOP’s are located on the seafloor.

Brackish—Slightly salty water.

Cetacean—Large aquatic carnivorous mammal with fin-like forelimbs, no hind limbs includes whales, dolphins, porpoises, and narwhals. Also of or relating to these animals.

Chemosynthetic—Organisms that obtain their energy from the oxidation of various inorganic compounds rather than from light (photosynthesis).
Critical habitat—Specific areas within the geographical area occupied by the species at the time of listing (under the ESA), if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and specific areas outside the geographical area occupied by the species if the agency (USFWS or NMFS) determines that the area itself is essential for conservation.

Coastal waters—Waters within the geographical areas defined by each State’s Coastal Zone Management Program.

Coastal wetlands—Forested and nonforested habitats, mangroves, and marsh islands exposed to tidal activity. These areas directly contribute to the high biological productivity of coastal waters by input of detritus and nutrients, by providing nursery and feeding areas for shellfish and finfish, and by serving as habitat for birds and other animals.

Coastal zone—The coastal waters (including the lands therein and thereunder) and the adjacent shore lands (including the waters therein and thereunder) strongly influenced by each other and in proximity to the shorelines of the several coastal states; the zone includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches and extends seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shore lands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject to the discretion of or which is held in trust by the Federal Government, its officers, or agents. (The State land and water area officially designated by the State as “coastal zone” in its State coastal zone program as approved by the U.S. Department of Commerce under the Coastal Zone Management Act.)

Condensate—Liquid hydrocarbons produced with natural gas; they are separated from the gas by cooling and various other means. Condensates generally have an API gravity of 50o-120o.

Continental margin—The ocean floor that lies between the shoreline and the abyssal ocean floor, includes the continental shelf, continental slope, and continental rise.

Continental shelf—The gently seaward-sloping surface that extends between the shoreline and the top of the continental slope at about 150 meters (345 feet) depth. The average gradient of the shelf is between 1:500 and 1:1000 and, although it varies greatly, the average width is approximately 70 kilometers (44 miles). This can also be a judicial term; for example, the outer limit of the legal continental shelf is determined by reference to be a distance of 200 nautical miles (370 kilometers, 230 miles) or to the outer edge of the geological continental margin, wherever the margin extends beyond 200 nautical miles (370 kilometers; 230 miles).

Contingency Plan—A plan for possible offshore emergencies prepared and submitted by the oil or gas operator as part of the plan of development and production, and which may be required for part of the plan of exploration.

Continental slope—That part of the continental margin that lies between the continental shelf and the bottom of the ocean. Sunlight does not penetrate this area, and mostly it is home to scavengers. It is characterized by a relatively steep slope of 3 to 6 degrees.

Critical habitat—a designated area that is essential to the conservation of an endangered or threatened species that may require special management considerations or protection.

Crude oil—Petroleum in its natural state as it emerges from a well, or after it passes through a gas-oil separator but before refining or distillation. An oily, flammable, bituminous liquid that is essentially a complex mixture of hydrocarbons of different types with small amounts of other substances.
Crustacean—Includes a diversity of marine, freshwater, and terrestrial animals. All crustaceans have a head and five pairs of appendages, two of which are antennae. Many microscopic crustaceans, like krill and brine shrimp, are marine plankton, an important food source for other animals in the sea. Shrimp, lobsters, crabs, crayfish, and barnacles are crustaceans.

Deferral—Action taken by the Secretary of the Interior at the time of the Area Identification to remove certain areas/blocks from the proposed sale.

Delineation well—A well that is drilled for the purpose of determining the size and/or volume of an oil or gas reservoir.

Deepwater Horizon (DWH) event—All actions stemming from the April 20, 2010, explosion and subsequent sinking of the Transocean drillship Deepwater Horizon, up to and including the Macondo well kill declaration on September 19, 2010.

Depleted species—Defined by the MMPA as any case in which: (a) the Secretary of Commerce, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals, determines that a species or population stock is below its optimum sustainable population; (b) a State determines that such species or stock is below its optimum sustainable population; or (c) a species or population stock is listed as a threatened species or endangered species under the ESA.

Demersal—Living near, deposited on, or sinking to the bottom of the sea.

Development—Activities that take place following discovery of economically recoverable mineral resources, including geophysical surveying, drilling, platform construction, operation of onshore support facilities, and other activities that are for the purpose of ultimately producing the resources.

Development Operations Coordination Document (DOCD)—A document that must be prepared by the operator and submitted to BOEMRE for approval before any development or production activities are conducted on a lease in the Western Gulf.

Diapause—A state of rest, halted development, or arrested development or growth, accompanied by greatly decreased metabolism, often correlated with the seasons, usually applied only to insects.

Dilution—The reduction in the concentration of dissolved or suspended substrates by mixing with water.

Direct employment—Consists of those workers involved the primary industries of oil and gas exploration, development, and production operations (Standard Industrial Classification Code 13—Oil and Gas Extraction).

Discharge—Something that is emitted; flow rate of a fluid at a given instant expressed as volume per unit of time.

Dispersant—A suite of chemicals and solvents used to break up an oil slick into small droplets, which increases the surface area of the oil and hastens the processes of weathering and microbial degradation.

Dispersion—A suspension of finely divided particles in a medium.

Distinct Population Segment (DPS)—A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. Distinct population segments may be listed as threatened or endangered under the ESA.

Drilling mud—A mixture of clay, water or refined oil, and chemical additives pumped continuously downhole through the drill pipe and drill bit, and back up the annulus between the pipe and the walls of the borehole to a surface pit or tank. The mud lubricates and cools the drill bit, lubricates the drill pipe as it turns in the wellbore, carries rock cuttings to the surface, serves to keep the hole...
from crumbling or collapsing, and provides the weight or hydrostatic head to prevent extraneous fluids from entering the well bore and to downhole pressures; also called drilling fluid.

**Drillship**—A self-propelled, self-contained vessel equipped with a derrick amidships for drilling wells in deep water.

**Effluent**—A waste product that is discharged to the environment, usually used to mean treated wastewater discharged from a wastewater treatment plant, sewer, or industrial outfall.

**Effluent limitations**—Any restriction established by a State or the USEPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents discharged from point sources into U.S. waters, including schedules of compliance.

**Endangered species**—Defined under the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range.”

**Environmental Assessment**—A concise public document required by the National Environmental Policy Act of 1969 (NEPA). In the document, a Federal agency proposing (or reviewing) and action provides evidence and analysis for determining whether it must prepare an Environmental Impact Statement (EIS) or whether it finds there is no significant impact (i.e., Finding of No Significant Impact [FONSI]).

**Environmental effect**—A measurable alteration or change in environmental conditions.

**Environmental Impact Statement (EIS)**—A statement required by the National Environmental Policy Act of 1969 (NEPA) or similar State law in relation to any major action significantly affecting the environment; a NEPA document.

**Epifaunal**—Animals living on the surface of hard substrate.

**Essential Fish Habitat (EFH)**—Defined under the Magnuson-Stevens Fishery Conservation and Management Act as waters and substrate that are necessary to the fish species for spawning, breeding, feeding, or growth to maturity.

**Estuary**—Coastal semienclosed body of water that has a free connection with the open sea and where freshwater meets and mixes with seawater.

**Eutrophication**—The process whereby an aquatic environment becomes rich in dissolved nutrients, causing excessive growth and decomposition of oxygen-depleting plant life and resulting in injury or death to other organisms.

**Exclusive Economic Zone (EEZ)**—The maritime region extending 200 nmi from the baseline of the territorial sea, in which the United States has exclusive rights and jurisdiction over living and nonliving natural resources.

**Exploration**—The process of searching for minerals. Exploration activities include: (1) geophysical surveys where magnetic, gravity, seismic, or other systems are used to detect or infer the presence of such minerals; and (2) any drilling, except development drilling, whether on or off known geological structures. Exploration also includes the drilling of a well in which a discovery of oil or natural gas in paying quantities is made, and the drilling, after such a discovery, of any additional well that is needed to delineate a reservoir and to enable the lessee to determine whether to proceed with development and production.

**Exploration Plan (EP)**—A plan that must be prepared by the operator and submitted to BOEMRE for approval before any exploration or delineation drilling is conducted on a lease.

**Exploration well**—A well drilled in unproven or semi-proven territory to determining whether economic quantities of oil or natural gas deposit are present; exploratory well.
Fault—A fracture in the earth’s crust accompanied by a displacement of one side of the fracture with respect to the other.

Field—An accumulation, pool, or group of pools of hydrocarbons in the subsurface. A hydrocarbon field consists of a reservoir in a shape that will trap hydrocarbons and that is covered by an impermeable, sealing rock.

Fixed or bottom founded—Permanently or temporarily attached to the seafloor.

Flyway—An established air route of migratory birds.

Formation—A bed or deposit sufficiently homogeneous to be distinctive as a unit. Each different formation is given a name, frequently as a result of the study of the formation outcrop at the surface and sometimes based on fossils found in the formation.

Fugitive emissions—Emission into the atmosphere that could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening.

Gathering lines—A pipeline system used to bring oil or gas production from a number of separate wells or production facilities to a central trunk pipeline, storage facility, or processing terminal.

Geochemical—Of or relating to the science dealing with the chemical composition of and the actual or possible chemical changes in the crust of the earth.

Geologic hazard—A feature or condition that, if unmitigated, may seriously jeopardize offshore oil and gas exploration and development activities. Mitigation may necessitate special engineering procedures or relocation of a well.

Geophysical—Of or relating to the physics of the earth, especially the measurement and interpretation of geophysical properties of the rocks in an area.

Geophysical data—Facts, statistics, or samples that have not been analyzed or processed, pertaining to gravity, magnetic, seismic, or other surveys/systems.

Geophysical survey—A method of exploration in which geophysical properties and relationships are measured remotely by one or more geophysical methods.

Habitat—A specific type of environment that is occupied by an organism, a population, or a community.

Halophytic—A plant that can tolerate or thrive in alkaline soil rich in sodium or calcium salts; tolerant of saline (salty) conditions.

Harassment—Under the 1994 amendments to the MMPA, harassment is statutorily defined as any act of pursuit, torment, or annoyance which: has the potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B Harassment).

Haulout area—Specific locations where pinnipeds come ashore and concentrate in numbers to rest, breed, and/or bear young.

Holocene Epoch—A geologic time segment of the Quaternary Period, dating from the end of the Pleistocene Epoch, approximately 8,000 years ago until the present.

Hydrocarbons—Any of a large class of organic compounds containing primarily carbon and hydrogen. Hydrocarbon compounds are divided into two broad classes: aromatic and aliphatics. They occur primarily in petroleum, natural gas, coal, and bitumens.
Hypothermia—Condition in which body temperature drops below the level required for normal metabolism and/or bodily function to take place.

Hypoxia—Depressed levels of dissolved oxygen in water, usually resulting in decreased metabolism.

Incidental take—Takings that result from, but are not the purpose of, carrying out an otherwise lawful activity (e.g., fishing) conducted by a Federal agency or applicant (see Taking).

Indigenous—Originating where it is found. Refers to species or peoples found locally and from the local area.

Indirect effects—Effects caused by activities that are stimulated by an action but not directly related to it.

Industry infrastructure—The facilities associated with oil and gas development, e.g., refineries, gas processing plants, etc.

Indirect employment—Secondary or supporting oil- and gas-related industries, such as the processing of crude oil and gas in refineries, natural gas plants, and petrochemical plants.

Intertidal—The zone between the high and low water marks.

Invertebrate—An animal without a backbone or spinal column, such as an insect.

Isobath—Line connecting points of equal water depth on a nautical chart; a seabed contour.

Jackup rig—A barge-like, floating platform with legs at each corner that can be lowered to the sea bottom to raise the platform above the water.

Lagoon—A water body often separated from ocean water exchange, with enclosure as a defining characteristic.

Lease—Authorization that is issued under and that authorizes exploration for, and development and production of, minerals. Lease means an agreement that is issued under Section 8 or maintained under Section 6 of the Outer Continental Shelf Lands Act and that authorizes exploration for, and development and production of, minerals. The term also means the area covered by that authorization, whichever the context requires.

Lease sale—The competitive auction of leases granting companies or individuals the right to explore for and develop certain minerals under specified conditions and periods of time.

Lease term—The initial period for oil and gas leases, usually a period of 5, 8, or 10 years depending on water depth or potentially adverse conditions.

Lessee—A party who has entered into a lease with the United States to explore for, develop, and produce the leased minerals.

Lightering—Smaller boats supplying larger boats with supplies and/or carrying fuel; lightering operations include transfers within the vessel, to lightering barges, or if necessary, into the sea.

Lithic—Of or pertaining to stone.

Macondo Oil Spill—The name given to the oil spill that resulted from the explosion and sinking of the Deepwater Horizon rig from the period between April 24, 2010, when search and recovery vessels on site reported oil at the sea surface until uncontrolled flow from the Macondo well was capped.

Marshes—Persistent, emergent, nonforested wetlands characterized by predominantly cordgrasses, rushes, and cattails.

Migratory bird—Any mutation or hybrid of a listed species, as well as any part, egg, or nest of such bird. Protected under the Migratory Bird Treaty Act.
Minerals—As used in this document, minerals include oil, gas, sulphur, and associated resources, and all other minerals authorized by an Act of Congress to be produced from public lands as defined in Section 103 of the Federal Land Policy and Management Act of 1976.

Mollusk—An invertebrate having a soft unsegmented body, usually enclosed in a shell. Also a group of freshwater and saltwater animals, including oysters, clams, mussels, snails, conches, scallops, squid, and octopus.

Mysticete—A whale that has baleen (plates of keratinized tissue that hang from the upper jaw) instead of teeth (suborder Mysticeti). Examples include the humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*), and minke whale (*Balaenoptera acutorostrata*).

Nautical mile—A distance measurement equivalent to 1.15 statutory miles, or 1.8 kilometers.

Nearshore waters—Offshore open waters that extend from the shoreline out to the limit of the territorial seas (twelve nautical miles).

Nonattainment area—An area that is shown by monitoring data or by air-quality modeling calculations to exceed primary or secondary ambient air quality standards established by the USEPA.

Odontocete—Toothed marine mammals (suborder Odontoceti). Examples include the sperm whale (*Physeter macrocephalus*), beluga whale (*Delphinapterus leucas*), harbor porpoise (*Phocoena phocoena*), and bottlenose dolphin (*Tursiops truncatus*).

Offloading—Unloading liquid cargo, crude oil, or refined petroleum products.

Offshore—in beach terminology, the comparatively flat zone of variable width, extending from the shore to the edge of the continental shelf. It is continually submerged. Also the breaker zone directly seaward of the low tide line.

Oil spill contingency plan—A plan submitted by the lease or unit operator along with or prior to a submission of a plan of exploration or a development/production plan that details provisions for fully defined specific actions to be taken following discovery and notification of an oil spill occurrence.

Operational discharge—Any incidental pumping, pouring, emitting, emptying, or dumping of wastes generated during routine offshore drilling and production activities.

Operator—An individual, partnership, firm, or corporation having control or management of operations on a leased area or portion thereof. The operator may be a lessee, designated agent of the lessee, or holder of operating rights under an approved operating agreement.

Organic matter—Material derived from living plants or animals.

Outer Continental Shelf (OCS)—All submerged lands that comprise the continental margin adjacent to the United States and seaward of State offshore lands.

Pelagic—Of or pertaining to the open sea; associated with open water beyond the direct influence of coastal systems.

Perturbation—A secondary influence on a system that causes it to deviate.

Plankton—Passively floating or weakly motile aquatic plants (phytoplankton) and animals (zooplankton).

Pathology—The scientific study of the nature of disease and its causes, processes, development, and consequences.

Phocid—True or earless seals (family Phocidae). Examples include the bearded seal (*Erignathus barbatus*) and ringed seal (*Phoca hispida*).
Glossary

**Phytoplankton**—Microscopic floating aquatic plants that produce their own nutrients through photosynthesis.

**Pinniped**—Aquatic carnivorous mammals having a streamlined body specialized for swimming with limbs modified as flippers, for example, seals.

**Platform**—A steel or concrete structure from which offshore development wells are drilled.

**Plankton**—Very small, free-floating organisms of the ocean or other aquatic systems, including phytoplankton and zooplankton, which get their nutrients from organisms.

**Play**—A prospective subsurface area for hydrocarbon accumulation that is characterized by a particular structural style or depositional relationship.

**Plume**—A narrow thermal feature, which can be either hot or cold, that rises or sinks because of its anomalous temperature compared to the surrounding fluid.

**Polychaete**—A class of mainly marine annelids, characterized by parapodia bearing numerous hairs; for example, bristle worm.

**Polychlorinated Biphenyls (PCBs)**—A group of toxic, carcinogenic organic compounds previously used for industrial purposes.

**Polycyclic Aromatic Hydrocarbon (PAH)**—Chemical compounds that consist of fused aromatic rings; many are known or suspected carcinogens.

**Potential impact (effect)**—The range of alterations or changes to environmental conditions that could be caused by an action.

**Primary production**—Organic material produced by photosynthetic or chemosynthetic organisms.

**Produced water**—Total water discharged from the oil and gas extraction process; production water or production brine.

**Production**—Activities that take place after the successful completion of any means for the extraction of resources, including bringing the resource to the surface, transferring the produced resource to shore, monitoring operations, and drilling additional wells or workovers.

**Promulgated**—Formally made public; published accounts.

**Prospect**—An untested geologic feature having the potential for trapping and accumulating hydrocarbons.

**Province**—A spatial entity with common geologic attributes. A province may include a single dominant structural element such as a basin or a fold belt, or a number of contiguous related elements.

**Refining**—Fractional distillation of petroleum, usually followed by other processing (for example, cracking).

**Relief**—The difference in elevation between the high and low points of a surface.

**Reserves**—Proved oil or gas resources.

**Reservoir**—A subsurface, porous, permeable rock body in which hydrocarbons have accumulated.

**Rig**—A structure used for drilling an oil or gas well.

**Right-of-way**—A legal right of passage, an easement; the specific area or route for which permission has been granted to place a pipeline, (and) ancillary facilities, and for normal maintenance thereafter.

**Rookery**—The nesting or breeding grounds of gregarious (i.e., social) birds or mammals; also a colony of such birds or mammals.
**Royalty**—A share of the minerals produced from a lease paid in either money or “in-kind” to the landowner by the lessee.

**Sale area**—The geographic area of the Outer Continental Shelf (OCS) being offered for lease for the exploration, development, and production of mineral resources.

**Scoping**—The process prior to Environmental Impact Statement (EIS) preparation to determine the range and significance of issues to be addressed in the EIS for each proposed major federal action.

**Seagrass beds**—More or less continuous mats of submerged, rooted marine flowering vascular plants occurring in shallow tropical and temperate waters. Seagrass beds provide habitat, including breeding and feeding grounds, for adults and/or juveniles of many of the economically important shellfish and finfish.

**Seismic**—Pertaining to, characteristic of, or produced by water, earthquakes or earth vibration; having to do with elastic waves in the earth; also geophysical when applied to surveys.

**Sediment**—Material that has been transported and deposited by water, wind, glacier, precipitation, or gravity; a mass of deposited material.

**Seeps (hydrocarbon)**—Gas or oil that reaches the surface along bedding planes, fractures, unconformities, or fault planes.

**Sensitive area**—An area containing species, populations, communities, or assemblages of living resources, that is susceptible to damage from normal OCS-related activities. Damage includes interference with established ecological relationships.

**Stranding**—Defined under the MMPA as “an event in the wild in which (A) a marine mammal is dead and is (i) on a beach or shore of the United States; or (ii) in waters under the jurisdiction of the United States (including any navigable waters); or (B) a marine mammal is alive and is (i) on a beach or shore of the United States and is unable to return to the water; (ii) on a beach or shore of the United States and, although able to return to the water, is in need of apparent medical attention; or (iii) in the waters under the jurisdiction of the United States (including any navigable waters), but is unable to return to its natural habitat under its own power or without assistance.”

**Stipulations**—Specific measures imposed upon a lessee that apply to a lease. Stipulations are attached as a provision of a lease; they may apply to some or all tracts in a sale. For example, a stipulation might limit drilling to a certain time period of the year or certain areas.

**Subarea**—A discrete analysis area.

**Subsistence uses**—The customary and traditional uses by rural residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for making and selling of handcraft articles out of nonedible byproducts of fish and wildlife resources take for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.

**Substrate**—Any stratum lying underneath another.

**Supply vessel**—A boat that ferries food, water, fuel, and drilling supplies and equipment to an offshore rig or platform and returns to land with refuse that cannot be disposed of at sea.

**Take**—In the Marine Mammal Protection Act, meaning “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” In the Endangered Species Act, the definition includes to harass, harm, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. A notable component of this definition is “harm,” which means an act that actually kills or injures protected wildlife. Such acts may include significant habitat modification.
or degradation that actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering.

**Tertiary**—A geologic period dating from 63 million to 2 million years ago.

**Threatened species**—Defined under the Endangered Species Act as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”

**Total suspended solids**—The total amount of suspended solids in water.

**Turbidity**—Reduced water clarity due to the presence of suspended matter.

**Trawling**—The operation of towing a net (trawl) to catch fish and/or shellfish. Trawls are towed either with bottom contact or in midwater. The towing speed varies, according to such factors as the type of trawl and trawling and the target species.

**Trophic**—Trophic levels refer to the hierarchy of organisms form photosynthetic plants to carnivores, such as man; feeding trophic levels refer to the hierarchy of organisms from photosynthetic plants to carnivores in which organisms at one level are fed upon by those at the next higher level (e.g., phytoplankton eaten by zooplankton eaten by fish).

**Turbidity**—Reduced water clarity resulting from the presence of suspended matter.

**Upwelling**—Divergence of water currents or the movement of surface water away from land, leading to upward movement of cold nutrient-rich water from the ocean depths; often associated with great production of fish and fisheries.

**Volatile organic compound (VOC)**—Any reactive organic compound that is emitted to the atmosphere as a vapor. The definition does not include methane.

**Weathering (of oil)**—The aging of oil due to its exposure to the atmosphere, causing marked alterations in its physical and chemical makeup.
FIGURES
CHAPTER 1 FIGURES

Figure 1-1  Project Area ............................................................................................................................. 1
Figure 1-2  Beaufort Sea Active Leases .................................................................................................. 2
Figure 1-3  Chukchi Sea Active Leases ................................................................................................. 3

CHAPTER 2 FIGURES

Figure 2.1 Simple Illustration of a Marine Seismic Survey Operation using Streamers ...................... 5
Figure 2.2 Illustration of Ocean Bottom Cable survey ......................................................................... 6
Figure 2.3 Schematic view of a Controlled Source Electromagnetic (CSEM) survey ......................... 7
Figure 2.4 SDC operating in the Beaufort Sea ...................................................................................... 8
Figure 2.5 M/V Noble Discoverer ....................................................................................................... 8
Figure 2.6 Jackup Rig ............................................................................................................................ 9

CHAPTER 3 FIGURES

Figure 3.1-1 General circulation map of the Beaufort and Chukchi seas. ............................................. 10
Figure 3.1-2 Bathymetry of the Beaufort Sea, with place names indicated. .......................................... 11
Figure 3.1-3 Schematic circulation map of the Beaufort and Chukchi shelves showing the flow of Bering Strait water through the Chukchi Sea along three principal pathways that are associated with distinct bathymetric features: the Herald Valley, the Central Channel, and Barrow Canyon. .......................................................... 12
Figure 3.1-4a Sea Ice Extent March 2011 and September 2011 ........................................................... 13
Figure 3.1-4b Average Monthly Arctic Sea Ice Extent March 1979 – 2011 and September 1979 – 2011 .................................................................................................................. ... 13
Figure 3.1-5 Sound Level Metrics ......................................................................................................... 14
Figure 3.1-6a An audiogram of human hearing .................................................................................... 15
Figure 3.1-6b Graphic showing A-weighting function for human hearing ............................................. 15
Figure 3.1-7 Hearing curves for some marine mammals in water and a typical human in air ............... 16
Figure 3.1-8 Graphic showing M-weighting functions for marine mammal hearing for (A) low, mid, and high frequency cetaceans, and (B) for pinnipeds in water and air ........................................... 17
Figure 3.1-9 Prevailing underwater sound levels .................................................................................... 18
Figure 3.1-10 Depth profiles of natural turbidity levels measured in the nearshore Alaskan Beaufort Sea in 1999. ........................................................................................................ 19
Figure 3.1-11 Levels of Ecological Organization .................................................................................... 19
Figure 3.1-12 Beaufort and Chukchi Sea Bathymetry ......................................................................... 20
Figure 3.1-13 Outer Continental Shelf (OCS) Exploration Wells ........................................................... 21
Figure 3.1-14 Geologic Assessment Provinces .................................................................................... 22
Figure 3.2-1 Simplified Food Web of the Arctic Ocean Ecosystem ....................................................... 23
Figure 3.2-2 Seasonal ranges of the Western Arctic caribou herd with locations of satellite-collared caribou collected during the 2006-2007 regulatory year ......................................................... 24
Figure 3.2-3 Central Arctic Caribou Herd Seasonal Ranges in Northern Alaska .................................. 25
Figure 3.2-4 Caribou calving areas within the Arctic National Wildlife Refuge ................................. 26
Figure 3.2-5  Teshekpuk Lake Caribou Herd Seasonal Ranges in Northern Alaska (1990 – 2005 Satellite Telemetry Data) ........................................................... 27
Figure 3.2-6  Ranges of Alaska’s Caribou herds ................................................................. 28
Figure 3.2-7  Spectacled Eider Distribution ...................................................................... 29
Figure 3.2-8  Steller’s Eider Distribution ........................................................................... 30
Figure 3.2-9  Kittlitz’s Murrelet Distribution ..................................................................... 31
Figure 3.2-10 Yellow Billed Loon Distribution ................................................................. 32
Figure 3.2-11 Bowhead Whale Distribution ..................................................................... 33
Figure 3.2-12 Tracks of Satellite-Tagged Bowhead Whales During Spring Migration in the Beaufort Sea in 2006, 2007, and 2009 ........................................... 34
Figure 3.2-13 Tracks Of Eleven Satellite-Tagged Bowhead Whales In The Beaufort Sea In Summer/Fall 2006-2009 .............................................................. 36
Figure 3.2-14 Tracks of Satellite-Tagged Bowhead Whales Migrating Through the Chukchi Sea and Past Point Barrow in Spring 2009 ......................... 37
Figure 3.2-15 Tracks of Twenty-Six Satellite-Tagged Bowhead Whales in the Chukchi Sea During Fall 2006-2009 ................................................................. 38
Figure 3.2-16 Beluga Whale Distribution ......................................................................... 39
Figure 3.2-17 Gray Whale Distribution ............................................................................ 40
Figure 3.2-18 Ringed Seal Distribution ............................................................................. 41
Figure 3.2-19 Spotted Seal Distribution .......................................................................... 42
Figure 3.2-20 Ribbon Seal Distribution ........................................................................... 43
Figure 3.2-21 Bearded Seal Distribution ....................................................................... 44
Figure 3.2-22 Pacific Walrus Distribution ....................................................................... 45
Figure 3.2-23 Polar Bear Distribution ............................................................................ 46
Figure 3.2-24 Polar Bear Critical Habitat ....................................................................... 47
Figure 3.2-25 Special Habitat Areas U.S. Beaufort Sea .................................................... 48
Figure 3.2-26 Special Habitat Areas U.S. Chukchi Sea ..................................................... 49
Figure 3.3-1  2009 Alaska Economic Performance Report ............................................. 50
Figure 3.3-2  Statewide Employment by Section (February 2011) ..................................... 50
Figure 3.3-3  Local Capture of Large-Scale Resource Extraction from Remote Region Alaska (Million $) ................................................................. 51
Figure 3.3-4a  Top Employers in the NSB (2003) ............................................................... 51
Figure 3.3-4b  NSB Employment by Sector (2000) ......................................................... 52
Figure 3.3-4c  NAB Major Employment Sectors ............................................................. 52
Figure 3.3-5  Percent of Resident Workers by Wage Range (2009) ................................. 53
Figure 3.3-6  Efficiency (number landed / number struck) of the bowhead whale subsistence harvest 1973 to 2007 ................................................................. 53
Figure 3.3-7  Number of bowheads landed, and struck by subsistence hunters in the U.S., Canada, and Russia from 1974 to 2006 ............................................. 54
Figure 3.3-8  Winter sea ice in the Beaufort Sea .............................................................. 55
Figure 3.3-9  Ice floes in the Chukchi Sea ....................................................................... 55
Figure 3.3-10 Coastal flow lead near Barrow, Alaska ...................................................... 56
Figure 3.3-11 Open water off the coast of Barrow, Alaska (Summer) .............................. 56
December 2011

Figure 3.3-12 Summer in Kotzebue, located on the Chukchi Sea

Figure 3.3-13 Vegetation located within the EIS project area

Figure 3.3-14 Oil and Gas Development, Prudhoe Bay

Figure 3.3-15 `Mars Ice Island, Beaufort Sea Alaska

Figure 3.3-16 Pioneer Natural Gas, Oooguruk exploratory drilling site

Figure 3.3-17 BP, Liberty exploratory drilling site

Figure 3.3-18 Community Subsistence Use Areas

Figure 3.3-19 Bowhead Whale Subsistence Sensitivity

Figure 3.3-20 Bowhead Whale Subsistence Use Areas

Figure 3.3-21 Bowhead Whale Subsistence Use Areas

Figure 3.3-22 Walrus Subsistence Use Areas

Figure 3.3-23 Beluga Whale and Walrus Subsistence Use Areas

Figure 3.3-24 Seal Subsistence Use Areas

Figure 3.3-25 Polar Bear and Seal Subsistence Use Areas

Figure 3.3-26 Terrestrial Resources Subsistence Use Areas

Figure 3.3-27 Terrestrial Resources Subsistence Use Areas

Figure 3.3-28 Land Ownership and Management

CHAPTER 4 FIGURES

Figure 4.1 Past, Present, Reasonably Foreseeable Future Actions in the Beaufort Sea

Figure 4.2 Past, Present, Reasonably Foreseeable Future Actions in the Chukchi Sea

Figure 4.3-1 Beaufort Sea Conceptual Example for Alternative 2 (Level 1 Exploration Activity)

Figure 4.3-2 Chukchi Sea Conceptual Example for Alternative 2 (Level 1 Exploration Activity)

Figure 4.3-3 Temporal Conceptual Example under Alternative 2 (Level 1 Exploration Activity)

Figure 4.4-1 Beaufort Sea Conceptual Example for Alternative 3 (Level 2 Exploration Activity)

Figure 4.4-2 Chukchi Sea Conceptual Example for Alternative 3 (Level 2 Exploration Activity)

Figure 4.4-3 Temporal Conceptual Examples under Alternative 3 (Level 2 Exploration Activity)

Figure 4.5-1 Dispersion and fate of water-based drill cuttings and drilling fluids discharged to the ocean. About 90% of the discharged solids settle rapidly and form a mud/cuttings pile within several hundred meters of the point of discharge.

Figure 4.5-2 Logic framework for potential impacts to human health

APPENDIX B FIGURES

Figure B-1 Measured temperature and salinity profiles, and derived sound speed profiles near 71°30'N 164°30'W in late August 2010. Source O’Neill et al. 2010

Figure B-2 Deep water Beaufort Sea sound speed profile for August at 70°40' N, 138°15' W in 1375 m (4510 ft) water depth. Source GDEM (Teague et al. 1990)

Figure B-3 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in (a) endfire direction and (b) broadside direction from 3000 in3 airgun array, and (c) 60 in3 mitigation airgun used for Statoil’s 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth, measured 2 m (6.6 ft) above the seabed

Figure B-4 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in (a) endfire direction and (b) broadside direction from 3147 in3 airgun array used for Shell’s 2007 3D Camden Bay (Sivulliq Prospect) seismic survey in ~24 m (79 ft) water depth, measured 2 m (6.6 ft) above the seabed

Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement iv

Figures
Figure B-5  Spectrograms of airgun array pulses produced by GXT’s 2006 2D Chukchi Sea seismic survey using a 3320 in³ airgun array in 40 m (131 ft) water depth, measured 2 m (6.6 ft) above the seabed. .................................................................................................................................................. 88

Figure B-6  Pressure versus time (left) and SEL spectral density (right) of single airgun array pulses received at three distances 460 m (1,509 ft) (top), 1,359 m (4,459 ft) (middle), 80 km (50 mi) (bottom), from Statoil’s 2010 3D Chukchi Sea seismic survey in 38-42 m (125-138 ft) water depth. .................................................................................................................................................. 89

Figure B-7  One-third octave band per-pulse SEL (units are dB re 1 uPa²s) as a function of band center frequency and broadside distance from Statoil’s 3000 in³ airgun array used for its 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth. .................................................................................................................................................. 90

Figure B-8  RMS-90 integration time window length versus distance from GXT’s 2006 2D Chukchi Sea seismic survey ........................................................................................................................................................................................................ 90

Figure B-9  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in³ airgun array, and from the 20 in³ airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 2.5 m (8 ft) water depth. .................................................................................................................................................. 91

Figure B-10 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in³ airgun array, and from the 20 in³ airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 9 m (30 ft) water depth. .................................................................................................................................................. 92

Figure B-11 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for 10 in³ airgun (top left), 20 in³ array (top right), and 40 in³ array (bottom) used for Shell’s 2009 Site Clearance survey at its ........................................................................................................................................................................................................ 93

Figure B-12 Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for GeoPulse 3.5 kHz sub-bottom profiler operating during Shell’s 2009 (top left), 20 in³ array (top right), and 40 in³ array (bottom) used for Shell’s 2009 Site Clearance surveys at its Honeyguide (left) and Burger (right) prospects in the Chukchi Sea, measured 2 m above the seabed in 40 and 46 m water depth respectively. .................................................................................................................................................. 94
CHAPTER 1 FIGURES
CHAPTER 2 FIGURES
**Figure 2.1** Simple Illustration of a Marine Seismic Survey Operation using Streamers.
Source: USDOI, MMS 2006a

![Image of Marine Seismic Survey Operation using Streamers]

**Figure 2.2** Illustration of Ocean Bottom Cable survey.
Source: Schlumberger 2011

![Image of Ocean Bottom Cable survey]
Figure 2.3  Schematic view of a Controlled Source Electromagnetic (CSEM) survey.
A horizontal electric dipole is towed above receivers that are deployed on the seafloor.
Source: 2010 Electromagnetic Geoservices ASA
Figure 2.4  SDC operating in the Beaufort Sea.
Source: ICETECH 2010 Conference

Figure 2.5  M/V Noble Discoverer.
Source: Shell Inc. 2010a
Figure 2.6  *Jackup Rig.*
Source: Bennet & Associates LLC and Offshore Technology Development Inc. 2011
CHAPTER 3 FIGURES
Figure 3.1-1  General circulation map of the Beaufort and Chukchi seas.
Source: Weingartner and Danielson 2010

Figure 3.1-2  Bathymetry of the Beaufort Sea, with place names indicated.
Source: Weingartner 2008
**Figure 3.1-3** Schematic circulation map of the Beaufort and Chukchi shelves showing the flow of Bering Strait water through the Chukchi Sea along three principal pathways that are associated with distinct bathymetric features: the Herald Valley, the Central Channel, and Barrow Canyon.

Source: Weingartner and Danielson 2010

Three branches of the inflowing Pacific water are color-coded with navy blue (Anadyr Water) being the most nutrient-rich water and light blue (Alaska Coastal Water) being the least nutrient-rich. The Siberian Coastal Current (green) is present in summer and fall, but absent or weak in winter and spring. On the continental slope, the Pacific-origin water encounters Atlantic-origin Water (red) which is flowing counter-clockwise around the Arctic basin. Offshore of the slope, in the interior of the Canada Basin, is the clockwise wind-driven flow of the Beaufort Gyre (purple).
Sources: NSIDC, 2011a,b

a) Map shows the maximum sea ice extent (in white) for March 2011, and also the median sea ice extent (red line) for the period 1979–2000. Graph shows the average monthly sea ice extent over the period 1979–2011.

b) Map shows the minimum sea ice extent (in white) for September 2011, and the median sea ice extent (red line) for the period 1979–2000. Graph shows the average monthly sea ice extent over the period 1979–2011.
Figure 3.1-5  Sound Level Metrics.
**Figure 3.1-6a** An audiogram of human hearing.
Source: Discovery of Sound in the Sea 2011

![Audiogram of human hearing]

**Figure 3.1-6b** Graphic showing A-weighting function for human hearing.
Source: Harris 1998

![A-weighting function for human hearing]
Figure 3.1-7  Hearing curves for some marine mammals in water and a typical human in air.

Source: Discovery of Sound in the Sea 2011

There are two sets of y-axes (vertical) because different reference pressures are used to measure sound in water (re 1 µPa; left axis) vs in air (re 20 µPa; right axis). Notice that the decibel values differ by 61.5 dB for the same value of intensity (watts/ m²). The x-axis (horizontal) is the frequency of a sound on a logarithmic scale.
Figure 3.1-8  Graphic showing M-weighting functions for marine mammal hearing for (A) low, mid, and high frequency cetaceans, and (B) for pinnipeds in water and air.
Source: Southall et al. (2007)
Figure 3.1-9  Prevailing underwater sound levels.
Source: NRC 2003a
**Figure 3.1-10 Depth profiles of natural turbidity levels measured in the nearshore Alaskan Beaufort Sea in 1999.**
Source: Boehm 2001
Profile (a) shows turbidity levels before a storm event; profile (b) shows turbidity levels immediately following a storm event

![Depth profiles of natural turbidity levels](image)

**Figure 3.1-11 Levels of Ecological Organization.**
The dose-response model traditionally used in environmental impact assessment only considers the effects of stressors on individuals or populations. However, the value of ecosystem goods and services is usually derived from interactions among physical, chemical, and biological ecosystem components.
Figure 3.2-1  Simplified Food Web of the Arctic Ocean Ecosystem.

SHALLOW NEARSHORE (<5m)

- SPOTTED SEAL
- BELUGA
- ANADROMOUS FISHES
- MARINE FISHES
- SHORE BIRDS
- OLDSQUAW EIDERS
- MARSH & MUDFLAT BIRDS
- BRANT
- ZOO-PLANKTON
- BENTHIC EPIFAUNA
- BENTHIC INIFAUNA
- VASCULAR VEGETATION
- PHYTO-PLANKTON
- DETRITUS

DEEP NEARSHORE (5-20m)

- POLAR BEAR
- KITTIWAKES
- GULLS
- ALCIDS
- RINGED SEAL
- BOWHEAD WHALE
- MARINE FISHES
- EIDERS
- GRAY WHALE
- BEARDED SEAL
- WALRUS
- ZOO-PLANKTON
- BENTHIC EPIFAUNA
- BENTHIC INIFAUNA
- ZOO-PLANKTON
- BENTHIC EPIFAUNA
- BENTHIC INIFAUNA
- PHYTO-PLANKTON
- DETRITUS

LEGEND

Food Sources of Greater Importance

Source: Adapted After Truett, 1984
Figure 3.2-2  Seasonal ranges of the Western Arctic caribou herd with locations of satellite-collared caribou collected during the 2006-2007 regulatory year.

Source: ADF&G 2003

Data excludes first year caribou was collared; all collars standardized to one location every six days.
Figure 3.2-3 Central Arctic Caribou Herd Seasonal Ranges in Northern Alaska.
Source: BLM 2005
Figure 3.2-4  Caribou calving areas within the Arctic National Wildlife Refuge.
Source: USFWS 2008 The Teshekpuk Caribou Herd
Figure 3.2-5  Teshekpuk Lake Caribou Herd Seasonal Ranges in Northern Alaska (1990 – 2005 Satellite Telemetry Data).
Source: BLM 2005
Figure 3.2-6  Ranges of Alaska’s Caribou herds.
Source:  ADFG 2010a
Trans-Alaska Pipeline
Dalton Highway
North Slope Areawide Oil & Gas Lease Sale Area
North Slope Foothills Areawide Oil & Gas Lease Sale Area
ANWR - 1002 Area
National Petroleum Reserve in Alaska
North Slope Borough
Northwest Arctic Borough
Yukon - Koyukuk Borough
U.S. Maritime Boundary
Russia Maritime Boundary
Canada Maritime Boundary
Canada
Icy Cape
Point Franklin
Point Barrow
Cape Halkett
Nome
Elim
Koyuk
Hughes
Huslia
Barrow
Beaver
Circle
Tanana
Golovin
Koyukuk
Nuiqsut
Atqasuk
Rampart Central
Gambell
Council
Solomon
Kaktovik
Kivalina
Kotzebue
Savoonga
Point Lay
Livengood
Deadhorse
Point Hope
Wainwright
Prudhoe Bay
Birch Creek
Marys Igloo
Cape Lisburne
White Mountain
Stevens Village
Circle Hot Springs
Map Symbols
- Historical Drill Sites
- Federal/State Maritime Boundary (3-Miles Offshore)
- Bowhead Whale Distribution
- Concentration Area
- High Concentration Area
- Overlap Areas
- Winter (November - March)
- Spring (March - June)
- Summer (June - August)
- Fall (September - November)
- Generalized Migration Pattern
DATA SOURCES:

COORDINATE SYSTEM:
NAD 1983 UTM Zone 6N
Projection: Transverse Mercator

ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands

MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary

BOEMRE (2011): Planning Areas

NATIONAL MARINE FISHERIES SERVICE
JOB NO: Drawn: File: 26220558
DATE: NOV 2011
MAJ SEE PATH
U.S. BEAUFORT AND CHUKCHI SEAS, ALASKA
FIGURE 3.2-11
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS
BOWHEAD WHALE DISTRIBUTION

NATIONAL MARINE FISHERIES SERVICE
FIGURE 3.2-11 BOWHEAD WHALE DISTRIBUTION
U.S. BEAUFORT AND CHUKCHI SEAS, ALASKA
NOV 2011 F&E
DATE: NOV 2011 F&E
SER NO: 3231
DATA SOURCE:
Quakenbush et al. 2010b
FIGURE 3.2-13

EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS

TRACKS OF ELEVEN SATELLITE-TAGGED BOWHEAD WHALES IN THE BEAUFORT SEA IN SUMMER/FALL 2006-2009

DATA SOURCE: Quakenbush et al. 2010b
DATA SOURCE:
Quakenbush et al. 2010b

FIGURE 3.2-14

EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS

TRACKS OF SATELLITE-TAGGED BOWHEAD WHALES MIGRATING THROUGH THE CHUKCHI SEA AND PAST POINT BARROW IN SPRING 2009

U.S. CHUKCHI SEA, ALASKA

JOB NO: 26220558 DRAWN: MAJ
DATE: NOV 2011 FILE: SEE PATH
FIGURE 3.2-15

DATA SOURCE: Quakenbush et al. 2010b
Map Symbols
- Historical Drill Sites
- Federal/State Maritime Boundary (3-Miles Offshore)
- Onshore Oil & Gas Lease Sale Areas

Gray Whale Distribution
- Whales Present (April - December)
- Concentration Area (May - November)
- High Concentration Area (May - November)

DATA SOURCES:
- Audubon (2009)

Figure 3.2-17
Gray Whale Distribution
U.S. BEAUFORT AND CHUKCHI SEAS, ALASKA

Figure 3.2-17
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS

NATIONAL MARINE FISHERIES SERVICE

M:\Projects\Federal\26220558 - NMFS TO 10 Arctic Seismic & Drilling PEIS\mxd\November Edits\Figure 3.2-17 Gray Whale Distribution.mxd
**Map Symbols**
- Historical Drill Sites
- Federal/State Maritime Boundary (3-Miles Offshore)
- Bathymetry
- Onshore Oil & Gas Lease Sale Areas

**Beaded Seal Distribution**
- Seals Present (Year-round)
- Seals Present (November - May)
- Concentration Area (March - June)
- Concentration Area (July - September)
- High Concentration Area (October - April)

**DATA SOURCES:**

**NATIONAL MARINE FISHERIES SERVICE**
**EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS**

**BEARDED SEAL DISTRIBUTION**

**FIGURE 3.2-21**

**U.S. BEAUFORT AND CHUKCHI SEAS**

**North Slope Area wide Oil & Gas Lease Sale Area**

**North Slope Foothills Area wide Oil & Gas Lease Sale Area**

**ANWR - 1002 Area**

**National Petroleum Reserve in Alaska**

**Map Credits:**
- ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
- MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
- BOEMRE (2011): Planning Areas

**Map Source:**
- M:\Projects\Federal\26220558 - NMFS TO 10 Arctic Seismic & Drilling PEIS\mxd\November Edits\Figure 3.2-21 Bearded Seal Distribution.mxd
Map Symbols
- Historical Drill Sites
- Major Walrus Haulout
- Bathymetry
- Federal/State Maritime Boundary (3-Miles Offshore)
- Offshore Oil & Gas Lease Sale Areas

Pacific Walrus Distribution
- Present: Mostly Females and Young (May - October)
- Present: Males, Females, and Young (November - May)
- Concentration Area: Mostly Females and Young (June - October)
- Concentration Area: Males, Females, and Young (October - December)

DATA SOURCES:
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS

Polar Bear Critical Habitat

DATA SOURCES:
USFWS (2011): Polar Bear Critical Habitat Data

FIGURE 3.2-24

U.S. BEAUFORT AND CHUKCHI SEAS, ALASKA

POLAR BEAR CRITICAL HABITAT

COORDINATE SYSTEM:
NAD 1983 UTM Zone 6N
Projection: Transverse Mercator

ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands

MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary

BOEMRE (2011): Planning Areas

NATIONAL MARINE FISHERIES SERVICE

JOB NO: 26220558
DATE: NOV 2011
DRAWN: MAJ
FILE: 26220558

SEE PATH M:\Projects\Federal\26220558 - NMFS TO 10 Arctic Seismic & Drilling PEIS\mxd\November Edits\Figure 3.2-24 Polar Bear Critical Habitat.mxd
Map Symbols
- Historical Drill Sites
- Federal/State Maritime Boundary (3-Miles Offshore)
- Chukchi Sea Active Federal Leases

Special Habitat Areas
- Barrow Canyon
- Hanna Shoal
- Kasigluk Lagoon
- Ledyard Bay Critical Habitat Unit

DATA SOURCES:
- MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
- BOEMRE (2011): Planning Areas
- USGS (2011): Bathymetry
Figure 3.3-1  2009 Alaska Economic Performance Report.
Source: ADCCED 2011d

Figure 3.3-2  Statewide Employment by Section (February 2011).
Figure 3.3-3  Local Capture of Large-Scale Resource Extraction from Remote Region Alaska (Million $).
Source: Goldsmith 2007    Calculated by URS in 2003 dollars

Figure 3.3-4a Top Employers in the NSB (2003).
Source: NSB 2003 Economic Profile and Census Report
**Figure 3.3-4b NSB Employment by Sector (2000).**
Source: Alaska Department of Community & Regional Affairs, Community Database Online from 2000 Census

**Figure 3.3-4c NAB Major Employment Sectors**
Source: Alaska Department of Community & Economic Development, Community Database Online (from 2000 Census)
Figure 3.3-5  Percent of Resident Workers by Wage Range (2009).
Source:  ADLWD 2011a

Note:  Northern Region is indicated in blue (North Slope Borough, Northwest Arctic Borough, and Nome Census Area); State of Alaska is indicated in black.

Figure 3.3-6  Efficiency (number landed / number struck) of the bowhead whale subsistence harvest 1973 to 2007.
Source:  Suydam et al. 2007
Figure 3.3-7  Number of bowheads landed, and struck by subsistence hunters in the U.S., Canada, and Russia from 1974 to 2006.
Source: NMFS 2008
Figure 3.3-8  Winter sea ice in the Beaufort Sea  
Source:  http://www.photolib.noaa.gov/bigs/corp1014.jpg  
Note: Stamukhi zone in the foreground and flatter, smoother, landfast ice in the background.

Figure 3.3-9  Ice floes in the Chukchi Sea  
Figure 3.3-10 Coastal flow lead near Barrow, Alaska.
Source: http://boemre-new.gina.alaska.edu/
Note: Landfast ice is on the left and drifting pack ice on the right.

Figure 3.3-11 Open water off the coast of Barrow, Alaska (Summer).
Source: URS Corporation
Figure 3.3-12 Summer in Kotzebue, located on the Chukchi Sea.

Figure 3.3-13 Vegetation located within the EIS project area.
Figure 3.3-14 Oil and Gas Development, Prudhoe Bay.
Source: URS Corporation

Figure 3.3-15 Mars Ice Island, Beaufort Sea Alaska.
Source: [http://www.alaska.boemre.gov/kids/shorts/iceislnd/iceislnd.htm](http://www.alaska.boemre.gov/kids/shorts/iceislnd/iceislnd.htm)
Image shows a 60 day exploratory well built offshore, 8 km off Cape Halkut near NPR-A.
Figure 3.3-16 Pioneer Natural Gas, Oooguruk exploratory drilling site.

Figure 3.3-17 BP, Liberty exploratory drilling site.
Trans-Alaska Pipeline
Dalton Highway
North Slope Areawide Oil & Gas Lease Sale Area
North Slope Foothills Areawide Oil & Gas Lease Sale Area
ANWR - 1002 Area
National Petroleum Reserve in Alaska
North Slope Borough
Northwest Arctic Borough
U.S. Maritime Boundary
Canada Maritime Boundary
Canada
Point Barrow
Barrow
Nuiqsut
Atqasuk
Kaktovik
Deadhorse
Wainwright
Prudhoe Bay
Juneau
Fairbanks
Anchorage
Bering Sea
Arctic Ocean
Chukchi Sea
Beaufort Sea
Gulf of Alaska

COORDINATE SYSTEM:
NAD 1983 UTM Zone 6N
Projection: Transverse Mercator

DATA SOURCES:
ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
MMS (2008): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
BOEMRE (2011): Planning Areas
USGS (2011): Bathymetry

FIGURE 3.3-20
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS
BOWHEAD WHALE SUBSISTENCE USE AREAS
U.S. BEAUFORT SEA, ALASKA

S.R. Braund and Associates
for MMS (2008): Bowhead Whale Subsistence Use Areas

FIGURE 3.3-20
NATIONAL MARINE FISHERIES SERVICE
Map Symbols
- Historical Drill Sites
- Federal/State Maritime Boundary (3-Miles Offshore)
- Bathymetry
- EIS Project Area
Bowhead Subsistence Use Areas by Community
- Barrow
- Point Hope
- Wainwright
- Kivalina
- Areas of Overlap

DATA SOURCES:
ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
BOEMRE (2011): Planning Areas
USGS (2011): Bathymetry
Map Symbols
- Historical Drill Sites
- Federal & State Maritime Boundary (3-Miles Offshore)
- Bathymetry
- EIS Project Area

Terrestrial Resources Subsistence Use Areas by Community
- Kivalina
- Point Hope
- Point Lay
- Wainwright

DATA SOURCES:
- ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
- MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
- BOEMRE (2011): Planning Areas
- USGS (2011): Bathymetry

COORDINATE SYSTEM:
NAD 1983 UTM Zone 6N
Projection: Transverse Mercator

CHUKCHI SEA
- Kasegaluk Lagoon

NATIONAL MARINE FISHERIES SERVICE
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS
TERRESTRIAL RESOURCES SUBSISTENCE USE AREAS
U.S. CHUKCHI SEA, ALASKA

FIGURE 3.3-27
Figure 4.3-1

Map Symbols
- Bathymetry
- Active State Leases (As of December 1, 2003)
- Beaufort Sea Available State Leases
- Beaufort Sea Active Federal Leases
- Offshore Oil & Gas Lease Sale Areas
- ShelfEdge Hazard Survey Vessel
- 3D Ocean-Bottom Cable Seismic Survey Vessel
- 2D/3D Seismic Survey Vessel
- Drillship
- Support Vessel
- 160dB Isopleth, Level B harassment threshold for pulsed sources.
- 120dB Isopleth
- 120dB Isopleth, Level B harassment threshold for continuous sources
- 2D/3D Seismic Survey Track Line

Special Habitat Areas
- Barrow Canyon
- Camden Bay

DATA SOURCES:
- ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
- MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
- BOEMRE (2011): Planning Areas
- USGS (2011): Bathymetry

COORDINATE SYSTEM:
- NAD 1983 UTM Zone 6N
- Projection: Transverse Mercator

NATIONAL MARINE FISHERIES SERVICE
EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN EIS
CONCEPTUAL EXAMPLE FOR ALTERNATIVE 2 (LEVEL 1 EXPLORATION ACTIVITY)

U.S. BEAUFORT SEA, ALASKA

JOB NO: 26220558 PROJECT: TO 10 12 2011
DATE: NOV 2011
FILE: M:\Projects\Federal\26220558 - NMFS TO 10 Arctic Seismic & Drilling PEIS\mxd\December Edits\Alt. 2 Beaufort.mxd

Figure 4.3-1
Figure 4.3-2

Effects of Oil and Gas Activities in the Arctic Ocean EIS

Conceptual Example for Alternative 2 (Level 1 Exploration Activity)

National Marine Fisheries Service

U.S. Chukchi Sea, Alaska

Job No: 26220558

Draft Document: 02-11

November 2011

Arctic Ocean

Chukchi Sea

Beaufort Sea

Gulf of Alaska

Canada

Russia

Barrow

Atqasuk

Wainwright

Icy Cape

Point Lay

Point Hope

Cape Lisburne

Map Symbols

- Bathymetry
- Shallow Hazard Survey Vessel
- 2D/3D Seismic Survey Vessel
- 160dB Isopleth, Level B harassment threshold for pulsed sources
- 120dB Isopleth
- Chukchi Sea Active Federal Leases
- 2D/3D Seismic Survey Track Line

Special Habitat Areas

- Barrow Canyon
- Hanna Shoal
- Kasegaluk Lagoon
- Ledyard Bay Critical Habitat Unit

DATA SOURCES:

- ADNR-DOG (2009): State Lease Boundaries & Tracts; Oil & Gas Well Locations; State & Federal Lands
- NOAA (2008): Ledyard Critical Habitat Unit
- MMS (2007): Offshore Lease Boundaries & Tracts; 3-Mile Offshore Boundary; Continental Shelf Boundary
- BOEMRE (2011): Planning Areas
- USGS (2011): Bathymetry

COORDINATE SYSTEM:

NAD 1983 UTM Zone 6N
Projection: Transverse Mercator

See path: M:\Projects\Federal\26220558 - NMFS TO 10 Arctic Seismic & Drilling PEIS\mxd\December Edits\Alt. 2 Chukchi.mxd
Figure 4.3-3  Temporal Conceptual Example under Alternative 2 (Level 1 Exploration Activity)
Figure 4.4-3  Temporal Conceptual Examples under Alternative 3 (Level 2 Exploration Activity)

<table>
<thead>
<tr>
<th>Beaufort Sea</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploratory Drilling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D/3D Seismic Survey with In-Ice Seismic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D OBC Seismic Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D OBC Seismic Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D/3D Seismic Survey with In-Ice Seismic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Dotted line represents end of open water season

<table>
<thead>
<tr>
<th>Chukchi Sea</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploratory Drilling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploratory Drilling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D/3D Seismic Survey with In-Ice Seismic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D/3D Seismic Survey with In-Ice Seismic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearance and High Resolution Shallow Hazards Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Dotted line represents end of open water season
Figure 4.5-1  Dispersion and fate of water-based drill cuttings and drilling fluids discharged to the ocean. About 90% of the discharged solids settle rapidly and form a mud/cuttings pile within several hundred meters of the point of discharge.

Source: Neff 2005

This mud/cuttings pile would affect water depths near the drilling activity. The remaining 10% of the discharged solids remain suspended and drift with prevailing currents away from the drilling site to settle elsewhere.
Figure 4.5-2  Logic framework for potential impacts to human health.
APPENDIX B FIGURES
Figure B-1  Measured temperature and salinity profiles, and derived sound speed profiles near 71°30’N  164°30’W in late August 2010. Source O’Neill et al. 2010.
Figure B-2  Deep water Beaufort Sea sound speed profile for August at 70°40' N, 138°15' W in 1375 m (4510 ft) water depth. Source GDEM (Teague et al. 1990).
Figure B-3  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in (a) endfire direction and (b) broadside direction from 3000 in³ airgun array, and (c) 60 in³ mitigation airgun used for Statoil’s 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth, measured 2 m (6.6 ft) above the seabed.

Source: O’Neill et al. 2010.

The smooth fit functions shown with solid lines are the least-square function fits to Lp90, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points.
Figure B-4  Peak ($L_p$), RMS ($L_{p90}$) pressure levels and per-pulse SEL ($L_E$) in (a) endfire direction and (b) broadside direction from 3147 in$^3$ airgun array used for Shell’s 2007 3D Camden Bay (Sivulliq Prospect) seismic survey in ~24 m (79 ft) water depth, measured 2 m (6.6 ft) above the seabed.


The smooth fit functions shown with solid lines are the least-square function fits to $L_{p90}$, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points.
Figure B-5  Spectrograms of airgun array pulses produced by GXT’s 2006 2D Chukchi Sea seismic survey using a 3320 in³ airgun array in 40 m (131 ft) water depth, measured 2 m (6.6 ft) above the seabed.
Source: Austin and Laurinolli 2007.

From top left to bottom right, the measurement ranges are 1 km (0.62 mi), 10 km (6.2 mi), 20 km (12.4 mi), and 40 km (25 mi). Striations in these figures are due to modal propagation.
Figure B-6  Pressure versus time (left) and SEL spectral density (right) of single airgun array pulses received at three distances 460 m (1,509 ft) (top), 1,359 m (4,459 ft) (middle), 80 km (50 mi) (bottom), from Statoil’s 2010 3D Chukchi Sea seismic survey in 38-42 m (125-138 ft) water depth.
Source: O’Neill et al. 2010.
Measurements were made at 2 m (6.6 ft) above the seabed. The vertical red lines indicate the 90 percent time window used for $L_{p90}$ (rms) sound level calculation.
Figure B-7  One-third octave band per-pulse SEL (units are dB re 1 uPa2s) as a function of band center frequency and broadside distance from Statoil’s 3000 in³ airgun array used for its 2010 3D Chukchi Sea seismic survey in 38-43 m (125-141 ft) water depth.
Source: O’Neill et al. 2010.
Measurements were made 2m (6.6 ft) above the seabed. The 8-10 kHz signal is due to an echosounder.

Figure B-8  RMS-90 integration time window length versus distance from GXT’s 2006 2D Chukchi Sea seismic survey.
Source: Austin and Laurinolli 2007.
Figure B-9  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in$^3$ airgun array, and from the 20 in$^3$ airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 2.5 m (8 ft) water depth.


Measurements were made at the seabed. The smooth fit functions shown with solid lines are the least-square function fits to $L_{p90}$, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points.
Figure B-10  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) in endfire direction (top left) and broadside direction (top right) from an 880 in3 airgun array, and from the 20 in3 airgun (bottom) used for Eni/PGS’s 2008 OBC seismic survey in Harrison Bay in 9 m (30 ft) water depth.


Measurements were made at the seabed. The smooth fit functions shown with solid lines are the least-square function fits to L_{p90}, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points. At ranges less than 800 m (2,625 ft) from the mitigation airgun, the best empirical fit function was RL = 220.2 – 21.0 logR – 0.00088 R. Beyond 800 m (2,625 ft), it was RL = 158.4 – 30.5 log (R/800) – 0.017 (R-800).
Figure B-11  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for 10 in3 airgun (top left), 20 in3 array (top right), and 40 in3 array (bottom) used for Shell’s 2009 Site Clearance survey at its Honeyguide prospect in the Chukchi Sea, measured 2 m (6.6 ft) above the seabed in 48 m (157 ft) water depth. The smooth fit functions shown with solid lines are the least-square function fits to Lp90, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points.

Figure B-12  Peak (Lp), RMS (Lp90) pressure levels and per-pulse SEL (LE) for GeoPulse 3.5 kHz sub-bottom profiler operating during Shell’s 2009 (top left), 20 in3 array (top right), and 40 in3 array (bottom) used for Shell’s 2009 Site Clearance surveys at its Honeyguide (left) and Burger (right) prospects in the Chukchi Sea, measured 2 m above the seabed in 40 and 46 m water depth respectively.


The smooth fit functions shown with solid lines are the least-square function fits to $L_{p90s}$, and the dashed lines are the same functions shifted up to exceed 90 percent of the measurement points.
APPENDIX A
Standard and Additional Mitigation Measures
Table of Contents

Appendix A: Standard and Additional Mitigation Measures Addressing Impacts to Marine Mammals and Subsistence Activities ................................................................. A-1

Required Standard Mitigation Measures .............................................................................................................. A-1

A. DETECTION-BASED MEASURES INTENDED TO REDUCE NEAR-SOURCE ACOUSTIC EXPOSURES AND IMPACTS ON MARINE MAMMALS WITHIN A GIVEN DISTANCE OF THE SOURCE ........................................................................................................ A-1

B. NON-DETECTION-BASED MEASURES INTENDED TO MORE BROADLY LESSEN THE SEVERITY OF ACOUSTIC IMPACTS ON MARINE MAMMALS OR REDUCE OVERALL NUMBERS TAKEN BY ACOUSTIC SOURCE ........................................................................ A-4

C. MEASURES INTENDED TO REDUCE/LESSEN NON-ACOUSTIC IMPACTS ON MARINE MAMMALS ........................................................................................................ A-5

D. MEASURES INTENDED TO ENSURE NO UNMITIGABLE ADVERSE IMPACT TO SUBSISTENCE USES ............................................................................................. A-6

Additional Mitigation Measures ........................................................................................................................... A-9

A. DETECTION-BASED MEASURES INTENDED TO REDUCE NEAR-ARRAY ACOUSTIC EXPOSURES AND IMPACTS ON MARINE MAMMALS WITHIN A GIVEN DISTANCE OF THE SOURCE ........................................................................................................ A-9

B. NON-DETECTION-BASED MEASURES INTENDED TO MORE BROADLY LESSEN THE SEVERITY OF ACOUSTIC IMPACTS ON MARINE MAMMALS OR REDUCE OVERALL NUMBERS TAKEN BY ACOUSTIC SOURCE ........................................................................ A-10

C. MEASURES INTENDED TO REDUCE/LESSEN NON-ACOUSTIC IMPACTS ON MARINE MAMMALS ........................................................................................................ A-12

D. MEASURES INTENDED TO ENSURE NO UNMITIGABLE ADVERSE IMPACT TO SUBSISTENCE USES ............................................................................................. A-13
Appendix A: Standard and Additional Mitigation Measures
Addressing Impacts to Marine Mammals and Subsistence Activities

Standard Mitigation Measures

The mitigation measures1 (and the identified mitigation monitoring needed to support them) listed below are planned for inclusion as a requirement under every ITA issued for the type of activity identified.

A. DETECTION-BASED MEASURES INTENDED TO REDUCE NEAR-SOURCE ACOUSTIC EXPOSURES AND IMPACTS ON MARINE MAMMALS WITHIN A GIVEN DISTANCE OF THE SOURCE

This measure would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic including in-ice surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Mitigation Measure A1. Establishment of 180 dB shutdown/power down radius for cetaceans and 190 dB shutdown/power down radius for pinnipeds.

NMFS has established acoustic thresholds that identify the received sound levels above which hearing impairment or other injury could potentially occur; these thresholds are 180 and 190 dB re 1 µPa (rms) for cetaceans and pinnipeds, respectively (NMFS 1995, 2000). All further received sound level criteria reported in this appendix will be re 1 µPa (rms). In view of a panel of bioacoustics specialists convened by NMFS, the 180- and 190-dB criteria are the received levels above which one could not be certain that there would be no injurious effects, auditory or otherwise, to marine mammals. Since the establishment of these acoustic criteria, NMFS has recommended and included shutdown/powerdown zones at the 180/190 dB isopleths as standard required mitigation measures in MMPA authorizations for seismic surveys. Typical language in past ITAs includes:

- Establish and have trained Protected Species Observers (PSOs) monitor a preliminary exclusion zone for cetaceans surrounding the airgun array on the source vessel where the received level would be 180 dB or greater. The radius for the zone will vary based on the airgun array used, water depth, and numerous other factors related to the water and seafloor properties. This final distance of the radius will be established by modeling and/or a sound source verification test.

- Establish and monitor a preliminary exclusion zone for pinnipeds surrounding the airgun array on the source vessel where the received level would be at or above 190 dB with trained PSOs. The radius for the zone will vary based on the airgun array used, water depth, and numerous other factors related to the water and seafloor properties. The final distance of the radius will be established by modeling and/or a sound source verification test.

- Immediately power-down the seismic airgun array and/or other acoustic sources, whenever any cetaceans or walrus are sighted approaching close to or within the area delineated by the 180 dB, or pinnipeds or polar bears are sighted approaching close to or within the area delineated by the 190 dB isopleth.

---

1 These measures have been included in past ITAs issued by NMFS in the Arctic Ocean.
- If the power-down operation cannot reduce the received sound pressure level at the cetacean or pinniped to less than 180 dB or 190 dB, respectively, then the holder of the ITA must immediately shutdown the seismic airgun array and/or other acoustic sources.

- The seismic airgun array cannot be powered up unless the marine mammal exclusion zones are visible and no marine mammals are detected within the appropriate safety zones for a minimum of 15 minutes (small odontocetes, pinnipeds) or 30 minutes (for mysticetes). The seismic array can be ramped up once the PSOs have no further visual detection of the animal(s) within the exclusion zone, and they are confident that no marine mammals remain within the appropriate exclusion zone.

**Mitigation Measure A2. Specified ramp-up procedures for airgun arrays.**

Ramp-up is the gradual introduction of sound to deter marine mammals from potentially damaging sound intensities and from approaching the exclusion zone. This technique involves the gradual increase (usually approximately 5-6 dB per 5-minute increment) in emitted sound levels, beginning with firing a single airgun and gradually adding airguns over a period of 20 to 40 minutes, until the desired operating level of the full array is obtained. Ramp-up procedures are instituted based on the assumption that any marine mammals in the vicinity of seismic operations will become aware of the noise source before it rises to potentially harmful levels and to leave the area. The 180- and 190-dB) exclusion zones described in the previous measure are used for the ramp-up procedures as well. Typical language in past ITAs includes:

- Conduct a 30-minute period of marine mammal observations by at least two trained PSOs to verify that the exclusion zone is clear prior to commencing ramp-up at the commencement of seismic operations and at any time the airgun array has been shut down for a certain period of time. The period of shutdown requiring a full ramp-up is based on the size of the airgun array but is typically between 8 and 10 minutes.

- Do not commence ramp-up if the entire exclusion zones are not visible for at least 30 minutes prior to ramp-up in either daylight or nighttime and do not commence ramp-up at night unless the seismic source has maintained a sound pressure level at the source of at least 180 dB during the interruption of full seismic survey operations. If a sound source of at least 180 dB has been maintained during the interruption of seismic operations, then the 30 minute pre-ramp-up visual survey is waived.

- Ramp-up the airgun arrays at no greater than 6 dB per 5-minute period starting with the smallest airgun in the array and then adding additional guns in sequence until the full array is firing if no marine mammals are observed in the safety zones and periods specified above. Ramp-up procedures should be used at the commencement of seismic operations and any time after the airgun array has been shut down for a certain period of time.

**Mitigation Measure A3. Protected Species Observers (PSOs) required on all seismic source vessels and ice breakers, as well as on support (chase) vessels.**

PSOs are a key component both for the purposes of implementing mitigation measures, such as shutdowns and ramp-ups, and for gathering information pursuant to the monitoring requirements of the ITA (latter addressed separately). Some of the mitigation monitoring requirements in past ITAs include:

- The holder of the ITA must designate trained, NMFS-approved, individuals (PSOs) to be onboard the source vessel to conduct the visual monitoring programs required under this
Authorization and to record the effects of seismic surveys and the resulting noise on marine mammals.

- To the extent possible, PSOs should be on duty for four consecutive hours or less, although more than-one four-hour shift per day is acceptable. PSOs will not work more than three shifts in a 24-hour period (i.e. 12 hours total per 24-hour period).

- Monitoring is to be conducted by the PSOs onboard the active seismic vessel (including in-ice surveys), to (A) ensure that no marine mammals enter the appropriate exclusion zone whenever the seismic sources are on, and (B) to record marine mammal activity. At least two observers must be on watch the 30 minutes prior to full ramp up, during ramp ups, and for as much of the other operating hours as possible. At all other times, at least one observer must be on active watch (1) whenever the seismic source is operating during the daytime; (2) during any nighttime power-ups of the airguns; and (3) at night, whenever one or more power-down situations the preceding day were due to marine mammal presence.

- At all times, the crew must be instructed to keep watch for marine mammals. If any are sighted, the bridge watch-stander must immediately notify the PSO(s) on-watch. If a marine mammal is within or closely approaching its designated exclusion zone, the seismic acoustic sources must be immediately powered down or shutdown.

- Monitoring will consist of recording: (A) the species, group size, age/size/sex categories (if determinable), the general behavioral activity, heading (if consistent), bearing and distance from seismic vessel, sighting cue, behavioral pace, and apparent reaction of all marine mammals seen near the seismic vessel and/or its airgun array (e.g. none, avoidance, approach, paralleling, etc.); (B) the time, location, heading, speed, and activity of the vessel (shooting or not), along with sea state, visibility, cloud cover and sun glare at (1) any time a marine mammal is sighted, (2) at the start and end of each watch, and (3) during a watch (whenever there is a change in one or more variable); and, (C) the identification of all vessels that are visible within 5 km (3.1 mi) of the seismic-vessel whenever a marine mammal is sighted, and the time observed, bearing, distance, heading, speed and activity of the other vessel(s).

**On-ice Seismic Surveys**

**Mitigation Measure A4. All activities must be conducted at least 150 m (490 ft) from any observed ringed seal lair.**

- PSOs are a key component of locating ringed seal lairs. During active seismic vibrator source operations, the 150 m (490 ft) exclusion zone shall be monitored for entry by marine mammals.

- Any locations of seal structures must be marked and protected by a 150 m (490 ft) exclusion distance from any existing routes and on-ice seismic activities.

- No ice roads may be built between the mobile camp and work site. Travel between mobile camp and work site shall also be monitored for marine mammals and be done by vehicles driving through on a snow road. Vehicles must avoid any pressure ridges, ice ridges, and ice deformation areas where seal structures are likely to be present.
Mitigation Measure A5. No energy source may be placed over a ringed seal lair.

- PSOs are a key component of locating ringed seal lairs. During active seismic vibrator source operations, the 150 m (490 ft) exclusion zone shall be monitored for entry by marine mammals.
- Any locations of seal structures must be marked and protected by a 150 m (490 ft) exclusion distance from any existing routes and on-ice seismic activities.
- No ice roads may be built between the mobile camp and work site. Travel between mobile camp and work site shall also be monitored for marine mammals and be done by vehicles driving through on a snow road. Vehicles must avoid any pressure ridges, ice ridges, and ice deformation areas where seal structures are likely to be present.

Exploratory Drilling Activities

Mitigation Measure A6. PSOs required on all drill ships (including rigs and ships) and ice management vessels.

- PSO requirements would be the same as those identified for Standard Mitigation Measure A3. PSOs are required on all types of drilling units and all support vessels. PSOs will watch during active drilling operations and transits.

B. NON-DETECTION-BASED MEASURES INTENDED TO MORE BROADLY LESSEN THE SEVERITY OF ACOUSTIC IMPACTS ON MARINE MAMMALS OR REDUCE OVERALL NUMBERS TAKEN BY ACOUSTIC SOURCE

This measure would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic including in-ice surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Mitigation Measure B1. Specified flight altitudes for all support aircraft except for take-off, landing, and emergency situations.

- Aircraft shall not operate below 457 m (1,500 ft) unless the aircraft is engaged in approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations. Aircraft shall not operate below 305 m (1,000 ft) during marine mammal monitoring when operating outside of active subsistence areas. Aircraft engaged in marine mammal monitoring shall not operate below 457 m (1,500 ft) in areas of active subsistence use; such areas are to be identified through communications with the Communication Centers.
- Except for airplanes engaged in marine mammal monitoring, aircraft shall use a flight path that keeps the aircraft at least five miles inland until the aircraft is directly (south) of its offshore destination, then at that point it shall fly directly to its destination. This is applicable to the Beaufort Sea only.
- Helicopters shall not hover or circle above groups of marine mammals or within 457 m (1,500 ft) of such groups.
C. MEASURES INTENDED TO REDUCE/LESSEN NON-ACOUSTIC IMPACTS ON MARINE MAMMALS

These measures would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic including in-ice surveys, CSEM surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Mitigation Measure C1. Specified procedures for changing vessel speed and/or direction to avoid collisions with marine mammals.

General operation conditions include:

- Reduce vessel speed when within 274 m (900 ft) of whales and those vessels capable of steering around such groups should do so. Vessels may not be operated in such a way as to separate members of a group of whales from other members of the group.
- Avoid multiple changes in direction and speed when within 274 m (900 ft) of whales. In addition, operators should check the waters immediately adjacent to a vessel to ensure that no whales will be injured when the vessel's propellers (or screws) are engaged.
- Do not operate support vessels (including small boats), to the extent that they are being used, at a speed that would make collisions with whales likely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.
- When weather conditions require, such as when visibility drops, adjust vessel speed accordingly to avoid the likelihood of injury to whales. Vessel speeds should be reduced to at least 10 knots.

Mitigation Measure C2. Lost equipment notification.

- The operator shall notify BOEM or BSEE (dependent upon the type of activity), NMFS, and the U.S. Fish and Wildlife Service in the event of any loss of cable, streamer, or other equipment that could pose a danger to marine mammals.

On-ice Seismic Surveys

Mitigation Measure C3. When traveling on ice roads, the area shall be monitored for marine mammals.

- PSOs are a key component of locating ringed seal lairs. During active seismic vibrator source operations, the 150 m (490 ft) exclusion zone shall be monitored for entry by marine mammals.
- Any locations of seal structures must be marked and protected by a 150 m (490 ft) exclusion distance from any existing routes and on-ice seismic activities.
- No ice roads may be built between the mobile camp and work site. Travel between mobile camp and work site shall also be monitored for marine mammals and be done by vehicles driving through on a snow road. Vehicles must avoid any pressure ridges, ice ridges, and ice deformation areas where seal structures are likely to be present.
Exploratory Drilling Activities ONLY

Mitigation Measure C4. Oil Spill Response Plan.

Operators are required to have a plan(s) in place that: a) minimize the likelihood of a spill; b) outline the response protocol in the event of a spill; and c) identify the means of minimizing impacts to marine mammals following a spill.

- Each operator is required to prepare an oil spill response plan (OSRP) for any facilities seaward of the coastline. In the OSRP, the operator must include an emergency response action plan, a worst-case-discharge (WCD) scenario, an inventory of response equipment to support a WCD response, contractual agreements with oil spill removal organizations (OSRO) who will provide response services, a dispersant-use plan, an in situ-burning plan, and a training and response drills plan.

- In developing the WCD scenario, operators are required to conduct an appropriate trajectory analysis for the area where the facility will be located. This analysis must identify onshore and offshore areas that a discharge potentially could impact and further identify resources of special economic or environmental concern that may be present. The operator must describe what strategies would be used to protect these areas and resources.

- Operators may be required to stage spill response equipment near areas of concern to facilitate more rapid deployment to protect critical resources and limit exposure to oil.

D. MEASURES INTENDED TO ENSURE NO UNMITIGABLE ADVERSE IMPACT TO SUBSISTENCE USES

These measures would be required for all activities that occur during the open-water season and in-ice (i.e. 2D/3D seismic including in-ice surveys, CSEM surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Mitigation Measure D1. Shutdown of exploration activities occurring in specific areas of the Beaufort Sea corresponding to the start and conclusion of the fall bowhead whale hunts in Nuiqsut (Cross Island) and Kaktovik beginning on or around August 25.

- Start dates for hunts are based on

- No geophysical activity from the Canadian Border to the Canning River (146 deg. 4 min. W) beginning on or around August 25 to close of the Kaktovik’s and Nuiqsut’s fall bowhead whale.

- The bowhead whale subsistence hunt will be considered closed for a particular village when the village Whaling Captains’ Association declares the hunt ended or the village quota has been exhausted (as announced by the village Whaling Captains’ Association or the Alaska Eskimo Whaling Commission [AEWC]), whichever occurs earlier.

- From August 10 to August 25, industry participants will communicate and collaborate with AEWC on any planned vessel movement in and around Kaktovik and Cross Island to avoid impacts to the whale hunt.
From Pt. Storkerson (~148 deg. 42 min. W) to Thetis Island (~150 deg. 10.2 min. W);

- Inside the Barrier Islands: No geophysical activity prior to August 5. Geophysical activity is allowed from August 5 until completion of operations. Geophysical activity allowed in this area after August 25 shall include a source array of no more than 12 airguns, a source layout no greater than 8 m x 6 m (26.2 ft x 19.7 ft), and a single source volume no greater than 14.4 liters (880 in³).

- Outside the Barrier Islands: No geophysical activity from August 25 to close of fall bowhead whale hunting in Nuiqsut. Geophysical activity is allowed at all other times.

From Canning River (~146 deg. 4 min. W) to Pt. Storkerson (~148 deg. 42 min. W), no geophysical activity from August 25 to the close of bowhead whale subsistence hunting in Nuiqsut.

Around Barrow, no geophysical activity from Pitt Point on the east side of Smith Bay (~152 deg. 15 min. W) to a location about halfway between Barrow and Peard Bay (~157 deg. 20 min. W) from September 15 to the close of the fall bowhead whale hunt in Barrow.

Industry participants will contact the whaling captains’ associations of Wainwright, Point Lay, and Point Hope to determine if the village is planning to participate in a fall whale hunt. If the village whaling captains indicate that they plan to participate in the fall whale hunt, before September 15, no more than two geophysical activities employing airguns will occur at any one time within 48.3 km (30 mi) of any point along the Chukchi Sea coast until the close of the fall bowhead whale hunt.

Mitigation Measure D2. Establishment and utilization of Communication Centers in subsistence communities to address potential interference with marine mammal hunts on a real-time basis throughout the season.

To address potential interference with marine mammal hunts on a real-time basis, exploration companies have been required to participate in the establishment and interaction with Communication Centers in affected subsistence communities. The Communication Centers are to be operated on a 24-hour basis during the fall bowhead whale hunt.

- Upon notification by a Communication Center operator of an at-sea emergency, the holder of the ITA shall provide such assistance as necessary to prevent the loss of life, if conditions allow the holder of the ITA to safely do so.

- Upon request for emergency assistance made by a subsistence whale hunting organization, or by a member of such an organization, in order to prevent the loss of a whale, the holder of the ITA shall assist towing of a whale taken in a traditional subsistence whale hunt, if conditions allow the holder of the ITA to safely do so.

- The Plan of Cooperation (as required by NMFS implementing regulations at 50 CFR 216.104(a)(12)) outlining the steps that will be taken to cooperate and communicate with the native communities to ensure the availability of marine mammals for subsistence uses must be implemented.
Mitigation Measure D3. Required flight altitudes and paths for all support aircraft in areas where subsistence occurs, except during take-off, landing, and emergency situations.

Aircraft shall avoid concentrations or groups of whales. Operators shall, at all times, conduct their activities at a maximum distance from such concentrations of whales.

- Aircraft shall not operate below 457 m (1,500 ft) unless the aircraft is engaged in, approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations.
- Aircraft engaged in marine mammal monitoring shall not operate below 457 m (1,500 ft).
- Except for airplanes engaged in marine mammal monitoring, aircraft operating in the Beaufort Sea shall use a flight path that keeps the aircraft at least five miles inland until the aircraft is directly (south) of its offshore destination, then at that point it shall fly directly (north) to its destination.
- When weather conditions do not allow a 457 m (1,500 ft) flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the 457 m (1,500 ft) altitude. However, when aircraft are operated at altitudes below 457 m (1,500 ft) because of weather conditions, the operator must avoid whale concentrations and concentration areas and should take precautions to avoid flying directly over or within 1,372 m (4,501 ft) of groups of whales.
Additional Mitigation Measures

The following mitigation measures (and mitigation monitoring needed to support them) will be evaluated in Chapter 4 and may be required by NMFS in ITAs or by BOEM in G&G permits or ancillary activity notices to make the necessary findings under the MMPA and OCS Lands Act, respectively, for the type of activity identified.

A. DETECTION-BASED MEASURES INTENDED TO REDUCE NEAR-ARRAY ACOUSTIC EXPOSURES AND IMPACTS ON MARINE MAMMALS WITHIN A GIVEN DISTANCE OF THE SOURCE

Additional Mitigation Measure A1. Sound source verification tests for sound sources and vessels at the start of the season.

Before conducting the activity, the operators shall conduct sound source verification (SSV) tests to verify the radii of the safety and monitoring zones within real-time conditions in the field, providing for more accurate radii to be used. When moving an operation into a new area, the operator shall re-verify the new radii of the exclusion zones. The purpose of this mitigation measure is to establish and monitor more accurate safety zones based on empirical measurements, as compared to the zones based on modeling and extrapolation from different datasets. Using a hydrophone system, the vessel operator is required to conduct SSV tests for all airgun arrays and vessels and, at a minimum, report the following results to NMFS within five days of completing the test:

- The empirical distances from the airgun array and other acoustic sources utilized during the effectiveness of the ITA to broadband received levels of 190 dB down to 120 dB in 10 dB increments and the radiated sounds vs. distance from the source vessel.
- Measurements are to be made at the beginning of the survey for locations not previously modeled in the Arctic Seas.

Additional Mitigation Measure A2. Measures to assess efficacy and improve detection capabilities in low visibility situations (e.g. Forward Looking Infrared [FLIR] imaging devices, 360° thermal imaging devices).

- All PSOs could be provided with and use appropriate night-vision devices, Big Eyes, and reticulated and/or laser range finding binoculars in order to detect marine mammals within the Exclusion Zone.

Additional Mitigation Measure A3. Limiting activities in situations of low visibility.

Additional Mitigation Measure A4. Measures to increase detection probability for real-time mitigation (e.g. to maintain 180 dB shutdown zones), such as passive and active acoustic monitoring.
Additional Mitigation Measure A5. Enhancement of monitoring protocols and mitigation shutdown zones to minimize impacts in specific biologic situations (e.g. cow/calf groups and feeding or resting aggregations).

Some characteristic mitigation language that has been used in past ITAs for these measures include:

- For seismic activities (including shallow hazards and site clearance and other marine surveys where active acoustic sources will be employed) in the Beaufort Sea after August 25, a 120-dB monitoring zone for bowhead whales will be established and monitored for the next 24 hours if four or more bowhead whale cow/calf pairs are observed at the surface during an aerial monitoring program within the area where an ensonified 120-dB zone around the vessel’s track is projected. To the extent practicable, such monitoring should focus on areas upstream (eastward) of the bowhead migration. No seismic surveying shall occur within the 120-dB safety zone around the area where these whale cow-calf pairs were observed, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 120-dB safety zone of seismic-surveying operations.

- A 160-dB vessel monitoring zone for bowhead and gray whales will be established and monitored in the Chukchi Sea and after August 25 in the Beaufort Sea during all seismic surveys. Whenever an aggregation of bowhead whales or gray whales (12 or more whales of any age/sex class that appear to be engaged in a non-migratory, significant biological behavior (e.g. feeding, socializing)) are observed during an aerial or vessel monitoring program within the 160-dB safety zone around the seismic activity, the seismic operation will not commence or will shut down, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 160-dB safety zone of seismic-surveying operations.

B. NON-DETECTION-BASED MEASURES INTENDED TO MORE BROADLY LESSEN THE SEVERITY OF ACOUSTIC IMPACTS ON MARINE MAMMALS OR REDUCE OVERALL NUMBERS TAKEN BY ACOUSTIC SOURCE

These measures would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic surveys including in-ice seismic, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Additional Mitigation Measure B1. Temporal/spatial limitations to minimize impacts in particular important habitats, including Camden Bay, Barrow Canyon, Hanna Shoal, the shelf break of the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.

No oil and gas industry exploration activities would be permitted to occur in the areas specified here during the listed timeframes. Additionally, buffer zones around these time/area closures could potentially be included. Buffer zones would require that activities emitting pulsed sounds would need to operate far enough away from these closure areas so that sounds at 160 dB do not propagate into the area or that activities emitting continuous sounds would need to operate far enough away from these closure areas so that sounds at 120 dB do not propagate into the area. In the event that a buffer zone of this size was impracticable, a buffer zone avoiding the ensonification of the important habitat above 180 dB could be used.
• Camden Bay: minimizing disturbance of feeding and resting whales.
  o Bowhead whales: September 1 – October 15 for primary migration and feeding (Huntington and Quakenbush 2009; Koski and Miller 2009; Quakenbush et al. 2010a)
  o Subsistence (bowhead whale hunting): late August – early October (Huntington and Quakenbush 2009)
  o Except for emergencies or human/navigation safety, oil and gas exploration operations shall not occur within Camden Bay or the designated buffer zones during the dates noted here.

• Barrow Canyon and the Western Beaufort Sea: minimizing surface vessel and aircraft disturbance of feeding and resting whales.
  o Bowhead whales: late August – early October
  o Beluga whales: mid-July – late August
  o Except for emergencies or human/navigation safety, oil and gas exploration operations shall not occur within the Barrow Canyon area or the designated buffer zones from August 1 to the close of the fall bowhead whale hunt in Barrow.

• Shelf Break of the Beaufort Sea: minimizing surface vessel and aircraft disturbance of feeding whales
  o Beluga whales: mid-July – late-September

• Hanna Shoal: minimizing surface vessel and aircraft disturbance of feeding and resting marine mammals (gray whales, walrus, spotted seals)
  o Walrus: July – August (USGS 2011)
  o Gray whales: late August – early October
  o Except for emergencies or human/navigation safety, oil and gas exploration operations shall not occur within the Hanna Shoal area or the designated buffer zones from September 1 to October 15.

• Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit: minimizing surface vessel and aircraft disturbance of feeding and resting marine mammals (beluga whales, spotted seals) and spectacled eiders; subsistence hunting of beluga whales.
  o Subsistence (Kasegaluk Lagoon beluga whale hunting): mid-June – mid-July
  o Except for emergencies or human/navigation safety, oil and gas exploration operations shall not occur within the Unit or the designated buffer zones between July 1 and November 15.
  o To the maximum extent practicable, aircraft supporting seismic survey operations shall avoid operating below 457 m (1,500 ft) over the Unit between July 1 and November 15.
  o Vessel travel within the Unit and altitude deviations by aircraft over the Unit for emergencies or human safety shall be reported within 24 hours to BOEM.
Additional Mitigation Measure B2. NMFS restricting number of surveys (of same level of detail) that can be conducted in the same area in a given amount of time (i.e. to avoid needless collection of identical data).

- Require industry to organize a way to interact with one another to identify when and if duplicative surveys are likely to occur (survey type to gather same type of data within five years) and outline efforts to avoid or describe justification.

2D/3D Seismic Surveys, Including In-Ice Surveys ONLY

Additional Mitigation Measure B3. Separate seismic surveys are prohibited from operating within 145 km (90 mi) of one another.

C. MEASURES INTENDED TO REDUCE/LESSEN NON-ACOUSTIC IMPACTS ON MARINE MAMMALS

These measures would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic surveys including in-ice seismic, CSEM surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Additional Mitigation Measure C1. Vessels and aircraft avoidance of concentrations of groups of ice seals, walruses, and polar bears.

- Seismic survey and associated support vessels shall observe a 0.8 km (0.5 mi) safety radius around ice seal or Pacific walrus groups hauled out onto land or ice.
- Vessels must reduce speed when walruses are observed in the water. Vessels capable of steering around these animals must do so. Vessels may not be operated in such a manner as to separate members of a group of ice seals or walruses from other members of a group. Vessels should avoid multiple changes in direction and speed when ice seals or walruses are present.
- Under no circumstances, other than an emergency, should aircraft be operated at an altitude lower than 457 m (1,500 ft) when within 0.8 km (0.5 mi) of ice seal or Pacific walrus groups.
- Helicopters may not hover or circle above such areas or within 762 m (2,500 lateral ft) of such areas.
- Seismic survey operators shall adhere to any mitigation measures identified by the USFWS to protect polar bears from being harassed and/or injured.
- Vessels must reduce speed when polar bears are observed in the water. Vessels capable of steering around these animals must do so. Vessels may not be operated in such a manner as to separate members of a group of polar bears from other members of a group. Vessels should avoid multiple changes in direction and speed when polar bears are present.
- Currently, proposed polar bear critical habitat mitigation includes a 1.6 km (1 mi) no disturbance zone around the barrier islands, and sea ice habitat.

Additional Mitigation Measure C2. Specified shipping or transit routes to avoid important habitat in areas where marine mammals may occur in high densities.
Exploratory Drilling Activities ONLY

Additional Mitigation Measure C3. Requirements to ensure reduced, limited, or zero discharge of any or all of the specific discharge streams identified with potential impacts to marine mammals or marine mammal habitat.

Discharge streams identified with potential impacts to marine mammals or marine mammal habitat include the following:

- Drill cuttings;
- Drilling fluids;
- Sanitary waste;
- Bilge water;
- Ballast water; and
- Domestic waste (i.e. gray water).

Additional Mitigation Measure C4. Operators are required to recycle drilling muds.

- Operators are required to recycle drilling muds (e.g. use those muds on multiple wells) based on operational considerations to reduce discharges.

On-ice Seismic Surveys

Additional Mitigation Measure C5. Use trained seal-lair sniffing dogs for areas with water deeper than 3 m (9.8 ft) depth contour to locate seal structures under snow in the work area and camp site before initiation of activities.

Additional Mitigation Measure C6. Use trained seal-lair sniffing dogs to survey the ice road and establish a route where no ringed seal structures are present.

D. MEASURES INTENDED TO ENSURE NO UNMITIGABLE ADVERSE IMPACT TO SUBSISTENCE USES

These measures would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic surveys, including in-ice seismic, CSEM surveys, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).

Additional Mitigation Measure D1. No transit of exploration vessels into the Chukchi Sea prior to July 15 or until the beluga hunt is completed at Point Lay.

- Any vessel conducting geophysical work in the Chukchi Sea should remain as far offshore as weather and ice conditions allow and, at all times, at least 8.05 km (5 mi) offshore during transit except for emergencies or human/navigation safety.
- Geophysical activity shall not be conducted within 96.56 km (60 mi) of any point on the Chukchi Sea coast.

Additional Mitigation Measure D2. Vessels transiting east of Bullen Point to the Canadian border should remain at least 8km (5 mi) offshore during transit along the coast, provided ice and sea conditions allow.
Additional Mitigation Measure D3. Shutdown of exploration activities in the Beaufort Sea for the Nuiqsut (Cross Island) and Kaktovik bowhead whale hunts based on real-time reporting of whale presence and hunting activity rather than a fixed date.

Additional Mitigation Measure D4. Shutdown of exploration activities in the Beaufort Sea for the Barrow bowhead whale hunts from Pitt Point on the east side of Smith Bay to a location about half way between Barrow and Peard Bay from September 15 to the close of the fall bowhead whale hunt in Barrow.

Additional Mitigation Measure D5. Shutdown of exploration activities in the Chukchi Sea for the Barrow (the area circumscribed from the mouth of Tuapaktushak Creek due north to the coastal zone boundary, to Cape Halkett due east to the coastal zone boundary) and Wainwright (the area circumscribed from Point Franklin due north to the coastal zone boundary, to the Kuk River mouth due west to the coastal zone boundary) bowhead whale hunts based on real-time reporting of whale presence and hunting activity rather than a fixed date.

Additional Mitigation Measure D6. Shutdown of exploration activities in the Chukchi Sea for the Point Hope and Point Lay bowhead whale hunts (within a 48 km [30 mi] buffer from the coast) based on real-time reporting of whale presence and hunting activity rather than a fixed date.

Additional Mitigation Measure D7. Transit restrictions into the Chukchi Sea modified to allow offshore travel under certain conditions (e.g. 32 km [20 mi] from the coast) if beluga whale, fall bowhead whale (Barrow and Wainwright), and other marine mammal hunts would not be affected.

Exploratory Drilling Activities ONLY

Additional Mitigation Measure D8. For exploratory drilling operations in the Beaufort Sea west of Cross Island, no drilling equipment or related vessels used for at-sea oil and gas operations shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.
Effects of Oil and Gas Activities in the Arctic Ocean EIS
Appendix B - Seismic Survey Sound Propagation in the EIS Project Area

Table of Contents

1.0 Sound Speed Profiles ................................................................................................................. B-1
  1.1 Shallow Water Conditions ........................................................................................... B-1
  1.2 Deep Water Conditions ................................................................................................ B-1
2.0 2D and 3D Airgun Array Sound Propagation......................................................................... B-2
  2.1 Airgun Array Sound Levels in Shallow Water .......................................................... B-2
  2.2 Spectral and Temporal Characteristics of Airgun Signals in Shallow Water........ B-2
3.0 Sound Propagation in Shallow Water Environments............................................................. B-3
4.0 Sound Propagation in Deep Water Environments................................................................. B-3
5.0 Site Clearance and High Resolution Shallow Hazards Survey Sounds ............................ B-4
Appendix B
Seismic Survey Sound Propagation in the EIS Project Area

Of all exploration sources, seismic survey airgun array sources generate the highest sound pressures. Further, a large number of measurements of airgun sound levels have been performed since 2006 in the EIS project area. This Appendix describes important findings of those measurements, and discusses the influence of project area physical environments have in general on low frequency sound propagation. While this information is related directly to airgun sounds and airgun sound propagation, it is useful also for understanding propagation of all low frequency (<1 kHz) noise in the project area environments. Key results include strong modal propagation in shallow environments and support for long-range sound propagation in sound channels of deep environments.

The figures associated with this appendix can be found in the Figures section of this EIS.

1.0 Sound Speed Profiles

1.1 Shallow Water Conditions

The majority of the EIS project area is characterized by shallow waters of less than 50 m (164 ft) depth. Sound speed profiles in the shallow waters of the EIS project area during summer months are dominated by the effects of gradients of salinity and temperature. Solar heating of surface waters and influx of lower salinity, warmer Pacific water sets up a stratified structure of low salinity warm water overlying high salinity cold water. This stratification forms in low sea states but mixing of water layers to the bottom can occur after storms, and the stratification can be temporarily lost. Stratification can reform after just a few days of calm weather. An example of stratified water profiles, and the resulting sound speeds, is given in Figure B-1 (O’Neill et al. 2010). When stratification exists, higher sound speeds occur in the upper water layers and this profile leads to downward refraction of propagating sounds. In general, downward-refracting profiles are expected to lead to lower sound levels near the surface, and higher rates of sound attenuation with range due to more sound interaction with the seabed. There does not appear to be a systematic examination of this effect for the industrial sound types employed for oil and gas exploration activities (primarily airgun arrays, vessels, drill rigs and various types of sonars) in the Chukchi and Beaufort seas.

1.2 Deep Water Conditions

Only the further offshore regions of the EIS project area, mainly in the Beaufort Sea, extend into deep water defined here by depths greater than a few hundred meters. In deep arctic waters the sound speed profile is described by increasing sound speed with depth due to pressure effects, but solar heating of the top layer in summer can lead to higher speeds in the surface 20 m (66 ft). Figure B-2 shows a typical Beaufort Sea sound speed profile for August in 1,375 m (4,511 ft) water depth as predicted by the U.S. Naval Oceanographic Office’s Generalized Digital Environmental Model (GDEM) database (Teague et al. 1990).

The resulting effect of the deep water profile on acoustic propagation is the formation of a surface sound channel (or half channel) with upper boundary at the surface. When warming of the surface occurs a small full channel can form with axis at the base of the warmed layer (at approximately 20 m [66 ft] depth) that could trap high frequency (>200 Hz) sounds. The important feature of the deep water profile is that upward refraction over a large depth range leads to trapping of shallow-angle low frequency sounds in a channel that allows this sound to propagate large distances with relatively low attenuation.
2.0 2D and 3D Airgun Array Sound Propagation

Airgun array acoustic measurements have been performed for most seismic surveys in the Chukchi and Beaufort seas as required under IHA authorizations for those projects. The measurements have been performed only in water depths less than 50 m (164 ft). Acoustic measurements have been performed since 2008 for deeper water seismic surveys for BP Canada and Imperial Oil Canada in Canadian waters but those results are presently not published. Reporting requirements of the IHAs in U.S. waters include documenting the sound levels and acoustic characteristics of the airgun array signals. A list of recent seismic surveys in the EIS project area, with references to the measurement reports is given in Chapter 4, Section 4.5.1.5.

2.1 Airgun Array Sound Levels in Shallow Water

Airgun array acoustic measurements have recorded the airgun pressure signatures as a function of distance from the arrays in the EIS project areas to approximately 50 m water depth. The key metrics recorded are broadband peak pressure ($L_p$), 90th percent RMS ($L_{p90}$), and per-pulse SEL ($L_E$), and the formula for computing these metrics from the recorded pressure signatures are provided in all of the 90-day reports (e.g. O’Neill et al. 2010). Measurements are typically presented in level versus distance plots in broadside and entire directions from the arrays. The results from two production surveys in the Chukchi Sea and Beaufort Sea study areas are presented in Figures B-3 and B-4.

2.2 Spectral and Temporal Characteristics of Airgun Signals in Shallow Water

The spectral and temporal characteristics of airgun pulses change as they propagate in the relatively shallow water environments of the EIS project area. Low frequency sounds (less than 500 Hz) propagate largely as resonant modes in shallow water. The acoustic measurements of impulsive sources in the Chukchi and Beaufort seas have identified modal propagation in all cases. As an example, the spectrograms (graphs of spectral density versus frequency and time) from acoustic recording of airgun array signals from GXT’s 2006 2D Chukchi Sea seismic program approximately 100 km (62 mi) north of Cape Lisburne in 40 m (131 ft) water depth at four distances from the airgun array are shown in Figure B-5. The down-sweeping striations in these spectrograms represent propagation in individual modes. Modal patterns in water depths of 20 to 40 m (66 to 131 ft) tend to develop in the first 2 to 5 km (1.2 to 3.1 mi) of propagation and are most strongly apparent between 8 and 20 km (5 and 12.4 mi) distance from the source. Some of the modes start to decay at longer ranges as discussed below.

The modal propagation observed in the EIS project area during seismic survey programs are strongest at frequencies between approximately 30 and 300 Hz. Mode energy outside of this range of frequencies can propagate to short or moderate distances but becomes more rapidly attenuated and eventually very weak after a few tens of kilometers propagation. At distances beyond approximately 50 km (31 mi) only a few modes are left with energy in the frequency band mentioned above. These remaining modes can support propagation of acoustic energy sufficiently well that it can often be detected above ambient levels to several hundred kilometers distance. The overall effect is that airgun sound energy at long distances is mainly restricted to the frequencies of modes that propagate well. Figure B-7 shows the pressure waveform and SEL spectral density of an airgun pulse measured at 80 km (50 mi) range from Statoil’s 2010 Chukchi Sea seismic survey. The spectral density figure clearly shows that sound energy below 30 Hz and above 200 Hz has been lost, but that energy between these frequencies remains present.

A second effect of modal propagation is to extend the duration of impulsive sounds. Modal dispersion (the variation of group or horizontal propagation speed for different modes) causes the impulsive signals to spread out in time, with low frequencies arriving later than high frequencies. Frequency dispersion within modes also contributes to the time spread. The increase in pulse duration that results from...
dispersion is clearly apparent in the signals in Figures B-5 and B-6. In fact, the 90 percent rms time window from which $L_{p90}$ is computed increases from approximately 100 ms for the 90 m (295 ft) distance measurement to almost 2 s for the 80 km (50 mi) distance measurement (a factor of 20 times) in that example. The analysis of airgun pulses of GXT’s survey included an examination of the 90 percent rms time window length variation with distance from the airgun array (Austin and Laurinolli 2007), and these results are reproduced in Figure B-8.

3.0 Sound Propagation in Shallow Water Environments

The Beaufort Sea portion of the EIS project area includes locations with water depths less than 10 m (33 ft). Sound propagation in these environments differs substantially from deepwater sound propagation, mainly because fewer acoustic modes are supported for the low frequencies of industrial sounds in very shallow water (below about 15 m [49 ft] depth). The modes that do propagate are forced to extend into the seabed where sound attenuation coefficients are higher than in the water. Shallower source depths, necessitated by proximity of the seafloor, also reduce mode excitations (the injection of sound energy into a mode) and therefore less sound energy propagates in the few modes that are supported. Finally, the shallower receiver depths (again limited by the depth of the seafloor) cannot receive highest mode pressure levels because those maxima exist in the seafloor. The overall effect is that lower industrial sound pressure levels occur in very shallow water than in deeper (15 m [49 ft] or more) water depths. Figure B-9 shows the shallow water airgun pulse level measurements from Eni/PGS’s 2008 OBC seismic survey using an 880 in$^3$ airgun array in Harrison Bay, Beaufort Sea in 9 m (30 ft) water depth. Figure B-10 shows the same results for the same source operating in 2.5 m (8 ft) water depth. The listed source depth in both cases is 2.5 m (8 ft) (Warner et al. 2008).

4.0 Sound Propagation in Deep Water Environments

None of the recent seismic surveys performed in the EIS project area have performed acoustic measurements, in deep water (>50 m [>164 ft] depth) locations. However, measurements of distant seismic pulses with level close to 120 dB re 1 µPa were made during Shell’s 2008 acoustic characterization measurements of their Como prospect survey in early September (Hannay and Warner 2009). The recorder that detected those seismic pulses was located 80 km (50 mi) offshore, near the shelf edge. While the source of the distant pulses was not determined, they likely originated from surveys in deep water off the Mackenzie Delta, at more than 200 km (120 mi) distance. Interestingly the distant survey pulse levels were greater than those from the Shell survey that approached within 60 km (37 mi) of the recorder. The reason for the higher levels received from the much more distant survey is likely that the sound channel discussed in Section 1.2 of this Appendix supported long-range seismic pulse propagation with low attenuation, whereas propagation from Shell’s survey sounds in 20 to 30 m (65 to 98 ft) water depth experienced much high attenuation.

While the project area deep water environments will support long-distance propagation, the greater seafloor depth will likely return less acoustic energy at short range than the shallow water environment, resulting in lower sound levels, at least at shallow depths, close to the source. Sound that does become trapped in the sound channel, however, is likely to remain at relatively high levels to significant distances as discussed above.
5.0 Site Clearance and High Resolution Shallow Hazards Survey Sounds

Shallow hazards seismic surveys use small airgun arrays, typically using one, two, or four airguns with total volume less than 100 in\(^3\). Some shallow hazards surveys use boomers or sparkers in place of airguns. The noise footprints of these sources are smaller than from 2D and 3D seismic surveys because the source levels are lower and the sources operate at shallower depths. Nevertheless, much of the propagation characteristics are similar to those for larger sources, including the modal propagation and time dispersion effects discussed above. Representative levels are presented in Figure B-11 from Shell’s 2008 shallow hazards survey near its Honeyguide prospect in the Chukchi Sea for three airgun configurations: 10 in\(^3\), 20 in\(^3\) and 40 in\(^3\) operating at 2 m (6.6 ft) depth in 48 m (157 ft) water depth (Warner et al. 2010).

Site clearance surveys often use sub-bottom profilers operating in the 2 to 12 kHz frequency range. These typically produce acoustic energy in beams that point straight down, so smaller sound levels occur to the sides. Figure B-12 below shows sound pressure and SEL levels to the side of a GeoPulse 3.5 kHz sub-bottom profiler while operating at 3 m (10 ft) depth below sea surface at Shell’s Honeyguide and Burger prospects in the Chukchi Sea in approximately 40 m (131 ft) and 46 m (151 ft) water depths respectively.
APPENDIX C

Final Scoping Report

Environmental Impact Statement on Effects of Oil & Gas Activities (Seismic and Exploratory Drilling) in the Arctic Ocean
FINAL
Scoping Report
For
Environmental Impact Statement on Effects of Oil & Gas Activities (Seismic and Exploratory Drilling) in the Arctic Ocean
June 2010

Office of Protected Resources
NOAA Fisheries
National Marine Fisheries Service
This page intentionally left blank.
TABLE OF CONTENTS

1.0 INTRODUCTION ......................................................................................................................... 1
   1.1 Scoping Overview ............................................................................................................... 1
   1.2 Project Background and Overview .................................................................................. 2
   1.3 Purpose of the Project ..................................................................................................... 4

2.0 SCOPING METHODS ................................................................................................................. 5
   2.1 Scoping Announcements and Newsletters ....................................................................... 5
   2.2 Public Scoping Meetings .................................................................................................. 6

3.0 SUMMARY OF COMMENTS RECEIVED .............................................................................. 7
   3.1 Issues Identified During Scoping ..................................................................................... 7
   3.2 Public Comments ............................................................................................................ 9

4.0 NEXT STEPS IN THE PLANNING PROCESS ..................................................................... 11
   4.1 Develop Alternatives ..................................................................................................... 11
   4.2 Describe the Affected Environment ............................................................................... 11
   4.3 Assess Environmental Consequences of Alternatives .................................................... 11
   4.4 Issue the Draft EIS ........................................................................................................ 11
   4.5 Issue the Final EIS and Record of Decision ................................................................... 11

5.0 CONTACTS ............................................................................................................................ 13

APPENDICES

Appendix A Scoping Outreach Materials
Appendix B Public Scoping Meeting Materials
Appendix C Comment Analysis Report

LIST OF TABLES

Table 1. Scoping Meetings, Locations & Dates .................................................................1
Table 2. Issue Category Codes .........................................................................................8
Table 3. Summary of Statements of Concern .................................................................9

LIST OF FIGURES

Figure 1. Comments by Issue .........................................................................................7
This page intentionally left blank.
# ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D</td>
<td>Two-dimensional</td>
</tr>
<tr>
<td>3D</td>
<td>Three-dimensional</td>
</tr>
<tr>
<td>BOE</td>
<td>Bureau of Ocean Energy Management</td>
</tr>
<tr>
<td>CAR</td>
<td>Comment Analysis Report</td>
</tr>
<tr>
<td>CASy</td>
<td>Comment Analysis System</td>
</tr>
<tr>
<td>Comment ID</td>
<td>Automated Tracking Number</td>
</tr>
<tr>
<td>DPEIS</td>
<td>Draft Programmatic Environmental Impact Statement</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>ITA</td>
<td>Incidental Take Authorizations</td>
</tr>
<tr>
<td>MMPA</td>
<td>Marine Mammal Protection Act</td>
</tr>
<tr>
<td>MMS</td>
<td>Minerals Management Service</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NOI</td>
<td>Notice of Intent</td>
</tr>
<tr>
<td>OCS</td>
<td>Outer Continental Shelf</td>
</tr>
<tr>
<td>PEA</td>
<td>Programmatic Environmental Assessment</td>
</tr>
<tr>
<td>PSA</td>
<td>Public Service Announcement</td>
</tr>
<tr>
<td>ROD</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>SOCs</td>
<td>Statements of Concern</td>
</tr>
<tr>
<td>U.S.</td>
<td>United States</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) to analyze the environmental impacts of issuing Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act (MMPA). These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the United States (U.S.) Beaufort and Chukchi Seas off Alaska. NMFS is serving as the lead agency for this EIS and is responsible for the development of the EIS in collaboration with the cooperating agencies. The U.S. Bureau of Ocean Energy Management (BOE) (formerly the U.S. Minerals Management Service [MMS]) is a cooperating agency. As a result of the scoping process, the North Slope Borough and the Environmental Protection Agency (EPA) were invited to become cooperating agencies; their decisions were pending at the time of release of this document.

The Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on February 8, 2010 (75 FR 6175). The scoping period, during which issues and concerns are identified, was also initiated February 8, 2010. Scoping comments were received through April 9, 2010 as specified in the NOI.

1.1 Scoping Overview

NMFS hosted public scoping meetings for the Effects of Oil and Gas Activities in the Arctic Ocean EIS to disseminate information about the proposed project and to identify issues and concerns that should be addressed in the EIS (Table 1). The meetings consisted of an open house, a brief presentation, and then a public comment opportunity. Native language translation was provided upon request in Point Hope and Kaktovik. Transcripts of each public scoping meeting are available on the project website (http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm).

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kotzebue</td>
<td>February 18, 2010 6:00-8 p.m.</td>
<td>Northwest Arctic Borough Assembly Chambers, Kotzebue, AK</td>
</tr>
<tr>
<td>Public Scoping</td>
<td>February 19, 2010 5:00-7:00 p.m.</td>
<td>Point Hope Community Center, Point Hope, AK</td>
</tr>
<tr>
<td>Public Scoping</td>
<td>February 22, 2010 7:00-9:00 p.m.</td>
<td>Point Lay Community Center, Point Lay, AK</td>
</tr>
<tr>
<td>Public Scoping</td>
<td>March 9, 2010 7:00-9:00 p.m.</td>
<td>Wainwright Community Center, Wainwright, AK</td>
</tr>
<tr>
<td>Public Scoping</td>
<td>March 10, 2010 7:00-9:30 p.m.</td>
<td>Inupiat Heritage Center, Barrow, AK</td>
</tr>
<tr>
<td>Public Scoping</td>
<td>March 11, 2010 7:00-9:00 p.m.</td>
<td>Nuiqsut Community Center, Nuiqsut, AK</td>
</tr>
</tbody>
</table>
Meeting | Date | Location
--- | --- | ---
Kaktovik Public Scoping Meeting | March 12, 2010 6:30-8:30 p.m. | Kaktovik Community Center, Kaktovik, AK
Anchorage Public Scoping Meeting | March 23, 2010 7:00-9:00 p.m. | Egan Center, 555 West 5th Avenue, Anchorage, AK

In a separate, but parallel process for government to government consultation, Tribal governments in each community, with the exception of Anchorage, were notified of the EIS process and invited to participate. The first contact was via letter, dated January 29, 2010; follow-up calls were made with the potentially affected Tribal governments, and each was visited during the scoping process. The Comment Analysis Report (CAR) includes comments received in the scoping period during government to government consultation between NMFS, BOE, and the Tribal governments. Comments submitted in writing by Tribal governments during the scoping period are also included in the CAR.

This document is a public record of the scoping activities conducted for the Effects of Oil and Gas Activities on the Arctic Ocean EIS from the issuing of the NOI through the close of the scoping period. Comments received prior to April 9, 2010 are summarized and presented in this document. Comments received after the close of scoping will be considered during the development of the EIS but are not part of this report.

The organization of this report begins with an overview of the outreach to notify the public and convene the scoping meetings. The body of this report then provides a brief summary of comments offered during the scoping period. The concluding section describes the next steps in the planning process.

A series of appendices compile the supporting materials for the summaries provided in this report. Materials regarding public notice and outreach, meeting materials, and the comment analysis report are provided in the appendices.

1.2 Project Background and Overview

In 2006, the BOE prepared a Programmatic Environmental Assessment (PEA) for Arctic Outer Continental Shelf (OCS) Seismic Surveys. NMFS was a cooperating agency in the preparation of the PEA. Afterwards, in accord with NOAA Administrative Order 216-6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, 1999), NMFS adopted the PEA and issued one-year Incidental Harassment Authorizations to oil and gas companies for the taking of marine mammals during seismic surveys.

In 2007, the BOE began a Draft Programmatic EIS (DPEIS); NMFS agreed to be a cooperating agency and adopt the document as its own NEPA analysis. This project assessed the impacts of BOE’s issuance of permits and authorizations under the OCS Lands Act for seismic surveys in the U.S. Beaufort and Chukchi Seas and NMFS’ authorizations to take marine mammals incidental to conducting those surveys. The intent of the DPEIS was to try to address the potential effects of concurrent offshore seismic survey activities and the potential for an increase in such activities.

The DPEIS was halted because new information became available, such as scientific study results and changes in projections of levels of proposed offshore activity. This new information altered the scope of the study, range of possible alternatives, and analyses. This led to the need for a new NEPA process, and the start of the Effects of Oil and Gas Activities in the Arctic Ocean EIS. This EIS will analyze the
impacts of issuing marine mammal ITAs under the MMPA related to oil and gas industry exploration activities (including both seismic surveys and exploration drilling), and the issuance of permits for seismic surveys in the Beaufort and Chukchi Sea by BOE under the OCS Lands Act.

NMFS issues these authorizations to the oil and gas industry during offshore exploration activities (primarily seismic surveys and exploratory drilling). In order to issue authorizations, NMFS must determine that the taking:

- will have a negligible impact on the species or stock(s); and
- will not have an unmitigable adverse impact on the availability of such species or stock(s) for taking for subsistence uses (where relevant)

Additionally, the authorization shall prescribe the permissible methods of taking, other means of affecting the least practicable adverse impact on such species or stock(s), and requirements pertaining to the mitigation, monitoring, and reporting of such takings.

The term “take,” under the MMPA, means “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” Except with respect to activities not pertinent here, the MMPA defines “harassment” as:

“any act of pursuit, torment, or annoyance which:

(i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or
(ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

This EIS will consider seismic and drilling activities in Federal and state waters of the U.S. Beaufort and Chukchi Seas. The EIS will identify potential impacts that seismic surveys (including two dimensional [2D] and three-dimensional [3D] streamer and ocean bottom cable surveys, and shallow hazard seismic surveys) and exploratory drilling in the Beaufort and Chukchi Seas could have on the physical, biological, and social environments. Methods to mitigate impacts will also be considered. In addition, the EIS will contain an analysis of secondary and cumulative effects of the alternatives.

The effects of 2D and 3D streamer and ocean bottom cable surveys (also referred to as seismic surveys) and shallow hazard and site clearance surveys will be analyzed in this EIS. 2D and 3D seismic surveys are conducted to obtain data on geological formations from the sediment near-surface to several thousand meters deep (below the sediment surface). This information enables the industry to accurately assess potential hydrocarbon reservoirs and helps to optimally locate exploration and development wells that can maximize the extraction and production from a reservoir. High resolution seismic surveys are also used to locate shallow geological hazards. Such information allows BOE to fulfill its statutory responsibilities to ensure safe operations, support environmental impact analyses, protect benthic resources through avoidance measures, and perform other statutory responsibilities.

The EIS will also analyze effects of offshore exploratory drilling operations during the open water season so that oil companies can drill exploration targets on their OCS leases in the Beaufort and Chukchi Seas. NMFS would also analyze the effects of obtaining geotechnical data for pre-feasibility analyses of shallow sub-sea sediments as part of its proposed exploratory drilling operations by drilling a series of boreholes, each up to 400 feet (122 m) in depth.
1.3 Purpose of the Project

The Effects of Oil and Gas Activities in the Arctic Ocean EIS will analyze the potential effects of geophysical surveys and exploratory drilling activities and the issuance of ITAs under the MMPA for the taking of marine mammals incidental to these activities, conduct a cumulative effects analysis, consider a reasonable range of alternatives consistent with NMFS’ statutory mandates, reanalyze the range of practicable mitigation and monitoring measures for marine mammals, and evaluate the availability of marine mammals for subsistence uses.

In order to comply with NEPA and to achieve increased administrative efficiency on the ITA program, NMFS has determined that this EIS will analyze a range of oil and gas exploratory actions and that will also satisfy the Council on Environmental Quality’s NEPA regulations and the NOAA NEPA Administrative Order 216-6. This EIS would cover known and reasonably foreseeable projects requiring ITAs in the U.S. Arctic regions for future years, until at which time a revision to the document becomes necessary. NMFS has determined that an EIS would serve a more beneficial use in terms of agency decision making and would allow greater public participation in future decisions related to ITAs for the oil and gas industry.
2.0 SCOPING METHODS

Scoping is designed to be an open, public process for identifying the scope of physical, biological, and social environmental issues related to the proposed project that should be addressed through NEPA. The scoping process provides people potentially affected by the project an opportunity to express their views and offer any suggestions they may have regarding the project. Scoping is typically accomplished through written correspondence, public scoping meetings, use of electronic media, and formal and informal consultation with agency officials, interested individuals, and groups.

The scoping process is the first phase of an ongoing public participation program, which keeps relevant agencies and the interested public engaged in the project’s progress and informed of opportunities to participate in preparation of the EIS. In the scoping phase, individuals, Tribes, agencies, non-governmental organizations, and the resource development industry have an opportunity to bring local issues and concerns within the project area to light and make comments and suggestions that will help develop a reasonable range of alternatives to be evaluated within the EIS.

The scoping process utilized a number of techniques to ensure that agencies, officials, and members of the public were informed of the project, including:

- Development of a project mailing list
- Distribution of an initial newsletter with project information and a public comment form to parties on the mailing list
- Agency scoping consultation and coordination letters
- Government to government consultation and coordination letters
- Newspaper and online notices of scoping meetings
- Public service announcements of scoping meetings
- *Federal Register* notices announcing scoping meetings
- Public scoping meetings in Kotzebue, Point Hope, Point Lay, Wainwright, Barrow, Nuiqsut, Kaktovik, and Anchorage.
- Project email address for comments (arcticeis.comments@noaa.gov).
- Project website for project information and electronic comment forms (http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm).

2.1 Scoping Announcements and Newsletters

The Effects of Oil and Gas Activities in the Arctic Ocean EIS process began with publication of the NOI in the *Federal Register* on February 8, 2010. A copy of the NOI is included in Appendix A.

A newsletter with project information, public scoping meeting announcements, and public comment forms was mailed on February 12, 2010 to agencies, organizations, and individuals identified on the mailing list. NMFS sent letters on January 29, 2010 initiating government to government consultation in the communities of Kotzebue, Point Hope, Point Lay, Wainwright, Barrow, Nuiqsut, and Kaktovik.

Newspaper announcements for the scoping meetings were advertised in the *Arctic Sounder* on February 11 and March 4, 2010; the *Nome Nugget* on February 11, February 18 and March 4, 2010; and the *Anchorage Daily News* on March 7 and March 21, 2010. Public service announcements (PSAs) were faxed on February 10, 2010 to KICY 805 AM, KBRW, K268 AA, K201 AV, KNOM 780 AM and KOTZ radio stations. PSAs were also faxed on March 3 and March 5, 2010 to KSKA, KBFX, KMXS, KBRJ, KBRW, K201AG and K201AH radio stations. Press releases were sent to the
Arctic Sounder and Nome Nugget on March 4, 2010. A press release was sent to the Anchorage Daily News on March 5, 2010. This information is included in Appendix A. Online advertisements of the public scoping meetings were also submitted to the What’s Up list serve.

2.2 Public Scoping Meetings

Eight public scoping meetings were conducted in February and March 2010, with the dates and locations detailed in Table 1. The scoping meeting format and the information presented was the same at each public meeting. During the open house session, attendees had the opportunity to view presentation boards and maps that displayed project information and were able to ask questions of the project team. A project overview, including an introduction to the NEPA process, was then presented. The public question and comment period followed with a court reporter recording public testimony.

Comment forms were made available at the meetings so that attendees could submit written comments during the meeting or mail them in at a later date. Supporting information for the public scoping meetings, including display boards and the formal presentation, is included in Appendix B.

The Effects of Oil and Gas Activities in the Arctic Ocean EIS scoping meetings were generally well attended, with many public comments in some locations. Those attending the meetings were typically aware of on-going discussions regarding proposed activities in the Chukchi and Beaufort Seas.
3.0 SUMMARY OF COMMENTS RECEIVED

Public scoping comments were received in several ways:

- Oral discussion or testimony from the public meeting transcripts;
- Written comments received by mail or by fax; and
- Written comments submitted electronically by e-mail or through the project website.

There were a total of 73 submissions during the scoping period, including all formats described above. Comments were assigned subject category codes to describe the content of the comment. The issue categories and codes are listed in Table 2. The issues were grouped by general topics, including effects, available information, regulatory compliance, Inupiat culture, and general. The relative distribution of comments by issue is shown in Figure 1.

Group affiliations of those that submitted comments include: Federal agencies, Tribal governments, state agencies, local governments, businesses, special interest groups/non-governmental organizations, and individuals. The complete text of public comments received is included in the Administrative Record for the EIS.

All unique submissions were read and analyzed for substantive comments. Substantive comments were assigned a single Issue Code in the Comment Analysis System database (CASy). Each comment coded also received an automatic tracking number (Comment ID) by CASy.

The public comment submissions generated 721 coded comments, which were then grouped into Statements of Concern (SOCs). SOCs are summary statements intended to capture the different themes identified in the substantive comments. Every substantive comment was assigned to an SOC; 178 SOCs were developed. Each SOC is represented by an issue category code followed by a number: NMFS will use the SOCs to develop alternatives and mitigation measures in the EIS, as appropriate.

3.1 Issues Identified During Scoping

The comments received during the scoping period were coded into 14 issue categories, described as follows:
### TABLE 2. ISSUE CATEGORY CODES

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Issue Category</th>
<th>Code</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects</td>
<td>Habitat</td>
<td>HAB</td>
<td>Comments associated with habitat requirements, or potential habitat impacts from seismic activities and exploratory drilling. Comment focus is habitat, not animals.</td>
</tr>
<tr>
<td></td>
<td>Marine Mammal and other Wildlife Impacts</td>
<td>MMI</td>
<td>General comments related to potential impacts to marine mammals or wildlife, unrelated to subsistence resource concepts.</td>
</tr>
<tr>
<td></td>
<td>National Energy Demand and Supply</td>
<td>NED</td>
<td>Comments related to meeting national energy demands, supply of energy.</td>
</tr>
<tr>
<td></td>
<td>Oil Spill Risks</td>
<td>OSR</td>
<td>Concerns about potential for oil spill, ability to clean up spills in various conditions, potential impacts to resources or environment from spills.</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic Impacts</td>
<td>SEI</td>
<td>Comments on economic impacts to local communities, regional economy, and national economy, can include changes in the social or economic environments (MONEY, JOBS).</td>
</tr>
<tr>
<td></td>
<td>Subsistence Resource Protection</td>
<td>SRP</td>
<td>Comments on need to protect subsistence resources and potential impacts to these resources. Can include ocean resources as our garden, contamination (SUBSISTENCE ANIMALS, HABITAT).</td>
</tr>
<tr>
<td></td>
<td>Water and Air Quality</td>
<td>WAQ</td>
<td>Comments regarding water and air quality, including potential to impact or degrade these resources.</td>
</tr>
<tr>
<td>Available Information</td>
<td>Data</td>
<td>DATA</td>
<td>Comments referencing scientific studies that should be considered.</td>
</tr>
<tr>
<td></td>
<td>Research, Monitoring, Evaluation Needs</td>
<td>RME</td>
<td>Comments on baseline research, monitoring, and evaluation needs</td>
</tr>
<tr>
<td>Regulatory Compliance</td>
<td>Coordination and Compatibility</td>
<td>COR</td>
<td>Comments on compliance with other statutes, laws or regulations that should be considered; coordinating with Federal, state, local agencies or organizations; permitting requirements.</td>
</tr>
<tr>
<td>(Process: NEPA, Permits,</td>
<td>Mitigation Measures</td>
<td>MIT</td>
<td>Comments related to suggestions for or implementation of mitigation measures.</td>
</tr>
<tr>
<td>this EIS)</td>
<td>Inupiat Culture and Way of Life</td>
<td>ICL</td>
<td>Comments related to potential cultural impacts or desire to maintain traditional practices (PEOPLE).</td>
</tr>
<tr>
<td></td>
<td>Use of Traditional Knowledge</td>
<td>UTK</td>
<td>Comments regarding how traditional knowledge (TK) is used in the document or decision making process, need to incorporate TK, or processes for documenting TK.</td>
</tr>
<tr>
<td>General</td>
<td>Comment Acknowledged</td>
<td>ACK</td>
<td>Entire submission determined not to be substantive and warranted only a “comment acknowledged” response.</td>
</tr>
</tbody>
</table>
3.2 Public Comments

All comments received at public scoping meetings were assigned to issue categories, as previously discussed, based on the content of the comment. The summarized comments, grouped by issue, can be seen in the Comment Analysis Report in Appendix C. Below is a very brief summary of issues; it is recommended to review the CAR to understand the range of issues identified during scoping. The most frequently coded topics were related to regulatory compliance, including the issue categories of coordination and compatibility and mitigation measures. However, as illustrated in the CAR, a broad set of issues was identified during scoping, including concerns regarding potential impacts to the Inupiat culture and way of life, use of traditional knowledge, and potential environmental effects. There were also many comments regarding available data and mitigation measures. Several individual submissions included extremely detailed information.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Issue Category</th>
<th>Summary of Statements of Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects</td>
<td>Habitat</td>
<td>Three SOCs were developed for HAB. Several focus on the concepts that habitat may be affected by climate change/loss of sea ice and potential increases in human activities. Another SOC reflects that there is important habitat in the Beaufort Sea for bowhead whales.</td>
</tr>
<tr>
<td></td>
<td>Marine Mammal and other Wildlife Impacts</td>
<td>The 16 SOCs for MMI are divergent. Some indicate that oil and gas activities negatively impact marine species; even low levels of sound can be disruptive. Acidification, increased vessel traffic, and the cumulative effects of projects also pose threats to marine mammals. Other SOCs indicate that offshore exploration and production activities have not had adverse effects on marine mammal stocks, and research indicates that the health or reproductive fitness of populations has not been impacted.</td>
</tr>
<tr>
<td>National Energy Demand and Supply</td>
<td>Three SOCs were identified for NED. Concerns include the need for stable domestic energy supplies, the potential for undiscovered resource potential in the outer continental shelf, and the disproportionate impact to Inupiat people due to national energy demands.</td>
<td></td>
</tr>
<tr>
<td>Oil Spill Risks</td>
<td>The 11 SOCs identified for OSR are divergent. Some highlight the risks of oil spills, need for spill plans, difficulty of cleaning up oil spills in Arctic waters, and the lack of resources in the Arctic for response to a spill. Other SOCs indicate that technology and industry standards have prevented spills and that most spills have resulted from tankers, not pipelines.</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Impacts</td>
<td>Three SOCs were developed for SEI. Concerns focus on benefits to the state and nation from oil and gas development, the benefits to the oil and gas industry from predictability in permitting processes, and increases in the cost of whaling activities due to oil and gas activities.</td>
<td></td>
</tr>
<tr>
<td>Subsistence Resource Protection</td>
<td>The 11 SOCs developed for SRP are divergent. One statement indicates that industrial activities should not impact subsistence in the Chukchi Sea, as proposed activities are far offshore. The other concerns are related to potential impacts to subsistence resources due to aircraft disturbance, increased vessel traffic, ice breaking, noise</td>
<td></td>
</tr>
<tr>
<td>GROUP</td>
<td>Issue Category</td>
<td>Summary of Statements of Concern</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td></td>
<td>and cumulative impacts. There are also concerns about contamination from drilling muds and potential contamination from spills. Risks to hunters include increased travel time due to deflected animals from industry activities.</td>
<td>Water and Air Quality</td>
</tr>
<tr>
<td></td>
<td>The 6 SOCs developed for WAC focus on sources and levels of pollutants, potential for bioaccumulation, and lack of technology to eliminate contamination threats.</td>
<td></td>
</tr>
<tr>
<td>Available Information</td>
<td>Data</td>
<td>Ten SOCs developed for DATA highlight numerous reports, studies, and sources of information recommended for review by NMFS.</td>
</tr>
<tr>
<td></td>
<td>Research, Monitoring, Evaluation Needs</td>
<td>The 14 SOCs developed for RME are divergent. Some indicate the need for additional research and monitoring, while others state that sufficient data exists to support proposed activities. Concerns are expressed that the environmental baseline is changing and that industry authorizations should be delayed until additional research is conducted.</td>
</tr>
<tr>
<td>Regulatory Compliance (Process: NEPA, Permits, this EIS)</td>
<td>Coordination and Compatibility</td>
<td>There were 58 SOCs generated for COR, or approximately one-third of all SOCs produced during the scoping period. Statements focus on compliance with laws, statutes, and regulations; agency processes and interagency coordination, the scope of this EIS, and permitting requirements.</td>
</tr>
<tr>
<td></td>
<td>Mitigation Measures</td>
<td>The 27 SOCs identified for MIT suggest a diversity of mitigation measures, including use of technology, activity restrictions/caps, area restrictions, ballast/hull cleaning requirements, designation of shipping lanes, speed restrictions, activity restrictions during periods of low visibility/inclement weather that inhibits marine mammal observations, and others. Suggestions include monitoring the effectiveness of existing mitigation measures, and the use of local residents for monitoring activities. Other statements indicate that existing measures are sufficient to mitigate impacts from proposed oil and gas activities, and that arbitrary restrictions could impair industry’s ability for exploration of leases.</td>
</tr>
<tr>
<td>Inupiat Culture</td>
<td>Inupiat Culture and Way of Life</td>
<td>The 6 SOCs developed for ICL are divergent. One statement indicates that a benefit from industrial noise could be to cause whales to move closer to shore for easier subsistence access. The other statements indicate concern for potential impacts to subsistence communities and activities, including human health impacts and potential for impacts to subsistence foods. Other concerns are that communities are not compensated for impacts related to oil and gas activities, and that a compromise is needed between protection of subsistence resources and providing local jobs.</td>
</tr>
<tr>
<td></td>
<td>Use of Traditional Knowledge</td>
<td>The 10 SOCs developed for UTK highlight the importance of incorporating Traditional Knowledge in the planning process and encouraged use of Traditional Knowledge provided during prior projects. There is also concern that information provided by communities is not incorporated or considered valid.</td>
</tr>
<tr>
<td>General</td>
<td>Comment Acknowledged</td>
<td>Entire submission determined not to be substantive; no SOCs were developed.</td>
</tr>
</tbody>
</table>
4.0 NEXT STEPS IN THE PLANNING PROCESS

4.1 Develop Alternatives
A reasonable range of alternatives that meet the purpose and need of the project will be identified and examined in the EIS. Pertinent input from the scoping process will be incorporated into the range of potential alternatives. This ensures that the full spectrum of positions expressed by participants in the scoping process has been considered. Alternatives that were eliminated from further consideration and not brought forward for formal analysis in the EIS will be identified, along with justifications for elimination. Each viable alternative will be developed with conceptual plans by utilizing available information or by identifying additional information to be obtained in order to evaluate all of the alternatives on an equal basis. This step is underway, beginning after the scoping comments were analyzed.

4.2 Describe the Affected Environment
Available environmental information associated with the identified issue categories will be reviewed and summarized. The summary will include the most recent scientific research available and all pertinent studies and surveys required for areas that would be potentially impacted by all viable alternatives. This information will be presented in the Affected Environment chapter of the EIS. This step is scheduled to begin in June 2010.

4.3 Assess Environmental Consequences of Alternatives
The potential environmental consequences of alternatives carried forward for analysis will be evaluated, including direct, indirect, and cumulative effects. NEPA compliance associated with Federal, state, and local agency permits will be identified and incorporated into the analysis of potential effects. This step will be conducted concurrently with the Affected Environment summary and is scheduled to begin in July 2010.

4.4 Issue the Draft EIS
A Draft EIS will be prepared and made available for review by the public, government to government, local, state, and Federal agencies. The Draft EIS will be available for a 60-day review after the Notice of Availability has been published in the Federal Register. The public hearings will offer another opportunity for public comment on the Draft EIS. Currently, the public comment period is estimated to begin in December 2010 and run through February 2011. Public Hearings for the Draft EIS are estimated to occur in January 2011.

4.5 Issue the Final EIS and Record of Decision
After analyzing public comments received on the Draft EIS, the document will be revised to prepare a Final EIS. The Final EIS will include the comments submitted on the Draft EIS, including changes made to the EIS in response to comments. This step will include public notice of document availability, the distribution of the document, and a 30-day comment/waiting period on the final document. This step is projected to occur between May and June 2011.

NMFS and BOE are expected to each issue a separate Record of Decision (ROD) which will then conclude the EIS process in July 2011. The selected alternative will be identified in each ROD, as well as the agency’s rationale for their conclusions regarding the environmental effects and appropriate mitigation measures for the proposed project.
5.0 CONTACTS

**Lead Agency**
National Marine Fisheries Service  
Mr. Michael Payne  
Chief – Permits, Conservation & Education Division  
Office of Protected Resources  
1315 East-West Highway  
Silver Spring, MD 20190  
Phone: (301) 713-2289 ext. 110  
Fax: (301) 713-0376

**Cooperating Agency**
Bureau of Ocean Energy Management  
Mr. Jeffery Loman  
Acting Regional Director  
Alaska OCS Region  
3801 Centerpoint Drive, Suite 500  
Anchorage, Alaska 99503-5823  
Phone: (907) 334-5205

**Project Website:** http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm

**Project Email:** arcticeis.comments@noaa.gov
APPENDIX A
Scoping Outreach Materials

Notice of Intent
Notice of Public Scoping Meetings
Project Mailing List
Newsletter #1 and Comment Form
Newspaper Advertisements
Press Release
Online Advertisements
Radio Public Service Announcements
Notice of Intent
DC 20230 (or via the Internet at dhynek@doc.gov).
Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to Brian Harris-Kojetin, OMB Desk Officer either by fax (202–395–7245) or e-mail (bharrisk@omb.eop.gov).

Glenna Mickelson,
Management Analyst, Office of the Chief Information Officer.

BILLING CODE 3510–07–P

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
RIN 0648–XU06
Notice of Intent to Prepare an Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean
AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.
ACTION: Notice of Intent to prepare an Environmental Impact Statement; request for comments.
SUMMARY: The National Marine Fisheries Service (NMFS) announces its intent to prepare an Environmental Impact Statement (EIS) to analyze the environmental impacts of issuing Incidental Take Authorizations (ITAs) pursuant to the Marine Mammal Protection Act (MMPA) to the oil and gas industry for the taking of marine mammals incidental to offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas off Alaska.
DATES: All comments, written statements, and questions regarding the scoping process and preparation of the EIS must be received no later than April 9, 2010.
ADDRESSES: Written comments and statements should be addressed to Mr. P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20190–3225. The mailbox address for providing e-mail comments is arcticeis.comments@noaa.gov.
Comments sent via e-mail, including all attachments, must not exceed a 10–megabyte file size. Comments and statements may also be submitted via fax to (301) 713–0376. Information on this project can also be found on the Protected Resources webpage at: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

FOR FURTHER INFORMATION CONTACT:
Michael Payne, Office of Protected Resources, NMFS, (301) 713–2289 ext. 110.

SUPPLEMENTARY INFORMATION:
Background
Sections 101 (a)(5)(A) and (D) of the MMPA (16 USC 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of proposed authorization is provided to the public for review. The term “take” under the MMPA means “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” Except with respect to certain activities not pertinent here, the MMPA defines “harassment” as “any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].” Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined “negligible impact” in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Summary of Previous National Environmental Policy Act (NEPA) Documents
In 2006, the U.S. Minerals Management Service (MMS) prepared a Programmatic Environmental Assessment (PEA) for the 2006 Arctic Outer Continental Shelf (OCS) seismic surveys. NMFS was a cooperating agency and adopted the Final PEA on June 28, 2006. Under this PEA, NMFS issued Incidental Harassment Authorizations under Section 101(a)(5)(D) of the MMPA to oil and gas companies for the taking of marine mammals incidental to seismic surveys in 2006. This PEA analyzed the effects of four concurrent seismic surveys in the Beaufort Sea and four concurrent seismic surveys in the Chukchi Sea. At that time, NMFS indicated that increased activity and new available science would result in a need to prepare an EIS for future authorizations.
On April 6, 2007, NMFS and MMS published a Notice of Availability for a Draft Programmatic EIS (DPEIS) and a schedule of public hearings (72 FR 17117) to assess the impacts of MMS’ issuance of permits and authorizations under the Outer Continental Shelf Lands Act (OCSLA) for the conduct of seismic surveys in the Chukchi and Beaufort Seas off Alaska and NMFS’ authorizations under the MMPA to incidentally harass marine mammals while conducting those surveys. The proposed scope and effects of the seismic survey activities analyzed in the DPEIS were based on the best available information at the time. Since then, new information (e.g., scientific study results, changes in projections of level of activity) has become available that alters the scope, range of possible alternatives, and analyses in the DPEIS. Therefore, MMS and NMFS filed a Notice of Withdrawal of the DPEIS on October 28, 2009 (74 FR 55539) and announced our decision to begin a new NEPA process.

Objectives of the EIS
This NOI announces NMFS’ intent, as lead agency, to prepare a new EIS to analyze the potential effects of both geophysical surveys and exploratory drilling, address cumulative effects over a longer time frame, consider a more reasonable range of alternatives consistent with our statutory mandates, and reanalyze the range of practicable mitigation and monitoring measures for protecting marine mammals and availability of marine mammals for subsistence uses. MMS will be a cooperating agency on this EIS.
Specifically, this EIS would:
(1) Assess the environmental impacts to the physical, biological, cultural, economic, and social resources from deep-penetration, two-dimensional (2D) and three-dimensional (3D) streamer and ocean bottom cable surveys (hereafter referred to as seismic surveys)
and shallow hazard and site clearance surveys;

(2) Assess the environmental impacts to the physical, biological, cultural, economic, and social resources from open water offshore exploratory drilling operations during the open water season in order for the industry to drill priority exploration drill sites on MMS OCS leases in the Chukchi and Beaufort Seas. Also, as part of this EIS, NMFS will analyze the effects of obtaining geotechnical data for pre-feasibility analyses of shallow sub-sea sediments as part of its proposed exploratory drilling operations; and

(3) Assess whether alternatives developed would allow for the implementation of a long-term planning process pursuant to section 101(a)(5)(A) of the MMPA through the development and implementation of regulations that would be in place for 5 year time periods.

For the purposes of complying with NEPA and to achieve greater administrative efficiency in its ITA program, NMFS has determined the need to prepare an EIS that will analyze a range of oil and gas exploratory activities and that will satisfy the requirements of the Council on Environmental Quality’s NEPA regulations and the NOAA NEPA administrative order 216–6. The proposed EIS would cover known and reasonably foreseeable projects requiring ITAs in the U.S. Arctic regions for future years, until such time that a revision of the document is necessary. NMFS has determined, based on the following factors, that an EIS would serve a more beneficial use in terms of agency decisionmaking and would allow greater public participation in future decisions related to ITAs for the oil and gas industry:

• NMFS and MMS have received preliminary information from industry that suggests an additional increase in seismic survey applications beyond recent levels;

• NMFS has received applications for exploratory drilling and expects more in the future, the effects of which were not analyzed in the withdrawn DPEIS;

• Understanding that both drilling and seismic activities could be expected to continue in the immediate years, both agencies determined that a longer timeframe needed to be analyzed in order to most effectively and fully evaluate the potential for cumulative impacts; and

• NMFS prepares environmental analyses under NEPA to support the issuance of ITAs under sections 101(a)(5)(A) and (D) of the MMPA. Therefore, this EIS will also be used to support future MMPA authorizations issued by NMFS for seismic and exploratory drilling activities in state and Federal waters in the U.S. Arctic Ocean in the Beaufort and Chukchi Seas.

Finally, the environmental analysis will assist NMFS and MMS in carrying out other statutory responsibilities relating to the agencies’ role in authorizing seismic survey and exploratory drilling activities or incidental take of marine mammals (e.g., assessing environmental impacts on listed species under the Endangered Species Act [Section 7 consultation] and effects of the proposed action on essential fish habitat [EFH] under the Magnuson-Stevens Fishery Conservation and Management Act [EFH consultation]).

Overview of Proposed Activities

Seismic Activities

This EIS would analyze effects of seismic activities during the open water season in the Beaufort and Chukchi Seas. Seismic surveys are conducted to obtain data on geological formations from the sediment near-surface to several thousand meters deep (below the sediment surface). This information enables industry to accurately assess potential hydrocarbon reservoirs, helps to optimally locate exploration and development wells, maximizing extraction and production from a reservoir, and to locate shallow geologic hazards. It also allows MMS to fulfill its statutory responsibilities to ensure safe operations, support environmental impact analyses, protect benthic resources through avoidance measures, and perform other statutory responsibilities.

Seismic surveys are most often characterized by the type of data being collected. Seismic surveys may be described in very general terms by when the surveys occur (pre-lease, post-lease) because the timing can indicate the type of data likely to be collected. Surveys may be described by the acoustic sound source (air gun, water gun, sparker, pinger, etc.) or by the purpose for which the data is being collected (speculative shoot, exclusive shoot, site clearance).

Each seismic vessel may be accompanied by other support vessels for provision re-supply and crew change. In addition, fixed-wing aircraft may be used for marine mammal surveillance over-flights.

Drilling Activities

This EIS would also analyze effects of offshore exploratory drilling operations during the open water season in order that oil companies can drill exploration targets on their OCS leases in the Beaufort and Chukchi Seas. Also, as part of this EIS, NMFS would analyze the effects of obtaining geotechnical data for pre-feasibility analyses of shallow sub-sea sediments as part of its proposed exploratory drilling operations by drilling a series of boreholes, each up to 400 feet (122 m) in depth.

Each drilling vessel is typically accompanied by up to two Arctic class ice management vessels which also serve duty as anchor tenders and other drill ship support tasks, as well as additional support vessels, oil spill response vessels, and aircraft. Additional support vessels will be used for provision re-supply and crew change. In addition, fixed-wing aircraft may be used for marine mammal surveillance over-flights, as well as for activities such as crew change and provision re-supply.

Scoping

Publication of this notice begins the official scoping period that will help clarify previously identified issues of concern and determine the range and structure of alternatives to be considered in the EIS. NMFS invites comments and input from the public, organizations and interest groups, local governments, and Federal and state agencies on issues surrounding the proposal. The scoping period will end on April 9, 2010; for consideration in the development of the EIS, all written statements and questions must be received by this date, via contact means identified above (see ADDRESSES). NMFS will consider all comments received during the scoping period. All hardcopy submissions must be unbound and suitable for copying and electronic scanning. Comments sent via e-mail, including all attachments, must not exceed a 10–megabyte file size. NMFS requests that you include in your comments:

(1) Your name and address;

(2) Whether or not you would like a copy of the Draft EIS; and

(3) Any background documents to support your comments as you feel necessary.

Instructions: All comments received are a part of the public record. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

This notice requests public participation in the scoping process, provides information on how to
participate, and identifies a set of preliminary alternatives to serve as a starting point for discussions. The public will have additional opportunities to comment on the Draft EIS and any applications received under the MPA as part of this action. In particular, NMFS is soliciting information on:

1. Effects of oil and gas exploration on marine mammal behavior and use of habitat;
2. Effects of oil and gas exploration on availability of species for subsistence uses;
3. Available new science on the Arctic ecosystem; and
4. Available new technology for monitoring or obtaining seismic/drilling data.

The scoping comments will help inform NMFS' formulation of a range of reasonable alternatives considered in the EIS. The scope and structure of the alternatives evaluated will reflect the combined input from the public, industry, stakeholders, affected state and Federal agencies, and NMFS administrative and research offices. The range of reasonable alternatives that are analyzed in this EIS will be determined based on information gathered during scoping and will be consistent with the purpose and need of NMFS' and MMS' actions and with applicable law.

Issues and concerns associated with oil and gas related activities in the Arctic marine environment have been documented by the scientific community, government publications, at scientific symposia, through the scoping and public hearings/comments, and other NEPA analyses. In addition, public testimony and traditional knowledge from Alaskan Natives have provided valuable information about the potential impacts to marine mammals and on subsistence hunting of such species from seismic surveying and drilling operations. Based on information from these sources, the following prominent issues and concerns on which NMFS is seeking public comments have been identified and will be included in an alternatives framework and analysis of effects:

- Protection of subsistence resources and Inupiat culture and way of life
- Disturbance to bowhead whale migration patterns
- Impacts of seismic operations on marine fish reproduction, growth, and development
- Harassment and potential harm of wildlife, including marine mammals and marine birds, by vessel operations, movements, and noise
- Impacts on water quality
- Changes in the socioeconomic environment
- Impacts to threatened and endangered species
- Impacts to marine mammals, including disturbance and changes in behavior
- Incorporation of traditional knowledge in the decision-making process
- Effectiveness and feasibility of marine mammal monitoring and other mitigation and monitoring measures

To provide a framework for public comments, the range of reasonable alternatives will include the Proposed Action and several other action alternatives, as well as a No Action alternative. The action alternatives analyzed will represent a range of levels of activities from unrestricted to no seismic or exploratory drilling and could address the following, although this list is not exhaustive:

Levels of Activity

- Number, scale, size, location, and duration of seismic activities
- Number, scale, size, location, and duration of drilling activities
- Number, scale, size, location, and duration of shallow hazard/site clearance activities
- Number, scale, size, location, and duration of associated support activities (vessel, aircraft, shore)
- The degree to which those activities can overlap in space and time

Mitigation

- Exclusion zones based on received levels of sounds;
- Exclusion zones based on presence of specific biological factors in combination with received levels of sound;
- Exclusion zones based on presence and timing of subsistence activities;
- Time/area closures for biological and subsistence reasons; and
- Limitations on certain combinations of activities in specific temporal/spatial circumstances.

The EIS will assess the direct and indirect effects of the alternative approaches to authorizing oil and gas seismic surveys under the OCSLA and the taking of marine mammals incidental to seismic surveys and exploratory drilling activities under the MPA. The EIS will assess the effects on the marine mammal species and availability of those species for subsistence uses, as well as other components of the marine ecosystem and human environment. The EIS will assess the contribution of these activities to the cumulative effects on these resources, including effects from past, present, and reasonably foreseeable future events and activities in the U.S. Arctic. Anyone having relevant information they believe NMFS should consider in its analysis should provide a description of that information along with complete citations for supporting documents.

For additional information on the withdrawn MMS and NMFS 2007 DPEIS, please visit the MMS website at: http://www.mms.gov/alaska/ref/EIS%20EA/draft_arctic_peis/draft_peis.htm.

Scoping Meetings Agenda

Public scoping meetings will be held at the following locations in February and March, 2010: Anchorage, Barrow, Kaktovik, Kotzebue, Nuiqsut, Point Hope, Point Lay, and Wainwright.

Public scoping meetings will be held at the following dates, times, and locations:

1. February 18, 2010, 6 – 8 p.m., Northwest Arctic Borough Assembly Chambers, Kotzebue, Alaska;
2. February 19, 2010, 5 – 7 p.m., Point Hope Community Center, Point Hope, Alaska; and
3. February 22, 2010, 7 – 9 p.m., Point Lay Community Center, Point Lay, Alaska.

The final dates, times, and locations are not yet finalized for the public scoping meetings in Anchorage, Barrow, Kaktovik, Nuiqsut, and Wainwright; a supplement to this NOI will be published with the final meeting dates, times, and locations. Comments will be accepted at all public scoping meetings, as well as during the scoping period and can be submitted via the methods described earlier in this document (see ADDRESSES).

Special Accommodations

These meetings are accessible to people with disabilities. Requests for sign language interpretation or auxiliary aids should be directed to Sheyna Wisdom by telephone at (907) 261–6705 or by email at Sheryna_Wisdom@URSCorp.com at least 7 days before the scheduled meeting date.


James H. Lecky,
Director, Office of Protected Resources, National Marine Fisheries Service.
[FR Doc. 2010–2681 Filed 2–5–10; 8:45 am]
Notice of Public Scoping Meetings
DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

RIN 0648-XS88

Schedules for Atlantic Shark Identification Workshops and Protected Species Safe Handling, Release, and Identification Workshops; Correction

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public workshops; correction.

SUMMARY: Due to an unanticipated temporary closure of the Princess Bayside Hotel in Ocean City, MD, NMFS is changing the location of its March 24, 2010, Protected Species Safe Handling, Release, and Identification Workshop that was announced in the Federal Register on December 8, 2009. The locations of the remaining workshops in February and March 2010 remain unchanged. The Protected Species Safe Handling, Release, and Identification Workshops are mandatory for vessel owners and operators who use bottom longline, pelagic longline, or gillnet gear, and have also been issued shark or swordfish limited access permits. Additional free workshops will be held in 2010 and announced in the Federal Register.

DATES: The dates and times for the remaining Protected Species Safe Handling, Release and Identification Workshops in February and March 2010 have not been changed and will be held February 24, March 10, and March 24, 2010. See SUPPLEMENTARY INFORMATION for further details.

ADDRESSES: The remaining Protected Species Safe Handling, Release, and Identification workshops will be held in Boston, MA; Galveston, TX; and Ocean City, MD. See SUPPLEMENTARY INFORMATION for the corrected Ocean City, MD, workshop location.

FOR FURTHER INFORMATION CONTACT: Richard A. Pearson by phone: (727) 824–5399, or by fax: (727) 824–5398.

SUPPLEMENTARY INFORMATION:

Correction

In the Federal Register of December 8, 2009, in FR Doc. E9–29258, on page 64665, in the third column, correct the location of the sixth workshop listed under the heading “Workshop Dates, Times, and Locations” to read:

Workshop Dates, Times, and Locations
6. March 24, 2010, from 9 a.m. - 5 p.m., Princess Royal Hotel, 9100 Coastal Highway, Ocean City, MD 21842.

Atlantic Shark Identification Workshop

Since January 1, 2007, shark limited access and swordfish limited access permit holders who fish with longline or gillnet gear have been required to submit a copy of their Protected Species Safe Handling, Release, and Identification Workshop certificate in order to renew either permit (71 FR 58057; October 2, 2006). These certificate(s) are valid for three years. As such, vessel owners who have not already attended a workshop and received a NMFS certificate, or vessel owners whose certificate(s) will expire prior to the next permit renewal, must attend a workshop to fish with, or renew, their swordfish and shark limited access permits. Additionally, new shark and swordfish limited access permit applicants who intend to fish with longline or gillnet gear must attend a Protected Species Safe Handling, Release, and Identification Workshop and submit a copy of their workshop certificate before either of the permits will be issued. Approximately 78 free Protected Species Safe Handling, Release, and Identification Workshops have been conducted since 2006.

At least one operator on vessels using longline or gillnet gear must be issued, and possess on board, a valid Protected Species Safe Handling, Release, and Identification Workshop certificate issued to that operator, in addition to having on board a valid workshop certificate issued to the vessel owner. Both vessel owner and operator certificates are valid for three years. As such, vessel operators who have not already attended a workshop and received a NMFS certificate, or vessel operators whose certificate(s) will expire prior to their next fishing trip, must attend a workshop to operate a vessel with swordfish and shark limited access permits.

Registration

To register for a scheduled Protected Species Safe Handling, Release, and Identification Workshop, please contact Angler Conservation Education at (386) 852–9137.

Registration Materials

To ensure that workshop certificates are linked to the correct permits, participants will need to bring the following items with them to the workshop:

Individual vessel owners must bring a copy of the appropriate swordfish and/or shark permit(s), a copy of the vessel registration or documentation, and proof of identification.

Representatives of a business owned or co-owned vessel must bring proof that the individual is an agent of the business (such as articles of incorporation), a copy of the applicable swordfish and/or shark permit(s), and proof of identification.

Vessel operators must bring proof of identification. Workshop Objectives

The protected species safe handling, release, and identification workshops are designed to teach longline and gillnet fishermen the required techniques for the safe handling and release of entangled and/or hooked protected species, such as sea turtles, marine mammals, and smalltooth sawfish. The proper identification of protected species will also be taught at these workshops in an effort to improve reporting. Additionally, individuals attending these workshops will gain a better understanding of the requirements for participating in these fisheries. The overall goal of these workshops is to provide participants with the skills needed to reduce the mortality of protected species, which may prevent additional regulations on these fisheries in the future.


Emily Menashes,
Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.


Tammy C. Adams,
Acting Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service.

Supplemental Information:

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

RIN 0648-XU53

Notice of Public Scoping Meetings for the Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public scoping meetings.

SUMMARY: NMFS will hold five public scoping meetings in March 2010 to...
receive public comments on NMFS’ intent to prepare an environmental impact statement (EIS) on the effects of oil and gas activities (e.g., seismic surveys and exploratory drilling) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas).

**DATES:** The comment period for the scoping process is from February 8, 2010, through April 9, 2010. See **SUPPLEMENTARY INFORMATION** under the “Meeting Dates, Times, and Locations” heading for the dates and locations of the public scoping meetings.

**ADDRESSES:** The public has the opportunity to submit comments and statements regarding NMFS’ intent to prepare this EIS using the following methods:

- **Mail:** P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910;
- **Facsimile (fax):** (301) 713–0376;
- **E-mail to:** arcticeis.comments@noaa.gov; or
- **Public hearings:** submit oral or written comments at public scoping meetings.

Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size. Information on this project can also be found on the Protected Resources webpage at: [http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm](http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm).

**FOR FURTHER INFORMATION CONTACT:** Michael Payne, Office of Protected Resources, NMFS, (301) 713–2289 ext. 110.

**SUPPLEMENTARY INFORMATION:**

**Background**

On February 8, 2010 (75 FR 6175), NMFS announced its intent to prepare an EIS on the effects of oil and gas activities in the U.S. Chukchi and Beaufort Seas. In that notice, NMFS announced that it would hold a total of eight public scoping meetings in February and March 2010. However, the February 8, 2010 (75 FR 6175), notice only provided dates, times, and locations for the first three meetings.

NMFS has scheduled additional public scoping meetings to be held in Wainwright, Barrow, Nuiqsut, Kaktovik, and Anchorage. The purposes of these meetings are to provide an opportunity for the public to learn about the proposed action, identify issues to be addressed in the EIS process, and to submit oral or written comments on this proposal.

**Meeting Dates, Times, and Locations**

The dates, times, and locations of the public scoping meetings are as follows:

1. March 9, 2010, 7–9 p.m., Wainwright Community Center, Wainwright, Alaska;
2. March 10, 2010, 7:30–9:30 p.m., Inupiat Heritage Center, Barrow, Alaska;
3. March 11, 2010, 7–9 p.m., Nuiqsut Community Center, Nuiqsut, Alaska;
4. March 12, 2010, 6:30–8:30 p.m., Kaktovik Community Center, Kaktovik, Alaska; and
5. March 23, 2010, 7–9 p.m., Egan Center, 555 West Fifth Avenue, Anchorage, Alaska 99501.

**Special accommodations**

These meetings are accessible to people with disabilities. Requests for sign language interpretation or auxiliary aids should be directed to Sheyna Wisdom by telephone at (907) 261–6705 or by e-mail at Sheyna_Wisdom@URSGrp.com at least 7 days before the scheduled meeting date.


Wanda L. Cain,
Acting Deputy Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2010–3750 Filed 2–23–10; 8:45 am]

**BILLING CODE 3510–22–S**

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RIN 0648–XU10**

**Taking of Threatened or Endangered Marine Mammals Incidental to Commercial Fishing Operations; Proposed Permit**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; request for comments.

**SUMMARY:** NMFS proposes to issue a permit for a period of three years to authorize the incidental, but not intentional, taking of individuals from the Central North Pacific (CNP) stock of endangered humpback whales (Megaptera novaeangliae) by the Hawaii-based longline fisheries (deep-set and shallow-set). In accordance with the Marine Mammal Protection Act (MMPA), NMFS has made a preliminary determination that incidental taking from commercial fishing will have a negligible impact on CNP humpback whales; a recovery plan was completed in 1991; and vessels have been registered, a monitoring plan is in place, and a NMFS has insufficient funds to develop a Take Reduction Plan (TRP) at this time to address taking in these fisheries. Accordingly, NMFS proposes to issue the required permits to the Hawaii-based longline fisheries. NMFS solicits public comments on the negligible impact determination and on the proposal to issue this permit.

**DATES:** Comments must be received by March 26, 2010.

**ADDRESSES:** A draft of the negligible impact determination is available on the Internet at the following address: [http://pifr.noaa.gov/](http://pifr.noaa.gov/). Written copies of the determination may be requested from, and comments on the determination and proposed permit should be sent to: Lisa Van Atta, Assistant Regional Administrator, Protected Resources Division, NMFS Pacific Islands Region, 1601 Kapiolani Boulevard, Suite 1110, Honolulu, HI 96814. Comments may also be sent by e-mail to: MMPA.permit–PIR@noaa.gov or by fax to (301) 427–2533. Comments received after the 30-day comment period may not be considered or made part of the record.

The recovery plan for humpback whales is available on the Internet at the following address: [http://www.nmfs.noaa.gov/pr/recovery/plans.htm#mammals](http://www.nmfs.noaa.gov/pr/recovery/plans.htm#mammals).

**FOR FURTHER INFORMATION CONTACT:** Lisa Van Atta, Assistant Regional Administrator, Protected Resources Division, Pacific Islands Region, (808) 944–2257 or Tom Eagle, Office of Protected Resources, (301) 713–2322, ext. 105.

**SUPPLEMENTARY INFORMATION:** NMFS is now considering the issuance of a permit under MMPA section 101(a)(5)(E) to vessels registered in the Hawaii-based longline fisheries (deep-set and shallow-set) to incidentally take individuals from the CNP stock of humpback whales (Megaptera novaeangliae), which are listed as endangered under the Endangered Species Act (ESA).

The Hawaii-based longline fisheries do not take other species or stocks of threatened or endangered marine mammals; therefore, no other species or stocks are considered for this proposed permit. The information available from the Hawaii-based deep-set longline fishery since 1994 indicates that there has never been incidental mortality or serious injury of CNP humpback whales; therefore, none is anticipated in the 3-year duration of the permit. Since 1994, there has been only one serious injury of a CNP humpback whale in the Hawaii-based shallow-set longline...
The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
SCOPING MEETING – OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN

Date: February 22, 2010
Time: 7:00-9:00 pm
Location: Point Lay Community Center

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
SCOPING MEETING – OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN

Date: March 9, 2010
Time: 7:00-9:00 pm
Location: Wainwright Community Center

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
SCOPING MEETING – OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN

Date: March 10, 2010
Time: 7:30-9:30 pm
Location: Barrow Inupiat Heritage Center

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

The meeting will have an informal open house, followed by a presentation, and an opportunity to offer comments.

Please join us!
Project Mailing List
<table>
<thead>
<tr>
<th>Salutation</th>
<th>First</th>
<th>Last</th>
<th>Title</th>
<th>Organization</th>
<th>Department</th>
<th>Address1</th>
<th>Address2</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Zip2</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>CHRIS</td>
<td>TOMPSETT</td>
<td>NEPA NATURAL RESOURCES</td>
<td>NAVY</td>
<td></td>
<td>1176 HOWELL STREET CODE 551 BLDG</td>
<td>NJWCD/WNP T</td>
<td>NEWPORT</td>
<td>RI</td>
<td>02841</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DEPUTY UNDERSECRETARY</td>
<td>DEPARTMENT OF DEFENSE</td>
<td></td>
<td>3400 DEFENSE PENTAGON</td>
<td>Room 38856A</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20001</td>
<td>3400</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN W</td>
<td>KATZ</td>
<td>ALASKA'S WASHINGTON REPRESENTATIVE</td>
<td></td>
<td></td>
<td>444 N CAPITOL ST NW STE 518</td>
<td>Washington, DC 20301-3400</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CINDY</td>
<td>SHOGAN</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA WILDERNESS LEAGUE</td>
<td></td>
<td>122 C STREET NW STE 240</td>
<td>WASHINGTON DC 20001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MATT</td>
<td>CROMWELL</td>
<td>UPSTREAM GENERAL MANAGER</td>
<td>AMERICAN PETROLEUM INSTITUTE</td>
<td></td>
<td>1220 L STREET NW</td>
<td>WASHINGTON DC 20005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>NICOLETTE</td>
<td>NYE</td>
<td>DIRECTOR</td>
<td>NATIONAL OCEAN INDUSTRIES ASSOCIATION</td>
<td></td>
<td>1120 G STREET NW SUITE 900</td>
<td>WASHINGTON DC 20005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BILL</td>
<td>MEADOWS</td>
<td>DIRECTOR</td>
<td>NATIONAL PARKS AND CONSERVATION ASSOCIATION</td>
<td></td>
<td>1300 19TH STREET NW SUITE 300</td>
<td>WASHINGTON DC 20036</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>RENEE</td>
<td>ORR</td>
<td>CHIEF, LEASING DIVISION</td>
<td>MINERALS MANAGEMENT SERVICE</td>
<td></td>
<td>MS-4010</td>
<td>361 ELDEN STREET</td>
<td>HERNDON</td>
<td>VA</td>
<td>20170</td>
<td>4617</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HENRI</td>
<td>BISSON</td>
<td>SENIOR ADVISOR TO THE SECRETARY</td>
<td>FOR ALASKAN AFFAIRS</td>
<td></td>
<td>1849 C STREET NW</td>
<td>WASHINGTON DC 20240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ANGELA</td>
<td>MAZZULLO</td>
<td>DIRECTOR</td>
<td>MINERALS MANAGEMENT SERVICE</td>
<td></td>
<td>MS-2320</td>
<td>1849 C STREET NW</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HONORABLE</td>
<td>MARK</td>
<td>BEGICH</td>
<td>HONORABLE SENATOR</td>
<td>US CONGRESS</td>
<td></td>
<td>1200 NEW JERSEY AVE, SE</td>
<td>EAST BLDG, 12 FLOOR</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20590</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HONORABLE</td>
<td>LISA</td>
<td>MURKOWSKI</td>
<td>HONORABLE SENATOR</td>
<td>US CONGRESS</td>
<td></td>
<td>1200 NEW JERSEY AVE, SE</td>
<td>EAST BLDG, 12 FLOOR</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HONORABLE</td>
<td>DON</td>
<td>YOUNG</td>
<td>HONORABLE CONGRESSMAN</td>
<td>US CONGRESS</td>
<td></td>
<td>1200 NEW JERSEY AVE, SE</td>
<td>EAST BLDG, 12 FLOOR</td>
<td>WASHINGTON</td>
<td>DC</td>
<td>20515</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>--------</td>
<td>--------------------------------</td>
<td>-------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MS</td>
<td>CANIESHA</td>
<td>WASHINGTON</td>
<td>SCIENTIFIC PROGRAM DIRECTOR</td>
<td>MARINE MAMMAL COMMISSION</td>
<td></td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>KOKKINAKIS</td>
<td>CONTENT AND LICENSING SPECIALIST</td>
<td>LEXISNEXIS ACADEMIC AND LIBRARY SOLUTIONS</td>
<td>EXECUTIVE SOURCES</td>
<td>7500 OLD GEORGETOWN RD STE 1300</td>
<td>BETHESDA MD 20814</td>
<td>6198</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>KOKKINAKIS</td>
<td>NEPA COORDINATION &amp; COMPLIANCE</td>
<td>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</td>
<td>PLANNING AND INTEGRATION</td>
<td>1325 EAST WEST HWY SSMC3 ROOM 15723</td>
<td>SILVER SPRING MD 20910</td>
<td>3283</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>SARAH</td>
<td>JENSEN</td>
<td>MS CANIESHA WASHINGTON</td>
<td>EXECUTIVE SOURCES</td>
<td>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>KOKKINAKIS</td>
<td>US ARCTIC RESEARCH COMMISSION</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JESSICA</td>
<td>LEFEVRE</td>
<td>MS CANIESHA WASHINGTON</td>
<td>EXECUTIVE SOURCES</td>
<td>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>KOKKINAKIS</td>
<td>LAW OFFICE OF JESSICA LAFEVRE</td>
<td>1325 EAST WEST HWY</td>
<td>SILVER SPRING MD 20910</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>BRENDA</td>
<td>MORGAN</td>
<td>MS CANIESHA WASHINGTON</td>
<td>EXECUTIVE SOURCES</td>
<td>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>DENISE</td>
<td>STEPHENSON HAWK</td>
<td>DIRECTOR</td>
<td>THE STEPHENSON GROUP</td>
<td>EXECUTIVE SOURCES</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>KRISTEN</td>
<td>METZGER</td>
<td>EXECUTIVE SOURCES</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>VIADA</td>
<td>EXECUTIVE SOURCES</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>STEPHANIE</td>
<td>HAZLETT</td>
<td>EXECUTIVE SOURCES</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>WALLACE</td>
<td>TAYLOR</td>
<td>EXECUTIVE SOURCES</td>
<td>4340 EAST WEST HWY STE 700</td>
<td>BETHESDA MD 20814</td>
<td>4498</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>---------</td>
<td>--------------------------------------</td>
<td>--------------------------------------</td>
<td>-------------------------------</td>
<td>-----------------------------</td>
<td>-----------</td>
<td>----------------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MS</td>
<td>ERIN</td>
<td>KOZAKIEWICZ</td>
<td>LAND ASSISTANT</td>
<td>DEVON ENERGY PRODUCTION COMPANY LP</td>
<td>WESTERN DIVISION</td>
<td>20 NORTH BROADWAY STE 1500</td>
<td>OKLAHOMA CITY</td>
<td>OK</td>
<td>73102</td>
<td>8260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>W P</td>
<td>MCALISTER</td>
<td></td>
<td>DEVON ENERGY PRODUCTION COMPANY</td>
<td>CIRALOGIC</td>
<td>20 NORTH BROADWAY</td>
<td>OKLAHOMA CITY</td>
<td>OK</td>
<td>73102</td>
<td>8260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAMES</td>
<td>SHERHARD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>G S</td>
<td>NADY</td>
<td>SENIOR STAFF LAND REPRESENTATIVE</td>
<td>SHELL OFFSHORE INC</td>
<td></td>
<td>PO BOX 576</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77001</td>
<td>0576</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>J Y</td>
<td>CHRISTOFER</td>
<td>VICE PRESIDENT</td>
<td>HESS CORPORATION</td>
<td></td>
<td>500 DALLAS STREET</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>DAVIS</td>
<td>LAND CONSULTANT</td>
<td>TOTAL E&amp;P USA INC</td>
<td></td>
<td>PO BOX 4397</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77002</td>
<td>4397</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RANDALL</td>
<td>D JONES</td>
<td>MANAGER LAND &amp; NEGOTIATIONS</td>
<td>AURORA GAS LLC</td>
<td></td>
<td>2500 CITY WEST BLVD STE 2500</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>LORI</td>
<td>PRICE</td>
<td>LAND COORDINATOR</td>
<td>ENI PETROLEUM EXPLORATION CO INC</td>
<td>1201 LOUISIANA STE 3500</td>
<td></td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PAUL</td>
<td>GYLES</td>
<td></td>
<td>EXXONMOBIL PRODUCTION COMPANY</td>
<td>800 BELL STREET</td>
<td>CORP-EBM-1061J</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>WILLIAM</td>
<td>RISSER, MD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CHERYL</td>
<td>SAHA</td>
<td></td>
<td>PETROBAS AMERICA INC</td>
<td></td>
<td>10050 RICHMOND AVE STE 1400</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77042</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>SCOTT</td>
<td>CORNWELL</td>
<td>LIBRARIAN</td>
<td>AMOCO PRODUCTION COMPANY</td>
<td>501 WESTLAKE PARK BLVD</td>
<td></td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77079</td>
<td>2604</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAMES</td>
<td>MIKESCH</td>
<td>EXPLOSION MANAGER</td>
<td>BURLINGTON RESOURCES</td>
<td>600 N DAIRY ASHFORD STR</td>
<td></td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77079</td>
<td>1100</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BOB</td>
<td>GAGE</td>
<td>SENIOR STAFF LANDSMAN</td>
<td>MURPHY EXPLORATION &amp; PRODUCTION COMPANY</td>
<td>16900 KATY FREEWAY STE 600</td>
<td></td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>TODD</td>
<td>KRATZ</td>
<td>SENIOR LAND REP</td>
<td>CHEVRON USA INC</td>
<td>EXPLORATION AND PRODUCTION</td>
<td>PO BOX 36366</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>TODD</td>
<td>LIEBL</td>
<td>MANAGER, US ONSHORE LAND</td>
<td>ANADARKO PETROLEUM CORPORATION</td>
<td>DELAWARE CORP</td>
<td>PO BOX 1330</td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77251</td>
<td>1330</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JIM</td>
<td>CARLTON</td>
<td></td>
<td>CONOCOPHILLS ALASKA INC</td>
<td>3600 FOURNACE PLACE</td>
<td></td>
<td></td>
<td>HOUSTON</td>
<td>TX</td>
<td>77401</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STUART</td>
<td>GUSTAFSON</td>
<td>VICE PRESIDENT</td>
<td>ARMSTRONG OIL AND GAS INC</td>
<td>OPERATIONS</td>
<td>1421 BLAKE STR</td>
<td></td>
<td>DENVER</td>
<td>CO</td>
<td>80202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ED</td>
<td>KERR</td>
<td>VP FOR LAND</td>
<td>ARMSTRONG OIL AND GAS INC</td>
<td>1421 BLAKE STR</td>
<td></td>
<td></td>
<td>DENVER</td>
<td>CO</td>
<td>80202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>LANE</td>
<td>FRANKS</td>
<td>PRESIDENT</td>
<td>LIBERTY PETROLEUM CORP</td>
<td>10851 NORTH BLACK CANYON HIGHWAY STE 540</td>
<td></td>
<td></td>
<td>PHOENIX</td>
<td>AZ</td>
<td>85029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>A LAURENCE</td>
<td>D'ANNA</td>
<td>NORTH AMERICAN CIVIL RECOVERIES</td>
<td>ARBITRAGE CORP</td>
<td>377 SOUTH NEVADA STR</td>
<td></td>
<td></td>
<td>CARSON CITY</td>
<td>NV</td>
<td>89703</td>
<td>4290</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>KAY</td>
<td>MUNGGER</td>
<td>PRESIDENT</td>
<td>MUNGER OIL INFORMATION SERVICES</td>
<td>PO BOX 45738</td>
<td></td>
<td></td>
<td>LOS ANGELES</td>
<td>CA</td>
<td>90045</td>
<td>0738</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ELLEN</td>
<td>ARONSON</td>
<td>REGIONAL MANAGER</td>
<td>MINERALS MANAGEMENT SERVICE</td>
<td>PACIFIC OCS REGION</td>
<td>770 PASEO</td>
<td></td>
<td>CAMARILLO</td>
<td>CA</td>
<td>93010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 3 of 16
<table>
<thead>
<tr>
<th>Salutation</th>
<th>First</th>
<th>Last</th>
<th>Title</th>
<th>Organization</th>
<th>Department</th>
<th>Address1</th>
<th>Address2</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Zip2</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>RICHARD</td>
<td>CHARTER</td>
<td>MARINE CONSERVATION ADVOCATE</td>
<td>ENVIRONMENTAL DEFENSE</td>
<td>123 MISSION ST FL 28</td>
<td>SAN FRANCISCO</td>
<td>CA</td>
<td>94105</td>
<td>5142</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>EDGAR</td>
<td>WAYBURN MD</td>
<td>CHAIRMAN</td>
<td>SIERRA CLUB</td>
<td>ALASKA TASK FORCE</td>
<td>65 SECOND STREET</td>
<td>2ND FLOOR</td>
<td>SAN FRANCISCO</td>
<td>CA</td>
<td>94105</td>
<td>3441</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>W M</td>
<td>MARQUETTE</td>
<td>LIBRARIAN</td>
<td>NATIONAL MARINE FISHERIES SERVICE</td>
<td>BOWHEAD WHALE PROJECT</td>
<td>18805 89TH AVENUE N</td>
<td>EDMONDS</td>
<td>WA</td>
<td>98020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ELBERT</td>
<td>MOORE</td>
<td>DIRECTOR, OFFICE OF ECOSYSTEMS AND COMMUNITIES</td>
<td>ENVIRONMENTAL PROTECTION AGENCY</td>
<td>REGION 10</td>
<td>1200 SIXTH AVE OMP-104</td>
<td>SEATTLE</td>
<td>WA</td>
<td>98101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RUSSELL E</td>
<td>NELSON JR</td>
<td>ALASKA FISHERIES SCIENCE CENTER</td>
<td>REGION 10</td>
<td>1200 SIXTH AVE MS ECO-088</td>
<td>SEATTLE</td>
<td>WA</td>
<td>98101</td>
<td>1128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BRIAN</td>
<td>ROSS</td>
<td>LIBRARIAN</td>
<td>NOAA LIBRARY</td>
<td>7600 SAND POINT WY NE BLDG 4</td>
<td>SEATTLE</td>
<td>WA</td>
<td>98115</td>
<td>0070</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVEN</td>
<td>BRAUND</td>
<td>LEGAL DIRECTOR</td>
<td>TRUSTEES FOR ALASKA</td>
<td>1026 W 4TH AVENUE STE 201</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>ALASKA FEDERATION OF NATIVES</td>
<td>1577 C STREET, SUITE 300</td>
<td>ANCHORAGE</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>STATE OF ALASKA</td>
<td>OCEAN CONSERVANCY</td>
<td>ALASKA OFFICE</td>
<td>1775 MORNINGTIDE CT</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA INTER-TRIBAL COUNCIL</td>
<td>ENVIRONMENTAL PROGRAM</td>
<td>445 EAST FIFTH AVE</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td>1946</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMANDER</td>
<td>US COAST GUARD SECTOR</td>
<td>510 L STREET SUITE 100</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGIONAL DIRECTOR</td>
<td>NATIONAL PARK SERVICE</td>
<td>240 WEST 5TH AVENUE #114</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td>2327</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA CONSERVATION FOUNDATION</td>
<td>441 WEST 5TH AVE STE 402</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td>2340</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECIAL ASSISTANT TO THE SECRETARY FOR ALASKA</td>
<td>OFFICE OF SENATOR LISA MURKOWSKI</td>
<td>1689 C STREET STE 100</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td>5151</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>NATIONAL WILDLIFE FEDERATION</td>
<td>750 WEST 2ND AVE STE 200</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US ARCTIC RESEARCH COMMISSION</td>
<td>OFFICE OF PROJECT MANAGEMENT AND PERMITTING</td>
<td>420 L STREET STE 315</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXECUTIVE DIRECTOR</td>
<td>EKXON VALDEZ OIL SPILL TRUSTEE COUNCIL</td>
<td>OFFICE OF PROJECT MANAGEMENT AND PERMITTING</td>
<td>441 WEST 5TH SUITE 500</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MARINE ADVISORY PROGRAM</td>
<td>DEPT OF NATURAL RESOURCES</td>
<td>OFFICE OF PROJECT MANAGEMENT AND PERMITTING</td>
<td>1007 WEST 3RD AVE STE 100</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US ARCTIC RESEARCH COMMISSION</td>
<td>DEPT OF NATURAL RESOURCES</td>
<td>550 WEST 7TH AVE STE 1600</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US ARCTIC RESEARCH COMMISSION</td>
<td>WILDLIFE FEDERATION OF ALASKA</td>
<td>750 WEST 2ND AVE, STE 200</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS ELAINE ABRAHAM</td>
<td>ALASKA NATIVE SCIENCE COMMISSION</td>
<td>WILDLIFE FEDERATION OF ALASKA</td>
<td>429 L STREET</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>MARINE ADVISORY PROGRAM</td>
<td>WILDLIFE FEDERATION OF ALASKA</td>
<td>550 WEST 7TH AVENUE STE 800</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US DEPARTMENT OF THE INTERIOR</td>
<td>OFFICE OF ENVIRONMENTAL POLICY</td>
<td>1689 C STREET RM 119</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US DEPARTMENT OF THE INTERIOR</td>
<td>DIVISION OF OIL AND GAS</td>
<td>911 W 8TH AVE STE 302</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>US DEPARTMENT OF THE INTERIOR</td>
<td>DIVISION OF OIL AND GAS</td>
<td>308 G STREET STE 323</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>AK DEPT OF NATURAL RESOURCES</td>
<td>DIVISION OF OIL AND GAS</td>
<td>550 WEST 7TH AVE STE 800</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>AK DEPT OF NATURAL RESOURCES</td>
<td>ALASKA BUSINESS UNIT</td>
<td>125 CHRISTENSEN DRIVE STE 2</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFFICE DIRECTOR</td>
<td>PIONEER NATURAL RESOURCES USA INC</td>
<td>LAND DEPT</td>
<td>700 G STR STE 600</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS ELSIE M. HENDRIX</td>
<td>CULLY CORPORATION</td>
<td>405 E. FIREWEED, SUITE 203</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS ELEANOR HUFFINES</td>
<td>THE WILDERNESS SOCIETY</td>
<td>705 CHRISTENSEN DRIVE</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR PAUL LAIRD</td>
<td>ALASKA SUPPORT INDUSTRY ALLIANCE</td>
<td>646 W 4TH AVE STE 200</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR BILL LAMOREAUX</td>
<td>ANCHORAGE DISTRICT OFFICE</td>
<td>DEPARTMENT OF ENVIRONMENTAL CONSERVATION</td>
<td>555 CORDOVA STREET</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS KAREN MATTHIAS</td>
<td>CANADIAN CONSULATE</td>
<td>310 K STREET STE 220</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR JOHN NORMAN</td>
<td>ALASKA OIL AND GAS CONSERVATION COMMISSION</td>
<td>333 WEST 7TH AVENUE STE 100</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR CHAD PADGETT</td>
<td>OFFICE OF CONGRESSMAN DON YOUNG</td>
<td>OFFICE OF CONGRESSMAN DON YOUNG</td>
<td>510 L STREET STE 580</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH J</td>
<td>PERKINS JR ESQ</td>
<td></td>
<td>GUESS &amp; RUDD P C</td>
<td>510 L STREET STE 700</td>
<td>ANCHORAGE AK 99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>TRISH</td>
<td>ROLFE</td>
<td>ALASKA REPRESENTATIVE</td>
<td>SIERRA CLUB ALASKA FIELD OFFICE</td>
<td>333 WEST 4TH AVE STE 307</td>
<td>ANCHORAGE AK 99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>STAN</td>
<td>SENNER</td>
<td>NATIONAL AUDUBON SOCIETY</td>
<td></td>
<td>441 WEST FIFTH AVE STE 300</td>
<td>ANCHORAGE AK 99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CLARENCE</td>
<td>SUMMERS</td>
<td>NATIONAL PARK SERVICE</td>
<td>SUBSISTENCE DIVISION</td>
<td>241 WEST 5TH AVENUE #114</td>
<td>ANCHORAGE AK 99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PETER</td>
<td>VAN TUYN</td>
<td>TRUSTEES FOR ALASKA</td>
<td>ALASKA RESOURCES LIBRARY &amp; INFORMATION SERVICES</td>
<td>1026 W 4TH AVE STE 201</td>
<td>ANCHORAGE AK 99501</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRINCE WILLIAM SOUND RCAC</td>
<td>US FISH AND WILDLIFE SERVICE</td>
<td>3150 C STREET, SUITE 100</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LIBRARIAN</td>
<td>MIGRATORY BIRD MANAGEMENT</td>
<td>1011 EAST TUDOR ROAD</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>US FISH AND WILDLIFE SERVICE</td>
<td>LIBRARY</td>
<td>1011 EAST TUDOR ROAD</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ASSISTANT REGIONAL DIRECTOR</td>
<td>US FISH AND WILDLIFE SERVICE</td>
<td>1011 EAST TUDOR ROAD</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LIBRARIAN</td>
<td>SUBSISTENCE AND FISHERIES</td>
<td>3709 SPENARD RD STE 100</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PROJECT MANAGER</td>
<td>ANADARKO PETROLEUM CORP</td>
<td>3201 C STREET STE 803</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRINCE WILLIAM SOUND RCAC</td>
<td>REGIONAL CITIZENS ADVISORY COUNCIL</td>
<td>3709 SPENARD ROAD STE 100</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MARILYN</td>
<td>CROCKETT</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA OIL AND GAS ASSOCIATION</td>
<td>121 WEST FIREWEED LANE STE 207</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN R</td>
<td>DAVIS</td>
<td>SUPERVISOR</td>
<td>WESTERN GECO</td>
<td>2525 GAMBELL STR STE 400</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RICH</td>
<td>FOX</td>
<td>LAND MANAGER ALASKA</td>
<td>SPELLE FFRONTIER OIL AND GAS INC</td>
<td>3601 C STREET SUITE 1334</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEOFF</td>
<td>HASKETT</td>
<td>REGIONAL DIRECTOR</td>
<td>US FISH AND WILDLIFE SERVICE</td>
<td>1011 EAST TUDOR ROAD</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEVE</td>
<td>KROHN</td>
<td>PRODUCTION MANAGER</td>
<td>EXXONMOBIL CORPORATION</td>
<td>3201 C STR STE 400</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PAUL</td>
<td>RAMERT</td>
<td>ASRC ENERGY SERVICES</td>
<td></td>
<td>2700 GAMBELL STR STE 200</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>TAMARA</td>
<td>SHEFFIELD</td>
<td></td>
<td>ALASKA OIL AND GAS ASSOCIATION</td>
<td>121 WEST FIREWEED LANE #207</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>EUGENE</td>
<td>VIRBEN</td>
<td>SUPERINTENDENT OF ADMINISTRATION</td>
<td>BUREAU OF INDIAN AFFAIRS</td>
<td>WEST CENTRAL ALASKA FIELD OFFICE 3601 C STREET STE 1258</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>ZAGER</td>
<td>MANAGER</td>
<td>CHEVRON USA INC</td>
<td>3800 CENTERPOINT DRIVE STE 100</td>
<td>ANCHORAGE AK 99503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>TERRY</td>
<td>CUMMINGS</td>
<td>LIBRARIAN</td>
<td>ELMENDORF AFB LIBRARY</td>
<td>10480 22ND ST</td>
<td>ELMENDORF AFB AK 99506</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>-------</td>
<td>----------------------------------------</td>
<td>---------------------------------------------------</td>
<td>---------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>LIBRARIAN</td>
<td></td>
<td></td>
<td></td>
<td>US ARMY CORPS OF ENGINEERS LIBRARY</td>
<td>REGULATORY BRANCH - ALASKA DISTRICT</td>
<td>PO BOX 898</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99506</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>TOM</td>
<td>LOHMAN</td>
<td>ENVIRONMENTAL RESOURCE SPECIALIST</td>
<td>US ARMY CORPS OF ENGINEERS</td>
<td>NORTH SLOPE BOROUGH</td>
<td>4011 WINCHESTER LOOP</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99506</td>
<td>0898</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>TONY</td>
<td>DEGANGE</td>
<td>BIOLOGICAL OFFICE CHIEF</td>
<td>US GEOLOGICAL SURVEY</td>
<td>CONSORTIUM LIBRARY</td>
<td>3211 PROVIDENCE DRIVE</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td>8176</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>GUNNAR</td>
<td>KNAPP</td>
<td></td>
<td>UNIVERSITY OF ALASKA ANCHORAGE</td>
<td>INSTITUTE OF SOCIAL &amp; ECONOMIC RESEARCH</td>
<td>3211 PROVIDENCE DRIVE</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MICHAEL</td>
<td>PELIKAN</td>
<td>DIRECTOR</td>
<td>ALASKA PACIFIC UNIVERSITY</td>
<td>ACADEMIC SUPPORT CENTER LIBRARY</td>
<td>4101 UNIVERSITY DRIVE RM 310</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td>4672</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CELIA</td>
<td>ROZEN</td>
<td></td>
<td>ALASKA RESOURCES LIBRARY &amp; INFORMATION SERVICES</td>
<td>ACQUISITIONS</td>
<td>3211 PROVIDENCE DRIVE STE 111</td>
<td>LIBRARY BLDG</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td>4614</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>PAULETTA</td>
<td>SAWYER</td>
<td>ACQUISITIONS</td>
<td>UNIVERSITY OF ALASKA ANCHORAGE</td>
<td>CONSORTIUM LIBRARY</td>
<td>3211 PROVIDENCE DRIVE</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>SUZANNE</td>
<td>SHARP</td>
<td>RESEARCHER</td>
<td>UNIVERSITY OF ALASKA ANCHORAGE</td>
<td>INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH</td>
<td>3211 PROVIDENCE DRIVE STE 5TH FLOOR</td>
<td>DIPLOMACY BLDG</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>DOROTHY</td>
<td>CHILDERS</td>
<td>DIRECTOR</td>
<td>ALASKA MARINE CONSERVATION COUNCIL</td>
<td>ALASKA OFFICE</td>
<td>PO BOX 100599</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STEPHEN</td>
<td>CONN</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA PUBLIC INTEREST RESEARCH GROUP</td>
<td></td>
<td>PO BOX 101093</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MICHAEL</td>
<td>GALGINAITIS</td>
<td>DIRECTOR</td>
<td>APPLIED SOCIOCULTURAL RESEARCH</td>
<td></td>
<td>PO BOX 101352</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99510</td>
<td>1352</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PAT</td>
<td>NOAH</td>
<td></td>
<td>CONOCOPHILLIPS ALASKA INC LAND DEPT</td>
<td></td>
<td>PO BOX 100360</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99510</td>
<td>0360</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>DAVID</td>
<td>W BROWN</td>
<td>LAND MANAGER</td>
<td>CONOCOPHILLIPS ALASKA INC LAND DEPARTMENT</td>
<td></td>
<td>PO BOX 100360 ATO 1470</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99510</td>
<td>0360</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MARCIA</td>
<td>COMBES</td>
<td>DIRECTOR</td>
<td>ENVIRONMENTAL PROTECTION AGENCY ALASKA OPERATIONS OFFICE</td>
<td></td>
<td>222 WEST 7TH AVE BOX 19</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99513</td>
<td>7588</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JENNIFER</td>
<td>CURTIS</td>
<td>ENVIRONMENTAL PROTECTION AGENCY</td>
<td>NATIONAL MARINE FISHERIES SERVICE</td>
<td></td>
<td>222 WEST 7TH AVE BOX 43</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99513</td>
<td>7577</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THOMAS</td>
<td>LONNIE</td>
<td>STATE DIRECTOR</td>
<td>BUREAU OF LAND MANAGEMENT</td>
<td></td>
<td>222 WEST 7TH AVE STE 13</td>
<td></td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99513</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MR</td>
<td>REX</td>
<td>ROCK</td>
<td>PRESIDENT</td>
<td>TIGARA CORPORATION</td>
<td></td>
<td>2121 ABBOTT ROAD</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99507</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THEODORE L</td>
<td>ROCKWELL</td>
<td>DIRECTOR</td>
<td>ENVIRONMENTAL PROTECTION AGENCY</td>
<td>ALASKA OPERATIONS OFFICE</td>
<td>222 WEST 7TH AVENUE BOX 14</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99513</td>
<td>7588</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BRAD</td>
<td>SMITH</td>
<td>MARINE MAMMAL BIOLOGIST</td>
<td>NATIONAL MARINE FISHERIES SERVICE</td>
<td>ALASKA REGIONAL OFFICE, ANCHORAGE</td>
<td>222 WEST 7TH AVE BOX 43</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99513</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MEDA</td>
<td>SNYDER</td>
<td>STATE PIPELINE COORDINATOR</td>
<td>ALASKA NEWSPAPERS INC</td>
<td>REGION II, H&amp;R CHIEF</td>
<td>DEPT OF FISH &amp; GAME</td>
<td>333 RASPBERRY ROAD</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99518</td>
<td>1599</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JIM</td>
<td>FALL</td>
<td>PROGRAM MANAGER SUBSISTENCE DIVISION</td>
<td>STATE OF ALASKA</td>
<td>ARCTIC SOUNDER</td>
<td>DEPT OF FISH AND GAME</td>
<td>333 RASPBERRY ROAD</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99518</td>
<td>1599</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>BETH</td>
<td>HALEY</td>
<td>LAND MANAGER ALASKA</td>
<td>BP EXPLORATION (ALASKA) INC</td>
<td>BP EXPLORATION (ALASKA) INC</td>
<td>DEPT OF FISH AND GAME</td>
<td>333 RASPBERRY ROAD</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99518</td>
<td>1599</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JUDY</td>
<td>BUONO</td>
<td>LAND &amp; TITLE CORINDATOR</td>
<td>UNION OIL COMPANY OF CALIFORNIA</td>
<td>PO BOX 196247</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99519</td>
<td>8247</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES</td>
<td>UNDERWOOD JR</td>
<td>LANDSMAN</td>
<td>MARATHON OIL COMPANY</td>
<td>TEAM</td>
<td>PO BOX 196168</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99519</td>
<td>6168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PAUL</td>
<td>DAVIS</td>
<td>LAND &amp; TITLE CORINDATOR</td>
<td>RURAL CAP</td>
<td>URAL RESOURCES</td>
<td>PO BOX 209098</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99520</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>PATRICIA</td>
<td>LONGLEY</td>
<td>COCHRAN</td>
<td>ALASKA NATIVE SCIENCE COMMISSION</td>
<td>PO BOX 244305</td>
<td>ANCHORAGE</td>
<td>AK</td>
<td>99524</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GABE</td>
<td>SCOTT</td>
<td>LAND &amp; TITLE CORINDATOR</td>
<td>CASCADIA WILDLANDS PROJECT</td>
<td>PO BOX 853</td>
<td>CORDOVA</td>
<td>AK</td>
<td>99574</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>FRANCES ANN</td>
<td>DEGNAN</td>
<td>SECRETARY/TEASURER</td>
<td>US FISH AND WILDLIFE SERVICE</td>
<td>NORTHERN ALASKA ECOLOGICAL SVCS</td>
<td>DEPT OF ENVIRONMENTAL CONSERVATION</td>
<td>610 UNIVERSITY AVE</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99701</td>
<td>4980</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>DOUG</td>
<td>DASHER</td>
<td>DISTRICT OFFICE</td>
<td>ALASKA NATIVE KNOWLEDGE NETWORK</td>
<td>PO BOX 756730</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>---------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>J.</td>
<td>BURNS</td>
<td>MMS/SCI COMM MEMBER</td>
<td>LIVING RESOURCES INC</td>
<td>PO BOX 83570</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99708</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>PAMELA</td>
<td>A.</td>
<td>MILLER</td>
<td>NORTHERN ALASKA ENVIRONMENTAL</td>
<td>NORTHERN ALASKA ENVIRONMENTAL CENTER</td>
<td>830 COLLEGE ROAD</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99708</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BOB</td>
<td>KARLEN</td>
<td></td>
<td>BUREAU OF LAND MANAGEMENT</td>
<td>NORTHERN FIELD OFFICE</td>
<td>1150 UNIVERSITY AVENUE</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JACK</td>
<td>KERIN</td>
<td>DIVISION OF WATER</td>
<td>STATE OF ALASKA</td>
<td>DEPT OF NATURAL RESOURCES</td>
<td>3700 AIRPORT WAY</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>STANLEY</td>
<td>LEAPHART</td>
<td>LIBRARIAN</td>
<td>TUZZY CONSORTIUM LIBRARY</td>
<td>DEPT OF NATURAL RESOURCES</td>
<td>3700 AIRPORT WAY</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99721</td>
<td>4699</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEORGE</td>
<td>PANEAK</td>
<td>MAYOR</td>
<td>BARROW WILDLIFE CAPTAINS ASSOCIATION</td>
<td>NORTH SLOPE BOROUGH</td>
<td>PO BOX 629</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THOMAS</td>
<td>RULLAND</td>
<td>ENVIRONMENTAL PROGRAM MANAGER</td>
<td>NATIVE VILLAGE OF BARROW</td>
<td>INUPIAT HERITAGE CENTER</td>
<td>PO BOX 69</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHNNY</td>
<td>ADAMS</td>
<td></td>
<td>NORTH SLOPE BOROUGH</td>
<td>PLANNING DEPARTMENT</td>
<td>PO BOX 69</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MARIE</td>
<td>ADAMS CARROLL</td>
<td>NEWS DIRECTOR</td>
<td>BARROW CABLE TV</td>
<td>PO BOX 109</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MAGGIE</td>
<td>AHMAOGAK</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 570</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>KATHY</td>
<td>ANGEAK</td>
<td>LIASON OFFICER IHLC</td>
<td>NORTH SLOPE BOROUGH</td>
<td>PLANNING DEPT</td>
<td>PO BOX 69</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH</td>
<td>K.</td>
<td>AKPIK</td>
<td></td>
<td>ARCTIC DEVELOPMENT COUNCIL</td>
<td>PO BOX 1353</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES</td>
<td>BROWER</td>
<td>CHAIRMAN</td>
<td>UKPEAGVIK INUPIAT CORPORATION</td>
<td>PO BOX 623</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td>0890</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CHARLOTTE</td>
<td>BROWER</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS ASSOCIATION</td>
<td>PO BOX 1084</td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MR</td>
<td>ARNOLD</td>
<td>BROWER JR</td>
<td></td>
<td>BARROW WHALING CAPTAINS ASSOCIATION</td>
<td></td>
<td>BOX 402</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HARRY</td>
<td>BROWER JR</td>
<td>CHAIRMAN</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 712</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HARRY</td>
<td>BROWER JR</td>
<td>CHAIRMAN</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 570</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEORGE</td>
<td>EDWARDSON</td>
<td>PRESIDENT</td>
<td>INUPIAT COMMUNITY OF THE ARCTIC SLOPE</td>
<td></td>
<td>PO BOX 934</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ANTHONY</td>
<td>EWARDSEN</td>
<td>PRESIDENT</td>
<td>URPAAGVIK INUPIAT CORPORATION</td>
<td></td>
<td>PO BOX 890</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>TONY</td>
<td>EWARDSEN</td>
<td></td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 596</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CRAIG</td>
<td>GEORGE</td>
<td></td>
<td>NORTH SLOPE BOROUGH DEPT OF WILDLIFE MANAGEMENT</td>
<td></td>
<td>PO BOX 69</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RICHARD</td>
<td>GLENN</td>
<td>VICE PRESIDENT LAND</td>
<td>ARCTIC SLOPE REGIONAL CORPORATION</td>
<td></td>
<td>PO BOX 129</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>&quot;Taqulik&quot;</td>
<td>HEPA</td>
<td>DIRECTOR</td>
<td>DEPT OF WILDLIFE MANAGEMENT NORTH SLOPE BOROUGH</td>
<td></td>
<td>PO BOX 69</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BOB</td>
<td>HARCHAREK</td>
<td>MAYOR</td>
<td>CITY OF BARROW</td>
<td></td>
<td>PO BOX 629</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>EDWARD</td>
<td>HOPSON</td>
<td>CHAIRMAN</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 172</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MARTHA</td>
<td>HOPSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>EDWARD</td>
<td>ITTA SR</td>
<td>MAYOR</td>
<td>NORTH SLOPE BOROUGH</td>
<td></td>
<td>PO BOX 69</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>DOREEN</td>
<td>LAMPE</td>
<td>PRESIDENT</td>
<td>INUPIAT COMMUNITY OF THE ARCTIC SLOPE</td>
<td></td>
<td>PO BOX 934</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PRICE</td>
<td>LEAVITT</td>
<td>EXECUTIVE DIRECTOR</td>
<td>INUPIAT COMMUNITY OF THE ARCTIC SLOPE</td>
<td></td>
<td>PO BOX 934</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td>0934</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JANICE</td>
<td>MEADOWS</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 570</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PERCY</td>
<td>NUSUNGINYA</td>
<td>TRIBAL COUNCIL PRESIDENT</td>
<td>NATIVE VILLAGE OF BARROW</td>
<td></td>
<td>PO BOX 1130</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td>1130</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THOMAS</td>
<td>OLEMAUN</td>
<td>PRESIDENT</td>
<td>NATIVE VILLAGE OF BARROW INUPIAT TRADITIONAL GOVERNMENT</td>
<td></td>
<td>PO BOX 1130</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOE</td>
<td>SAGE</td>
<td></td>
<td>NATIVE VILLAGE OF BARROW WILDLIFE DIRECTOR</td>
<td></td>
<td>PO BOX 1130</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAMES</td>
<td>PATKOTAK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ROSABELLE</td>
<td>REXFORD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ROBERTA</td>
<td>QUINTAVELL</td>
<td>DIRECTOR</td>
<td>ARCTIC SLOPE REGIONAL CORPORATION</td>
<td></td>
<td>PO BOX 129</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH</td>
<td>UPICKSON</td>
<td>LIBRARIAN</td>
<td>NORTH SLOPE BOROUGH LIBRARY/MEDIA SCHOOL DISTRICT</td>
<td></td>
<td>PO BOX 169</td>
<td></td>
<td>BARROW</td>
<td>AK</td>
<td>99723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>WASKU</td>
<td>WILLIAMS</td>
<td>MANAGER, PLANNING AND DEVELOPMENT</td>
<td>ALASKA CLEAN SEAS</td>
<td></td>
<td>POUCH 340022</td>
<td></td>
<td>PRUDHOE BAY</td>
<td>AK</td>
<td>99734</td>
<td>0022</td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
<td>Country</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>----------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>MR</td>
<td>REGINAL</td>
<td>ANINGAYOU</td>
<td>SR</td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 23</td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99742</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>LEONARD</td>
<td>APANGALOOK</td>
<td></td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 93</td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99742</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MICHAEL</td>
<td>APATIKI</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS</td>
<td>ASSOCIATION</td>
<td>PO BOX</td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99742</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MERLIN</td>
<td>KOONOOKA</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 67</td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99742</td>
<td></td>
</tr>
<tr>
<td>HONORABLE</td>
<td>ANNIE</td>
<td>TIKLUK</td>
<td>MAYOR</td>
<td>KAVEOLOOK SCHOOL LIBRARY</td>
<td>CITY OF KAKTOVIK</td>
<td>CITY OFFICE</td>
<td>PO BOX 27</td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THOMAS</td>
<td>AGIAK</td>
<td>PRESIDENT</td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 24</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>FREDDIE</td>
<td>AISIHANNA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH</td>
<td>KALEK</td>
<td>PRESIDENT</td>
<td>KAKTOVIK WHALING CAPTAINS</td>
<td></td>
<td>PO BOX 83</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH</td>
<td>KALEK</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 83</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAMES</td>
<td>LAMPE SR</td>
<td></td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 7</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>FENTON</td>
<td>REXFORD</td>
<td>PRESIDENT</td>
<td>KAKTOVIK INUPIAT</td>
<td>CORPORATION</td>
<td>010 A STREET</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>FENTON</td>
<td>REXFORD</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS</td>
<td>ASSOCIATION</td>
<td>PO BOX 137</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>NOLAN</td>
<td>SOLOMAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>LON</td>
<td>SONSALLA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEORGE</td>
<td>TAGATOOK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>HONORABLE</td>
<td>ANNIE</td>
<td>TIKLUK</td>
<td>MAYOR</td>
<td>CITY OF KAKTOVIK</td>
<td></td>
<td>PO BOX 27</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>IDA E</td>
<td>ANGASAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOSEPH</td>
<td>KALEA</td>
<td>COMMISSIONER</td>
<td>KAKTOVIK WHALING</td>
<td>CAPTAINS</td>
<td>PO BOX 63</td>
<td></td>
<td></td>
<td>KAKTOVIK</td>
<td>AK</td>
<td>99747</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAYMOND</td>
<td>HAWLEY</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 50075</td>
<td></td>
<td></td>
<td>KIVALINA</td>
<td>AK</td>
<td>99750</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ORAN</td>
<td>KNOX SR</td>
<td></td>
<td>ALASKA ESKIMO WHALING</td>
<td>COMMISSION</td>
<td>PO BOX 50045</td>
<td></td>
<td></td>
<td>KIVALINA</td>
<td>AK</td>
<td>99750</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CALEB</td>
<td>WESLEY</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS</td>
<td>ASSOCIATION</td>
<td>PO BOX</td>
<td></td>
<td></td>
<td>KIVALINA</td>
<td>AK</td>
<td>99750</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>LOWELL</td>
<td>SAGE JR</td>
<td>PRESIDENT</td>
<td>NATIVE VILLAGE OF KIVALINA</td>
<td></td>
<td>PO BOX 50051</td>
<td></td>
<td></td>
<td>KIVALINA</td>
<td>AK</td>
<td>99750</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>EUGENE</td>
<td>SMITH JR</td>
<td>MAYOR</td>
<td>CITY OF KOTZEBUE</td>
<td></td>
<td>PO BOX</td>
<td></td>
<td></td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAYMOND</td>
<td>HAWLEY</td>
<td>COMMISSIONER</td>
<td>NANA REGIONAL CORPORATION</td>
<td>LANDS DEPARTMENT</td>
<td>PO BOX 49</td>
<td></td>
<td></td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MERYLIN</td>
<td>TRAYNOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AK</td>
<td>99752</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CALEB</td>
<td>WESLEY</td>
<td>PRESIDENT</td>
<td>NATIVE VILLAGE OF KOTZEBUE</td>
<td></td>
<td>PO BOX 296</td>
<td></td>
<td></td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MARIE</td>
<td>GREENE</td>
<td>PRESIDENT</td>
<td>NANA REGIONAL CORPORATION</td>
<td></td>
<td>PO BOX 49</td>
<td></td>
<td></td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
</tr>
</tbody>
</table>

Master Mailing List Newsletter #1 with Blackout of Personal Addresses
<table>
<thead>
<tr>
<th>Salutation</th>
<th>First</th>
<th>Last</th>
<th>Title</th>
<th>Organization</th>
<th>Department</th>
<th>Address1</th>
<th>Address2</th>
<th>City</th>
<th>State</th>
<th>Zip2</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>WILLIE</td>
<td>GOODWIN</td>
<td>CHAIRMAN</td>
<td>ALASKA BELUGA WHALE COMMITTEE</td>
<td></td>
<td>PO BOX 334</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JEFF</td>
<td>HADLEY</td>
<td></td>
<td>CITY OF KOTZEBUE</td>
<td>PLANNING DIVISION</td>
<td>PO BOX 46</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GUY</td>
<td>ADAMS</td>
<td>EXECUTIVE DIRECTOR</td>
<td>NATIVE VILLAGE OF KOTZEBUE IRA</td>
<td></td>
<td>PO BOX 296</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td>0296</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>REGGIE</td>
<td>JOULE</td>
<td>REPRESENTATIVE</td>
<td>ALASKA STATE LEGISLATURE</td>
<td></td>
<td>PO BOX 673</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>KRIS</td>
<td>LETHIN</td>
<td>PRESIDENT/CEO</td>
<td>KIRK TAGRUK INUPIAT CORP</td>
<td></td>
<td>PO BOX 1050</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>SIIKARUAG</td>
<td>WARTING</td>
<td>MAYOR</td>
<td>NORTHWEST ARCTIC BOROUGH</td>
<td></td>
<td>PO BOX 1110</td>
<td>KOTZEBUE</td>
<td>AK</td>
<td>99752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>LEO</td>
<td>FERREIRA III</td>
<td>VILLAGE COORDINATOR</td>
<td>NATIVE VILLAGE OF POINT LAY</td>
<td></td>
<td>PO BOX 59031</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ANNE</td>
<td>MARTIN</td>
<td></td>
<td>LIBRARIAN</td>
<td>KALI COMMUNITY SCHOOL/COMMUNITY LIBRARY</td>
<td>1029 UGRUK AVE</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>THOMAS</td>
<td>NUKAPIGAK</td>
<td></td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 59101</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JULIUS</td>
<td>REXFORD</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 59016</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JULIUS</td>
<td>REXFORD</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS ASSOCIATION</td>
<td></td>
<td>PO BOX 59016</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JULIUS</td>
<td>REXFORD</td>
<td>PRESIDENT</td>
<td>NATIVE VILLAGE OF POINT LAY</td>
<td></td>
<td>PO BOX 59031</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ALMA</td>
<td>UPICKSOUN</td>
<td>CHAIRMAN</td>
<td>CULLY CORPORATION</td>
<td></td>
<td>PO BOX 59089</td>
<td>POINT LAY</td>
<td>AK</td>
<td>99759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES</td>
<td>BROWER</td>
<td></td>
<td>LIBRARIAN</td>
<td>KEGOYAH KOZGA PUBLIC LIBRARY</td>
<td>PO BOX 165</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ORVILLE</td>
<td>AHKINGA SR</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 7025</td>
<td>DIOMEDE</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ORVILLE</td>
<td>AHKINGA JR</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS ASSOCIATION</td>
<td></td>
<td>PO BOX 7046</td>
<td>DIOMEDE</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ORVILLE</td>
<td>AHKINGA JR</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 7046</td>
<td>DIOMEDE</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RONALD</td>
<td>OZENNA</td>
<td></td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 7023</td>
<td>DIOMEDE</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES</td>
<td>MENADELOOK</td>
<td></td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 7043</td>
<td>LITTLE DIOMEDE</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES D.N.</td>
<td>BROWER</td>
<td></td>
<td>LIBRARIAN</td>
<td>KEGOYAH KOZGA PUBLIC LIBRARY</td>
<td>223 FRONT STREET</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CHARLES</td>
<td>JOHNSON</td>
<td>EXECUTIVE DIRECTOR</td>
<td>ICE SEAL COMMITTEE</td>
<td></td>
<td>PO BOX 946</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>VERA</td>
<td>METCALF</td>
<td></td>
<td>ESKIMO WALRUS COMMISSION</td>
<td></td>
<td>PO BOX 94</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>DENISE</td>
<td>MICHELS</td>
<td>MAYOR</td>
<td>ESKIMO WALRUS COMMISSION</td>
<td></td>
<td>PO BOX 281</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BENJAMIN</td>
<td>NAGEAK</td>
<td>CHAIRMAN</td>
<td>ESKIMO WALRUS COMMISSION</td>
<td></td>
<td>PO BOX 948</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>RICHARD</td>
<td>STEIN</td>
<td>GENERAL MANAGER</td>
<td>BERING AIR INC</td>
<td></td>
<td>PO BOX 1650</td>
<td>NOME</td>
<td>AK</td>
<td>99762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JIM</td>
<td>SYMPTILLE</td>
<td></td>
<td>LIBRARIAN</td>
<td>TIKIGAQ LIBRARY</td>
<td>PO BOX 148</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CAROLINE</td>
<td>CANNON</td>
<td></td>
<td>LIBRARIAN</td>
<td>TIKIGAQ LIBRARY</td>
<td>PO BOX 266</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>LILY</td>
<td>TUZROYLUKE</td>
<td>PRESIDENT</td>
<td>NATIVE VILLAGE OF POINT HOPE</td>
<td></td>
<td>PO BOX 109</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------------------------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>KILLIGVUK, SR</td>
<td>Master</td>
<td>VILLAGE COORDINATOR</td>
<td>NORTH SLOPE BOROUGH</td>
<td>PO BOX 108</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAKE</td>
<td>KOONUK</td>
<td>Commissioner</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 192</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>KOONUK SR</td>
<td>President</td>
<td>POINT HOPE WHALING CAPTAINS ASSOCIATION</td>
<td>PO BOX 350</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEORGE</td>
<td>KINOK</td>
<td>Mayor</td>
<td>CITY OF POINT HOPE</td>
<td>PO BOX 189</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ELIJAH</td>
<td>ROCK SR</td>
<td>Secretary</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 68</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>ROCK SR</td>
<td>President</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 107</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JAKE</td>
<td>SCHAEFER</td>
<td>President</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 108</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>SAYERS</td>
<td>TUZROYLUKE SR</td>
<td>Chairman</td>
<td>TIKGAK CORP</td>
<td>PO BOX 9</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>TUZROYLUKE JR</td>
<td>Librarian</td>
<td>TIKIGAK SCHOOL/COMMUNITY LIBRARY</td>
<td>1837 TIKIGAK AVE</td>
<td>POINT HOPE</td>
<td>AK</td>
<td>99766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>KULOWIYI</td>
<td>President</td>
<td>WHALING CAPTAINS ASSOCIATION</td>
<td>PO BOX</td>
<td>SAVOONGA</td>
<td>AK</td>
<td>99769</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GEORGE</td>
<td>NOONGWOOK</td>
<td>Vice-Chairman</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 81</td>
<td>SAVOONGA</td>
<td>AK</td>
<td>99769</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>PERRY</td>
<td>PUNOWIYI</td>
<td>President</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 77</td>
<td>SAVOONGA</td>
<td>AK</td>
<td>99769</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>KARLA</td>
<td>NAYUKPUK</td>
<td>President</td>
<td>NATIVE VILLAGE OF SHISHMAREF</td>
<td>PO BOX 72110</td>
<td>SHISHMAREF</td>
<td>AK</td>
<td>99772</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>NELLIE</td>
<td>WEYIOUSANNA</td>
<td>Librarian</td>
<td>ILISAGVIK LIBRARY</td>
<td>PO BOX 90</td>
<td>SHISHMAREF</td>
<td>AK</td>
<td>99772</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>VERA</td>
<td>ALEXANDER</td>
<td>Director</td>
<td>UNIVERSITY OF ALASKA FAIRBANKS</td>
<td>ELMER E RASMUSON LIBRARY</td>
<td>310 TANANA DR</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>VERA</td>
<td>ALEXANDER</td>
<td>Librarian</td>
<td>UNIVERSITY OF ALASKA FAIRBANKS</td>
<td>INSTITUTE OF ARCTIC BIOLOGY</td>
<td>311 IRVING BLDG</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>VERA</td>
<td>ALEXANDER</td>
<td>Director</td>
<td>UNIVERSITY OF ALASKA FAIRBANKS</td>
<td>GEOPHYSICAL INSTITUTE</td>
<td>PO BOX 757320</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td>7320</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>VERA</td>
<td>ALEXANDER</td>
<td>Director</td>
<td>UNIVERSITY OF ALASKA FAIRBANKS</td>
<td>SCHOOL OF FISHERIES &amp; OCEAN SCIENCES</td>
<td>245 O'NEILL BUILDING</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td>7220</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>BARNHARDT</td>
<td>Director</td>
<td>ALASKA NATIVE KNOWLEDGE NETWORK</td>
<td>ALASKA RSI</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td>6730</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>MILLER</td>
<td>Director</td>
<td>ELMER E RASMUSON LIBRARY</td>
<td>DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS</td>
<td>3354 COLLEGE ROAD</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99709</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>MILLER</td>
<td>Director</td>
<td>ELMER E RASMUSON LIBRARY</td>
<td>ARCTIC CONNECTIONS</td>
<td>PO BOX 82803</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99708</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>MILLER</td>
<td>Country</td>
<td>ELMER E RASMUSON LIBRARY</td>
<td>GOVERNMENT DOCUMENTS/MAPS</td>
<td>PO BOX 756817</td>
<td>FAIRBANKS</td>
<td>AK</td>
<td>99775</td>
<td>6817</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAY</td>
<td>MILLER</td>
<td>Village</td>
<td>ELMER E RASMUSON LIBRARY</td>
<td>VILLAGE COORDINATOR</td>
<td>NORTH SLOPE BOROUGH</td>
<td>PO BOX 128</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>MR</td>
<td>FREDRICK</td>
<td>AHMAOGAK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 161</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RANSOM</td>
<td>AGNASSAGGA</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 29</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>BARRY</td>
<td>BODFISH SR</td>
<td>ALASKA COMMUNITY/SCHOOL LIBRARY</td>
<td>PO BOX 143</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JUNE</td>
<td>CHILDRESS</td>
<td>PRESIDENT</td>
<td>OLGOONIK CORPORATION</td>
<td>PO BOX 184</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>WALTER</td>
<td>NAYAKIK</td>
<td>PRESIDENT</td>
<td>WHALING CAPTAINS ASSOCIATION</td>
<td>PO BOX 9</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ENOCH</td>
<td>OKTOLLIK</td>
<td>MAYOR</td>
<td>CITY OF WAINWRIGHT</td>
<td>PO BOX 3</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HOWARD</td>
<td>PATKOTAK</td>
<td>CHAIRMAN</td>
<td>OLGOONIK CORPORATION</td>
<td>PO BOX 4</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ROSSMAN</td>
<td>PEETOOK</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 43</td>
<td>WAINWRIGHT</td>
<td>AK</td>
<td>99782</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>KENNETH</td>
<td>TAGAROOK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 54</td>
<td>WALES</td>
<td>AK</td>
<td>99783</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RAYMOND</td>
<td>SEETOOK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 553</td>
<td>WALES</td>
<td>AK</td>
<td>99783</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JACOB</td>
<td>SOOLOOK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 329</td>
<td>NORTH SLOPE BOROUGH</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ARCHIE</td>
<td>AKHIKIAN</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 22</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MARJORIE</td>
<td>AHNHUKIANA</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89168</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ROSEMARY</td>
<td>ARTUUGAARJUK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HARRY</td>
<td>TAZRUK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 54</td>
<td>WALES</td>
<td>AK</td>
<td>99783</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>FLORES</td>
<td>ELFOELOUK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 329</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMMIE</td>
<td>EUDILIAK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 22</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MAGGIE</td>
<td>HOPSON</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89168</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CARL</td>
<td>BROWER</td>
<td>MAYOR</td>
<td>CITY OF NUIQSUT</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CARL</td>
<td>BROWER</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89148</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMMA</td>
<td>EUDITIAK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MAGGIE</td>
<td>HOPSON</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>HARRY</td>
<td>TAZRUK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 54</td>
<td>WALES</td>
<td>AK</td>
<td>99783</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>FLORES</td>
<td>ELFOELOUK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 329</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMMIE</td>
<td>EUDILIAK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 22</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MAGGIE</td>
<td>HOPSON</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89168</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CARL</td>
<td>BROWER</td>
<td>MAYOR</td>
<td>CITY OF NUIQSUT</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>CARL</td>
<td>BROWER</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89148</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMMA</td>
<td>EUDITIAK</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89033</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>MAGGIE</td>
<td>HOPSON</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td>PO BOX 89168</td>
<td>NUIQSUT</td>
<td>AK</td>
<td>99789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>---------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>MR</td>
<td>FRANK</td>
<td>LONG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>GORDAN</td>
<td>MATUMACK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ELI</td>
<td>NUKAPIGAK</td>
<td>PRESIDENT</td>
<td>KUUKPIK CORPORATION</td>
<td></td>
<td>PO BOX 89187</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>NUKAPIGAK</td>
<td>PRESIDENT</td>
<td>KUUKPIK CORPORATION</td>
<td></td>
<td>PO BOX 89187</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>NUKAPIGAK</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 84054</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOE</td>
<td>NUKAPIGAK</td>
<td>CHAIRMAN</td>
<td>KUUKPIK VILLAGE CORPORATION</td>
<td></td>
<td>PO BOX 89187</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>RUTH</td>
<td>NUKAPIGAK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMILY</td>
<td>PANIGER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>WILLIE</td>
<td>SIELAK-JR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>ALICE</td>
<td>TPAŁOOK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>EMILY</td>
<td>WILSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOEB</td>
<td>WOODSON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>NUKAPIGAK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ISAAC</td>
<td>NUKAPIGAK</td>
<td>COMMISSIONER</td>
<td>ALASKA ESKIMO WHALING COMMISSION</td>
<td></td>
<td>PO BOX 84054</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOE</td>
<td>NUKAPIGAK</td>
<td>CHAIRMAN</td>
<td>KUUKPIK VILLAGE CORPORATION</td>
<td></td>
<td>PO BOX 89187</td>
<td></td>
<td></td>
<td>AK</td>
<td>99789</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>CANDACE</td>
<td>ITTA</td>
<td>PRESIDENT</td>
<td>ATQASUK INUPIAT CORPORATION</td>
<td></td>
<td>PO BOX 91021</td>
<td></td>
<td></td>
<td>AK</td>
<td>99791</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>JIMMY</td>
<td>NAYUKOK</td>
<td>MAYOR</td>
<td>CITY OF ATQASUK</td>
<td></td>
<td>PO BOX 91119</td>
<td></td>
<td></td>
<td>AK</td>
<td>99791</td>
<td></td>
</tr>
<tr>
<td>GOVERNOR</td>
<td>SEAN</td>
<td>PARNELL</td>
<td>GOVERNOR</td>
<td>STATE OF ALASKA</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>PO BOX 11000</td>
<td></td>
<td></td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>STATE OF ALASKA</td>
<td>DIVISION OF GOVERNMENT COORDINATION</td>
<td>PO BOX 110030</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>STATE OF ALASKA</td>
<td>DIVISION OF BUDGET AND MANAGEMENT</td>
<td>PO BOX 110020</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOCUMENTS LIBRARIAN</td>
<td>JUNEAU PUBLIC LIBRARY</td>
<td>UNIVERSITY OF ALASKA SOUTHEAST</td>
<td>LIBRARY - MAILSTOP BEI</td>
<td>11120 GLACIER HIGHWAY</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99801</td>
<td>8676</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>KATTANYNA</td>
<td>BENNETT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>LAYLA</td>
<td>HUGHES</td>
<td></td>
<td>WORLD WILDLIFE FUND</td>
<td></td>
<td>419 SIXTH STR STE 317</td>
<td></td>
<td></td>
<td>JUNEAU</td>
<td>AK</td>
<td>99801</td>
</tr>
<tr>
<td>MR</td>
<td>TOM</td>
<td>IRWIN</td>
<td>COMMISSIONER</td>
<td>DEPT OF NATURAL RESOURCES</td>
<td>STATE OF ALASKA</td>
<td>400 WILLOUGHBY AVE 5TH FLOOR</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99801</td>
<td>1724</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ERIC</td>
<td>JORGENSEN</td>
<td>MANAGING ATTORNEY</td>
<td>EARTHJUSTICE</td>
<td></td>
<td>325 FOURTH STREET</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>IRIS</td>
<td>KORFONEN-PENN</td>
<td>REGIONAL ADMINISTRATOR</td>
<td>NATIONAL MARINE FISHERIES SERVICE</td>
<td>ALASKA REGIONAL OFFICE</td>
<td>PO BOX 21668</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99802</td>
<td>1668</td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
<td>DEPARTMENT OF FISH AND GAME</td>
<td>HABITAT DIVISION</td>
<td>ALASKA STATE LIBRARY</td>
<td>GOVERNMENT PUBLICATIONS</td>
<td></td>
<td>PO BOX 110571</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>0571</td>
<td></td>
</tr>
<tr>
<td>Salutation</td>
<td>First</td>
<td>Last</td>
<td>Title</td>
<td>Organization</td>
<td>Department</td>
<td>Address1</td>
<td>Address2</td>
<td>City</td>
<td>State</td>
<td>Zip</td>
<td>Zip2</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>--------</td>
<td>------------------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>------------</td>
<td>------------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>MR</td>
<td>RANDY</td>
<td>BATES</td>
<td>DIRECTOR</td>
<td>DEPT OF COMMUNITY AND REGIONAL AFFAIRS</td>
<td>DEPARTMENT OF NATURAL RESOURCES</td>
<td>302 GOLD STREET STE 202</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>1030</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>MICHAEL</td>
<td>CUSHING</td>
<td>DEPUTY CHIEF OF STAFF</td>
<td>STATE OF ALASKA</td>
<td>DEPT OF COMMUNITY &amp; REGIONAL AFFAIRS</td>
<td>PO BOX 112100</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>2100</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>RANDY</td>
<td>RUAO</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>STATE OF ALASKA</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>PO BOX 110001</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY BATES DIRECTOR</td>
<td>DEPT OF COMMUNITY AND REGIONAL AFFAIRS</td>
<td>DEPARTMENT OF NATURAL RESOURCES</td>
<td>302 GOLD STREET STE 202</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>1030</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>LIBRARIAN</td>
<td>LIBRARY</td>
<td>VALDEZ CONSORTIUM LIBRARY</td>
<td>VALDEZ</td>
<td>AK</td>
<td>99686</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY RUAO DEPUTY CHIEF OF STAFF</td>
<td>STATE OF ALASKA</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>PO BOX 110001</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>WJOHN</td>
<td>RICHARDSON</td>
<td>EXECUTIVE VICE PRESIDENT</td>
<td>LGL LIMITED</td>
<td>ENVIRONMENTAL RESEARCH ASSOCIATES</td>
<td>22 FISHER STREET PO BOX 280</td>
<td>KING CITY</td>
<td>ON</td>
<td>L7B 1A6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JEFF</td>
<td>BEVER</td>
<td>TEAM LEADER</td>
<td>PETRO-CANADA (ALASKA) INC</td>
<td>NORTH AMERICAN FRONTIERS</td>
<td>PO BOX 2844</td>
<td>CALGARY</td>
<td>AB</td>
<td>261 3E3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>NEAL</td>
<td>ALEXANDER</td>
<td>MANAGER, LAND NEGOTIATIONS</td>
<td>PETRO-CANADA (ALASKA) INC</td>
<td>NORTH AMERICAN FRONTIERS</td>
<td>PO BOX 2844</td>
<td>CALGARY</td>
<td>AB</td>
<td>261 3E3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY BATES DIRECTOR</td>
<td>DEPT OF COMMUNITY AND REGIONAL AFFAIRS</td>
<td>DEPARTMENT OF NATURAL RESOURCES</td>
<td>302 GOLD STREET STE 202</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>1030</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>LIBRARIAN</td>
<td>LIBRARY</td>
<td>VALDEZ CONSORTIUM LIBRARY</td>
<td>VALDEZ</td>
<td>AK</td>
<td>99686</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY RUAO DEPUTY CHIEF OF STAFF</td>
<td>STATE OF ALASKA</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>PO BOX 110001</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>WJOHN</td>
<td>RICHARDSON</td>
<td>EXECUTIVE VICE PRESIDENT</td>
<td>LGL LIMITED</td>
<td>ENVIRONMENTAL RESEARCH ASSOCIATES</td>
<td>22 FISHER STREET PO BOX 280</td>
<td>KING CITY</td>
<td>ON</td>
<td>L7B 1A6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JEFF</td>
<td>BEVER</td>
<td>TEAM LEADER</td>
<td>PETRO-CANADA (ALASKA) INC</td>
<td>NORTH AMERICAN FRONTIERS</td>
<td>PO BOX 2844</td>
<td>CALGARY</td>
<td>AB</td>
<td>261 3E3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>NEAL</td>
<td>ALEXANDER</td>
<td>MANAGER, LAND NEGOTIATIONS</td>
<td>PETRO-CANADA (ALASKA) INC</td>
<td>NORTH AMERICAN FRONTIERS</td>
<td>PO BOX 2844</td>
<td>CALGARY</td>
<td>AB</td>
<td>261 3E3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>HELGA</td>
<td>GRAU</td>
<td>CANADIAN CIRCUMPOLAR LIBRARY</td>
<td>UNIVERSITY OF ALBERTA</td>
<td>SCIENCE AND TECHNOLOGY LIBRARY</td>
<td>13800 COMMERCE PARKWAY MCDONALD DETTWILER BLDG</td>
<td>EDMONTON</td>
<td>AB</td>
<td>T6G 2JB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>ART</td>
<td>RAMIREZ</td>
<td>INSTITUTE OF OCEAN SCIENCES</td>
<td>DEPT OF FISHERIES AND OCEANS</td>
<td>DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS</td>
<td>PO BOX 6000</td>
<td>SIONEY</td>
<td>BC</td>
<td>V8V2V3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY BATES DIRECTOR</td>
<td>DEPT OF COMMUNITY AND REGIONAL AFFAIRS</td>
<td>DEPARTMENT OF NATURAL RESOURCES</td>
<td>302 GOLD STREET STE 202</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td>1030</td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>LIBRARIAN</td>
<td>LIBRARY</td>
<td>VALDEZ CONSORTIUM LIBRARY</td>
<td>VALDEZ</td>
<td>AK</td>
<td>99686</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR</td>
<td>JOHN</td>
<td>WALSH</td>
<td>MR RANDY RUAO DEPUTY CHIEF OF STAFF</td>
<td>STATE OF ALASKA</td>
<td>OFFICE OF THE GOVERNOR</td>
<td>PO BOX 110001</td>
<td>JUNEAU</td>
<td>AK</td>
<td>99811</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Newsletter #1 and Comment Form
Effects of Oil and Gas Activities in the Arctic Ocean
Environmental Impact Statement

February 2010

This is the first in a series of newsletters concerning the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement. It is being mailed to Federal, state, and local agencies; elected and appointed officials; Alaska Native groups; other interested organizations; and individual citizens to inform people about the EIS project and to solicit comments. This and subsequent newsletters can be found on the project website at http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

Scoping Notice

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS). The project will analyze the impacts of issuing marine mammal Incidental Take Authorizations, under the Marine Mammal Protection Act (MMPA).

The term “take” under the MMPA means “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” The MMPA defines “harassment” as:

“any act of pursuit, torment, or annoyance which:
(i) has the potential to injure a marine mammal or marine mammal stock in the wild; or
(ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.”

NMFS issues these authorizations to the oil and gas industry during offshore exploration activities (primarily seismic surveys and exploratory drilling). In order to issue authorizations, NMFS must determine that the taking:

- will have no more than a negligible impact on the species or stock(s)
- will not have an adverse impact that cannot be mitigated regarding the availability of the species or stock(s) for subsistence uses (where relevant)
- the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are identified.

This EIS will consider activities in Federal and state waters of the U.S. Beaufort and Chukchi Seas.

The scoping period for the Effects of Oil and Gas Activities in the Arctic Ocean EIS begins February 8, 2010 and ends April 9, 2010.

Scoping is a formal process that requires the lead agency to reach out to all interested parties early in the development of an EIS. The intent is to identify areas of concern associated with the proposed action that should be fully addressed in the EIS, including cumulative impacts, and ask for guidance on alternatives to the proposed action that should be considered. The scoping process provides opportunities for people potentially affected by the proposed action to express their views and concerns, and offer suggestions.

The purposes of this newsletter are to:

- Provide background information on the proposed action to issue incidental take authorizations.
- Provide an overview of the EIS process, and invite you to participate!

About the Environmental Impact Statement

NMFS is serving as the lead agency for this EIS. The U.S. Minerals Management Service (MMS) joins the effort as a cooperating agency. The EIS will analyze the environmental impacts to the physical, biological, and social resources from seismic activities and exploratory drilling in the Beaufort and Chukchi Seas.

Previous issues and concerns associated with oil and gas related activities in the Arctic marine environment have been documented by the scientific community, government publications, at scientific symposia, through the scoping and public hearings/comments, and other National Environmental Policy Act (NEPA) analyses. In addition, public testimony and traditional knowledge from Alaska Natives has provided valuable information about the potential impacts to marine mammals and on subsistence hunting of such species from seismic surveying and drilling operations. This EIS will build upon these efforts.

The EIS will address long-term cumulative effects, consider a reasonable range of alternatives consistent with NMFS’ legal mandates, and analyze the range of practical mitigation and monitoring measures for protecting marine mammals and the availability of marine mammals for subsistence uses.
PROJECT HISTORY

In 2006, the MMS prepared a Programmatic Environmental Assessment (PEA) for Arctic Outer Continental Shelf (OCS) seismic surveys. Afterwards, in accord with the MMPA, NMFS conducted its own Environmental Assessments and issued annual Incidental Harassment Authorizations to oil and gas companies for the taking of marine mammals during seismic surveys.

In 2007, the MMS began a Draft Programmatic EIS (DPEIS). This project assessed the impacts of MMS’ issuance of permits and authorizations under the OCS Lands Act for seismic surveys in the Beaufort and Chukchi Seas near Alaska, and NMFS’ authorizations to incidentally harass marine mammals while conducting those surveys. The intent of the DPEIS was to try to address the potential effects of concurrent offshore exploration activities and the potential for an increase in such activities.

The DPEIS was halted because new information became available, such as scientific study results and changes in projections of levels of offshore activity. This new information altered the scope of the study, range of possible alternatives, and analyses. This led to the need for a new NEPA process, and the start of the Effects of Oil and Gas Activities in the Arctic Ocean EIS.

The process for the Effects of Oil and Gas Activities in the Arctic Ocean EIS is summarized in ten broad steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Steps in the NEPA Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Federal Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS)</td>
</tr>
<tr>
<td></td>
<td>February 8, 2010</td>
</tr>
<tr>
<td>2</td>
<td>Scoping</td>
</tr>
<tr>
<td></td>
<td>Scoping period: February 8 to April 9, 2010</td>
</tr>
<tr>
<td></td>
<td>Public Scoping Meetings: February 18 to March 23, 2010</td>
</tr>
<tr>
<td></td>
<td>Scoping Report: Estimated May 2010</td>
</tr>
<tr>
<td>3</td>
<td>Analysis of Alternatives</td>
</tr>
<tr>
<td>4</td>
<td>NMFS Selects Preferred Alternative</td>
</tr>
<tr>
<td>5</td>
<td>Issue Draft EIS</td>
</tr>
<tr>
<td></td>
<td>Estimated release: mid-December 2010</td>
</tr>
<tr>
<td></td>
<td>Available for 45-day public review, through early February 2011</td>
</tr>
<tr>
<td>6</td>
<td>Public Hearing on Draft EIS</td>
</tr>
<tr>
<td></td>
<td>Estimated: January 2011</td>
</tr>
<tr>
<td>7</td>
<td>Public Comment Review and Synthesis</td>
</tr>
<tr>
<td></td>
<td>Comment Analysis Report Available, Estimated: March 2011</td>
</tr>
<tr>
<td>8</td>
<td>Respond to Comments/Prepare Final EIS</td>
</tr>
<tr>
<td></td>
<td>Estimated: June 2011</td>
</tr>
<tr>
<td>9</td>
<td>Issue Final EIS</td>
</tr>
<tr>
<td></td>
<td>Estimated: late June 2011</td>
</tr>
<tr>
<td></td>
<td>Available for minimum 30-day public review</td>
</tr>
<tr>
<td>10</td>
<td>Record of Decision</td>
</tr>
<tr>
<td></td>
<td>Public statements of agency decisions</td>
</tr>
<tr>
<td></td>
<td>Estimated: July 2011</td>
</tr>
</tbody>
</table>

OBJECTIVES OF THE PUBLIC INVOLVEMENT PROCESS

All interested parties are invited to participate in the EIS process. This includes members of the general public, Alaska Native organizations, local and regional interest groups, the oil and gas industry, and state and Federal agencies are encouraged to participate. Objectives of the public involvement process include:

- Share information about NEPA requirements
- Obtain and analyze comments and suggestions from interested parties that will help determine issues and concerns
- Use comments and suggestions to help define a reasonable range of alternatives to be evaluated in the EIS, and to develop suitable mitigation and monitoring measures
- Incorporate relevant issues in the analysis process
- Respond to public comments and incorporate public comments into the document

PRECEDING THE ENVIRONMENTAL IMPACT STATEMENT

The EIS will identify potential impacts that seismic surveys and exploratory drilling in the Beaufort and Chukchi Seas could have on the physical, biological, and social environments. Methods to mitigate impacts will also be considered. In addition, the EIS will contain an analysis of secondary and cumulative effects of the alternatives.

As the lead agency, NMFS is responsible for the development of the EIS, in cooperation with the MMS.

Beluga whale pod (Source: National Marine Mammal Laboratory)
HOW CAN YOU PARTICIPATE IN THE EIS?

Your comments are very important to us, particularly at this early stage in the project. There are several ways to participate in the EIS process. In February and March, 2010 there will be public scoping meetings in several communities. Comments can be provided in-person at the meeting locations below:

**Scoping Meetings**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 18</td>
<td>6:00-8:00pm</td>
<td>Kotzebue – Northwest Arctic Borough Assembly Chambers</td>
</tr>
<tr>
<td>February 19</td>
<td>5:00-7:00pm</td>
<td>Point Hope Community Center</td>
</tr>
<tr>
<td>February 22</td>
<td>7:00-9:00pm</td>
<td>Point Lay Community Center</td>
</tr>
<tr>
<td>March 9</td>
<td>7:00-9:00pm</td>
<td>Wainwright Community Center</td>
</tr>
<tr>
<td>March 10</td>
<td>7:30-9:30pm</td>
<td>Barrow – Inupiat Heritage Center</td>
</tr>
<tr>
<td>March 11</td>
<td>7:00-9:00pm</td>
<td>Nuiqsut Community Center</td>
</tr>
<tr>
<td>March 12</td>
<td>6:30-8:30pm</td>
<td>Kaktovik Community Center</td>
</tr>
<tr>
<td>March 23</td>
<td>7:00-9:00pm</td>
<td>Anchorage – Egan Center</td>
</tr>
</tbody>
</table>

To request accommodation of a disability or special need at a public meeting (e.g., sign language interpreter), please contact Sheyna Wisdom, seven (7) days prior to the meeting, via:

Fax: (907) 562-1297
Telephone: (907) 562-3366 or (800) 909-6787
Email: sheyna_wisdom@urscorp.com

NMFS will make a reasonable effort to provide effective accommodations for all participants.

HOW TO SUBMIT COMMENTS

In addition to attending scoping meetings and providing verbal comments, there are several ways to submit written comments:

- Bring them to a scoping meeting
- Use the comment form on the project website, [http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm](http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm)
- Email us at arcticeis.comments@noaa.gov
- Fax comments to: (301) 713-0376
- Mail comments to:
  
  Mr. P. Michael Payne  
  Chief – Permits, Conservation & Education Division  
  Office of Protected Resources, NMFS  
  1315 E West Hwy Room 13705  
  Silver Spring, MD 20910-6233

Let us know what aspects of this EIS process are important to you!

**Written scoping comments can be submitted until April 9, 2010.**

Comments received after this time will be considered, but will not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS. A summary of scoping comments will be provided in the next newsletter.

OTHER OPPORTUNITIES TO PARTICIPATE

Public involvement will continue throughout the EIS process. The goal is to receive public and agency comments, identify key issues of concern, and improve analysis. Additional newsletters will be distributed to provide updates.

Once the Draft EIS is complete, the document will be released to the public for an estimated review period of 45 days. During the review period, NMFS will conduct public hearings to accept comments on the Draft EIS. Public testimony, written comments, and electronic comments will be accepted during the review period. Future newsletters will provide information on how you can receive a copy of the Draft EIS, schedule public hearings, and opportunities for comment.

Visit the project website for on-going information updates: [http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm](http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm). We are all interested in ensuring that offshore development in the Arctic is conducted in a safe manner, and minimizes adverse impacts to stocks of marine mammals and their availability for subsistence harvest.
Your input is an important element in the scoping phase of this EIS. To help us consider your views and suggestions, please submit your comments to the EIS team. If you wish to send your comments by mail, write them down on this sheet and mail to our address, which is preprinted on the back of this page. Please write legibly (printing is appreciated) and you may attach additional sheets if necessary. You can also submit comments by email to arcticeis.comments@noaa.gov or through the comment section of the website at http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

Name (PLEASE PRINT): ________________________________

Address: ________________________________

City, State, Zip Code: ________________________________

Telephone (Optional): ________________________________

E-mail (Optional): ________________________________

☐ Please retain or add my name to the project mailing list. I wish to receive information in the mail.

☐ Please add my name and e-mail address to the list. I wish to receive information by electronic mail.

COMMENTS:

Note: To mail, fold page in thirds so that the address on the back of this sheet shows. Tape shut and affix a standard first class postage stamp. Thank you for your participation!
Newspaper Advertisements
ALASKA NEWSPAPERS, INC.
301 CALISTA COURT, SUITE B
ANCHORAGE, ALASKA 99518-3028
(907) 272-9830 * (907) 272-9512

URS Corporation
Attn: Michelle Harper
P.O. Box 203970
Austin, TX 78720

Date: May 5, 2010
CASE/PO/AIO:
INVOICE(S): 021000380086
PAPER: ARCTIC SOUNDER

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA, STATE OF ALASKA, THIRD DIVISION


STACY N. DEACON
ADMINISTRATIVE ASSISTANT, AK NEWSPAPERS INC.

SUBSCRIBED AND SWORN BEFORE ME ON
May 5, 2010

CHRISTINA RITTER
NOTARY PUBLIC FOR THE STATE OF ALASKA
MY COMMISSION EXPIRES ON APRIL 1, 2013
# INVOICE

Alaska Newspapers, Inc.

301 Calista Ct,
Suite B
Anchorage,
Alaska 99518-3028
Phone: (907) 272-9330
Fax: (907) 272-9512

<table>
<thead>
<tr>
<th>Invoice Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inset/Ad #</td>
<td>80219</td>
</tr>
<tr>
<td>Advertiser Name</td>
<td>URSCORPORATION</td>
</tr>
<tr>
<td>Publication</td>
<td>The Arctic Sounder</td>
</tr>
<tr>
<td>Description</td>
<td>B&amp;W, 2x6.5, Display Ad.</td>
</tr>
<tr>
<td>Headline</td>
<td>Public Scoping AD</td>
</tr>
<tr>
<td>Column Inches</td>
<td>13.00</td>
</tr>
<tr>
<td>$ per Column Inch</td>
<td>$26.00</td>
</tr>
<tr>
<td>Amount</td>
<td>$338.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Details</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad Cost for this Insertion</td>
<td>$338.00</td>
</tr>
<tr>
<td>Total Surcharge for this Insertion</td>
<td>$0.00</td>
</tr>
<tr>
<td>Total Discount for this Insertion</td>
<td>$0.00</td>
</tr>
<tr>
<td>Bill Cost for this Insertion</td>
<td>$338.00</td>
</tr>
<tr>
<td>Amount Prepaid for this Insertion</td>
<td>$0.00</td>
</tr>
<tr>
<td>Amount to pay for this Insertion</td>
<td>$338.00</td>
</tr>
</tbody>
</table>

Received 05-05-2010 10:58 a.m. From-1111 To-URS
Omnibus energy bills target lower expenses

Efficiency proposals extend from cities to villages

After a year of work, including unprecedented formal legislative hearings in a dozen rural communities including Bush, Ouzinkie and Koutze among other Bush villages, committees of the Alaska House and Senate are grooming the powderkeg of pasting a state energy policy and package of bills to lower energy costs in the government and private sector.

Both bills require the Department of Commerce to prepare annual energy efficiency conservation targets for public buildings. After these reports agencies would work in a seven-year Senate bill requires COT to improve the energy efficiency of the state's 1,000 public facilities and report its achievements annually to the legislatures.

Other language establishes a permanent preference for equipment or appliances bought by the state that qualify under the federal EPRI Energy Star Program.

Funding the program

A new initiative that could save millions of dollars for rural villages requires the Alaska Energy Authority to establish a state fuel-buying cooperative. It would be open to schools, municipalities and private businesses. The AEA would also be required in an amendment to the governor's budget proposal.

Both bills require the governor's energy efficiency program to consist of a "fund for the Power Purchase Loan Program, available to utilities, independent power producers and local governments, and $9 million to match $9 million from federal, state and local governments that are adopting their own energy efficiency credits.

Bush and Boyd agreed that the legislation is necessary to reduce the cost of energy for Alaskans, particularly in rural areas.

The Senate's committee also went $20 million for Southeast hydroelectric development and transmission lines in the village power system upgrades, and 98 million for federal and state facilities in rural communities. $31 million for the Power Purchase Loan Program, available to utilities, independent power producers and local governments.

The total request is $61 million more than the governor's budget for the same items.

Both bills also state that "full funding" for the Power Purchase Loan Program and $4 million for additional energy efficiency projects in rural schools.

Yeager said that the Senate Finance Committee had one hearing earlier on HB 300 on Jan. 23 and another scheduled for Feb. 9.

NEWS IN BRIEF

School construction bill moves forward

The Alaska Senate Education Committee recently approved and sent for support for a "special school construction debt reimbursement program for schools three years old or older. The bill, sponsored by Sen. Paul Pesut, R-Juneau, and Sen. Janice Baker, R-Marine View also includes funding for a "regional education improvement plan" for Southeast, which is also in the governor's budget.

School construction bill moves forward

The Alaska Senate Education Committee recently approved and sent for support for a "special school construction debt reimbursement program for schools three years old or older. The bill, sponsored by Sen. Paul Pesut, R-Juneau, and Sen. Janice Baker, R-Marine View also includes funding for a "regional education improvement plan" for Southeast, which is also in the governor's budget.

The bill also includes $2 million for Southeast shareholders, $1 million for the Alaska Native Education Trust, and $1 million to support the Alaska Native Education Trust.

The committee also approved a "regional education improvement plan" for Southeast, which is also in the governor's budget.

The school construction bill will probably have to wait until the next session to be passed into law.

Development's approved list to be released

The list of potential projects for inclusion in the Development's approved list of energy efficiency projects will be released at some point in the future. The list will be released to the public at some point in the future.

Development's approved list to be released

The list of potential projects for inclusion in the Development's approved list of energy efficiency projects will be released at some point in the future. The list will be released to the public at some point in the future.
<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>RATE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>Display advertising 3 col x6&quot; x2 wk Scoping Meetings</td>
<td>18.00</td>
<td>648.00</td>
</tr>
</tbody>
</table>

**Vendor # 16238777**

Joy Wakefield-Gonzalez
@ urscorp.com
26220558.05000

TOTAL $648.00
PUBLIC SCOPING MEETINGS
Effects of Oil and Gas Activities in the Arctic Ocean
Environmental Impact Statement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites the public to open house and scoping meetings. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas. Scoping comments must be received by April 9, 2010.

The public scoping meetings provide an opportunity to express your views and identify issues to address in the EIS process. The meetings will include background information on the proposed project as well as the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments. There will be additional scoping meetings in Anchorage, Gakon, Kaktovik, Nunivak, and Wainwright in March.

Please contact Michael Rayne, NMFS Office of Protected Resources, (301) 713-2289 ext. 110 or visit the project website for more information: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm. Requests for sign language interpretation or auxiliary aids should be made at least 7 days before the scheduled meeting to Sheyna Wisdom at (907) 261-6705 or Sheyna_Wisdom@urscorp.com.

KOTZEBUE
Northwest Arctic Borough Assembly Chambers, Thursday, February 18
6 p.m. - 8 p.m.

POINT HOPE
Community Center, Friday, February 19
5 p.m. - 7 p.m.

POINT LAY
Community Center, Monday, February 19
7 p.m. - 9 p.m.
Publisher's Affidavit

UNITED STATES OF AMERICA,

State Of Alaska

Second Division

SS:

Mary Street, being first duly sworn on oath deposes and says:

That I am and was at all times herein this affidavit mentioned, Alien Assd

of THE NOME NUGGET, a newspaper of general circulation and published weekly at Nome, Second Division, State of Alaska, that the Scoping Meeting

a printed copy of which is hereto annexed, was published in said paper once and every week for two successive and consecutive weeks in the issues of the following dates:

Feb 11 & 18, 2010

Mary Street

SUBSCRIBED and SWORN to before me this 18th day of Feb, 2010

NOTARY PUBLIC in and for the State of Alaska.

My commission expires 6-07-12

Mary Street
AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA, STATE OF ALASKA, THIRD DIVISION

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC THIS DAY PERSONALLY APPEARED STACY N. DEACON WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT SHE IS THE ADMINISTRATIVE ASSISTANT OF ALASKA NEWSPAPERS, INC. DBA THE ARCTIC SOUNDER PUBLISHED AT ANCHORAGE IN SAID DIVISION THREE AND STATE OF ALASKA AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED IS A TRUE COPY, WAS PUBLISHED IN SAID PUBLICATION ON 2/18/2010 AND THEREAFTER FOR A TOTAL OF 1 CONSECUTIVE ISSUE(S), THE LAST PUBLICATION APPEARING ON 2/18/2010, AND THAT THE RATE CHARGED THEREON IS NOT IN EXCESS OF THE RATE CHARGED TO PRIVATE INDIVIDUALS.

STACY N. DEACON
ADMINISTRATIVE ASSISTANT, AK NEWSPAPERS INC.

SUBSCRIBED AND SWORN BEFORE ME ON
May 5, 2010

CHRISTINA RITTER
NOTARY PUBLIC FOR THE STATE OF ALASKA
MY COMMISSION EXPIRES ON APRIL 1, 2013
**Invoices**

**Alaska Newspapers, Inc.**

301 Calista Ct,
Suite B
Anchorage, 
Alaska 99518-3028
Phone: (907) 272-9830
Fax: (907) 272-9542

---

**Bill To:**

**URS CORPORATION**

**Attn:** ACCOUNTS PAYABLE

P.O. Box 203970

Austin TX 78720

---

**Invoice Details:**

<table>
<thead>
<tr>
<th>Invoice #</th>
<th>021000380087</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invoice Date</td>
<td>2/18/2010</td>
</tr>
<tr>
<td>Order #</td>
<td>Kimberly Wetzel</td>
</tr>
<tr>
<td>Terms</td>
<td>Net 30 Days</td>
</tr>
<tr>
<td>Cst ID</td>
<td>2777</td>
</tr>
<tr>
<td>Sales Rep</td>
<td>BAN</td>
</tr>
</tbody>
</table>

---

**Insertion Details:**

<table>
<thead>
<tr>
<th>Insertion ID</th>
<th>B0220</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertiser Name</td>
<td>URS CORPORATION</td>
</tr>
<tr>
<td>Publication</td>
<td>The Arctic Sounder</td>
</tr>
<tr>
<td>Description</td>
<td>B&amp;W, 2x6.5, Display Ad.</td>
</tr>
<tr>
<td>Headline</td>
<td>Public Scoping AD</td>
</tr>
<tr>
<td>Column inches</td>
<td>13.00</td>
</tr>
<tr>
<td>$ per Column inch</td>
<td>$26.00</td>
</tr>
</tbody>
</table>

**Ad Cost for this insertion:** $338.00

---

**Summary:**

| Ad Cost for this insertion | $338.00 |
| Total Subchrges for this insertion | $0.00 |
| Total Discounts for this insertion | $0.00 |
| Bill Cost for this insertion | $338.00 |
| Amount Prepaid for this insertion | $0.00 |
| Amount to pay for this insertion | $338.00 |
Barrow boys win Valdez Elks Tournament

Whalers beat Nome 80-61 in Saturday's championship

VAN WILLIAMS
nwilliams@barrownews.com

Enjoyed a loose to reach rival Nome from seven days earlier, the Barrow boys basketball team didn't disappoint in the rematch.

This time around the Whalers controlled the action from the very beginning, enroute to a 70-61 victory in the championship game of last week's Valdez Elks Tournament. Tournament MVP Tyler Adams pumped in 23 points, Albert Carlo added 16 points and Victor Ursinova dished a double-double with 11 points and 11 rebounds. The win improved Barrow's record to 2-1 on the year.

Most importantly, though, it was the second straight season Barrow came out on top in Nome, a feat improved from last season when the Whalers dropped three of four to the Niners.

"Confidence wise, it's good," Barrow coach Jeremy Archer said.

The Whalers beat Corner, 4A, Houston and Nome on their way to winning the Valdez Elks Tournament for the second straight year. Last year's title was completely pilfered Barrow to the Class 2A state tournament, so maybe this year's title will do the same.

"We went down there expecting to win," Archer said. "To get the kids to head to some good teams. It was like a star tournament atmosphere as far as the call-board teams there." In the little tilt, Barrow entered its lead to 20 after Adams drained a half-court shot at the first-quarter buzzer. The advantage was 36-26 at halftime, although the score was even in the second half.

Nome's player-of-the-year candidate Prentiss Hughies scored a game-high 27 points. Still, though, Archer was happy with how his team handled what his teammates could do.

"The thing I think that helped us win is we defended well," the coach said. "If we went in good and we can beat anybody, we have to defend well and we did that pretty much the whole tournament. "We're not bribun, we're getting better and better." Archer was especially pleased with his aggregate mindset Adams brought to the court, something he's been trying to get to the 6-foot-3 junior pointed to less often.

"He was hitting the ball and taking the bell to the shine, and just becoming a 5-point shooter," the coach said. "He actually played a complete basketball game, especially against Cordova and Nome脱颖而出." Against Cordova, Adams scored in a season-high 30 points, many of the lows, to help Barrow rally from a double-digit deficit to win 63-55.

"He pretty much kept us in the game," Archer said.

In the semifinals, Barrow beat Houston 60-47 behind double-figure scores Daniel Thomas (15 points, 8 assists) and Simmonds. Adams was quiet that game but he made lots of impact in the championship game against Nome, using his inside presence and inside-outside jumpers to dominate the defense.

"If he's hitting if a lot, that allows us to get a lot more points at the rim and maximum his basketball IQ," Archer said. "When he's playing, he's very good and he creates opportuni ties for a lot of others, and I think we got from them that night."

For us, that's the kind of style we need to play in the ball-court."
### Invoice

**BILL TO:**

<table>
<thead>
<tr>
<th>BILL TO:</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS Corp</td>
</tr>
<tr>
<td>P.O. Box 203970</td>
</tr>
<tr>
<td>Austin, TX 78720</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>RATE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Display advertising</td>
<td>18.00</td>
<td>18.00</td>
</tr>
<tr>
<td></td>
<td>3 col xz6&quot; x 1 wk 3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOAA Scoping</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1638777</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** $18.00
PUBLIC SCOPING MEETINGS
Effects of Oil and Gas Activities in the Arctic
Ocean Environmental Impact Statement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites the public to open house and scoping meetings. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas. Scoping comments must be received by April 9, 2010.

The public scoping meetings provide an opportunity to express your views and identify issues to address in the EIS process. The meetings will include background information on the proposed project as well as the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

Please contact Michael Payne, NMFS Office of Protected Resources, (301) 713-2289 ext. 110 or visit the project website for more information: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

Requests for sign language interpretation or auxiliary aids should be made at least 7 days before the scheduled meeting to Sheyna Wisdom at (907) 261-6705 or Sheyna_Wisdom@urscorp.com.

WAINWRIGHT
Tue., March 9, 2010
Community Center
7 p.m. - 9 p.m.

BARROW
Wed., March 10, 2010
Inupiat Heritage Center
7:30 p.m. - 9:30 p.m.

NUIQSUT
Thur., March 11, 2010
Community Center
7 p.m. 9 p.m.

KAKTOVIK
Fri., March 12, 2010
Community Center
6:30 p.m. - 8:30 p.m.
Publisher's Affidavit

UNITED STATES OF AMERICA,
State Of Alaska
Second Division

Meryl Strand, being first duly sworn on oath deposes and says:

That I am and was at all times herein this affidavit mentioned, administrator of THE NOME NUGGET, a newspaper of general circulation and published weekly at Nome, Second Division, State of Alaska, that the a printed copy of which is hereto annexed, was published in said paper once and every week for successive and consecutive weeks in the issues of the following dates:

[Dates]

SUBSCRIBED and SWORN to before me this 4th day of March, 2011

Notary Public in and for the State of Alaska.

My commission expires
AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA, STATE OF ALASKA, THIRD DIVISION


STACY N. DEACON
ADMINISTRATIVE ASSISTANT, AK NEWSPAPERS INC.

SUBSCRIBED AND SWORN BEFORE ME ON
May 5, 2010

CHRISTINA RITTER
NOTARY PUBLIC FOR THE STATE OF ALASKA
MY COMMISSION EXPIRES ON APRIL 1, 2013
URS CORPORATION
Attn: ACCOUNTS PAYABLE
P.O. Box 203970
Austin TX 78720

INVOICE

Alaska Newspapers, Inc.

301 Calista Ct,
Suite B
Anchorage,
Alaska 99518-3028
Phone: (907) 272-9830
Fax: (907) 272-9512

Bill To:

Alaska Newspapers, Inc.
301 Calista Ct,
Suite B
Anchorage,
Alaska 99518-3028

INVOICE # 031009361601
Invoice Date 3/4/2010
Order # Kimberly Wetzel
Terms: 30 Days
DIR ID: 2777
Sales Rep: BAN

Insertion Details:

Insertion Id: 81734
Advertiser Name: URS CORPORATION
Publication: The Arctic Sounder
Description: B&W, 2x6.5, Display Ad.
Headline: Public Scoping 4-9-10
Column Inches: 13.00

PO Number: Kimberly Wetzel
Issue Date: 3/4/2010
Page Num: 3

Ad Cost for this Insertion: $339.00

Ad Cost for this Insertion: $339.00
Total Surcharges: $0.00
Total Discounts: $0.00
Bill Cost for this Insertion: $338.00
Amount Prepaid for this Insertion: $0.00
Amount to pay for this Insertion: $338.00

Received 05-05-2010 10:58am From-1111 To-URS Page 003
Lawmakers reduce goals for polar bear conference

Cost of species listing, PR assessment on agenda

ASSOCIATED PRESS

The federal listing of polar bears as a threatened species as an endangered Alaska lawmak- ers, they considered spending more then a million dollars for a public relations effort to counter the decision.

A request for proposals from public relations firms now has more modest goals a conference assessing what the Endangered Species Act will cost Alaska, and whether a public relations package would be useful. A legislative request for proposals from public relations firms was modified three times since mid-December. Proposals have been in hand since Jan. 20. For a fee of up to $1.5 million, lawmakers are looking for someone who can put on a conference in Anchorage, gather panels to speak on the effects of the ESA and re- covered whether Alaska should endorse a public relations effort to counter its negative economic effects.

"We're not going to reverse the listing," said John Bitney, an aide to Rep. John Harris, chairman of the Legislative Council, which will make a decision on proposals. "I don't think we expected that.

With recent success by environmental groups petitioning for Alaska species to be listed, and interest in block offshore oil and gas exploration in the Arctic, Alaska lawmakers worry that the state's primary source of revenue is threatened.

As much as 70 percent of Alaska's gross state revenue is generated by the petroleum industry. Lawmakers fear restrictions to protect polar bears, Cook Inlet beluga whales and other listed species could shrink the profit for oil that could be shipped south through the state's trans-Alaska pipeline or for natural gas that could fill a proposed trans-Alaska oil pipeline.

Majority opinion

Majority Democrats in the Alaska Legislature have been frank about their skepticism that polar bears are an issue from global warming, which they have discounted and called "an albatross for the Earth's weather.

Both the House and Senate in 2007 passed resolutions urging the Bush administration to reject listing bears. The application for listing is based on the so-called, unscientific statistical hypothesis that climate change is caused by human activity in the form of increased release of carbon dioxide into the atmosphere," said Harris, who now represents the At- work.

Lawmakers later appropriated money to look into the proposal, led by former Senate Majority Leader John Binkley. However, the effort was scuttled.

Harris, who recently pulled out of the race for the GOP gubernatorial nomination, declined to be interviewed about the public relations contract. Bitney said Harris is res- cent to speak about proposals until review.

A conference to review the polar bear listing process and the science behind it has been established as a forum with balanced presentations.

The state's largest newspaper, the Anchorage Daily News, called it a public relations campaign likely to confuse people instead of clarifying problems the state faces. Kathleen Siegel, the center for Biological Diversity attorney who drafted the petition to list the polar bear, said lawmakers likely would tap into profes- sional climate skeptics.

"It's been really well demonstrated that there is a coordinated lie campaign to confuse people about climate change. There has been for years," she said.

The Legislature's first request called for a conference that would have drummed up support for the petition by using state agencies in the polar bear lawsuit. Respondents were to outline how they would support the state's position, solicit the assistance of other state, federal and local agencies and help to prepare test amends before Congress.

That may have stayed into the governor's jurisdiction, Bitney said, and the proposed request was cancelled.

The final version asks companies to outline whether a public relations campaign based on the conclusions reached by the conference panel could derail national, state and local efforts to stop climate change.

Pat's view rejected

Harris raised the same issue. George W. Bush Page 16, BEARS

PUBLIC SCOPING MEETINGS

Effects of Oil and Gas Activities in the Arctic Ocean

Environmental Impact Statement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites the public to open house and scoping meetings. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations to the oil and gas industry during offshore exploration activities (e.g., seismic surveys and exploratory drilling) in Federal and state waters of the U.S. Chukchi and Beaufort Seas. Scoping comments must be received by April 9, 2010.

The public scoping meetings provide an opportunity to express your views and identify issues related to the EIS process. The meetings will include background information on the proposed project as well as the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

Please contact Michael Payne, NMFS Office of Protected Resources, (508) 773-1239 ext. 110 or visit the project website for more information: http://people.nos.ngs.noaa.gov/protected staffer.html

Requests for sign language interpretation or auxiliary aids should be made at least 7 days before the scheduled meeting to Shagun Wisdom or (907) 261-6792 or Shagun.Wisdom@noaa.gov

WAINwright

Tuesday, March 9, 2010

Community Center

7:00-9:00pm

HARROW

Wednesday, March 10, 2010

Hitching Hotel Center

7:00-9:00pm

NUISANCE

Thursday, March 11, 2010

Community Center

7:00-9:00pm

KAKIVIK

Friday, March 12, 2010

Community Center

5:30-7:30pm

DEATH

Judith Ruth Plunk-Borsodny

Sharon Devon Plunk-Borsodny, of Anchorage, was buried following her stroke of March 9, 2010. She was 74. Born Nov. 22, 1935, in Evanston, Utah, she was descended from Welsh and Norwegian ancestry. Ms. Plunk-Borsodny was married twice, to Joe Plunk and to Arthur Borsodny.

In addition to her husband and brother, Ms. Plunk-Borsodny is survived by her son, Randy Plunk, of Anchorage, and her brother, James Plunk, of Utah. Services will be July 9, 2010, at 2 p.m.
Anchorage Daily News
Affidavit of Publication

1001 Northway Drive, Anchorage, AK 99508

<table>
<thead>
<tr>
<th>AD#</th>
<th>DATE</th>
<th>PO</th>
<th>ACCOUNT</th>
<th>PRICE PER DAY</th>
<th>OTHER CHARGES</th>
<th>OTHER CHARGES #2</th>
<th>OTHER CHARGES #3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>745029</td>
<td>03/07/2010</td>
<td>26220558.</td>
<td>URSC0705</td>
<td>$149.40</td>
<td></td>
<td></td>
<td></td>
<td>$298.80</td>
</tr>
<tr>
<td>658052</td>
<td>03/21/2010</td>
<td>26220558.</td>
<td>URSC0705</td>
<td>$149.40</td>
<td>$298.80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Shane Drew, being first duly sworn on oath deposes and says that he is an advertising representative of the Anchorage Daily News, a daily newspaper.

That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on the above dates and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed

Subscribed and sworn to me before this date:

Notary Public in and for the State of Alaska.
Third Division. Anchorage, Alaska

MY COMMISSION EXPIRES: 12/19/13
Press Release
News Release – Arctic Sounder and Nome Nugget

**Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement – Public Scoping Meetings**

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is hosting several public scoping meetings focusing on a plan to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act (MMPA). These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Beaufort and Chukchi Seas. The first three scoping meetings will be held in Kotzebue on Thursday, February 18th, Point Hope on Friday, February 19th, and Point Lay on Monday, February 22nd. Additional scoping meetings in Wainwright, Barrow, Nuiqsut, Kaktovik and Anchorage will be held in March.

NMFS is serving as the lead agency for this Environmental Impact Statement (EIS). The U.S. Minerals Management Service (MMS) joins the effort as a cooperating agency. The EIS will analyze the environmental impacts to the physical, biological, and social resources from seismic activities and exploratory drilling. Methods to mitigate impacts will also be considered. In addition, the EIS will contain an analysis of secondary and cumulative effects of the alternatives.

NMFS issues ITAs to the oil and gas industry during offshore exploration activities (primarily seismic surveys and exploratory drilling). The term “take” under the MMPA means “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” In order to issue authorizations, NMFS must determine that the taking: 1) will have no more than a negligible impact on the species or stock(s), 2) will not have an adverse impact that cannot be mitigated regarding the availability of the species or stock(s) for subsistence uses (where relevant), and 3) the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are identified.

In 2007, MMS began a Draft Programmatic EIS to address the potential effects of concurrent offshore exploration activities and the potential for an increase in such activities. This EIS was altered because new information became available, such as scientific study results and changes in projections of levels of offshore activity. This led to the need for a new analysis, and the start of the Effects of Oil and Gas Activities in the Arctic Ocean EIS.

The scoping meetings provide an opportunity for the public to learn about the proposed action, express their views and concerns, and identify issues to be addressed in the EIS process.

<table>
<thead>
<tr>
<th><strong>KOTZEBOUE</strong></th>
<th><strong>POINT HOPE</strong></th>
<th><strong>POINT LAY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>February 18, 2010</td>
<td>February 19, 2010</td>
<td>February 22, 2010</td>
</tr>
<tr>
<td>Arctic Borough Assembly Chambers</td>
<td>Point Hope Community Center</td>
<td>Point Lay Community Center</td>
</tr>
<tr>
<td>6:00-8:00pm</td>
<td>5:00-7:00pm</td>
<td>7:00-9:00pm</td>
</tr>
</tbody>
</table>

Each meeting will have an informational open house, followed by a presentation, and an opportunity for the public to ask questions and offer comments.
News Release – Arctic Sounder and Nome Nugget

**Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement – Public Scoping Meetings**

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is hosting several public scoping meetings focusing on a plan to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act (MMPA). These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Beaufort and Chukchi Seas. Scoping meetings will be held in Wainwright on Tuesday, March 9th, Barrow on Wednesday, March 10th, Nuiqsut on Thursday, March 11th, and Kaktovik on Friday, March 12th. Three scoping meetings were held in February in Kotzebue, Point Hope, and Point Lay. A scoping meeting will also be held in Anchorage on March 23rd.

NMFS is serving as the lead agency for this Environmental Impact Statement (EIS). The U.S. Minerals Management Service (MMS) joins the effort as a cooperating agency. The EIS will analyze the environmental impacts to the physical, biological, and social resources from seismic activities and exploratory drilling. Methods to mitigate impacts will also be considered. In addition, the EIS will contain an analysis of secondary and cumulative effects of the alternatives.

NMFS issues ITAs to the oil and gas industry during offshore exploration activities (primarily seismic surveys and exploratory drilling). The term “take” under the MMPA means “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” In order to issue authorizations, NMFS must determine that the taking: 1) will have no more than a negligible impact on the species or stock(s), 2) will not have an adverse impact that cannot be mitigated regarding the availability of the species or stock(s) for subsistence uses (where relevant), and 3) the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are identified.

In 2007, MMS began a Draft Programmatic EIS to address the potential effects of concurrent offshore exploration activities and the potential for an increase in such activities. This EIS was altered because new information became available, such as scientific study results and changes in projections of levels of offshore activity. This led to the need for a new analysis, and the start of the Effects of Oil and Gas Activities in the Arctic Ocean EIS.

The scoping meetings provide an opportunity for the public to learn about the proposed action, express their views and concerns, and identify issues to be addressed in the EIS process. The Anchorage public scoping meeting will be held Tuesday March 23 2010 at the Egan Center, 555 W. 5TH Ave from 7:00 to 9:00pm.

Each meeting will have an informational open house, followed by a presentation, and an opportunity for the public to ask questions and offer comments.
Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement – Public Scoping Meetings

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is hosting a public scoping meeting focusing on a plan to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act (MMPA). These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Beaufort and Chukchi Seas. **The Anchorage public scoping meeting will be held Tuesday March 23, 2010 at the Egan Center, 555 W. 5TH Ave from 7:00 to 9:00pm.** Three scoping meetings were held in February in Kotzebue, Point Hope, and Point Lay. Four additional scoping meetings were also held between March 9-12, 2010 in Wainwright, Barrow, Nuiqsut, and Kaktovik respectively.

NMFS is serving as the lead agency for this Environmental Impact Statement (EIS). The U.S. Minerals Management Service (MMS) joins the effort as a cooperating agency. The EIS will analyze the environmental impacts to the physical, biological, and social resources from seismic activities and exploratory drilling. Methods to mitigate impacts will also be considered. In addition, the EIS will contain an analysis of secondary and cumulative effects of the alternatives.

NMFS issues ITAs to the oil and gas industry during offshore exploration activities (primarily seismic surveys and exploratory drilling). The term “take” under the MMPA means “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” In order to issue authorizations, NMFS must determine that the taking: 1) will have no more than a negligible impact on the species or stock(s), 2) will not have an adverse impact that cannot be mitigated regarding the availability of the species or stock(s) for subsistence uses (where relevant), and 3) the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are identified.

In 2007, MMS began a Draft Programmatic EIS to address the potential effects of concurrent offshore exploration activities and the potential for an increase in such activities. This EIS was halted because new information became available, such as scientific study results and changes in projections of levels of offshore activity. This led to the need for a new analysis, and the start of the Effects of Oil and Gas Activities in the Arctic Ocean EIS.

The scoping meetings provide an opportunity for the public to learn about the proposed action, express their views and concerns, and identify issues to be addressed in the EIS process. Each meeting has an informational open house, followed by a presentation, and an opportunity for the public to ask questions and offer comments.

Please contact Michael Payne, NMFS Office of Protected Resources, (301) 713-2289 ext. 110 or visit the project website for more information: [http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm](http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm).
Online Advertisements
February 18
KOTZEBAU - An Open House/Public Scoping Meeting will be held from 6:00 p.m. to 8:00 p.m. at the Northwest Arctic Borough Assembly Chambers. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

February 19
POINT HOPE – An Open House/Public Scoping Meeting will be held from 5:00 p.m. to 7:00 p.m. at the Point Hope Community Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

February 22
POINT LAY – An Open House/Public Scoping Meeting will be held from 7:00 p.m. to 9:00 p.m. at the Point Lay Community Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.
March 9
WAINWRIGHT - An Open House/Public Scoping Meeting will be held from 7:00 p.m. to 9:00 p.m. at the Wainwright Community Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

March 10
BARROW – An Open House/Public Scoping Meeting will be held from 7:30 p.m. to 9:30 p.m. at the Inupiat Heritage Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

March 11
NUIQSUT – An Open House/Public Scoping Meeting will be held from 7:00 p.m. to 9:00 p.m. at the Nuiqsut Community Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

March 12
KAKTOVIK – An Open House/Public Scoping Meeting will be held from 6:30 p.m. to 8:30 p.m. at the Kaktovik Community Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.

March 23
ANCHORAGE – An Open House/Public Scoping Meeting will be held from 7:00 p.m. to 9:00 p.m. at the Egan Center. The National Marine Fisheries Service (NMFS) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations (ITAs) under the Marine Mammal Protection Act. These
authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas. The meeting will present background information on the proposed action to issue ITAs and an overview of the EIS process. For more information, visit: http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm.
Radio Public Service Announcement
Hello,

This fax includes an announcement for a scoping meeting to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement in Kotzebue on February 18th from 6:00 p.m. to 8:00 p.m.

If it is possible, please announce the location and time of the meeting on KOTZ, particularly on the day of the meeting. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Public Service Announcement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites you to an open house and public scoping meeting. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

A Public scoping meeting will be held in Kotzebue on Thursday, February 18th, 2010.

The public scoping meetings provide an opportunity to learn about the project, express your views, and identify issues to be addressed in the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

- The meeting in Kotzebue on Thursday, February 18th will be held at the Northwest Arctic Borough Assembly Chambers from 6:00-8:00pm.

Please come join us!
Hello,

This fax includes an announcement for scoping meetings to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement in Point Hope on February 19th, and Point Lay on February 22nd. The meeting time in Point Hope from 5:00 p.m. to 7:00 p.m., and in Point Lay is from 7:00 p.m. to 9:00 p.m.

If it is possible, please announce the locations and times of the meetings on KBRW, K268AA and K201AV, particularly on the days of the meetings. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Hello,

This fax includes an announcement for scoping meetings to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement in Point Hope on February 19th, and Point Lay on February 22nd. The meeting time in Point Hope from 5:00 p.m. to 7:00 p.m. and in Point Lay is from 7:00 p.m. to 9:00 p.m.

If it is possible, please announce the locations and times of the meetings on KICY, particularly on the days of the meetings. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Hello,

This fax includes an announcement for scoping meetings to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement in Point Hope on February 19th, and Point Lay on February 22nd. The meeting time in Point Hope from 5:00 p.m. to 7:00 p.m., and in Point Lay is from 7:00 p.m. to 9:00 p.m.

If it is possible, please announce the locations and times of the meetings on KNOM, particularly on the days of the meetings. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Public Service Announcement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites you to open house and public scoping meetings. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

Public scoping meetings will be held in **Point Hope** on **Friday, February 19th**, and **Point Lay** on **Monday, February 22nd**.

The public scoping meetings provide an opportunity to learn about the project, express your views, and identify issues to be addressed in the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

- The meeting in **Point Hope** on **Friday, February 19th** will be held at the Point Hope Community Center from **5:00-7:00pm**.

- The meeting in **Point Lay** on **Monday, February 22nd** will be held at the Point Lay Community Center from **7:00-9:00pm**.

Please come join us!
TO: Director of Public Service Announcements
FROM: Amy Lewis
FIRM: KBRW
DATE: March 3, 2010
FAX NO: (907) 852-2274
PAGE: 1 of 2

SUBJECT: Scoping Meeting Announcement for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement

MEMO: PSA ANNOUNCEMENT

Hello,

This fax includes an announcement for scoping meetings to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement. Meetings will be held in Wainwright, Barrow, Nuiqsut, and Kaktovik.

If it is possible, please announce the locations and times of the meetings on KBRW, K201AG and K201AH, particularly on the days of the meetings. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation

CONFIDENTIALITY NOTICE
The information in this facsimile transmission is intended solely for the stated recipient of this transmission. If you have received this fax in error, please notify the sender immediately by telephone. If you are not the intended recipient, please be advised the dissemination, distribution, or copying of the information contained in this fax is strictly prohibited.
Public Service Announcement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites you to open house and public scoping meetings. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

Public scoping meetings will be held in **Wainwright, Barrow, Nuiqsut, and Kaktovik.**

The public scoping meetings provide an opportunity to learn about the project, express your views, and identify issues to be addressed in the EIS process. Each meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

- The meeting in **Wainwright** on **Tuesday, March 9th** will be held at the Wainwright Community Center from **7:00-9:00pm.**

- The meeting in **Barrow** on **Wednesday, March 10th** will be held at the Inupiat Heritage Center from **7:30-9:30pm.**

- The meeting in **Nuiqsut** on **Thursday, March 11th** will be held at the Nuiqsut Community Center from **7:00-9:00pm.**

- The meeting in **Kaktovik** on **Friday, March 12th** will be held at the Kaktovik Community Center from **6:30-8:30pm.**

Please come join us!
Hello,

This fax includes an announcement for a scoping meeting to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement. The meeting will be held in Anchorage on Tuesday March 23 at the Eagan Center. The meeting time is from 7:00 p.m. to 9:00 p.m.

If it is possible, please announce the location and time of the meeting on KBRJ and KMXS, particularly on the day of the meeting. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Hello,

This fax includes an announcement for a scoping meeting to be held for the Effects of Oil and Gas Activities in the Arctic Ocean Environmental Impact Statement. The meeting will be held in Anchorage on Tuesday March 23 at the Eagan Center. The meeting time is from 7:00 p.m. to 9:00 p.m.

If it is possible, please announce the location and time of the meeting on KSKA, particularly on the day of the meeting. If there are any questions, please call me at 503-948-7223 or Joan Kluwe at 907-374-0303.

Thank you,

Amy Lewis
URS Corporation
Public Service Announcement

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) invites you to an open house and public scoping meeting. NMFS is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing marine mammal Incidental Take Authorizations under the Marine Mammal Protection Act. These authorizations are issued to the oil and gas industry during offshore exploration activities, such as seismic surveys or exploratory drilling, that take place in Federal and state waters of the U.S. Chukchi and Beaufort Seas.

A public scoping meeting will be held in Anchorage on Tuesday, March 23, 2010 at the Egan Center, 555 W. 5th Ave. from 7:00 to 9:00pm.

The public scoping meeting provides an opportunity to learn about the project, express your views, and identify issues to be addressed in the EIS process. The meeting will have an informational open house, followed by a presentation, and an opportunity to offer comments.

Please come join us!
APPENDIX B
Public Scoping Meeting Materials

Presentation
Display Boards
Sign In Sheets
Presentation
Environmental Impact Statement on Effects of Oil & Gas Activities (Seismic and Exploratory Drilling) in the Arctic Ocean

Public Scoping Meeting
Anchorage, AK
March 23, 2010
Welcome and Introductions

**National Marine Fisheries Service**
- Jim Lecky
- Michael Payne
- Jolie Harrison
- Candace Nachman
- Shane Guan

**Minerals Management Service**
- John Goll
- Jeffery Loman
- Kimberly Skrupky

**URS**
- Jon Isaacs
- Joan Kluwe
- Sheyna Wisdom
- Amy Lewis
Scoping Meeting Agenda

- Information on Scoping Process
- Review of Proposed Action
- NEPA Process
- Activities covered by EIS
- Issues and Concerns
- Next Steps
- Public Comment Period
Statement of Intent

- Analyze the environmental impacts of issuing Incidental Take Authorizations (ITAs) pursuant to sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act (MMPA)
- Issue ITAs to the oil and gas industry for the taking of marine mammals incidental to offshore exploration activities in Federal and state waters of the U.S. Chukchi and Beaufort Seas
MMPA Definitions

- **Take** = to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect

- **Harassment** = any act of pursuit, torment, or annoyance which:
  - has the potential to injure (Level A)
  - has the potential to disturb by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B)
Purpose of NEPA

The National Environmental Policy Act (NEPA) promotes efforts to:

- Minimize impacts to the environment, including the human environment
- Assess environmental impacts of proposed action and a reasonable range of alternatives
- Solicit public comments on issues and alternatives during scoping process
Proposed Action

- Authorize incidental takes allowing industry “the incidental, but not intentional, taking of small numbers of marine mammals” within the Chukchi and Beaufort Seas

- NMFS and MMS must understand consequences of this action on the environment before issuing authorizations
  - Effects on marine mammal species or stocks
  - Effects on communities and subsistence
Requirements of MMPA

Authorizations shall be granted if:

- taking will have a negligible impact on the species or stock(s)
- taking will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses
- the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are set forth
Previous NEPA Documents

- June 28, 2006 – MMS Programmatic Environmental Assessment (PEA) for 2006 Arctic OCS seismic surveys
  - Analyzed effects of 8 concurrent surveys in Beaufort and Chukchi Seas (4 in each planning area)
  - NMFS indicated increased activity and new available science would warrant an EIS
- April 6, 2007 – NMFS and MMS published Draft Programmatic EIS (DPEIS)
Why is new EIS needed?

- New information that alters scope, alternatives, and analyses
- Industry suggests increased seismic activity
- Applications have been received for exploratory drilling
- Cumulative impact analysis to address a longer time frame
  - October 2009 – 2007 EIS withdrawn
  - February 2010 – NMFS announces notice of intent to prepare new EIS
What will EIS include?

Exploratory activities

- Shallow hazard/site clearance surveys
- 2D/3D seismic surveys
- Exploratory drilling
What will EIS include?

- Consider Impacts on Resources
  - Physical
  - Biological
  - Social

- Types of Impacts
  - Direct and Indirect
  - Short and Long-term
  - Cumulative
Impacts on Physical

- Physical Oceanography
  - Sea Ice
  - Water Column/Water Quality
  - Sediments
- Climate
- Air Quality
- Acoustics
Impacts on Biological

- Marine mammals
- Seabirds
- Other marine species
  - Marine fish
  - Plankton
  - Benthic
- Threatened and Endangered
Impacts on Sociocultural

- Coastal communities
- Subsistence uses
- Historic and cultural sites
- Inupiat way of life
- Human health
- Land and water use
- Transportation
- Recreation and tourism
- Visual
- Environmental Justice
Development of Alternatives

- Input from scoping process
- Levels of Activity
  (Number, scale/size, location, and duration of):
  - seismic activities
  - exploratory drilling activities
  - shallow hazard/site clearance activities
  - anticipated support activities (vessel, aircraft, shore)
Development of Alternatives

- Mitigation
  - Exclusion zones based on received levels of sound
  - Exclusion zones based on presence of specific biological factors in combination with received levels of sound
  - Exclusion zones based on presence and timing of subsistence activities
  - Time/area closures for biological and subsistence reasons
Issues and Concerns

- Protection of subsistence resources and Inupiat culture and way of life
- Disturbance to marine mammal migration patterns (bowhead, beluga, etc.)
- Impacts on marine fish, reproduction, growth, and development
- Oil and gas activity impacts on marine mammals and seabirds, including noise, movement, operations
Issues and Concerns (cont.)

- Impacts to threatened & endangered species (including polar bear, walrus)
- Incorporation of Traditional Knowledge in the decision-making process
- Effectiveness and feasibility of marine mammal monitoring and other mitigation measures
- Provide adequate lead time for communities to understand activities and respond
Requesting Information

- Effects of oil and gas seismic and exploration on:
  - marine mammal behavior and use of habitat
  - availability of species for subsistence uses and success of subsistence harvesting
- New Arctic ecosystem science
- New technology for monitoring seismic/drilling activity
- Recommendations for monitoring and mitigation
Option for Rulemaking

- NMFS is considering a long-term planning process under MMPA for 5-year regulations
  - Rather than annual Incidental Harassment Authorization (IHA)
  - Industry will submit petition
  - Implementation goal is 2012
  - EIS would provide NEPA compliance with either annual or 5-year ITAs
Next Steps in EIS Process

- Review comments received during meetings and comment period
- Issue scoping report
- Develop alternatives based on comments
- Prepare Draft EIS
  - Describe environment affected by proposed action
  - Evaluate environmental consequences of proposed action
  - Release Draft EIS for public comment *(estimated December 2010)*
  - Public comment period *(estimated through March 2011)*
- Prepare Final EIS (June 2011)
Scoping Meeting Locations

- February 18 – Kotzebue
- February 19 – Point Hope
- February 22 – Point Lay
- March 9 – Wainwright
- March 10 – Barrow
- March 11 – Nuiqsut
- March 12 – Kaktovik
- March 23 – Anchorage
Scoping Meeting Procedures

- Oral Comments
  - Please sign in at the registration table
  - Please be concise
  - Transcripts of today’s meeting are being captured by a court reporter
Scoping Meeting Procedures

- **Written Comments**
  - Comments due no later than April 9, 2010
  - May be turned in today, mailed, e-mailed, or faxed
  - Submit e-mail comments to: arcticeis.comments@noaa.gov
  - Submit written comments to:

    Michael Payne  
    NOAA/NMFS  
    Office of Protected Resources  
    Permits and Conservation Division  
    1315 East-West Highway  
    Silver Spring, MD 20910  
    Fax: (301) 713-0376
Additional Information

- Available on NMFS web page:
  http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm

- To receive a copy of the DEIS, please register and indicate your interest. The DEIS will also be posted on the website for electronic review.
Thank You for Participating

in the
Effects of Oil and Gas Activities
(Seismic Surveys and Exploratory Drilling)
in the Arctic Ocean
Scoping Process
Display Boards
WELCOME!

Environmental Impact Statement on Effects of Oil & Gas Activities (Seismic and Exploratory Drilling) in the Arctic Ocean

Public Scoping Meeting
Arctic EIS Objectives

What is purpose of Arctic EIS?

- Analyze the environmental impacts of issuing Incidental Take Authorizations (ITAs) pursuant to sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act (MMPA)
- Issue ITAs to the oil and gas industry for the taking of marine mammals incidental to offshore exploration activities in Federal and state waters of the U.S. Chukchi and Beaufort Seas

Authorizations shall be granted if:

- taking will have a negligible impact on the species or stock(s)
- taking will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses
- the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are set forth
Purpose of NEPA

The National Environmental Policy Act (NEPA) promotes efforts to:

- Prevent damage to environment, including the human environment
- Assess environmental impacts of proposed action and a reasonable range of alternatives
- Solicit public comments on issues and alternatives during scoping process

Proposed Action

- Authorize incidental takes allowing industry “the incidental, but not intentional, taking of small numbers of marine mammals” within the U.S. Chukchi and Beaufort Seas
- Understand consequences of this action on the environment before issuing authorizations
  - Effects on marine mammal species or stock(s)
  - Effects on communities and subsistence
Development of Alternatives

- **Levels of Activity**
  (Number, scale/size, location, and duration of):
  - seismic activities
  - exploratory drilling activities
  - shallow hazard/site clearance activities
  - anticipated support activities (vessel, aircraft, shore)

- **Mitigation**
  - Exclusion zones based on received levels of sound
  - Exclusion zones based on presence of specific biological factors in combination with received levels of sound
  - Exclusion zones based on presence and timing of subsistence activities
  - Time/area closures for biological and subsistence reasons
What will EIS include?

**Activities**

- Shallow hazard/site clearance surveys
- 2D/3D seismic surveys
- Exploratory drilling

**Types of Impacts**

- Direct and Indirect
- Short and Long-term
- Cumulative (past, present, reasonably foreseeable future)
What will EIS include?

Impacts

Physical Resources
- Physical Oceanography
- Sea Ice
- Water Column/Water Quality
- Sediments
- Climate
- Air Quality
- Acoustics

Biological Resources
- Marine Mammals
- Seabirds
- Marine Fish
- Plankton
- Benthic
- Terrestrial Wildlife
- Threatened & Endangered

Sociocultural Resources
- Subsistence Uses
- Coastal Communities
- Historic Sites
- Human Health
- Transportation
- Land Use
- Visual
- Recreation & Tourism
- Environmental Justice
# Steps in the NEPA Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Estimated Dates</th>
</tr>
</thead>
</table>
| 1    | Federal Notice of Intent (NOI)  
February 8, 2010 | |
| 2    | **Scoping**  
Scoping period: February 8 to April 9, 2010  
Public Scoping Meetings: February 18 to March 23, 2010  
Scoping Report, Estimated: May 2010 | |
| 3    | **Analysis of Alternatives** | |
| 4    | NMFS Selects Preferred Alternative | |
| 5    | **Issue Draft EIS**  
Estimated release: mid-December 2010  
Available for 45-day public review, through early February 2011 | |
| 6    | **Public Hearing on Draft EIS**  
Estimated: January 2011 | |
| 7    | **Public Comment Review and Synthesis**  
Comment Analysis Report Available, Estimated: March 2011 | |
| 8    | **Respond to Comments/ Prepare Final EIS**  
Estimated: June 2011 | |
| 9    | **Issue Final EIS**  
Estimated: late June 2011, Minimum 30-day public review | |
| 10   | **Record of Decision**  
Public statements of agency decisions  
Estimated: July 2011 | |

## Scoping Meeting Schedule
- February 18 – Kotzebue
- February 19 – Point Hope
- February 22 – Point Lay
- March 9 – Wainwright
- March 10 – Barrow
- March 11 – Nuiqsut
- March 12 – Kaktovik
- March 23 – Anchorage
How can you participate?

- **Oral Comments**
  - Please sign in at the registration table
  - Please keep comments to 4 minutes
  - Transcripts of today’s meeting are being captured by a court reporter

- **Written Comments**
  - Comments due no later than April 9, 2010
  - May be turned in today, mailed, e-mailed, or faxed
  - Submit e-mail comments to: arcticeis.comments@noaa.gov
  - Submit written comments to: arcticeis.comments@noaa.gov

---

**Project web page:**
http://www.nmfs.noaa.gov/pr/permits/eis/arctic.htm
Sign-in Sheets
** NMFS  
EFFECTS OF OIL AND GAS ACTIVITIES ON ARCTIC OCEAN EIS  
PROJECT SCOPING MEETING  
Anchorage  
March 23, 2010  
SIGN-IN SHEET  

<table>
<thead>
<tr>
<th>PLEASE PRINT NAME AND ADDRESS</th>
<th>AGENCY and DISCIPLINE</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Levine</td>
<td>Oceanica</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>David Dickson</td>
<td>Alaska WHO</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Eleanor Huffines</td>
<td>Pew</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marilyn Herman</td>
<td>Pew</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT?</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Chris Kleene</td>
<td>Oceana (Scientist)</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>William G. Kell, Jr.</td>
<td>Center for Regulatory Effectiveness</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Jeff Childs</td>
<td></td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Sarah Rider</td>
<td>NWFAC Atlantic Biologist</td>
<td></td>
<td></td>
<td>no</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT ?</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Jennifer Nist</td>
<td>NOAA Ge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shane Guan</td>
<td>NMFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stewart Seasing</td>
<td>ASRC Energy Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicole Whitting for Evans</td>
<td>The Wilderness Society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Roychelle Daniel</td>
<td>Pew</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andrew Hartwig</td>
<td>Ocean Conservancy</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Duncan Ely</td>
<td>Pelaews</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Galgaitis</td>
<td>Applied Socio-Legal Research</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Lucas Francis</td>
<td>Shell</td>
<td></td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Carl Pantman</td>
<td>RDC</td>
<td></td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>Marilyn Crockett</td>
<td>AOGA</td>
<td></td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>Robert Snydam</td>
<td>NSB</td>
<td></td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT ?</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| Jeff Johnson  
900 E. Benson  
M400 9-2  
Anchorage 99508 | BP | | | |
| Emily Lindow | NOAA | | | |
| Carl King | NUPito  
Point Hope | | | |
| Sarah Tsolias | IAGC  
geologist | | | |
<table>
<thead>
<tr>
<th>PLEASE PRINT NAME AND ADDRESS</th>
<th>AGENCY and DISCIPLINE</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Janet Clarke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dave Rush</td>
<td>NMML, NMFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lisa Baraff</td>
<td>URS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ken Boyd</td>
<td>STA RVC</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Jolie Harrison</td>
<td>NMFS</td>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Anne Southam</td>
<td>ERM</td>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Karin Berentzen</td>
<td>STATOIL</td>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Charles Greene</td>
<td>Greeenridge Sciences</td>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>6160-C Welland Edmond</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Santa Barbara, CA 92317</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Address</td>
<td>Agency and Discipline</td>
<td>Phone Number</td>
<td>Email Address</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Brandon Southall</td>
<td>911 Center Street Suite B</td>
<td>SAF, Inc.</td>
<td>SAF</td>
<td></td>
</tr>
<tr>
<td>Martin Cohen</td>
<td>2301B Hazard Street,</td>
<td>STATOil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wayne Webster</td>
<td>2700 Gambell St, Ste 200</td>
<td>ASRC Energy Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caryn Rea</td>
<td>7041 Potter Heights</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please Print Name and Address</td>
<td>Agency and Discipline</td>
<td>Phone Number</td>
<td>Email Address</td>
<td>Make Oral Comment</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Steinar Eldøy</td>
<td>Statoil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tom Boyd</td>
<td>URS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bruce St. Pierre</td>
<td>ConocoPhillips</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Bill Koski</td>
<td>LGL Ltd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Darren Ireland</td>
<td>LGI AK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Craig Reiser 1101 76th Ave Suite B Anchorage, AK 99518</td>
<td>U.S. Department of Commerce Biologist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craig George</td>
<td>NSD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eric Myers</td>
<td>Audubon Alaska</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Hopson Jr</td>
<td>Wildlife</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>David Hannay</td>
<td>JASCO Acoustician</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Michael Link</td>
<td>LGL</td>
<td></td>
<td></td>
<td>~</td>
</tr>
<tr>
<td>Dale Funk</td>
<td>LGL-L</td>
<td></td>
<td></td>
<td>~</td>
</tr>
</tbody>
</table>
### NMFS
**EFFECTS OF OIL AND GAS ACTIVITIES ON ARCTIC OCEAN EIS**
**PROJECT SCOPING MEETING**
Barrow
March 10, 2010
**SIGN-IN SHEET**

<table>
<thead>
<tr>
<th>PLEASE PRINT NAME AND ADDRESS</th>
<th>AGENCY and DISCIPLINE</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEIC 86514</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 581</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seattle, WA 98227</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Briana Elkins</td>
<td>NSB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 1774</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrow, AK 99723</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jessica Dole</td>
<td>NSB (senior)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 1872</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrow AIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnny Kunag Brown</td>
<td>SELA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charles Okaku</td>
<td>Self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspiring Nation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Rachel Edwardsen</td>
<td>U.S. Chichkan Film Unit, Director</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 1677</td>
<td>Barrow, AK 99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shawnie Larson</td>
<td>Pacific Environmental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>308 G Street, #202, Anchorage, AK 99560</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emma Hopson</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 1677</td>
<td>Barrow, AK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adeline Hopson</td>
<td>Self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 1672</td>
<td>Barrow, AK 99723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Address</td>
<td>Agency and Discipline</td>
<td>Phone Number</td>
<td>Email Address</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Rick L. Rice</td>
<td>P.O. Box 1230, B. W. 99723</td>
<td>NMFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jason Herrema</td>
<td>P.O. Box 69, Barrow, AK 99703</td>
<td>NMFS Wildlife Dept.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edward Itz</td>
<td>P.O. Box 69, B. W. 99723</td>
<td>NMFS Mayor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karla Kavesh</td>
<td>P.O. Box 69, B. W. 99723</td>
<td>NMFS Mayor's Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ben Albers</td>
<td>1115 N. Forest Dr, Bellingham, WA 98225</td>
<td>Self</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## NMFS

**EFFECTS OF OIL AND GAS ACTIVITIES ON ARCTIC OCEAN EIS**

**PROJECT SCOPING MEETING**

Barrow  
March 10, 2010  
SIGN-IN SHEET

<table>
<thead>
<tr>
<th>PLEASE PRINT NAME AND ADDRESS</th>
<th>AGENCY and DISCIPLINE</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
</table>
| DAVE ANDERSON  
PO BOX 1510  
BARROW, AK 99723 |  |  |  |  |
| Jim Saizewdel  
PO BOX 1535  
BARROW |  |  |  |  |
| B. Ristoiph  
PO BOX 69  
BRW |  |  |  |  |
| P. Lewis, Sr  
PO BOX 934  
BARROW, AK 99723 |  |  |  |  |
| Todd Sturm  
PO BOX 1821  
BARROW AK 99723 |  |  |  |  |

**URS**
<table>
<thead>
<tr>
<th>NAME</th>
<th>AGENCY and DISCIPLINE</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hans Neidig</td>
<td>Eni Petroleum</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Debby Edwardsen</td>
<td>Ilisagvik College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>George Edwardsen</td>
<td>ICAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ben Greene</td>
<td>NSB Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Agency and Discipline</td>
<td>Phone Number</td>
<td>Email Address</td>
<td>Make Oral Comment?</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Geoff Carr 11</td>
<td>ADFG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ryan Lee Oyagak</td>
<td>Self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelly McFarlin</td>
<td>University of Alaska</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PhD student</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Nora Jane Burns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 101</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaktovik, AK 99747</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jennifer &amp; Art Smith</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEE KAYOTUK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carla SimsKayotuk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99747</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Pete Veisko</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jim Ganeses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matthew Rexford</td>
<td>City of Kaktovik Board Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edward Rexford</td>
<td>UVI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harry Lord</td>
<td>Universal Oilfield</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Fenton Rexford Box 150</td>
<td>Nature Village of Kaktovik</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>George Knaggs</td>
<td>NTSC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leoal A. Stooch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marie Rexford</td>
<td>Resident</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Caleb Pangowiwi</td>
<td>OCEANA</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Box 637</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kotzebue, AK 99752</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukalsaysee</td>
<td>NWF</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>P.O. Box 110</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Igloolik</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>John Chase</td>
<td>NAF</td>
<td></td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

*NMFS*  
*EFFECTS OF OIL AND GAS ACTIVITIES ON ARCTIC OCEAN EIS*  
*PROJECT SCOPING MEETING*  
Kotzebue  
February 18, 2010  
*SIGN-IN SHEET*
**NMFS**

**EFFECTS OF OIL AND GAS ACTIVITIES ON ARCTIC OCEAN EIS**

**PROJECT SCOPING MEETING**

Kotzebue

February 18, 2010

SIGN-IN SHEET

<table>
<thead>
<tr>
<th>PLEASE PRINT NAME AND ADDRESS</th>
<th>AGENCY and DISCIpline</th>
<th>PHONE NUMBER</th>
<th>EMAIL ADDRESS</th>
<th>MAKE ORAL COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tim Smith</td>
<td>NOME FISHERNIE'S ASSOCIATION</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Grantchildren</td>
<td>NWAB</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Bobby Wells Mayor</td>
<td>Norvik</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Frank Stein</td>
<td>Kotzebue</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Rosanna Akluqamuk</td>
<td>ICAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>James Trudell</td>
<td>PNR Liaison</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed Nukapisiuk</td>
<td></td>
<td></td>
<td></td>
<td>/yes</td>
</tr>
<tr>
<td>Thomas Mark</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NWCA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PLEASE PRINT NAME AND ADDRESS</strong></td>
<td><strong>AGENCY and DISCIPLINE</strong></td>
<td><strong>PHONE NUMBER</strong></td>
<td><strong>EMAIL ADDRESS</strong></td>
<td><strong>MAKE ORAL COMMENT ?</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>George Siewik</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jimmy A. Ayagale</td>
<td>City of NU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sarah Ayagale</td>
<td>City of NU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billy Ayagale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT ?</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Dwayne Hoffman</td>
<td>URS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lucy Nukngiyaa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jimmy Nukngiyaa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carl S. Brower</td>
<td>Whaler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Thomas Napasekt Jr.</td>
<td>City of No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willie Siekak Sr.</td>
<td>NOI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archie Carolin</td>
<td>NUI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander</td>
<td>NUI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Brauer</td>
<td>NUI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Iglika V. Nagayev</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larry B. Ziegler</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bernia Kaigchik</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Tukile Alasvik</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorcas Tukile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Dustin Long</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 300</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elv Wilcox</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donna Hewitt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eric Leavitt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Jilli Leypa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esther Naslukpik</td>
<td></td>
<td></td>
<td></td>
<td>?</td>
</tr>
<tr>
<td>Krist Frankson</td>
<td></td>
<td></td>
<td></td>
<td>&gt;</td>
</tr>
<tr>
<td>Elijah Rock Sr.</td>
<td></td>
<td></td>
<td></td>
<td>?</td>
</tr>
<tr>
<td>Dorcus Rock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Caroline P. Cannon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jack Schaefer</td>
<td>ICAS</td>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Name</td>
<td>Agency and Discipline</td>
<td>Phone Number</td>
<td>Email Address</td>
<td>Make Oral Comment</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Bill A. Tracey SR</td>
<td>Pt. Lay resident NSB Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 53629</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point Lay, AK 99759</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Nukapigak</td>
<td>Native Village of Pt Lay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 59101</td>
<td>Vice President</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pt-Lay H1c 99759</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NELC MKSKEW72</td>
<td>Policy DEVT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pt, CA 91, AK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nathan Henry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Mario Tracey</td>
<td>USB Mayor's Village Liaison</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 59029</td>
<td>Point Lay, Alaska 99759</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lena Feinbrin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 59005</td>
<td>Point Lay, AK 99759</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Geraldine Ningedi</td>
<td></td>
<td></td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>George Akuluk</td>
<td></td>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Alice Naskodiyuk</td>
<td></td>
<td></td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Dennis Avezaqna</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wainwright, AK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bob Shearer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 107</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Joyward</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 163</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doug Highlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terry Tagarrook</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Bonnie Spencer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1026 Penn St Box 87 Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eleanor Bodfish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box 137 Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbert Tagaq</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silepul Herebnak, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freddie Eacks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO Box 78 Wainwright, AK 99782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>John Hopson Jr</td>
<td>Oligoalic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edna Ahmaoak</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marjorie A. Aedstad</td>
<td>N.S.B. Fire-Dept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cara Akipik</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLEASE PRINT NAME AND ADDRESS</td>
<td>AGENCY and DISCIPLINE</td>
<td>PHONE NUMBER</td>
<td>EMAIL ADDRESS</td>
<td>MAKE ORAL COMMENT</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Lizzie Aquilina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

Comment Analysis Report
Comment Analysis Report

During the scoping period for the *Environmental Impact Statement (EIS) on the Effects of Oil and Gas Activities in the Arctic Ocean*, the National Marine Fisheries Service (NMFS) received a total of 73 submissions, containing 721 substantive comments. Submissions included email, letters, and transcripts of public testimony given at scoping meetings and the proceedings of government-to-government consultations.

The body of this document contains the 178 Statements of Concern (SOCs) developed to help summarize scoping comments. The SOCs are ordered according to the original grouping of issues categories, as outlined below.

<table>
<thead>
<tr>
<th>Group</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effects</strong></td>
<td></td>
</tr>
<tr>
<td>HAB</td>
<td>2</td>
</tr>
<tr>
<td>MMI</td>
<td></td>
</tr>
<tr>
<td>NED</td>
<td></td>
</tr>
<tr>
<td>OSR</td>
<td></td>
</tr>
<tr>
<td>SEI</td>
<td></td>
</tr>
<tr>
<td>SRP</td>
<td></td>
</tr>
<tr>
<td>WAQ</td>
<td></td>
</tr>
<tr>
<td><strong>Available Information</strong></td>
<td>9</td>
</tr>
<tr>
<td>DATA</td>
<td></td>
</tr>
<tr>
<td>RME</td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory Compliance (Process; NEPA, Permits, this EIS)</strong></td>
<td>14</td>
</tr>
<tr>
<td>COR</td>
<td></td>
</tr>
<tr>
<td>MIT</td>
<td></td>
</tr>
<tr>
<td><strong>Inupiat Culture</strong></td>
<td>29</td>
</tr>
<tr>
<td>ICL</td>
<td></td>
</tr>
<tr>
<td>UTK</td>
<td></td>
</tr>
<tr>
<td><strong>General</strong></td>
<td>31</td>
</tr>
<tr>
<td>ACK</td>
<td></td>
</tr>
</tbody>
</table>
**Effects**

<table>
<thead>
<tr>
<th>HAB</th>
<th>Habitat - Comments associated with habitat requirements, or potential habitat impacts from seismic activities and exploratory drilling. Comment focus is habitat, not animals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAB 1</td>
<td>Thetis Island, Cross Island, and Camden Bay provide important feeding and resting habitat for migrating bowhead whales.</td>
</tr>
<tr>
<td>HAB 2</td>
<td>The Arctic is facing a variety of threats that need to be addressed: climate change (sea ice is receding in the summertime, the quality of the sea ice is changing and there's less multi-year ice than there used to be); ocean acidification; and industrial development.</td>
</tr>
<tr>
<td>HAB 3</td>
<td>Loss of sea ice in the Arctic may increase human activities, such as: oil and gas activity, mining, commercial shipping, and commercial fishing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MMI</th>
<th>Marine Mammal and other Wildlife Impacts - General comments related to potential impacts to marine mammals or wildlife, unrelated to subsistence resource concepts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMI 1</td>
<td>Oil and gas activities (such as seismic exploration and drilling) negatively impact marine species including: diverting whales, making animals shy away, covering ice with mud usually confined to the bottom of the ocean, forcing ice dependent animals out of their habitat, and destroying their habitat. These impacts may have lasting effects for animals over multiple years.</td>
</tr>
<tr>
<td>MMI 2</td>
<td>Animals impacted by oil and gas activities should be given a protected status, including seals, whales, other marine mammals, fish, ducks, and sea birds.</td>
</tr>
<tr>
<td>MMI 3</td>
<td>The EIS should acknowledge the evidence in peer-reviewed literature, which indicates that seismic exploration has not affected the health or reproductive fitness of marine mammal populations.</td>
</tr>
<tr>
<td>MMI 4</td>
<td>Special consideration should be given to disturbances that might separate a dependent infant from its caregiver. For example, bowhead cow-calf pairs.</td>
</tr>
<tr>
<td>MMI 5</td>
<td>Sounds levels do not have to be very high to adversely impact marine mammals, including causing them to abandon their young.</td>
</tr>
<tr>
<td>MMI 6</td>
<td>Cumulative exposure of marine mammals to oil and gas activity (including seismic exploration and drilling) should be considered, as species may encounter operations in multiple areas during one season. For example, bowhead whale migration routes may expose them to drilling activity in the Beaufort Sea and Chukchi Sea.</td>
</tr>
</tbody>
</table>
MMI 7 Studies reveal that female baleen whales show a heightened response to noise and disturbance and that fall migrating bowheads demonstrate greater avoidance than bowheads engaged in activities such as feeding.

MMI 8 The environmental record of the offshore exploration and production industry should be analyzed as part of the EIS. It documents that geophysical surveys are not likely to have discernable adverse effects on marine mammal stocks.

MMI 9 Studies have been unable to show a link between exposure to sound and adverse effects on marine mammal populations. Furthermore, there is no scientific evidence to suggest that the seismic activities associated with Beaufort and Chukchi Seas exploration, with use of a 180dB/190dB exclusion zone and other routine mitigation and monitoring requirements, will have an adverse population-level impact the bowhead whale stock.

MMI 10 Acidification will introduce a fundamental shift in the biogeochemical cycling of the Arctic Ocean. Impacts may include carbon ion depletion and its related effects, increased ocean noise, which could exacerbate the impacts of noise from industrial activity, changing the growth rates of photosynthetic phytoplankton, the toxicity of the marine toxins, the availability of ammonia for uptake by marine plants, and the efficiency of respiration in fish and other marine organisms. Animals at risk include mollusks, crustaceans, echinoderms, encrusting algae, and certain types of marine phytoplankton.

MMI 11 Increased vessel traffic increases the likelihood that marine mammals may be injured or killed from vessel strikes.

MMI 12 Mitigation measures to protect marine mammals are successful. For example, not one lethal take of polar bear has occurred since the incidental take authorizations regulations were put into place.

MMI 13 NMFS should reevaluate the impacts to marine mammals from noise exposure using the latest literature. Specific requests/examples include:

- Reevaluate permanent threshold shift of auditory injury for marine mammals.
- Recent literature indicates that very significant impacts to individuals and populations may occur at levels well below the 160 dB that MMS considers the minimum level at which behavioral harassment occurs.
- Thresholds employed should account for longer-term effects of noise exposure and not be based solely on immediate marine mammal responses.

MMI 14 Changes in Arctic conditions are resulting in the introduction of new marine mammal species, including: humpback, fin, and killer whales; narwhals, and porpoises.

MMI 15 Deflection of whales, and the resultant impacts to individuals and populations, fits squarely within the definition of "harassment" as defined in the Marine Mammal Protection Act.
Seismic and other sound sources result in detrimental impacts to marine species. Specific examples provided include:

- Killing fish eggs, larvae, and fry or retarding their growth and hinder their survival
- Causing changes in whale behavior including disturbed or "skittish" behavior, and coming up vertically for air
- Deflecting migrating whales
- Abandoning or avoiding impacted areas (e.g. mother polar bears abandoning dens, whales abandoning or avoiding feeding areas, and walrus abandoning haul outs)
- Masking of biologically important sounds
- Harming availability and viability of prey species
- Permanent and temporary hearing loss or auditory threshold shift in marine mammals and fish
- Alarm behavior in fish, and
- Impacts to tomcod.

---

The U.S. needs stable sources of energy from oil and natural gas to meet its increasing energy demands. Access to domestic supplies, such as those located on the Alaska Arctic Outer Continental Shelf, is important to meeting this demand. Other benefits could include decreased reliance on foreign sources.

The Inupiat people are being forced to bear a disproportionate share of the burdens of our nation's energy consumption.

Current resource estimates may understated Outer Continental Shelf supply potential because the areas are largely unexplored and the estimates have not benefited from the use of new seismic and computer modeling technology.

State and Federal agencies need to develop and implement an effective oil spill response/contingency plan prior to any more oil and gas activities.

Technology and industry standards have evolved to play a critical role in achieving prevention of oil spills through engineering, design, personnel training, and well planning.

A large oil spill in the extreme conditions present in Arctic waters would be extremely difficult or impossible to clean up.
OSR 4  The U.S. Coast Guard does not have federal funding for oil spill response and is not present in Arctic waters year round.

OSR 5  Although all phases of oil and gas activities increase the potential for an oil spill, a significant amount of major spills occur during the exploration phase.

OSR 6  Due to mismanagement of operations and maintenance on existing oil and gas developments in Alaska, industry has increased the risk of an oil spill.

OSR 7  In the last 20 years, industry has made proactive efforts regarding prevention but it is still not enough.

OSR 8  Most oil spills result from tankers, not pipelines.

OSR 9  Technology is not advanced enough for an oil spill clean up on the ice or in ice infested waters. Industry and the government agencies need to work together to develop this technology.

OSR 10 If there was an oil spill, it would be felt globally due to the ocean currents and migratory patterns of not only marine mammals but terrestrial species too.

OSR 11 There are four key actions needed to prevent and respond to oil spills in the Arctic Ocean: 1) Conduct an Arctic Oil Spill Risk Assessment 2) Assess Arctic Oil Spill Response Capacity 3) Conduct an Arctic Oil Spill Response Gap Analysis 4) Ensure the Process is Transparent and Scientifically Rigorous.

SEI  Socioeconomic Impacts - Comments on economic impacts to local communities, regional economy, and national economy, can include changes in the social or economic environments (MONEY, JOBS).

SEI 1  It is expensive to prepare for whaling and impacts from industry are only going to make it more expensive. These costs affect whole communities, not just whaling crews.

SEI 2  The oil and gas industry and other related business would benefit from predictability in permitting processes (such as issuance of incidental harassment authorizations). Long-term business decisions are made on the assumption that permits will be issued.

SEI 3  The State of Alaska and the entire nation benefit economically from offshore oil and gas development through job creation and generation of local, state, and federal revenues. Related economic issues identified include:
  • Lawsuits and regulations that hinder this development hurt the ability of Alaska residents (including Alaska native communities) to earn an income and provide for their families.
  • New natural gas production in the Alaska Arctic Outer Continental Shelf would enhance the economic viability of the proposed natural gas pipeline from Alaska to the Lower 48.
• Diminished access to domestic energy supplies, particularly in the form of natural gas has already had an impact on a number of important sectors of the economy.
• Regulators, industry, and the communities of the Arctic must work together to prevent economic impacts.

SRP Subsistence Resource Protection - Comments on need to protect subsistence resources and potential impacts to these resources. Can include ocean resources as our garden, contamination (SUBSISTENCE ANIMALS, HABITAT).

SRP 1 Industry activities should have little to no impact on subsistence hunting and harvest in the Chukchi Sea as these activities do not occur in the same areas. Subsistence hunting activities occur within 20 miles of the coast as opposed to exploration activities that would be occurring further offshore. Conditions are different in the Beaufort Sea.

SRP 2 Aircraft traffic (including support activity) associated with oil and gas activities occurs in the same area as subsistence users and has and may continue to affect subsistence resources including polar bears, walrus, seals, caribou, and coastal and marine birds, making it more difficult for hunters to obtain these resources. Aircraft disturbance in caribou migratory pathways from oil and gas operations and tourism near the coast displaces caribou inland and may be have a cumulative impact on harvest.

SRP 3 Drilling muds have been observed on icebergs by subsistence hunters who have expressed concern that such discharges may adversely impact subsistence resources such as bowheads and other marine mammals.

SRP 4 Cumulative impacts to subsistence resources may occur as a result not only from exploration activities but also from indirect activities including support vessels and aircraft traffic. The potential for increased commercial vessel traffic through the Arctic Ocean or from a Northwest Passage route could cumulatively impact subsistence resources.

SRP 5 Increased exploration activity and industry vessel traffic could potentially endanger subsistence hunters during poor weather conditions if the hunters are required to travel further than 30 miles offshore to spot whales that may be deflected due to industry activities.

SRP 6 Noise from seismic operations, drilling and potential development/production may cause bowhead whales to become more difficult to hunt. Activities related to seismic exploration and related air and vessel traffic may negatively impact subsistence harvest by causing displacement of caribou and birds.
SRP 7  Protection of subsistence resources and lifestyle is important to sustaining food sources and the culture of Alaska Natives for future generations.

SRP 8  Increased vessel traffic, including barge traffic between the communities, is impacting subsistence bowhead hunters as a result of whales being deflected from the area and loss of potential strikes and harvest. Subsistence bowhead hunters would like the EIS to consider impacts of increased vessel traffic and regulating vessel traffic in areas during whaling so that interference during the hunt from vessel traffic does not occur.

SRP 9  Impacts of exploratory drilling activities offshore that could impact subsistence activities related to the harvest of bowhead whales that should be evaluated include:
• Impacts of exploration and potential development and production could cause deflection of bowheads up to 30 miles offshore that would impact subsistence hunters and ability to safety tow whales back to shore and cause loss of opportunity for harvest of allotted quota. Changes in bowhead whale behavior as a result of industry activity may cause the whales to become less available to hunters.
• Increase in vessel and barge traffic (crew, fuel, and supply runs) between existing offshore structures and onshore development leads to increased deflection of whales from traditional hunting areas that then causes whalers to travel further offshore to hunt.
• Discharge of drilling muds that enter currents and migratory pathways of the bowheads can also cause the whales to divert from migratory pathways/currents and areas that subsistence hunters traditionally use causing whalers to travel further offshore to hunt.
• Concern that displacement of bowheads from migratory routes in the Beaufort and Chukchi Seas may impact other communities that also depend on bowheads for subsistence.
• Subsistence hunters concerned that bowheads that are continually deflected from normal migratory routes due to noise and discharges encountered in currents will eventually abandon traditional habitats all together.

SRP 10  Impacts of exploratory drilling activities offshore that could impact subsistence activities related to the harvest of seals and other marine mammals that should be evaluated include:
• Bearded seals may be displaced by icebreaking activities for exploration which would impact subsistence hunters and potential harvest of these seals.
• Cross Island and Thetis Island in the Beaufort Sea are important seal hunting areas for subsistence users and hunting and harvest could be disturbed by increased industry activities. Consider protection of these islands during subsistence activities/hunts.
• Exploration activities resulting in subsistence hunters having to travel further offshore to hunt bearded seals.
SRP 11 Impacts of exploratory drilling activities offshore that could impact subsistence resources should also evaluate:
- Bowhead whales and seals are not the only subsistence resource that Alaska Native communities rely upon. Fishing is also an important resource and different species are hunted throughout the year. Subsistence users have expressed concern that causeways and activities to support offshore exploration will change migratory patterns of fish and terrestrial animals that occur along the coastlines.
- Subsistence users concerns that impacts of an offshore oil spill could adversely affect subsistence resources.
- Protection of subsistence resources and impacts to subsistence lifestyle need to be considered before exploration activities can occur offshore.
- Research and monitoring of existing discharges and the impacts to migratory patterns of subsistence resources and impacts to subsistence users has not occurred.

<table>
<thead>
<tr>
<th>WAQ</th>
<th>Water and Air Quality - Comments regarding water and air quality, including potential to impact or degrade these resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAQ 1</td>
<td>Oil and gas activities can release numerous pollutants into the atmosphere. Greater emissions of nitrogen oxides and carbon monoxide could triple ozone levels in the Arctic, and increased black carbon emissions would result in reduced ice reflectivity that could exacerbate the decline of sea ice. The emission of fine particulate matter (PM 2.5), including black carbon, is a human health threat. Cumulative impacts will need to be assessed.</td>
</tr>
<tr>
<td>WAQ 2</td>
<td>Water pollution could cause toxins to bioaccumulate in top predators, including humans. There needs to be more information about the potential risks to human health.</td>
</tr>
<tr>
<td>WAQ 3</td>
<td>Water stratification during summer months may inhibit the dispersal of discharged pollutants, potentially confining pollutants to the shallow upper section of the ocean, where marine mammals are more likely to be affected.</td>
</tr>
<tr>
<td>WAQ 4</td>
<td>Thermal discharge from cooling water may impair water quality by directly altering the benthic community or killing marine organisms, by changing the behavior and physiology of marine organisms, and by potentially releasing toxins into the marine environment.</td>
</tr>
<tr>
<td>WAQ 5</td>
<td>Vessels used to conduct seismic surveys or exploration drilling can discharge numerous pollutants while operating, during refueling spills, or in other accidents.</td>
</tr>
<tr>
<td>WAQ 6</td>
<td>The oil and gas industry does not possess the technical ability to pursue development in a way that avoids contamination of nearby waters.</td>
</tr>
</tbody>
</table>
## Available Information

<table>
<thead>
<tr>
<th>DATA</th>
<th>Data - Comments referencing scientific studies that should be considered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA 1</td>
<td>NMFS should review and consider the comments received on the previous Draft EIS.</td>
</tr>
</tbody>
</table>
| DATA 2 | NMFS should consider the following documents in its analysis of cumulative impacts:  
• Arctic Marine Shipping Assessment available at:http://web.arcticportal.org/uploads/L9/LPqHzJZ88Zp4EOdasTcA/AMSA_Scenarios_NEW.pdf  
| DATA 3 | NMFS should reference air quality studies currently being undertaken by the National Park Service and Alaska Department of Environmental Conservation on cruise ships in Alaska. |
| DATA 4 | Expertise and information on conducting Health Impact Assessments is available from tribal, local, state, and federal health agencies. In addition, guidelines for conducting Health Impact Assessments are available from various sources including:  
• http://www.who.int/hia.about/guides/en/, and  
• http://www.ifc.org/ifcext/sustainability.nsf/Content/PublicComment_HealthImpactAssessment. |
| DATA 5 | NMFS should consider the following whale surveys/studies:  
• The latest aerial surveys of the Chukchi Offshore Monitoring in Drilling Area program (COMIDA).  
• The satellite tagging study being conducted by Lori Quackenbush of the Alaska Department of Fish and Game with assistance from the North Slope Borough's Department of Wildlife Management and the whaling captains of AEWC.  
• The 2010 bowhead whale population estimate currently under development. |
DATA 6  NMFS should refer to submittal by Walt Rosenbusch of the International Association of Geophysical Contractors which provides specific information on the geographic locations, types and number of geophysical activities estimated to occur over a 5-year time period (2011-2015). The submittal also provides detailed information on seismic sound sources, which should be considered.

DATA 7  NMFS should consider the following sources of information on invasive species:
  • Studies by Dr. Greg Ruiz, Marine Invasion Research Laboratory, Smithsonian Environmental Research Center.
  • A guide regarding how to deal with invasive species in the oil and gas industry developed by the International Petroleum Industry Environmental Conservation Association/The International Association of Oil and Gas Producers (IPIECA/OGP) Biodiversity Working Group, and Statoil.

DATA 8  NMFS should review and consider the documents and lists of references provided by the following commenters:
  • Shell Exploration and Production Company
  • Environmental Protection Agency

DATA 9  Sources of pertinent information on exploratory drilling include:
  • Neff, J. M. 2010. Fates and Effects of Water Based Drilling Muds and Cuttings in Cold-Water Environments (under development).
  • Statoil would be happy to provide information on drilling standards employed by the industry in Norway and their potential relevance in Alaska.

DATA 10  NMFS should consider the following sources of information pertaining to marine life:
  • The research program by ConocoPhillips, Shell, and Statoil (results of data collected so far clearly indicate a significant variation in the species and biomasses encountered from year to year in the Chukchi Sea).
  • Policy papers published by the American Fisheries Society (AFS) addressing such issues as the protection of marine fish stocks, biodiversity, introduction of aquatic species, and modifications to habitat available at: http://www.fisheries.org/afs/policy_statements.html
RME 1 The EIS needs to consider that the Arctic contains some of the world’s last remaining intact marine ecosystems and impacts to this baseline from climate change, ocean acidification, and increasing industrial activities.

RME 2 Sufficient baseline data currently exists to support exploratory drilling programs.

RME 3 There is insufficient information, monitoring and baseline data available for decision makers to determine if oil and gas activity will have an impact on the Arctic. Comments include:
• Authorizations for permits should not be made until adequate baseline information is available.
• NMFS must ensure that any industrial activity authorized in the Arctic does not substantially change the existing baseline conditions until such time as adequate information is available.
• Population level effects cannot be estimated without reliable population data. NMFS should proceed cautiously in evaluating impacts to marine mammals when there is so much uncertainty.
• NMFS should establish an existing baseline that will provide for a comparison of impacts in order to determine the effects of oil and gas activity.
• Instead of relying on positions based on insufficient information, continuing research to obtain such information should be carried out.

RME 4 Information and baseline data on marine mammal populations and distribution is inadequate to support informed decision making including:
• More information is need on the health of females and young calves.
• Knowledge of bowhead use of the Chukchi is limited. Suggestion that at least 2-3 years of baseline data be collected to support decisions made.
• Ice seal populations are more than 15 to 20 years old.
• There is no population estimates for polar bears or walrus in the Chukchi Sea.
• Data is not current for abundance, reproduction/breeding areas, habitat use, or feeding areas.
• Information specifically on the impacts of noise to marine mammals is lacking and there is inadequate monitoring of the effects.

RME 5 Lease sales were conducted lacking established baselines for the environment which is not in compliance with regulatory statutes.

RME 6 Regarding climate change the EIS needs to acknowledge that the environmental baseline of the region is changing, and that the effects of later-occurring activities may have to be measured against a different baseline than the effects of earlier-occurring activities.
RME 7  Specific data needs identified included:
- Studying the ocean currents and impacts of an oil spill(s), including impacts to fisheries and establishing a baseline before an oil spill occurs.
- Studies related to migratory patterns of Arctic cisco that occur between the Mackenzie and Colville rivers.
- Studies related to the lower levels of oxygenation in sea water in the northwestern area.
- More studies relating to areas surrounding Cross and Thetis Island in the Beaufort Sea.

RME 8  Conduct environmental analyses for all planning areas. For those areas which already have existing work done, it was recommend a tiered approach be used to supplement that work.

RME 9  In developing the EIS, NMFS should recognize and consider existing scientific research including:
- Research and development around marine sound and environmental impact being conducted by the E&P Sound and Marine Life Joint Industry Programme administered by the International Association of Oil and Gas Producers.
- Significant research on oil spill prevention, detection, and response has occurred in the last few years.
- Review projects to gather information being undertaken by oil companies as well as other organizations either independently, through Joint Industry Projects or as part of an industry association to enhance spill response capabilities in remote and challenging regions such as the Alaskan Arctic.
- Review industry published studies on the environmental effects of and best management practices for pollution prevention technology, emissions from offshore platforms that include produced waters, drilling discharges, air emissions, the effects of sound on marine life that includes whales and fish, weather and oceanographic studies, and improved design standards for severe weather multi-year acoustic monitoring in both the Chukchi and Beaufort seas.

RME 10  A data gap analysis needs to be conducted in order to evaluate the current level of understanding of the Arctic environment to support a sound decision making process. This analysis would provide a basis for a comprehensive research and monitoring plan that could be used by decision makers. The analysis should:
- Include a discussion of lack of baseline information on several species and what steps can be taken to address deficiencies.
- Provide the public with an understanding of existing data gaps of the baseline and current conditions.
- Identify ongoing research that would provide missing information.
- Identify priorities for additional information to support decision making.
- Include environmental review, marine spatial and planning regarding industry activity and climate change and potential direct/indirect and cumulative impacts.
- Recommend how necessary additional research and monitoring could be collected in the near term and on an on-going basis.
• Synthesize existing scientific data and understanding of the area and monitoring and research plans.

RME 11 This EIS needs to carry out a balanced and objective review of scientifically sound and peer-reviewed literature that examines the effects of offshore oil and gas activities on marine mammals that occur in this environment. Speculation and bias about potential effects should be avoided. Effects should be described with references made that are scientifically supported with peer reviewed literature and technical reports.

RME 12 Use local hires to perform baseline gathering tasks.

RME 13 Methodology for collecting baseline data that could guide decisions makers should consider:
• Integration and synthesis of data that provides a basis for modeling or predicting the effects of future activities under different scenarios of climate change and development.
• Gathering additional data using satellite tags so decision makers can develop mitigation measures as activity is occurring in the Beaufort and Chukchi seas.
• Reevaluate current methodology for assessing conditions in limited areas during periods of breaks in exploration activities as this may not be reflective of the actual baseline.
• Consider the use of a modeling tool called Acoustic Integration Model that would estimate how many animals may be exposed to specific levels of sound.

RME 14 Research is needed in order to describe the cumulative effects of noise to bowhead whales and marine mammals in the Beaufort and Chukchi seas.
**Regulatory Compliance (Process; NEPA, Permits, this EIS)**

**COR**  
**Coordination, Process and Analysis - Comments on compliance with other statutes, laws or regulations that should be considered; coordinating with Federal, state, local agencies or organizations; permitting requirements.**

**COR 1**  
The following suggestions were made about the roles and responsibilities of organizations in the EIS:

- The Environmental Protection Agency should be invited to participate as a cooperating agency in the EIS given the agencies permitting authority and known expertise in resources critical to a full analysis of the issues underlying this EIS, particularly air and water quality.
- The Minerals Management Service should continue to be a joint lead agency for the EIS rather than a cooperating agency their legal responsibility (including permitting) for the proposed action and expertise that can contribute to the NEPA process.
- The North Slope Borough should be invited to participate as a cooperating agency in the EIS given their status as a locally affected jurisdiction closest to the majority of activities contemplated by the analysis, their jurisdiction by law over aspects of the actions falling within the scope of the proposed analysis, and their special expertise regarding resources (specifically wildlife) critical to NMFS' analysis.
- Affected Tribal governments should be invited to participate in the EIS as a cooperating agency. This would provide for the establishment of a mechanism for addressing inter-governmental issues throughout the EIS development process.

**COR 2**  
Naval activities, specifically the use of active sonar from naval submarines, should be included in the scope of the EIS. Oil and gas activity may lead to national defense assets being deployed to protect oil and gas activity in the Arctic Ocean. In this instance sonar is going to be one of the biggest harassment effects on marine wildlife.

**COR 3**  
The scope of the EIS should not be limited to the issuance of incidental take authorizations and should be expanded to include an evaluation of all reasonably foreseeable offshore exploration, development, and production activities during both open water and ice-covered seasons including:

- Winter season drilling from bottom-founded structures in shallower waters of the outer continental shelf
- Nearshore and offshore construction operations
- Facility installation and abandonment
- Laying of gathering lines and pipelines
- Development drilling and production operations
- Transportation, specifically marine or aircraft traffic associated with re-supply and crew transfers, and
- Distribution to market.
COR 4 The non-exclusive data business model used by many oil and gas companies should be considered when developing the scope of the EIS. The business model for acquiring non-exclusive geophysical data takes advantage of economies of scale in our industry by spreading the costs of data acquisition and processing over time and multiple customers who desire to make use of the data.

COR 5 The scope of the EIS should include electromagnetic, gravity, magnetic, and gravity gradiometry surveys.

COR 6 NMFS should take a precautionary approach in its analysis of impacts of oil and gas activities and in the selection of a preferred alternative. Comments include:

• A precautionary approach is required as there is insufficient information on Arctic ecosystems.
• A precautionary approach is required to ensure that adverse impacts to subsistence resources are minimized and mitigated.
• Activities should only be authorized when the science clearly demonstrates that those activities will not harm marine mammals or interference with subsistence activities and with the full involvement of the people most affected.
• Adopt a similar approach to that outlined in the North Pacific Fishery Management Council's Arctic Fishery Management Plan.

COR 7 The EIS should include an analysis of the impacts of oil and gas activities on air quality. Comments include:

• Clearly specify emission sources and quantity of emissions including from marine vessels.
• Disclose whether air toxics emissions would result from project activities, discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations and individuals that may to be exposed to these emissions.
• Consider production emissions from gas flaring volatilization of petroleum fractions, machinery exhaust emissions, volatilization during evaporation, and landfarming.
• Determine potential and actual impacts at individual sites.
• Include detailed information about ambient air conditions and national ambient air quality standards, a detailed project emission inventory, specific information about pollution from mobile and stationary sources.
• Include an Equipment Emissions Mitigation Plan that identifies actions to reduce diesel particulate, carbon monoxide, hydrocarbons, and NOx associated with construction and operation activities.
• Include mitigation measures to reduce identified air quality impacts.
• If air quality impacts are identified, NMFS should document the approach used to analyze and predict air quality impacts in an Air Quality Modeling Protocol and fully vet this approach with the Environmental Protection Agency.
COR 8 The EIS cumulative impacts analysis should include an evaluation of:
• Resources of concern that are at risk and are significantly impacted by the proposed project before mitigation
• All non-oil and gas activities
• Present and reasonably foreseeable projects and actions proximate to the project area, such as North Slope on-shore oil and gas activities, and reasonably foreseeable oil and gas development and production activities, both on- and offshore
• Multiple types of oil and gas activities including, concurrent seismic surveys, exploration drilling, shallow hazard surveys, site clearance surveys, icebreaking, and other activities and should assess the impacts of sound on marine life, impacts of discharges from exploration drilling (drilling fluids and cuttings), potential oil spills, and disturbance from relevant facilities, support vessels and aerial traffic linked to the operations
• Evaluate potential consequences of the proposed project "outside" the project area boundaries including impacts to other wildlife and aquatic resources.
• The effects of climate change and ocean acidification
• Potential commercial fisheries
• Increased international vessel traffic
• Water and air quality impacts, and
• Baseline pressure on subsistence resources from population growth in North Slope communities.

COR 9 The EIS cumulative impacts analysis should not include:
• Non-oil and gas activities in the Arctic. The focus of the EIS is to study potential impacts of oil and gas activities. Other activities outside the industry do not fit in this EIS analysis.
• Impacts occurring outside Alaska on marine mammals, given activities that may impact them abroad (for example, Russia) are managed under different laws and regulatory regimes, and may not be subject to the extensive mitigation measures required in Alaska.

COR 10 The EIS should include an analysis of impacts associated with climate change and ocean acidification including:
• Addressing threats to species and associated impacts for the bowhead whale, pacific walrus, and other Arctic species
• Effects of loss of sea ice cover, seasonally ice-free conditions on the availability of subsistence resources to Arctic communities, and
• Increased community stress.

COR 11 The EIS should follow an ecosystem approach in its evaluation of impacts to biological resources and their habitats including nested layers (taxonomic, population, genetic) of all biodiversity.
COR 12 The EIS should take into account that the issuance of incidental take authorizations are in accordance with the Marine Mammal Protection Act, but are also consistent with the Federal Administration's energy exploration and development policies and requirements.

COR 13 The EIS should include an analysis of the impacts associated with the introduction of invasive non-native species through oil and gas activities and outline mitigation measures to address identified impacts. Comments include:
• Authorizing agencies must comply with Executive Order 13112 regarding executive invasive non-native species.
• Authorizing agencies should work with other agencies to minimize the risk of introducing invasive non-native species.
• Fully analyze impacts of introducing non-native species that may become aquatic invasive species; use relevant programs and authorities to prevent the introduction of aquatic invasive species; develop the means to detect and respond rapidly to and control populations of such species; and monitor aquatic invasive species populations accurately and reliably; not authorize, fund, or carry out actions it believes are likely to cause or promote the introduction or spread of aquatic invasive species in the U.S.

COR 14 The EIS should include an analysis of the impacts associated with potential oil spills from oil and gas exploration, development and production activities and outline mitigation measures to reduce identified impacts. Comments include:
• The assessment should be based on realistic spill scenarios and distribution modeling, taking current state of the art technologies for preventing spills into consideration.
• The EIS should review the adequacy and environmental impacts of anticipated spill response measures, such as dispersants or in-situ burning, in the Arctic environment.
• The EIS should explain the extent to which lack of baseline scientific information would hinder post-spill recovery and rehabilitation efforts, including efforts to detect adverse environmental impacts.
• The context within which NMFS should examine the potential for oil spills should be a coordinated effort with other agencies that share responsibility for oil spill research, response, and prevention in the Arctic.
• The EIS should contain a detailed discussion of the potential impacts of oil spills on marine mammals and other Arctic wildlife, including migratory birds.
• The EIS should consider the potential impacts associated with leaving oil in the water and ice over the winter season.

COR 15 The EIS should include an analysis of the socio-cultural impacts associated with oil and gas activities in the Arctic. The scope of impacts to these resources should include the direct, indirect, and cumulative impacts to: subsistence users, sacred sites, traditional cultural properties or landscapes, hunting, fishing, gathering areas, access to subsistence hunting or fishing areas, historical or current travel routes, and historic properties, districts or landscapes.
The EIS should include an analysis of the impacts of oil and gas activities on water quality. Comments include:
• The EIS should describe the current condition of waters in the project area and disclose which waters may potentially be affected by the proposed project, the nature of potential impacts, and specific pollutants likely to impact those waters.
• The EIS should document the project's consistency with applicable wastewater permitting requirements (as required by NPDES and/or ADPES programs) and should discuss specific mitigation measures that may be necessary or beneficial in reducing adverse impacts to water quality.
• Potential short and long-term water quality impacts may be caused by a variety of activities associated with seismic and exploratory operations, including wastewater discharges from vessels and other infrastructure, and deposition of air emissions on water.
• The EIS should include an analysis of zero discharge of drilling muds.

The proposed EIS should analyze impacts associated with increases in vessel traffic associated with oil and gas operations in the Arctic.

The EIS should include site-specific information on each resource and analyze the differential impacts that would occur for each location where activities may take place.

The EIS should include an analysis of impacts on fish including the effects of noise on hearing, eggs, larvae, and fry.

The EIS should include an analysis of the impacts of oil and gas activities to subsistence resources, and the impacts to the people that utilize those resources. NMFS must ensure oil and gas activities do not reduce the availability of any affected population or species to a level insufficient to meet subsistence needs (50 CFR 216.103). Comments include:
• Clearly identify and separate potential effects from seismic surveys on bowhead whale population health from potential effects on the availability of the bowhead whales for subsistence hunting.
• Include a thorough discussion of beluga subsistence hunting, and potential impacts of seismic surveys and associated activities on that hunting and present clear conclusions about the likelihood of significant and/or adverse impacts on belugas.
• Analyze the potential impacts of oil spills to subsistence resources, and the impacts to the people that utilize those resources.

The EIS should include an analysis of all impacts of oil and gas activities on marine mammals and outline mitigation measures to address identified impacts. Comments include:
• The analysis should cover all marine mammals, including bowhead whales, beluga whales, walrus, seals, and polar bears.
• The analysis should consider impacts to marine mammals occurring in other
parts of the United States, as some stocks that occur in the Chukchi and Beaufort seas are migratory.
• Include a thorough discussion about relevant studies of the impacts of oil and gas activities to marine mammals, including noise and other impacts from seismic surveys, drilling, vessels, and aircraft.

**COR 22**
The EIS should include an analysis of the impacts of noise from oil and gas activities on marine species. Comments include:
• Include a discussion of strandings and other non-auditory physical injuries; temporary or permanent loss of hearing; avoidance behavior; disruption of biologically important behaviors; masking of biologically meaningful sounds; chronic stress; and reasonably expected declines in the availability and viability of prey species.
• Assessment of potential impacts of sound on marine life should be based on best available knowledge.
• The analysis should include information on actual dB levels, extent over time (periodic or continuous), and geographic area that will be disturbed.

**COR 23**
The EIS should include an analysis of the benefits of oil and gas exploration activities and the following facts:
• Since 2005, the federal government has collected over $3 billion for leases in these waters.
• New offshore development and environmental protection are not mutually exclusive.
• OCS development has an outstanding safety and environmental record spanning decades.
• Development has coexisted with other industries, including fishing, in the North Sea, the Gulf of Mexico, and Cook Inlet.
• With regard to the Alaskan OCS, exploration is not new. Approximately 30 wells have been drilled in the Beaufort Sea and five in the Chukchi Sea.

**COR 24**
The EIS should be a concise and uncomplicated document that contains maps and graphics explaining the proposal, alternatives, and locations of key fish and wildlife resources and subsistence resources and activities.

**COR 25**
A supplemental or revised draft EIS is more appropriate than a new draft. Reasons include:
• Very substantial effort was involved in preparation of the previous draft EIS and its record.
• Ordinarily, deficiencies in a draft EIS or changes in the proposed action warrant a revised or supplemental draft, not a wholly new NEPA effort.
• The NEPA regulations provide only for supplemental drafts, and make no mention of withdrawal and preparation of a new draft.
• Preparation of a wholly new EIS will make it difficult for stakeholders and the public to sort out the revisions and to determine what changes are significant or are regarded as significant from the agency’s point of view.
• A supplemental draft could explain the significant changes that have been
made to the database supporting the draft EIS and to the analysis of impacts and alternatives, thereby greatly assisting the comments process.

COR 26  NMFS should reformulate this question in its Notice of Intent, “(4) Available new technology for monitoring or obtaining seismic/drilling data” to consider new technology that reduce the potential impacts of seismic and exploratory activities.”

COR 27  NMFS and MMS should issue a Federal Register notice of data availability detailing the "new information" asserted in the Notice of Intent to warrant starting over the NEPA process.

COR 28  Based on the Notice of Intent, it appears that NMFS will not be conducting site-specific analyses or decisions for this project. As such this EIS may be programmatic in nature and should be identified as a programmatic EIS.

COR 29  The EIS should be completed expeditiously with definite time limits.

COR 30  Individual projects should be reviewed on a case-by-case basis and should not be deferred until after the EIS is complete so as not to delay projects that have been under development since before the Notice of Intent. Also because the regulatory program has long been in place, and the agencies have years of experience with offshore oil and gas exploration activities.

COR 31  The EIS should not take the place of site-specific analyses. It is certainly possible if not likely that individual activities, depending on the mitigation measures that are put in place, could have significant impacts to the environment and that an EIS still might be warranted for some of these individual activities.

COR 32  Given the nature of this project a concise purpose and need statement is of critical importance to setting up the analysis of alternatives, which could range from too tightly focused to too broad, depending on how the statement is written. Given the uncertainty of the range, duration and frequency of future incidental take authorizations, the EIS will need to clearly explain the need of the proposed project.

COR 33  NMFS should objectively review data from peer-reviewed scientific literature and not speculation to assess potential impacts of geophysical activities on the environment.

COR 34  The EIS should ensure the environmental justice requirements of Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations) are being met. Comments include:
• Disclose what efforts were taken to ensure effective public participation in the scoping process and throughout the development of the EIS.
• The sources of data utilized for these analyses, and the references utilized for establishing the criteria.
• NMFS must take into account the unique interests of local Inupiat communities and must fully evaluate any disproportionate impacts placed upon the Inupiat people. NMFS must endeavor to make information available in understandable and accessible terminology, and NMFS should also be sensitive to the burdens placed on local communities when multiple decisions are being made at the same time.
• Particular attention should be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources, as well as how project information is disseminated to the community.

COR 35  
A Health Risk Assessment or Health Impact Assessment should then be conducted, in conjunction with the EIS, to determine the direct, indirect, and cumulative impacts of oil and gas activities on human health. Comments include:
• NMFS should partner directly with local, state, tribal, and federal health officials to conduct the appropriate health analysis and determine effective mitigation measures for any health impacts.
• The community health issue must receive the same level of analysis that other environmental concerns receive throughout the NEPA process.
• NMFS should utilize the best available methodology to assess human health impacts for the draft EIS (as required under NEPA and Executive Orders 12898 and 13045).
• The health analysis should include: 1) A description of the baseline health status of affected communities 2) An analysis of potential health consequences of the alternatives 3) Identification of potential mitigation measures 4) A discussion of whether the impacts may disproportionately affect low income or minority communities, or children 5) An analysis of the cumulative effects of the proposed action and alternatives.
• There are increasing concerns from local residents regarding human health impacts from proposed oil and gas exploration, development and production activities.

COR 36  
NMFS must ensure that the monitoring and mitigation measures imposed are implemented and performed effectively. There needs to be enough funding to allow for better enforcement of stipulations, and consequences for permit violations.

COR 37  
NMFS needs to develop and implement a comprehensive, science-based management plan to effectively regulate industrial activity in the Arctic Ocean. An Arctic comprehensive management plan would provide a more complete understanding of how the Arctic ecosystem functions, and what impacts industrial activities have on marine mammals and subsistence communities. NMFS should coordinate its work on the draft EIS with the work of the Task Force in developing an Arctic comprehensive management plan, and should limit the number and scope of activities that are authorized until this plan has been implemented.
COR 38 The following suggestions were made about the range of alternatives in the EIS:
• NMFS should consider a multi-step process that will reduce the initial list of alternatives to a final list that will undergo full evaluation in the draft EIS.
• NMFS should explain the reasoning for evaluating a no action alternative (i.e. no seismic or exploratory drilling) since this is beyond the authority of the participating agencies; the Secretary of Interior has the authority to nominate areas for oil and gas activities under the Outer Continental Shelf Lands Act.
• There are significant economic consequences to be examined in the “no action” scenario analysis. By not undertaking exploration activities in the Arctic and other areas of the outer continental shelf, the U.S. will be obliged to import additional oil from foreign sources.
• NMFS should consider a sufficient range of alternatives to provide for maximum flexibility in determining the final course of action pursuant to the purpose and need statement.
• The alternatives should treat the Chukchi and Beaufort seas separately and adopt a flexible program with realistic operating scenarios.
• The alternatives should adopt a flexible approach to the various seismic and drilling activities taking place within a defined area and evaluate the impacts of proposed operations on an annual basis.
• The proposed EIS should consider alternatives that address shortcomings in monitoring and mitigation measures.
• NMFS should consider a broader range of exploration scenarios, given that industry estimates are not always reflective of actual activity into the future.

COR 39 The EIS should include a list of Conflict Avoidance Agreements for all native groups in Alaska and adopt similar requirements to minimize impacts on subsistence hunting activities.

COR 40 NMFS must ensure that the EIS complies with the following regulations and guidance:
• Information Quality Act (peer review and document standards)
• Marine Mammal Protection Act
• Endangered Species Act
• National Environmental Policy Act
• Council on Environmental Quality guidance on analysis of bio-diversity, and
• EPA guidance on analysis of air quality impacts from emissions.

COR 41 Inupiat Community of the Arctic Slope, the Alaska Eskimo Whaling Commission, and Northwestern Arctic Borough request a copy of the Draft EIS.

COR 42 Because MMS regulations (30 CFR Part 251) state that geological and geophysical activities cannot create or cause hazardous or unsafe conditions, any mitigation and monitoring measures imposed on seismic surveys by NMFS and MMS must not result in hazardous or unsafe conditions.
COR 43  Changes in the EIS analyses over time, coupled with misperceptions of the underlying statutory standards, have culminated in a worst-case scenario impacts analysis presented in the draft EIS.

COR 44  The perception of representation on behalf of communities regarding input and concerns by environmental groups, Inupiat Community of the Arctic Slope, North Slope Borough, and Alaska Eskimo Whaling Commission is not always accurate or inclusive of an actual community’s concerns.

COR 45  Northwest Arctic Borough requests to be involved with future consultations.

COR 46  The EIS process causes social impacts to Alaska Native communities participating in the process by taking time away from families, subsistence activities, and work to attend meetings and provide comments. Village governments do not have the budgets to allocate staff time to review and comment on EIS documents.

COR 47  Communities expressed concern that they are inundated with multiple projects to review and attend meetings by different government agencies. Comment periods often conflict with subsistence activities (particularly whaling season) and as a result communities are unable to fully participate. Communities do not have the staff/resources, expertise or time to allocate a through read of each EIS that is occurring on the North Slope. As a result Alaska Native communities are unable to participate in the process and a majority of their potential comments are not included in the decision making process which may have negative future impacts for these communities.

COR 48  Consultation with Alaska Native communities needs to consider:
• Working with each community to hear their concerns about potential impacts and addressing these concerns in the document.
• Working with these communities needs to be flexible with regard to impacts to traditional lifestyle, involvement of elders, and schedules that do not interfere with subsistence activities.
• Villages need adequate preparation time to accommodate meetings and participate in the decision making process as they are overwhelmed by having to participate in multiple decisions and EISs.
• NMFS should work with stakeholders in the communities and Alaska Native organizations to gather input for alternatives for the EIS to consider.
• Communities would like to get same information that is presented in each community across the North Slope.

COR 49  Government to government consultation needs to include:
• Consider potentially affected federally recognized tribal governments to participate in the EIS development process as cooperating agencies.
• Consider development of a government to government consultation plan that would be helpful in conducting consultation meetings to avoid conflict with subsistence seasons, and such a plan could be developed in collaboration with affected tribal governments.
• Consult with Inupiat Community of the Arctic Slope on a government to
government basis and consult with Alaska Eskimo Whaling Commission
pursuant to cooperative agreements and continue to accept input from local
villages
  • Consultation, particularly at the scoping level, should be initiated from
NOAA/NMFS and not through their contractor. Meetings should be in person.
  • Keep organizations such as the Kaktovik Whaling Captains Association
involved in government to government consultation through coordination with
Native Village of Kaktovik.
  • Provide at least 30 days notice for government to government consultation
meetings so that communities are able to review and process what is being
presented to them for their consideration.

COR 50 The Record of Decision should not be completed until the Section 106
consultation process has been fully completed. If adverse effects to traditional
cultural properties, sacred sites, or other areas of cultural resource concern are
identified, any Memorandum of Agreement developed to resolve these
concerns under Section 106 should be addressed in the Record of Decision.

COR 51 NMFS should not issue incidental take authorizations unless they can ensure
that mitigation measures will remove the potential for serious injuries or
mortality to marine mammals from activities associated with oil and gas
operations.
  • Other commenters suggest that authorizations should not be issued until the
EIS process is complete.

COR 52 The agency should exercise its best judgment in granting incidental take
authorizations and consider:
  • Adopting a five year regulation letter of authorization or consider perhaps a 2
to 3 year permit in consideration of the rapidly changing Arctic environment.
  • Consider a one year permit of performance and if compliance is sufficient
than authorize a five permit.
  • Alternatives that consider five year permits should provide for notice and
public comment on an annual basis, particularly with concern to subsistence
users.
  • Consider limits on activities to protect key habitat and subsistence areas in
five year regulations based on best available science.

COR 53 Oil and gas activity in the Arctic should not be authorized in until after the EIS
has been completed. Baseline conditions will have already been affected by the
time the EIS is completed and it will not be possible to assess the impacts to
the Arctic. This has been demonstrated in other oil and gas developments such as:
  • Prudhoe Bay
  • The Gulf of Mexico (in reference to the BP oil spill).

COR 54 The agency should exercise its best judgment in granting incidental take
authorizations and consider that overly restrictive incidental take authorizations could discourage industry investment, future exploration and production of energy resources in the Arctic. The process is too lengthy and uncertain which can make it difficult for industry to plan and execute responsible and effective programs.

COR 55 The EIS should not seek to establish any such limit on incidental take authorizations; instead it should propose data development and an evaluation system that would be carried out in cooperation with the permit applicants. This would provide sufficient information to make these judgments on an annual basis.

COR 56 NMFS should develop a mechanism to ensure that there is a coordinated effort by federal and state agencies, industry, affected communities, and non governmental organizations and stakeholders to integrate as much as possible physical, biological and social information and data that is applicable to oil and gas exploration and establishes a comprehensive ecosystem baseline.

COR 57 Data and results that are gathered should be shared throughout the impacted communities. Often, adequate data is not shared and therefore perceived inaccurate.

COR 58 The determination whether or not non-exclusive surveys are employed should be left to free-market (competitive) forces.

MIT Mitigation Measures - Comments related to suggestions for or implementation of mitigation measures.

MIT 1 The best available technology should be used to minimize impacts. Specific suggestions include:
• Vibroseis
• Extended reach drilling
• Zero discharge technology (as implemented in Norway)
• Gravity, magnetic, and gravity gradiometry data collection, and
• Low-sulfur fuel.

MIT 2 Areas of high sociocultural, ecological, or biological significance should be protected with seasonal restrictions on the types of activities that can occur there. Specific areas suggested include:
• Critical feeding and resting grounds near Camden Bay in the mid-Beaufort
• Critical feeding grounds in the eastern Beaufort and near Barrow Canyon in the western Beaufort
• Nearshore areas (within 50 miles of the coast)
• Areas that are important for denning, feeding, and/or migration for Arctic species such as Pacific walrus, bowhead whales, beluga whales, or polar bears
• Ledyard Bay critical habitat area for spectacled eiders; and
• Subsistence use areas, such as:
• Areas used by the Village of Kaktovik in the eastern Beaufort
• Areas around Cross Island used by the Village of Nuiqsut
• Areas used by the Village of Barrow in the western Beaufort
• Areas used by Wainwright and Point Lay along the Chukchi Sea coast, and
• Kotzebue Sound (through July 10).

MIT 3 A buffer zone should be established at Cross Island similar to the one currently in place in the Chukchi Sea.

MIT 4 Establish a cap to limit the total number of oil and gas activities that may occur in planning area on a per season basis.

MIT 5 Oil and gas activities should be limited in duration to the minimum required.

MIT 6 Required mitigation measures, specifically safety and exclusion zones, should be adaptive and based on sound research, and must be reasonable and feasible. Specific suggestions include:
- Exclusion zones and other regulatory threshold criteria (e.g. 180/190) should be adjusted upwards to 230 dB re: 1 uPa (peak, flat) for cetaceans and 218 dB re: 1 uPa (peak, flat) for pinnipeds.
- NMFS should use the noise exposure criteria as proposed in Southall et al. (2007) to determine the thresholds for sound exposure and exclusion zones for cetaceans during seismic surveys.

MIT 7 Seismic surveys should be coordinated and use standardized methodologies to reduce the need for duplicative surveys by different companies.

MIT 8 The mitigation measures identified in the Programmatic Environmental Assessment should be incorporated into the current Environmental Impact Statement.

MIT 9 Existing restrictions are adequate to mitigate potential impacts from planned oil and gas activities.

MIT 10 Mitigation measures are needed to minimize or avoid introduction of non-indigenous species. Suggested measures include:
- Ships should be required to clean their hulls and overboard gear before entering Alaska waters.
- Ships should also exchange ballast water before entering Alaska waters.

MIT 11 The effectiveness of exclusion zone monitoring (marine mammal observers, acoustic monitoring, and aerial surveys) is limited by a number of factors including weather, daylight (glare or darkness), sea state, distance, and marine mammal behavior, and safety factors. NMFS should address these limitations.

MIT 12 Marine mammal monitoring should be required for oil and gas activities. Technologies/methods suggested include:
- Acoustic recorders
- Aerial monitoring
• Satellite tagging, and
• On-board marine mammal observers.

MIT 13 NMFS should run the marine mammal observer program as it does on fishing vessels to ensure that the data is unbiased and accurate.

MIT 14 Local residents are well suited to carry out the duties of marine mammal observers and should be employed for this task accordingly.

MIT 15 Noise associated with oil and gas activities should be minimized. Suggested measures include:
• Utilize technologies or methods that minimize horizontal propagation of noise.
• Require minimum noise levels; only that which can be defended as necessary and not wide open to whatever technology can be brought to bear.
• Require justification of the need to use proposed methods as opposed to other, if any, less invasive means of obtaining the desired physical data.

MIT 16 A sound cap or budget that limits the total amount of noise allowed per season should be considered as a mitigation measure.

MIT 17 Safety and exclusion zone distances should be calculated based on peak levels of sound generated by the oil and gas equipment.

MIT 18 Require fuel spill reporting and clean up protocols and sufficient equipment for worse case scenarios.

MIT 19 Arbitrary restrictions on concurrent operations could undermine a lessee's ability to explore its leases.

MIT 20 Proposed access routes should be surveyed for ice seal lairs, breathing holes, and resting locales to avoid disturbance of these animals.

MIT 21 Mitigation measures are needed to minimize or avoid ship strikes of marine mammals. Suggested measures include:
• Designating specific shipping lanes
• Implementing seasonal restrictions to protect marine mammals during their migration, and
• Establishing speed restrictions.

MIT 22 Require the use of fish finding equipment and procedures to shut down seismic activity when large schools of fish are encountered.

MIT 23 Consider barring surveys during periods of low visibility to decrease the risks of harm to marine mammals and birds.

MIT 24 Comprehensive monitoring is needed to evaluate population changes that may be occurring not only from the proposed project, but natural and cumulative factors.
MIT 25 NMFS should compile a complete, region-by-region account of all biological stipulations, Notices to Lessees and Operators, and mitigation measures in effect, along with summary information on whether or not these measures have appeared to work, and whether or not any direct studies have been conducted to verify their effectiveness. NMFS should address any identified shortcomings through consultation with stakeholders.

MIT 26 NMFS should consider a non-exclusive survey program that facilitates sharing of information between entities to reduce exploration related impacts.

MIT 27 NMFS must analyze impacts to marine mammals and ensure proposed mitigation and monitoring requirements meet the provisions of the Marine Mammal Protection Act, namely that they will result in "the least practicable impact" on protected species and their availability for subsistence use.
**Inupiat Culture**

<table>
<thead>
<tr>
<th>ICL</th>
<th>Inupiat Culture and Way of Life - Comments related to potential cultural impacts or desire to maintain traditional practices (PEOPLE).</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICL 1</td>
<td>Alaska Native communities are not compensated for impacts that result from oil and gas activities.</td>
</tr>
</tbody>
</table>
| ICL 2 | Industrial activities (such as oil and gas exploration and production) jeopardize the long-term health and culture of native communities. Specific concerns include:  
  • Impacts to Arctic ecosystems and the associated subsistence resources from pollutants, noise, and vessel traffic  
  • Restriction of access to subsistence resources (hunting and fishing areas).  
  • Community and family level cultural impacts related to the subsistence way of life  
  • Decreased availability of subsistence foods encourages consumption of store-bought food with less nutritional value  
  • Subsistence resources from the Arctic Ocean are shared with communities throughout Alaska so impacts to these resources would be felt throughout the state  
  • Direct impacts to health resulting from pollutants, and  
  • Anthropogenic noise is widespread and disturbs daily life in Alaska Native communities. |
| ICL 3 | Alaska Native communities need to find a compromise with oil and gas companies to protect subsistence resources and provide jobs. |
| ICL 4 | One benefit of the oil activity is that the noise may cause whales to move in closer to shore and provide subsistence users with better access. |
| ICL 5 | Although commercial fishing is currently prohibited the Chukchi and Beaufort seas, fishing is growing at the margins of the Arctic. Directly or indirectly, large-scale commercial fishing could compete with subsistence hunters for the limited productivity of Arctic waters. |
| ICL 6 | The Northwest Arctic Borough Assembly opposes Outer Continental Shelf leasing with Resolution 08-04. This resolution emphasizes the importance of subsistence foods to the Inupiat way of life. It also recognized the critical need for baseline data, environmental and wildlife monitoring, and filling large data gaps for the area. |
Use of Traditional Knowledge - Comments regarding how traditional knowledge (TK) is used in the document or decision making process, need to incorporate TK, or processes for documenting TK.

UTK 1 Although communities have been providing comments on oil and gas exploration and development for many years, it has not been documented well.

UTK 2 Native people have expressed concerns regarding the impacts of oil and gas activities on their communities for a long time however these concerns are not being addressed.

UTK 3 The use of traditional knowledge will assist in documenting the when, where, and at what time the different communities are subsistence hunting, and that will assist in the efforts to avoid conflict between industry and the communities.

UTK 4 The development of the EIS needs to incorporate and analyze local and traditional knowledge about impacts of previous offshore oil and gas activities on marine mammals as well as the impacts of other activities that may be relevant.

UTK 5 Traditional knowledge is going to be important for you to get some of the migration routes for beluga whales.

UTK 6 People would like to have a workshop in each community to identify traditional knowledge data gaps that need to be included in the process.

UTK 7 While the importance of scientific knowledge is widely recognized, the value of local and traditional knowledge should be equally recognized and included in the EIS process as validation to science.

UTK 8 Observations and/or studies provided by the communities has not been incorporated or accepted as valid information in the reporting process.

UTK 9 More needs to be done to ensure that traditional knowledge is widely available. One way of ensuring that is incorporation in the EIS process.

UTK 10 NMFS needs to consider the extensive, previously collected traditional knowledge, regarding the climate, ecological processes, and resource presence and use on the North Slope gathered over the last few decades in the EIS.
General

ACK  Comment Acknowledged - Entire submission determined not to be substantive and warranted only a “comment acknowledged” response.
APPENDIX D

Cooperating Agencies and Government to Government Letters

Memorandum of Understanding between the National Marine Fisheries Service and the Minerals Management Service
I. PURPOSE
This memorandum of understanding (MOU) outlines the roles and responsibilities of the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) and the U.S. Minerals Management Service (MMS) with respect to preparation of the Draft Environmental Impact Statement (DEIS) and the Final Environmental Impact Statement (FEIS) for the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas). This EIS is being prepared under the National Environmental Policy Act (NEPA), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500-1508), and NOAA’s Administrative Order 216-6 (NAO 216-6), Environmental Review Procedures for Implementing NEPA.

II. NOAA (Lead Federal Agency) RESPONSIBILITIES

A. NOAA has primary responsibility for meeting requirements of NEPA, including preparation of the DEIS and FEIS. In this capacity, NOAA will ensure that the EIS includes information needed to address state and Federal compliance requirements.

B. NOAA will consult with MMS regarding issues of concern, range of EIS alternatives, and mitigation and monitoring measures to be analyzed in the EIS.

C. NOAA will provide MMS with copies of the preliminary draft(s) of the DEIS and FEIS and interim work products, such as individual EIS sections, in a timely manner.

D. NOAA shall provide a minimum of 15 working days (unless a different, agreed upon time frame is established) for review of the preliminary draft of the DEIS and a minimum of 15 working days (unless a different, agreed upon time frame is established) for review of the preliminary draft of the FEIS. In the event there are additional drafts of either the DEIS or the FEIS, a mutually agreed upon time frame will be established.
E. NOAA will revise preliminary drafts of the DEIS and FEIS in response to comments/concerns/issues identified by MMS.

F. NOAA will ensure that MMS receives copies of all comments received on the DEIS and FEIS during the public comment periods and provide an initial identification of those comments pertaining to MMS’ expertise or regulatory authority, which may require MMS to prepare a written response for inclusion in the EIS.

G. NOAA will ensure that the DEIS and FEIS cover pages identify MMS as a cooperating agency.

III. MMS (Cooperating Agency) RESPONSIBILITIES

A. MMS will actively participate in development of the EIS.

B. MMS will serve as the agency of expertise with regard to describing the technologies used to conduct seismic surveys, offshore exploratory drilling, and other ancillary activities on Outer Continental Shelf leases and MMS statutory and regulatory mandates.

C. MMS will review preliminary documents and provide comments to NOAA in accordance with specified timelines.

D. MMS will manage and be responsible for its own resources, such as people, time, and money to assist NOAA in the development of the EIS.

E. MMS will provide NOAA with timely identification of significant issues, range of EIS alternatives, and mitigation and monitoring measures for NOAA to consider for inclusion in the DEIS and FEIS related to MMS’ responsibilities and authorities.

IV. PRINCIPAL POINTS OF CONTACT

James H. Lecky  
NOAA/NMFS  
1315 East West Highway, Rm. 13821  
Silver Spring, Maryland 20910  
(301) 713-2332  
James Kendall  
MMS  
381 Elden Street  
Herndon, Virginia 20170  
(703) 787-1652

John Goll  
MMS  
3801 Centerpoint Drive #500  
Anchorage, Alaska 99502  
(907) 334-5200
Either NOAA or MMS may terminate this agreement at any time by providing written notice to the other party.

NOAA AND MMS AGREE TO THIS MOU AS OF THE LATTER OF THE THREE DATES WRITTEN BELOW:

Date: FEB 8 2010  By: [Signature]
James H. Lecky
Director, Office of Protected Resources
NOAA/NMFS

Date: 2/3/2010  By: [Signature]
James Kendall
Chief, Environmental Division
MMS

Date: 2/3/2010  By: [Signature]
John Q. Gill
Regional Director, Alaska
MMS
Cooperating Agency Request Letter to the
North Slope Borough
Mr. Edward S. Itta  
Mayor  
North Slope Borough  
P.O. Box 69  
Barrow, Alaska 99723

Dear Mayor Itta:

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has recently begun planning for the preparation of an environmental impact statement (EIS) regarding the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas). This project is designed to analyze the effects of oil and gas exploration activities on marine species in the U.S. Arctic Ocean obtained through U.S. Minerals Management Service lease sales.

We are requesting, pursuant to the Council on Environmental Quality’s Regulations for Implementing the National Environmental Policy Act (NEPA) (40 CFR 1501.6), the participation of the North Slope Borough (NSB) as a cooperating agency on the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas) EIS, due to NSB's jurisdiction and special expertise with respect to the project.

We look forward to your response to this request. Enclosed is a draft Memorandum of Understanding generally outlining the roles and responsibilities of NOAA and NSB. We appreciate any comments you have on this draft agreement, which we will subsequently finalize for signature.

If you have any questions, please contact Mr. P. Michael Payne by phone at (301) 713-2289 ext. 110 or by email at Michael.Payne@noaa.gov.

Sincerely,

[Signature]

James H. Lecky, Director  
Office of Protected Resources

Enclosure
Cooperating Agency Request Letter to the Environmental Protection Agency
Dear Mr. Parkin:

The National Oceanic and Atmospheric Administration’s (NOAA) National Marine Fisheries Service (NMFS) has recently begun planning for the preparation of an environmental impact statement (EIS) regarding the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas). This project is designed to analyze the effects of oil and gas exploration activities on marine species in the U.S. Arctic Ocean obtained through U.S. Minerals Management Service (MMS) lease sales.

We are requesting, pursuant to the Council on Environmental Quality’s Regulations for Implementing the National Environmental Policy Act (NEPA) (40 CFR 1501.6), the participation of the Environmental Protection Agency (EPA) as a cooperating agency on the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas) EIS, given Section 309 of the Clean Air Act which specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions.

We look forward to your response to this request. If you have any questions, please contact Mr. P. Michael Payne by phone at (301) 713-2289 ext. 110 or by email at Michael.Payne@noaa.gov.

Sincerely,

James H. Lecky, Director
Office of Protected Resources

Enclosure
Cooperating Agency Request Letter to the
U.S. Fish and Wildlife Service
Mr. Geoffrey Haskett  
Regional Director  
U.S. Fish and Wildlife Service  
1011 E. Tudor Road  
Anchorage, Alaska 99503

Dear Mr. Haskett:

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has recently begun planning for the preparation of an environmental impact statement (EIS) regarding the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas). This project is designed to analyze the effects of oil and gas exploration activities on marine species in the U.S. Arctic Ocean obtained through U.S. Minerals Management Service lease sales.

We are requesting, pursuant to the Council on Environmental Quality’s Regulations for Implementing the National Environmental Policy Act (NEPA) (40 CFR 1501.6), the participation of the U.S. Fish and Wildlife Service (USFWS) as a cooperating agency on the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas) EIS, due to USFWS’ jurisdiction and special expertise with respect to the project.

We look forward to your response to this request. Enclosed is a draft Memorandum of Understanding generally outlining the roles and responsibilities of NOAA and USFWS. We appreciate any comments you have on this draft agreement, which we will subsequently finalize for signature.

If you have any questions, please contact Mr. P. Michael Payne by phone at (301) 713-2289 ext. 110 or by email at Michael.Payne@noaa.gov.

Sincerely,

James H. Lecky, Director  
Office of Protected Resources

Enclosure
EFFECTS OF OIL AND GAS ACTIVITIES (SEISMIC SURVEYS AND OFFSHORE DRILLING ACTIVITIES) IN THE ARCTIC OCEAN (U.S. CHUKCHI AND BEAUFORT SEAS)
ENVIRONMENTAL IMPACT STATEMENT

MEMORANDUM OF UNDERSTANDING BETWEEN

THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
NATIONAL MARINE FISHERIES SERVICE, THE LEAD AGENCY
AND
THE U.S. FISH AND WILDLIFE SERVICE, A COOPERATING AGENCY

I. PURPOSE
This memorandum of understanding (MOU) outlines the roles and responsibilities of the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) with respect to preparation of the Draft Environmental Impact Statement (DEIS) and the Final Environmental Impact Statement (FEIS) for the effects of oil and gas activities (seismic surveys and offshore drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas). This EIS is being prepared under the National Environmental Policy Act (NEPA), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500-1508), and NOAA's Administrative Order 216-6 (NAO 216-6), Environmental Review Procedures for Implementing NEPA.

II. NOAA (Lead Federal Agency) RESPONSIBILITIES

A. NOAA has primary responsibility for meeting requirements of NEPA, including preparation of the DEIS and FEIS. In this capacity, NOAA will ensure that the EIS includes information needed to address state and Federal compliance requirements.

B. NOAA will consult with USFWS regarding issues of concern, range of EIS alternatives, and mitigation and monitoring measures to be analyzed in the EIS.

C. NOAA will provide USFWS with copies of the preliminary draft(s) of the DEIS and FEIS and interim work products, such as individual EIS sections, in a timely manner.

D. NOAA shall provide a minimum of 15 working days (unless a different, agreed upon time frame is established) for review of the preliminary draft of the DEIS and a minimum of 15 working days (unless a different, agreed upon time frame is established) for review of the preliminary draft of the FEIS. In the event there are additional drafts of either the DEIS or the FEIS, a mutually agreed upon time frame will be established.
E. NOAA will revise preliminary drafts of the DEIS and FEIS in response to comments/concerns/issues identified by USFWS.

F. NOAA will ensure that USFWS receives copies of all comments received on the DEIS and FEIS during the public comment periods and provide an initial identification of those comments pertaining to USFWS' expertise or regulatory authority, which may require USFWS to prepare a written response for inclusion in the EIS.

G. NOAA will ensure that the DEIS and FEIS cover pages identify USFWS as a cooperating agency.

III. USFWS (Cooperating Agency) RESPONSIBILITIES

A. USFWS will actively participate in development of the EIS.

B. USFWS will serve as the agency of expertise with regard to the polar bear and walrus and other species under USFWS' jurisdiction.

C. USFWS will review preliminary documents and provide comments to NOAA in accordance with specified timelines.

D. USFWS will manage and be responsible for its own resources, such as people, time, and money to assist NOAA in the development of the EIS.

E. USFWS will provide NOAA with timely identification of significant issues, range of EIS alternatives, and mitigation and monitoring measures for NOAA to consider for inclusion in the DEIS and FEIS related to USFWS' responsibilities and authorities.

IV. PRINCIPAL POINTS OF CONTACT

James H. Lecky  
NOAA/NMFS  
1315 East West Highway, Rm. 13821  
Silver Spring, Maryland 20910  
(301) 713-2332

Geoffrey Haskett  
USFWS  
1011 E. Tudor Road  
Anchorage, Alaska 99503  
(907) 786-3542

Either NOAA or USFWS may terminate this agreement at any time by providing written notice to the other party.
NOAA AND USFWS AGREE TO THIS MOU AS OF THE LATTER OF THE TWO DATES WRITTEN BELOW:

Date: FEB 01 2010
By: James H. Lecky
Director, Office of Protected Resources
NOAA/NMFS

Date: 
By: Geoffrey Haskett
Regional Director
USFWS
APPENDIX D

Cooperating Agencies and Government to Government Letters

Government to Government Consultation Letters
Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Ms. Lampe:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments and communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other fish and wildlife species important to subsistence, as well as the availability of
species such as bowhead whales, beluga, walrus, and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the “take” of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only ‘small’ numbers of marine mammals and that the level of taking will have no more than a "negligible impact" on marine mammal species or stocks and will not have an "unmitigable adverse impact" on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910
Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Mr. Olemaun:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments of the coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other
fish and wildlife species important to subsistence, as well as the availability of species such as bowhead whales, beluga, walrus and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the “take” of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only ‘small’ numbers of marine mammals and that the level of taking will have no more than a “negligible impact” on marine mammal species or stocks and will not have an “unmitigable adverse impact” on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

P. Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910
Mr. Isaac Akootchook  
President, Native Village of Kaktovik  
P.O. Box 130  
Kaktovik, Alaska 99747

Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Mr. Akootchook:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments of the coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other fish and wildlife species important to subsistence, as well as the availability of...
species such as bowhead whales, beluga, walrus and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the "take" of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only "small" numbers of marine mammals and that the level of taking will have no more than a "negligible impact" on marine mammal species or stocks and will not have an "unmitigable adverse impact" on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

[Signature]

P. Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910
Ms. Bernice Kaigelak  
President, Native Village of Nuiqsut  
P.O. Box 89169  
Nuiqsut, Alaska 99789

Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Ms. Kaigelak:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments and coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other fish and wildlife species important to subsistence, as well as the availability of...
species such as bowhead whales, beluga, walrus, seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the “take” of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only “small” numbers of marine mammals and that the level of taking will have no more than a “negligible impact” on marine mammal species or stocks and will not have an “unmitigable adverse impact” on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

P. Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910
Caroline Cannon  
President  
Native Village of Point Hope  
P.O. Box 266  
Point Hope, Alaska 99766  

Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)  

Dear Ms. Cannon:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments and coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the
possible consequences of human-related activities on marine mammals and other fish and wildlife species important to subsistence, as well as the availability of species such as bowhead whales, beluga, walrus and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the “take” of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only ‘small’ numbers of marine mammals and that the level of taking will have no more than a "negligible impact" on marine mammal species or stocks and will not have an "unmitigable adverse impact" on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

Michael Payne, Chief Permits, Conservation and Education Division Office of Protected Resources National Marine Fisheries Service 1315 East-West Highway, Room 13705 Silver Spring, MD 20910
Fredricka Stalker  
President  
Native Village of Point Lay  
P.O. Box 59031  
Point Lay, Alaska 99759

Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Ms. Stalker:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments and coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened...
awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other fish and wildlife species important to subsistence, as well as the availability of species such as bowhead whales, beluga, walrus and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the "take" of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only "small" numbers of marine mammals and that the level of taking will have no more than a "negligible impact" on marine mammal species or stocks and will not have an "unmitigable adverse impact" on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910
Ms. June Childress  
President, Wainwright Traditional Council  
P.O. Box 143  
Wainwright, Alaska 99782

Re: National Marine Fisheries Service Environmental Impact Statement on the effects of oil and gas activities (seismic surveys and offshore exploratory drilling activities) in the Arctic Ocean (U.S. Chukchi and Beaufort Seas)

Dear Ms. Childress:

The National Marine Fisheries Service (NMFS) is initiating preparation of an Environmental Impact Statement (EIS) that will consider the effects of offshore geophysical seismic surveys and exploratory drilling in the Federal and state waters of the U.S. Chukchi and Beaufort Seas. The purpose of this letter is to initiate government-to-government consultations, and to invite you and members of your tribe to participate in the scoping process for the development of the EIS. The EIS will consider the potential consequences for authorizing these activities and will evaluate the potential for development of a long-term planning process including regulations developed under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA).

It is our goal to work collaboratively with Tribal Governments and coastal communities of the U.S. Chukchi and Beaufort Seas in order to explore ways that the energy development in the Arctic can best co-exist with the subsistence culture and lifestyle. NMFS recognizes that it has a special obligation to consult and coordinate with Alaska tribal organizations in the spirit of Executive Order 13175 and welcomes your participation in this effort. Furthermore, NMFS values the contribution that Alaska Native knowledge and experience can provide the EIS team with regard to marine mammals and the environment in general. We will be contacting and soliciting comments from other Alaska Native organizations as well.

The process of preparing the EIS will take approximately 18 months and is anticipated to be completed in June 2011. Public scoping and agency meetings will be held in coastal Alaskan communities of the Arctic including Kotzebue, Point Lay, Wainwright, Point Hope, Barrow, Nuiqsut, and Kaktovik, as well as Anchorage, Alaska, in February and March of this year. A brief description of the project is presented below:

- The past several years has seen an increased interest in oil and gas exploration in the Chukchi and Beaufort Seas. These activities, along with the heightened awareness of the global issues facing the Arctic, have focused attention on the possible consequences of human-related activities on marine mammals and other
fish and wildlife species important to subsistence, as well as the availability of species such as bowhead whales, beluga, walrus and seals to the subsistence hunters of these communities.

- Under the MMPA, NMFS is responsible for permitting or exempting the "take" of marine mammals through annual authorizations (Incidental Harassment Authorizations [IHAs]) or multiple-year authorizations (Letters of Authorization [LOAs]). In order to issue such authorizations, NMFS must determine that the activity will take only "small" numbers of marine mammals and that the level of taking will have no more than a "negligible impact" on marine mammal species or stocks and will not have an "unmitigable adverse impact" on subsistence uses of these species.

- Currently, oil and gas exploratory activities, such as drilling and seismic surveys that may take marine mammals pursuant to the MMPA, are applied for and authorized on an annual basis (i.e., IHAs). NMFS is proposing to implement a long-term planning process in order to reduce uncertainties and inconsistencies in the current process. We believe many of the concerns regarding the potential impacts of oil and gas activities on the annual subsistence harvests can be remedied through the development and implementation of regulations that would be in place for five-year periods of time, based on a defined level of activity. Also, under rulemaking, mitigation and monitoring requirements would be consistent or built upon from year to year, rather than determined on an annual basis.

- We are aware that North Slope residents have testified many times with regard to concerns over offshore development. It is our goal to gain a more complete understanding of the concerns that have been voiced previously, so that any questions we may pose to you related to this project will be more focused and useful for what we hope to achieve.

We look forward to working with you through the completion of the project. If you have any questions, please feel free to contact me at the address below, by telephone at (301) 713-2289, or by email at Michael.Payne@noaa.gov.

Sincerely,

[Signature]

Michael Payne, Chief
Permits, Conservation and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910