

Table with Arctic Council Oil and Gas Recommendations

Source Documents	Theme	Recommendations	Related Follow up actions	Status: Completed/Ongoing	Notes
Strategic Actions, AMSP 2004	<b>Respond to Emerging Knowledge</b>	(7.2.3) Examine the adequacy of Arctic Council guidelines related to the prevention of environmental impacts of oil and gas activities in light of the Council's <i>Assessment of Potential Impacts of Oil and Gas Activities in the Arctic</i> and in keeping with the review cycle approved by the Council			
Strategic Actions, AMSP 2004	<b>Respond to Emerging Knowledge</b>	(7.2.5) Improve capabilities for responding to marine emergency situations, including those resulting from climatic variability			Unsure if <i>completely</i> relevant
Strategic Actions, AMSP 2004	<b>Respond to Emerging Knowledge</b>	(7.2.6) Identify potential areas, as appropriate, where new guidelines and codes of practice for the marine environment are needed			Unsure if <i>completely</i> relevant
Strategic Actions, AMSP 2004	<b>Implement and Comply with Applicable International/Regional Commitments</b>	(7.3.1) Promote the implementation of and compliance with relevant international/regional agreements.			Very broad - almost irrelevant given recommendations above?
Strategic Actions, AMSP 2004	<b>Facilitate Partnerships and Technical Co-operation</b>	Foster partnerships among governments and indigenous peoples' organizations (IPOs), communities, industry, international bodies, non-governmental organizations (NGOs) and academic to advance the goals of this Strategic Plan, employing such mechanisms as partnership conferences and workshops			general to AMSP
Strategic Actions, AMSP 2004	<b>Facilitate Partnerships and Technical Co-operation</b>	(7.5.3) Encourage and facilitate technical cooperation for the Russian Federation's activities aimed at protecting the Arctic marine environment			general to AMSP
Strategic Actions, AMSP 3rd draft 2014	<b>(6.3). Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b>	1. Building on existing resources, consider further measures to enhance the sharing of information related to oil spill prevention/response including updated best practices, regulatory processes, and compliance and operational information (including near miss data), R&D on technology development and testing; key international contacts; and information about use of dispersants. (Source: EPPR RP3 Report Rec 4. "Arctic Oil Pollution centre of Excellence" )			
Strategic Actions, AMSP 3rd draft 2014	<b>(6.3). Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b>	2. Explore the use of satellite monitoring for oil pollution for early intervention and response.			
Strategic Actions, AMSP 3rd draft 2014	<b>(6.3). Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b>	3. Support the research and development of oil spill response and mitigation measures, technologies and accepted best practices effective in ice-filled waters including detection of oil under ice, modelling of oil spills under ice, and recovery of oil under ice. (Source: ABA rec/EPPR)			
Strategic Actions, AMSP 3rd draft 2014	<b>(6.3). Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b>	11. Support research into the understanding of oil spill countermeasures' unintended impacts on environment. Information needed for further development of the concept of Net Environmental Benefit Analysis (NEBA) as tool for oil spill response strategy decisions			
Strategic Actions, AMSP 3rd draft 2014	<b>(6.3). Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b>	12. Support a common arctic platform for ecotoxicological assessment and screening of chemicals used in the Arctic with regards to development and implementation of standard tests relevant for marine arctic conditions and organisms. The focus should be on chemicals used in the offshore oil industry and in chemical processes in the mining industry			

OGA Matrix -2007	General	Oil and gas activities and their consequences for the environment and humans should be given high priority in the future work of the Arctic Council, focussing in particular on: a. research, assessment and guidelines to support prevention of oil spills and reducing physical disturbances and pollution; b. research, assessment and guidelines leading to improved management of social and economic impacts on local communities; and c. research, assessment, and guidelines in relation to the interactions between oil and gas activities and climate change .	<p><b>Research:</b> Studies Encourage and suggest Research on all three subjects. These could be proposed to Academic and Government institutions and coordinated with all relevant AC WGs.</p> <p><b>Assessment and Guidelines:</b>  <b>Oil Spills:</b> EPPR follow-up on assessment of prevention of oil spills and possibly development (w/PAME?) of Guidelines for offshore spill prevention and response.  <b>Physical Disturbances:</b> AMAP assessment of physical disturbances and pollution onshore and (w/ACAP?) on guidelines for restoration and remediation of onshore polluted sites.  <b>Social and Economic Effects:</b> SDWG assessment (with AMAP?) and, with PAME (?), develop Guidelines.  <b>Oil and Gas and Climate Change:</b> AMAP lead for a project comparing OGA with ACIA, SWIPA (using Climate and Oil and Gas Expert Groups) and adding new information from CAFF and SDWG—Guidelines could be part of assessment result (w/PAME?).</p>		
OGA Matrix -2007	General	Recognizing the trans-boundary context of pollution hazards associated with certain oil and gas activities, the Arctic Council should support improvements in bilateral (and multilateral) cooperation among the Arctic countries to institute or improve coordination of preparedness and response measures across the circumpolar region, in particular cooperation in the Norwegian-Russian marine areas (Barents Sea) and the Russian-US marine areas (Chukchi and Bering Seas).	<p><b>Arctic States are primary responsible parties.</b> An assessment of bilateral and multilateral agreements and arrangements for preparedness and response possibly drawing on the AOR and EPPR work and on country experts. Possibly guidelines and recommendations to improve the cooperation and response capability. Encourage AC countries to improve or institute agreements for Barents and Chukchi (USCG-DOI).  <b>PAME:</b> Has IMO related projects on Sensitive/Protected areas, and HFO use and has the AOR assessing bi- and multilateral agreements including for response.  <b>EPPR</b> is assessing response capability and equipment and has developed, and updates, guidelines for response, Oil Spill Response: EPPR is developing a manual for guidance in the use of in-situ burning as a response technique for marine oil spills in ice covered water.  EPPR, PAME look at bi-laterals and multi-laterals (from AOR), promote the AMSA follow-up projects that relate</p>		
OGA Matrix -2007	General	Arctic oil and gas activities should be conducted in accordance with the precautionary approach as reflected in Principle 15 of the Rio Declaration as well as in Article 3, paragraph 3 of the UN Framework Convention of Climate Change; and with the polluter pays principle as reflected in Principle 16 of the Rio Declaration	<p><b>Arctic States Responsibility</b> An assessment of the compliance of the way activities are conducted and the provisions and guidance in the Rio and UNFCCC.</p>		
OGA Matrix -2007	Social and Economics Effects	Prior to opening new geographical areas for oil and gas exploration and development, or constructing new infrastructure for transporting oil and gas, local residents including indigenous communities should be consulted to ensure that their interests are considered, negative impacts are minimized and advantage is taken of opportunities afforded by the activity, especially during the early, intensive phases of development and construction.	<p>Assessment of the processes used for consultation and incorporation of local concerns including TEK in oil and gas planning and activities. Providing a Guide to local communities on oil and gas activities.  <b>SDWG:</b> Circumpolar Oil and Gas Tool Kit for Indigenous and Northern Communities.  <b>SDWG/AMAP:</b> Development of Socioeconomic Indicators of Effects from Oil and Gas Activities.</p>		
OGA Matrix -2007	Social and Economics Effects	Consideration should be given to securing lasting benefits from oil and gas activities for Arctic residents, for example through the establishment of infrastructure and health-care facilities, so that northern economies and people benefit over the longer-term and so that infrastructure and services are maintained in the period after the activity has declined or ceased.	<p><b>Arctic States Responsibility</b> Assessment of living conditions in areas of potential or ongoing (offshore) oil and gas activities. Provide Guidance on how to deal with all phases of Oil and Gas activities.  <b>SDWG Oil and Gas Tool Kit</b> as a follow-on to the Mining Tool kit. Use the SDWG AHDR and OGA Chapter 3 as resources.</p>		
OGA Matrix -2007	Effects on the Environment and Ecosystems	Measures should be adopted to enforce stringent controls on activities in sensitive areas, especially during periods when vulnerable species are present, and in particular on activities that involve a risk of effects from spills. Governments need to play an active role in this.	<p><b>Arctic States Responsibility</b>  <b>PAME:</b> AMSA IID is proposing to develop possible mitigation and measures for shipping under IMO.  HFO project also proposes to recommend measures on heavy fuel oil</p>		

OGA Matrix -2007	<b>Effects on the Environment and Ecosystems</b>	Where relevant, consideration should be given to staged opening of areas for oil and gas exploration and development or application of seasonal restriction on activities to minimize effects on ecosystems.	<b>Arctic States Responsibility</b> <b>AMSA IIC</b> is looking at spatial and temporal aspects of ecosystems vulnerability to oil spills and disturbance from ship traffic. <b>PAME:</b> AMSA IID will also look at spatial and temporal aspects of ecosystems vulnerability to oil spills and disturbance from ship traffic.		
OGA Matrix -2007	<b>Effects on the Environment and Ecosystems</b>	Consideration should be given to the need for additional protected areas and areas that are closed for oil and gas activities, the need for such areas should also be considered in areas designated as appropriate for oil and gas development.	<b>Arctic States Responsibility</b> <b>PAME:</b> AMSA IID is proposing this for shipping, which includes some oil and gas related vessel activity.		
OGA Matrix -2007	<b>Effects on the Environment and Ecosystems</b>	Improved mapping of vulnerable species, populations, and habitats in the Arctic should be carried out, also taking into account seasonal, annual and longer-term changes, in order to facilitate oil spill contingency planning.	<b>Arctic States</b> have primary responsibility Update and consolidate AC products <b>CAFF:</b> ABA and CBMP <b>AMAP:</b> OGA C6, SWIPA, other Arctic Assessments <b>AMSA IIC</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	Laws and regulations in all Arctic countries and their regional and local subdivisions should be enacted, periodically reviewed and evaluated and where necessary strengthened and rigorously enforced, in order to minimize any negative effects and maximize any positive effects of oil and gas activity on the environment and society.	<b>Arctic States Responsibility</b> Country Gaps-analysis; Regulatory recommendations; Enforcement strategies <b>PAME:</b> Arctic Offshore Oil and Gas Guidelines; AOR <b>AMAP:</b> Oil and Gas Assessment <b>EPPR:</b> Assessment of Response Assets. <b>CAFF Assessment</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	The requirement to use best industry and international standards should be addressed in laws and regulations. Management systems and regulations should be clear and flexible, and reviewed regularly to ensure that they are effective, adequate, consistently applied, and accommodate changes in technology in a timely manner.	<b>Arctic States have primary responsibility</b> Compendium of standards, best available or appropriate technology and techniques, industry best practice standards and guidelines etc. Assessment of Arctic State's management and regulatory regimes for flexibility and the inclusion of industry standards. <b>PAME:</b> Guidelines PAM/SDWGE Best Practices in Ecosystem Based Management PAME track relevant <b>Others</b> <b>OGP:</b> BAT Guidelines <b>IMO</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	Monitoring of compliance and implementation of regulations should be improved in the Arctic countries, and appropriate authorities across the Arctic should be encouraged to adhere to and to enforce compliance with regulations.	<b>Arctic States Responsibility</b> Guidelines for HSE Management and an informational resource portal with relevant reports and statistics could facilitate better enforcement <b>PAME:</b> AOOGG 2009 <b>AMAP:</b> OGA and Arctic Oil and Gas 2007. 2 new proposals PAME I-2011		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	An assessment of the oil and gas industry's degree of compliance with applicable domestic regulations and monitoring programmes should be undertaken.	<b>Arctic States Responsibility</b> A multi-national coordinated review of incidents and compliance issues for types of operations and by companies. Set-up a unified database using comparable statistics on the proposed MRE Information Portal. <b>Possible coordination with IRF, OSPAR and industry associations and NGOs</b> to compile and analyze incidents and accident statistics and compliance <b>PAME:</b> AOOGG 2009 <b>PAME I-2011</b> proposal MRE Information Portal could provide support for a project		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	Guidelines for oil and gas activities in the marine environment, and the legal framework for planning and controlling oil spill response operations in the Arctic, should be improved where necessary to reduce risks and minimize environmental disturbances.	<b>Arctic States have primary responsibility</b> <b>AMAP/CAFF/SDWG AMSA IIC</b> <b>EPPR</b> Inventory of OSR assets <b>PAME:</b> AMSA IID- IMO Polar Code- IMO HFO- AOR		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	Oil and gas companies should be responsible for the costs associated with risk reduction, spill response, remediation and decommissioning activities, and be prepared to share in the costs for environmental studies, monitoring and social impacts associated with oil and gas development.	<b>Arctic States have primary responsibility</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	Environmental impact assessments, strategic environmental assessments, and risk assessments should continue to be rigorously applied and streamlined to increase their relevance and usefulness for all stakeholders.	<b>Arctic States have primary responsibility</b> <b>Arctic States</b> EIA and Risk Assessment webpage information clearinghouse <b>PAME:</b> Arctic States EIA information clearing house on the PAME webpage (project underway but could be included in new MRE proposal)		

OGA Matrix -2007	<b>Managing Oil and Gas Development: Laws and regulations</b>	The ways in which local and indigenous knowledge has been and can be used in project planning, environmental assessment and monitoring, and regulatory decision-making should be evaluated to determine how best to involve such knowledge and its holders.	<b>Arctic States have primary responsibility</b> <b>Assessment of methods and practices</b> of countries use of TEK and TK in project planning, Environmental Assessment and Monitoring and regulatory decision making to draw from experience and develop suggestions for improvement. <b>SDWG:</b> May launch Oil and Gas Informational Tool Kit project following the Mining Tool Kit. <b>AMAP:</b> OGA		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Technology and Practices</b>	Oil and gas industry should adopt the best available Arctic technology and practices currently available in all phases of oil and gas activity when undertaking such activities in the Arctic.	<b>Arctic States have primary responsibility</b> (WGs) <b>PAME:</b> AOOGG <b>EPPR:</b> Guidelines <b>AMAP:</b> OGA (Others) <b>OSPAR</b> <b>International Regulators Forum</b> Industry associations and standards organizations (API, ISO, IEC, etc.)		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Technology and Practices</b>	Oil and gas industry should take action to reduce the physical impacts and disturbances associated with oil and gas activities, including, where appropriate: using 'road-less' development techniques to reduce physical impacts of roads; conducting as much activity as possible in winter months to avoid effects on tundra, permafrost, streams, and water bodies.			
OGA Matrix -2007	<b>Managing Oil and Gas Development: Technology and Practices</b>	Where appropriate, real-time monitoring should be used to minimize disturbances and impacts on wildlife, and scientifically-based best practices used to avoid adverse effects on marine mammals during seismic operations.	An assessment of the science and practices of marine noise (AMAP/PAME) and guidelines for best practices (PAME) <b>PAME:</b> AOOGG <b>AMAP:</b> OGA <b>Others</b> IMO Oil and Gas Producers International International Association of Geophysical Contractors,		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Technology and Practices</b>	Tanker operations in Arctic waters should employ the strictest measures for spill prevention and response, including improved communication, training, and cargo handling techniques and the use of ice-strengthened and double-hulled vessels. International coordination of oil transport information should be improved. International standards and national legislation for ships engaged in oil transportation in seas with potential for ice problems should be reviewed for adequacy and strengthened as appropriate.	<b>Arctic States have primary responsibility</b> <b>PAME:</b> AMSA 2009, AMSA Follow-up projects such as AMSA IID, HFO and Polar Code <b>Others</b> <b>IMO</b> Regulations Shipping (Polar Guidelines) <b>ISO</b> and other ship construction standards including		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Technology and Practices</b>	All pipeline projects should use the best available Arctic engineering and environmental standards, including right-of-way selection, inspection using state-of-the-art leak and corrosion detection systems, monitoring and environmental studies. Arctic design, engineering, construction and monitoring standards, and response capabilities, should be strictly adhered to and, if necessary, improved. Existing pipelines should be properly maintained and, if necessary, replaced.	<b>Arctic States responsibility</b> Inventory including size, age and usage data of all Arctic offshore pipelines; Design criteria and performance studies and assessments <b>AMAP:</b> OGA <b>PAME I-2011</b> Proposal on MRE Informational Portal <b>Other</b> International Regulators Forum; US and Norway design and monitoring programs Industry JIPs		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Consideration should be given to whether Arctic areas should be opened for oil and gas activities or transportation where the methods of dealing with a spill or other major accident are lacking or inadequate.	<b>Arctic States responsibility</b> <b>WGs</b> <b>PAME:</b> AMSA IID has similar proposals <b>AMSA IIC</b> <b>EPPR:</b> Sensitivity and response guidance		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Actions should be evaluated and applied to reduce risks of marine and terrestrial oil spills, especially aiming to prevent the occurrence of marine spills in the presence of sea ice.	<b>Arctic States responsibility</b> <b>PAME:</b> AOOGG; TROOP; AMSA IB; AMSA IID <b>EPPR:</b> Guidelines and Risk Assessment <b>Other</b> <b>OSPAR</b> <b>IMO</b> National Guidelines		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Emergency preparedness should be of the highest levels, including continued review of contingency plans, training of crews to operate and maintain equipment, and conducting regular (and unscheduled) response drills. Cooperation and emergency communications between operators and local, regional, national and international authorities on routes and schedules of transport and response capabilities need to be established and maintained.	<b>Arctic States responsibility</b> <b>WGs</b> <b>EPPR:</b> Guidelines and Risk Assessments <b>PAME:</b> AOOGG; TROOP; AMSA Traffic Tracking recommendations and Disaster WS findings and		

OGA Matrix -2007	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Oil spill response capabilities should be maintained and, where necessary, strengthened. Spill response technology should be further developed, especially technology or techniques for dealing with spills in water where ice is present. More (modern) combating equipment should be deployed in the Arctic, and distributed more widely to enable a rapid and effective response to the challenges associated with an acute spill in the Arctic environment.	<b>Arctic States Responsibility</b> -More coordinated and co-funded OSR research. <b>WGs</b> <b>EPPR:</b> Inventory of assets <b>Other</b> Academic and Governmental Institutional Research activities		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Countries should evaluate current funding levels to ensure full support for oil spill prevention, preparedness and response measures, including enforcement of these measures.	<b>Arctic States responsibility</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Remediation</b>	Oil and gas industry should be encouraged to continue their efforts to reduce emissions and discharges to the environment, including as appropriate: consideration of 'zero discharge' policies for harmful substances; reducing the amounts of produced water discharged to surface waters or the terrestrial environment; improved treatment of wastes prior to discharge; use of materials and chemicals that are less harmful to the environment; employment of closed-loop drilling practices for waste management; reducing the use of sumps and ensuring safe disposal of spent muds and cuttings; and discontinuation of flaring of associated solution-gas except in emergencies or for safety reasons.	<b>Arctic States responsibility</b> <b>WGs</b> <b>PAME:</b> AOOGG <b>AMAP:</b> OGA <b>EPPR:</b> Guidelines and Risk Assessments <b>Other</b> <b>OSPAR</b>		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Remediation</b>	The benefits and costs of decommissioning and removing abandoned oil and gas facilities and remediation of affected areas should be evaluated on a case-by-case basis. Action is required to remediate sites that are polluted or severely contaminated in order to significantly reduce or prevent threats to the environment and the health of affected local populations.	<b>Arctic States responsibility</b> - Studies on rig and pipeline removal in Arctic offshore conditions; Baseline studies before installation and monitoring of activities including decommissioning; Studies on environmental consequences of leaving behind some of the infrastructure (Rigs to Reefs). <b>WGs</b> <b>PAME:</b> AOOGG <b>Other:</b> National Systems OSPAR		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Remediation</b>	Where not already defined, countries should ensure that the respective responsibilities of government and industry for undertaking appropriate actions for decommissioning and remediation of all sites and infrastructure associated with ongoing and new oil and gas activities are clearly defined, and that measures are implemented to ensure that these obligations are met	<b>Arctic States responsibility</b> An assessment of the decommissioning and abandonment policies of countries and in international law A web information clearinghouse page. <b>WGs</b> <b>PAME:</b> assessment and possible guidelines		
OGA Matrix -2007	<b>Managing Oil and Gas Development: Remediation</b>	Where necessary, a mechanism should be put in place for the clean-up of sites still seriously polluted as a result of past oil and gas activities where the operators of the sites can no longer be identified.			
OGA Matrix -2007	<b>Managing Oil and Gas Development: Remediation</b>	Facilities for handling wastes from the oil and gas industry, including port reception facilities for transportation and ancillary vessels, should be extended to reduce environmental pollution, including pollution resulting from illegal discharges.	<b>Arctic States responsibility</b> Survey and assessment of port reception facilities with relation to possible oil and gas activity <b>WGs</b> <b>PAME:</b> AMSA findings and recommendations <b>Other:</b> Marine port waste reception report		
Arctic Biodiversity Assessment, CAFF	<b>Effects on the Environment and Ecosystems</b>	a. Support and enhance international efforts and cooperation to identify, assess and reduce existing and emerging harmful contaminants. b. <b>Support the development of appropriate prevention and clean up measures and technologies that are responsive to oil spills in the Arctic, especially in ice-filled waters, such that they are ready for implementation in advance of major oil and gas developments.</b> c. Encourage local and national action to implement best practices for local wastes, enhance efforts to clean-up legacy contaminated sites and include contaminant reduction and reclamation plans in development projects.			
AOR, Chapter 5	<b>Standards</b>	The Arctic Council should urge its members to support, as appropriate, efforts in the ISO and other processes to develop standards relevant to Arctic oil and gas operations			
AOR, Chapter 5	<b>Policy Harmonization</b>	Arctic states should move toward circumpolar policy harmonization in discrete sectors such as, e.g., environmental monitoring based on existing studies such as the Arctic Council's Arctic Offshore Oil and Gas Guidelines and the EPPR Recommended Prevention Practices report.			
AOR, Chapter 5	<b>Engagement with International Bodies</b>	Arctic Council should promote interactions with the appropriate international treaty bodies on offshore oil and gas issues that address for example discharges, oil spill preparedness and response, and environmental monitoring. This could include coordinating information exchange on reporting, monitoring, assessment and/or other requirements under relevant entities, encouraging inclusion of science and traditional knowledge, and keeping abreast of Arctic-specific developments relevant to the appropriate instruments.			
AOR, Chapter 5	<b>Industry Engagement</b>	Arctic states should further engage industry and regulator involvement, as appropriate, in PAME and EPPR initiatives on offshore oil and gas activity by utilizing existing industry forums, or by convening an Arctic-specific oil and gas dialog for industry and contractor groups.			
AOR, Chapter 6	<b>Cumulative Effects</b>	18) Arctic states should continue to identify, monitor and assess the combined effects of multiple stressors – inter alia climate change, ocean acidification, shipping, living marine resource use, regional and long-range pollution, and offshore oil and gas exploration and extraction – on Arctic marine species and ecosystems. Support the ongoing work under EBM, AMAP and CAFF including the initiative "Adaptation Actions for a Changing Arctic" to achieve this endeavor and strengthen the link between the current known status and future management of Arctic marine species and ecosystems.			

AOR, Chapter 6	<b>Greenhouse Gas Reduction</b>	19) Arctic states should reaffirm the importance of their engagement in the UNFCCC to reduce global greenhouse gas emissions as a matter of urgency, recognizing the significant potential threats posed to Arctic marine ecosystems and Arctic biodiversity from climate change and ocean acidification identified by AMAP and CAFF. Arctic states should also increase their leadership role in the study of ocean acidification in Arctic waters			
AMSA	<b>II(B). IMO Measures for Arctic Shipping</b>	<p>“That the Arctic states, in recognition of the unique environmental and navigational conditions in the Arctic, decide to cooperatively support efforts at the International Maritime Organization to strengthen, harmonize and regularly update international standards for vessels operating in the Arctic. These efforts include:</p> <ul style="list-style-type: none"> <li>• Support the updating and the mandatory application of relevant parts of the Guidelines for Ships Operating in Arctic Ice-covered Waters (Arctic Guidelines); and,</li> <li>• Drawing from IMO instruments, in particular the Arctic Guidelines, augment global IMO ship safety and pollution prevention conventions with specific mandatory requirements or other provisions for ship construction, design, equipment, crewing, training and operations, aimed at</li> </ul>			
AMSA	<b>II(F). Oil Spill Prevention</b>	“That the Arctic states decide to enhance the mutual cooperation in the field of oil spill prevention and, in collaboration with industry, support research and technology transfer to prevent release of oil into Arctic waters, since prevention of oil spills is the highest priority in the Arctic for environmental protection.”			
AMSA	<b>II(H). Reducing Air Emissions</b>	“That the Arctic states decide to support the development of improved practices and innovative technologies for ships in port and at sea to help reduce current and future emissions of greenhouse gases (GHGs), Nitrogen Oxides (NOx), Sulfur Oxides (SOx) and Particulate Matter (PM), taking into account the relevant IMO regulations.”			
AOOGG-Safety 2014	<b>Continuous Improvement</b>	Regulators must continuously evaluate and seek to improve their supervision by reviewing the regulatory system for clarity and effectiveness;			
AOOGG-Safety 2014	<b>Continuous Improvement</b>	<p><b>Ensure continuous improvement is accomplished through:</b></p> <ul style="list-style-type: none"> <li>• periodic regulatory reviews and follow-up changes or clarifications;</li> <li>• the application of risk-based regulation, focusing on critical operations, known hazards, and results of safety performance evaluations of the operator;</li> <li>• application of safety management system principles throughout the life-cycle of operation from leasing/licensing to monitoring and ultimately decommissioning;</li> <li>• monitoring environmental and safety performance;</li> <li>• conducting audits that examine company safety meeting records, maintenance logs, operator follow-up to known deficiencies, results of company internal audits, employee questionnaires, etc.;</li> <li>• open and frequent communication with the operator about how to improve their performance when deficiencies are identified;</li> <li>• both regular (and random) inspections;</li> <li>• meaningful enforcement actions.</li> </ul>			
AOOGG-Safety 2014	<b>Continuous Improvement</b>	Continuous improvement in offshore performance should be seen as a collaborative activity requiring cooperation and actions by both industry and regulators.			
AOOGG-Safety 2014	<b>Risk Assessment/Hazard Identification</b>	<p><b>Require operators to assess risk in offshore Arctic areas on an ongoing basis.</b> Factors include:</p> <ul style="list-style-type: none"> <li>• Geology in the well including shallow gas, permafrost and methane hydrates;</li> <li>• Weather, sea, ice;</li> <li>• Improvement in the management of change.</li> </ul>			
AOOGG-Safety 2014	<b>Risk Assessment/Hazard Identification</b>	Require the operator to regularly assess risk relevant to operating in Arctic conditions in order to inform the process of improving regulations, standards and industry guidance;			
AOOGG-Safety 2014	<b>Risk Assessment/Hazard Identification</b>	Require the operator to assess risks associated with cold environment technologies so that safety performance can be improved before breakdowns or accidents happen			
AOOGG-Safety 2014	<b>Risk Assessment/Hazard Identification</b>	Consider the use of a risk-based approach to regulation of Arctic operations such as Continuous Improvement Cycle or Risk-Based Life Cycle (RBLC) approach that prioritizes regulatory supervision according to risk. This should be carried through the full operation and life cycle of activities and should link the degree of regulatory supervision to critical operations and to a company’s safety performance history			

AOOGG-Safety 2014	Risk Assessment/Hazard Identification	<p><b>Employ Risk Management/Operational Controls by:</b></p> <ul style="list-style-type: none"> <li>• requiring monitoring of risk and safety margins, especially those worsened by Arctic conditions (e.g. permafrost, ice and icing, cold, remoteness from infrastructure, etc.);</li> <li>• requiring improvement of barrier management;</li> <li>• requiring improvement in situational awareness (e.g. weather, ice, sea conditions);</li> <li>• requiring additional direct monitoring and control instrumentation to replace indirect measures;</li> <li>• requiring real-time operations centers for all wells being drilled in the offshore Arctic;</li> <li>• having government regulators involved in real-time monitoring at critical points in the operations—such as negative pressure tests and during other critical procedures;</li> <li>• ensuring the regulator is knowledgeable and trained in the operations being monitored;</li> <li>• considering the use of the multi-lingual ISO 31,000 High Level Risk Management Guidelines for common terminology and communications;</li> <li>• requiring integrated risk assessment and analysis for the whole spectrum of the operation</li> </ul>			
AOOGG-Safety 2014	Risk Assessment/Hazard Identification	<p><b>Safety Margin Management should be used as a proactive approach to ensure margins of safety are established in the design phase. Have the operator:</b></p> <ul style="list-style-type: none"> <li>• define the safety envelope;</li> <li>• clearly establish proven practice;</li> <li>• assess uncertainties and adjust levels of safety margins;</li> <li>• factor in the differences in exploration and production operations and geology and Arctic ice type/conditions</li> </ul>			
AOOGG-Safety 2014	Risk Assessment/Hazard Identification	<p><b>Employ Risk Management/Operational Controls by:</b></p> <ul style="list-style-type: none"> <li>• requiring monitoring of risk and risk margins especially those worsened by Arctic conditions (e.g. permafrost, ice and icing, cold, remoteness from infrastructure, etc.);</li> <li>• requiring improvement of barrier management;</li> <li>• requiring improvement in situational awareness (e.g. weather, ice, sea conditions);</li> <li>• requiring additional direct monitoring and control instrumentation to replace indirect measures;</li> <li>• requiring real-time operations centers for all wells being drilled in the offshore Arctic;</li> <li>• having government regulators involved in real-time monitoring at critical points in the operations—such as negative pressure tests and during other critical procedures. Ensure the regulator is knowledgeable and trained in the operations being monitored.</li> <li>• considering the use of the multi-lingual ISO 31,000 High Level Risk Management Guidelines for common terminology and communications;</li> <li>• requiring integrated risk assessment and analysis for the whole spectrum of the operation.</li> </ul>			
AOOGG-Safety 2014	Risk Assessment/Hazard Identification	<p><b>Safety Margin Management should be used as a proactive approach to ensure margins of safety are established in the design phase. Have the operator:</b></p> <ul style="list-style-type: none"> <li>• define the safety envelope;</li> <li>• clearly establish proven practice;</li> <li>• assess uncertainties and adjust levels of safety margins;</li> <li>• factor in the differences in exploration and production operations and geology and Arctic ice type/conditions.</li> </ul>			
AOOGG-Safety 2014	Management of Change	Regulators and operators must constantly seek to improve their approach to the 'Management of Change' through hazard identification, risk analysis/assessment and better handling of any changes to the drilling plan during the operational phase			
AOOGG-Safety 2014	Management of Change	Regulators should require the operator to undertake a rigorous assessment of risks (using a risk assessment matrix or other suitable methodology) for each critical procedure or operation in the Arctic offshore. Among other factors, such assessments should fully consider relevant Arctic multipliers.			
AOOGG-Safety 2014	Training and Competence for the Arctic	Require operators to demonstrate that all personnel (including all contractors and subcontractors) have the required and appropriate training and competency for operations in Arctic waters;			
AOOGG-Safety 2014	Training and Competence for the Arctic	Competency requirements for regulatory staff should include both technical and non-technical skills and knowledge. These should include those related to disciplines such as human factors, management systems, system safety, and safety culture			
AOOGG-Safety 2014	Training and Competence for the Arctic	Regulators should ensure and verify that operators conduct both scheduled and unscheduled safety drills			
AOOGG-Safety 2014	Accountability and Responsibility	Regulators should hold the operator accountable for developing a comprehensive Safety Management System and a robust and identifiable safety culture			
AOOGG-Safety 2014	Accountability and Responsibility	Regulators should observe and validate the operator's safety management system and safety culture and identify opportunities for improvement.			
AOOGG-Safety 2014	Accountability and Responsibility	Regulators should hold the operator responsible for contractor safety training, competence and certification and have the operator demonstrate an effective process for managing them.			
AOOGG-Safety 2014	Accountability and Responsibility	Regulators should require the operator to designate who is responsible at all times for critical decision-making processes and ensure those designated sign all associated safety management systems and safety culture documents.			

AOOGG-Safety 2014	<b>Accountability and Responsibility</b>	Regulators should regularly track existing and emerging risks in the industry			
AOOGG-Safety 2014	<b>Accountability and Responsibility</b>	Arctic countries should train government auditors to ensure competency and confirm adequate and appropriate supervision is being undertaken			
AOOGG-Safety 2014	<b>Accountability and Responsibility</b>	While field inspection programs can be expensive to implement, the regulator must be prepared to support robust inspection programs			
AOOGG-Safety 2014	<b>Operating Procedures and Work Processes</b>	Regulators must ensure that the operator's proposed procedures are included in integrated plans and safety scenarios. The regulator must review these to assess whether they are appropriate for the region, season and activity, and are adequate for the proposed operations			
AOOGG-Safety 2014	<b>Operating Procedures and Work Processes</b>	Regulators should review any proposed modifications by the operator in response to Arctic conditions or changes expected during Arctic operations. Regulators should also ensure that the risks of these changes are properly considered and analyzed with mitigations identified by the operator			
AOOGG-Safety 2014	<b>Operating Procedures and Work Processes</b>	The regulator should monitor all critical operations, through onsite inspections, daily reports, and through real-time-operations centers, to ensure procedures are safe, protect the marine environment, conform to the safety management plan, and meet regulatory requirements			
AOOGG-Safety 2014	<b>Operating Procedures and Work Processes</b>	The regulator should assess the overall effectiveness of the operator's safety procedures through regular inspections, monitoring, and the review of accident/near-miss and incident reports in order to identify both non-compliance and opportunities for improvement			
AOOGG-Safety 2014	<b>Operating Procedures and Work Processes</b>	Regulators should have technical training on safety procedures and practices and be given full access to all safety and environmental performance data			
AOOGG-Safety 2014	<b>Quality Assurance and Mechanical Integrity</b>	Regulators should conduct regular inspections and audits of equipment and maintenance records, and meeting minutes, etc. in order to verify that critical equipment is being monitored and maintained properly			
AOOGG-Safety 2014	<b>Quality Assurance and Mechanical Integrity</b>	Regulators should ensure that all components are certified by the manufacturer and properly used by the operator			
AOOGG-Safety 2014	<b>Quality Assurance and Mechanical Integrity</b>	Foreign flagged vessels should receive careful supervision-- cursory inspections are not sufficient to demonstrate the vessel is capable of operating safely in the Arctic			
AOOGG-Safety 2014	<b>Documentation &amp; Reporting</b>	All data should be recorded and submitted or shared regularly within the company and with the authorities			
AOOGG-Safety 2014	<b>Documentation &amp; Reporting</b>	Operators should be encouraged to make public their safety plans, contingency plans, emergency response plans, and environmental protection plans.			
AOOGG-Safety 2014	<b>Documentation &amp; Reporting</b>	In addition to regular operational reports, regulators should require reports on internal audits, near-miss incidents and other safety or environmental non-compliance			
AOOGG-Safety 2014	<b>Documentation &amp; Reporting</b>	Data, methodologies, analyses, and trends should be shared between operators and regulators and, where appropriate, non-attribution reporting and trend analyses, be made publicly available			
AOOGG-Safety 2014	<b>Communications</b>	Regulators should review communications plans, methods and facilities thoroughly and ensure that the operator has adequate and redundant communications capability effective in the area of operation			
AOOGG-Safety 2014	<b>Communications</b>	Regulators should ensure that the safety management system establishes and implements clear lines of communication between all players including shore-based personnel, contractors and regulators. Any deviations in communication protocols (or "short-cuts") proposed during emergencies or interruption periods should be recorded and understood			
AOOGG-Safety 2014	<b>Safety Culture</b>	Regulators must define and communicate expectations regarding positive safety culture and require operators to establish (and implement) their safety culture			
AOOGG-Safety 2014	<b>Safety Culture</b>	Encourage (or require) regulated companies to create a shared understanding (within and across partners/contractors) of exactly what constitutes positive safety culture in Arctic offshore activities			
AOOGG-Safety 2014	<b>Safety Culture</b>	Require operators to have a verifiable process to improve safety culture through constant monitoring and assessment and the use of leading indicators, such as described in the Safety Culture workshop (PAME, 2013b, p. 47 – see also Appendix F to this report)			
AOOGG-Safety 2014	<b>Safety Culture</b>	Require operator to designate a responsible and accountable person (preferably the CEO) for their safety culture			
AOOGG-Safety 2014	<b>Safety Culture</b>	Operators and regulators should avoid becoming complacent by over-relying on occupational safety records			
AOOGG-Safety 2014	<b>Safety Culture</b>	Define and communicate indicators of a poor or degrading culture as a threat to safety and require operators to establish (and monitor) indicators of positive safety culture			
AOOGG-Safety 2014	<b>Safety Culture</b>	Regulators should share indicators of safety culture through some inter-governmental/industry forum			
AOOGG-Safety 2014	<b>Safety Culture</b>	Regulators should undertake thorough and frequent field inspections			
AOOGG-Safety 2014	<b>Safety Culture</b>	Conduct audits on a risk-based prioritization schedule and use the results to address improvement opportunities in the safety management system and safety culture			
AOOGG-Safety 2014	<b>Safety Culture</b>	Consider providing financial incentives (for good behavior) and penalties (for bad behavior): - View the safety and environmental record of the whole company as an indicator of performance; - Tie safety and environmental performance to lease or license qualifications; - Enact 'whistle-blower' provisions and personnel protection guarantees;			
AOOGG-Safety 2014	<b>Regulations</b>	Although prescriptive regulations may be appropriate and effective for some elements of the safety system, Arctic countries should consider expanding, where appropriate, more performance-based regulatory approaches			
AOOGG-Safety 2014	<b>Regulations</b>	Arctic countries must ensure that regulators are properly trained in techniques and practices of a performance-based regime, and that such a system is adequately funded and staffed			



AOOGG-Safety 2014	<b>Standards and Best Practices</b>	Industry and regulators should work together to initiate, implement, monitor, and continuously improve standards and best practices for safety management systems and safety culture in Arctic offshore oil and gas operations.			
AOOGG-Safety 2014	<b>Standards and Best Practices</b>	Regulators should stay actively involved in international initiatives for developing standards for Arctic offshore oil and gas activities.			
AOOGG-Safety 2014	<b>Standards and Best Practices</b>	Arctic states should promote international standards and promote or establish an Arctic Offshore Regulators Forum to address and share knowledge of offshore Arctic-relevant issues, for example, standardizing and reporting incident and near-miss incidents			
AOOGG-Safety 2014	<b>Incident and Near-Miss Reporting</b>	Define near misses, such as body-to-body incident definitions, well kicks, etc., possibly through the International Regulation Forum (IRF) as part of the Common International Incident Reporting Requirements or possibly through the International Organization for Standardization (ISO).			
AOOGG-Safety 2014	<b>Incident and Near-Miss Reporting</b>	Require mandatory reporting and analysis of near-miss and incident data to identify trends before an accident happens			
AOOGG-Safety 2014	<b>Incident and Near-Miss Reporting</b>	Make near-miss and incident trend data and hazards data analyses publicly available. And find a way around the "proprietary" nature of some information on near-misses and incidents such as the use of anonymous or confidential reporting and release of de-identified data or analyses of data			
AOOGG-Safety 2014	<b>Incident and Near-Miss Reporting</b>	Standardize analytical methods to better allow comparing of trends through coordination among regulators, industry and academia and in government regulator forums			
AOOGG-Safety 2014	<b>Incident and Near-Miss Reporting</b>	Consider developing, or encouraging the development of, a Worldwide near-miss and incident database to ensure that lessons learned are communicated to all. Consider as a model, a combination of aviation's ASAP and ASRS			
AOOGG-Safety 2014	<b>Measuring Occupational Health and Safety</b>	Regulators should ensure that operators are assessing the performance of the processes and systems that control major risk by using indicators of systems safety. This is done by using leading indicators and near-miss incidents, hazards, company records, performance review meetings, and worker surveys, etc;			
AOOGG-Safety 2014	<b>Measuring Occupational Health and Safety</b>	Regulators should promote safety by ensuring the operator demonstrates reviewable safety and vigilance initiatives throughout its life-cycle planning and operations			
AOOGG-Safety 2014	<b>Measuring Occupational Health and Safety</b>	Regulators should ensure that communications and lines-of-authority between the operator and contractors/sub-contractors are clearly established, understood and implemented. The operator should be held responsible for their contractor's safety performance and safety culture by using such instruments as Bridging Documents or other certified agreements or arrangements			
EPPR, Summar Report Recommendations - Prevention Arctic Marine Oil Pollutio 2013	<b>Standards for Arctic oil and gas activities</b>	International standards bring social and economic benefits by fostering the harmonization of specifications and practices. Standards are relevant to Arctic operations as the Arctic Council jurisdictions share similar operating environments. It is recommended that the Arctic Council catalog all applicable oil and gas standards for Arctic activities (e.g.: fa-cilities, ice management, escape route and drills, training, logistics, security) and highlight differences in the standards. This will provide states an opportunity to learn from practices in other jurisdictions and possibly apply them in their own region.			potential overlap w above? These may be irrelevant.... If the Centre of Excellence report comes after?
EPPR, Summar Report Recommendations - Prevention Arctic Marine Oil Pollutio 2014	<b>Circumpolar marine environment risk assessment</b>	It is recommended that the Arctic Council inventory existing risk assessments in the Arctic, identify common elements and environmental differences, as well as methodologies for undertaking these activities, and conduct a circumpolar marine environment risk assessment, if appropriate, in order to better link the sensitivities of the Arctic marine environment with scientific calculations on risks caused by shipping and offshore oil and gas activities in the Arctic Ocean both presently and in the future.			potential overlap w above? These may be irrelevant.... If the Centre of Excellence report comes after?
EPPR, Summar Report Recommendations - Prevention Arctic Marine Oil Pollutio 2014	<b>Facilitate oil spill prevention research and regulatory cooperation</b>	It is recommended that the Arctic Council establish a mechanism whereby regulators are able to share information on best practices, processes, regulatory approaches as well as compliance and operational information (e.g. near-miss data). Analysis of identified trends can be undertaken and various data collection done in an effort to identify Arcticspecific prevention practices while fostering circumpolar collaboration through the pooling of resources. The initial results of this initiative could include the creation of a joint database and regular meetings of regulators. Over time, it has the potential to develop into an Arctic Oil Pollution Prevention Centre of Excellence.			potential overlap w above? These may be irrelevant.... If the Centre of Excellence report comes after?

<p>EPPR, Summar Report Recommendations - Prevention Arctic Marine Oil Pollutio 2016</p>	<p><b>Ensure appropriate infrastructure is in place for emerging Arctic shipping lanes</b></p>	<p>To ensure safe development and mapping of emerging Arctic shipping lanes in order to prevent oil pollution incidents, it is recommended that the Arctic Council conduct an analysis of existing and emerging shipping lanes, identify gaps in infrastructure and mapping, and work towards enhancing the safety of Arctic shipping lanes</p>			<p>potential overlap w above? These may be irrelevant.... If the Centre of Excellence report comes after?</p>
<p>AOOGG, 2009: Section 2</p>	<p><b>Accountability and Responsibility</b></p>	<p>Offshore oil and gas activities should be conducted so as to protect, and avoid adverse impacts on, living resources and the ecosystems on which they depend; to avoid adverse impacts on the traditional ways of life, resource uses and cultural values of Arctic indigenous communities; and to coordinate with other human activities in the region.</p>			
<p>AOOGG, 2009: Section 2.1</p>	<p><b>Effects on the Environment and Ecosystems</b></p>	<p>Measures should be taken as necessary to ensure that Arctic flora and fauna and the ecosystems on which they depend are protected during all phases of offshore oil and gas activities. Special attention - particularly with regard to intrusive activities - is required for species (e.g. fish, birds, whales, seals, polar bears, and other marine mammals), which are resources for human use, particularly by indigenous people, and for special habitats (such as ice-edge zones, coastal lagoons and barrier islands, wetlands, estuaries, bays, and river deltas).</p>			
<p>AOOGG, 2009: Section 2.1</p>	<p><b>Effects on the Environment and Ecosystems</b></p>	<p>Onshore features that should be considered for protection and/or avoidance during offshore exploration and production activities include areas used significantly by waterfowl (such as high-density nesting, broodrearing, molting and staging areas), caribou (such as major calving and insect relief areas), and by musk oxen.</p>			
<p>AOOGG, 2009: Section 2.1</p>	<p><b>Effects on the Environment and Ecosystems</b></p>	<p>Consistent with the interests of human safety and well-being, a primary governing policy in the Arctic should be the conservation of resources for sustainable use. This includes protection of subsistence hunting, fishing, and gathering.</p>			
<p>AOOGG, 2009: Section 2.2</p>	<p><b>Social and Economics Effects</b></p>	<p>In planning and executing offshore oil and gas operations, necessary measures should be taken, in consultation with neighboring indigenous communities, to recognize and accommodate the cultural heritage, values, practices, rights and resource use of indigenous residents.</p>			
<p>AOOGG, 2009: Section 2.2</p>	<p><b>Social and Economics Effects</b></p>	<p>Arctic States, in cooperation with the oil and gas industry, should address the economic, social, health and educational needs based on equal partnership with indigenous people.</p>			
<p>AOOGG, 2009: Section 2.2</p>	<p><b>Social and Economics Effects</b></p>	<p>All phases of oil and gas activity should avoid disturbance of historic or prehistoric resources including archeological and sacred sites, historic shipwrecks and other potentially important cultural sites.</p>			
<p>AOOGG, 2009: Section 2.3</p>	<p><b>Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts, manage [minimizing] risks from activities, and reducing pollution</b></p>	<p>Offshore oil and gas activities should be conducted in coordination with other human activities in the region, such as tourism, fishing, shipping, and scientific research. There should be a solid understanding of other human uses in the area to forecast potential areas of conflict both annually and seasonally. Advanced information collection and analysis may permit improved consultation and dialogue to proactively avoid conflicts as well as target enhanced socio-economic impact analysis where required. Arctic governments should consider the use of integrated management schemes.</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>environment risk assessment</b></p>	<p>Environmental impact assessment (EIA) procedures should be used to determine the potential of impacts of offshore oil and gas exploration, development, transportation and infrastructure on the environment and human communities so as to inform decision-making. The scope of the assessment should be comprehensive. However, it may be decided that initial assessments should give priority to environmental sectors considered to be most at risk from the planned activities.</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>environment risk assessment</b></p>	<p>Assessments should consider alternative development options and any impacts that alternative activities may have, including potential cumulative impacts from other existing and known planned activities</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>environment risk assessment</b></p>	<p>PEIAs and EIAs should consider, in particular, the following effects (for example contamination, habitat disturbance and alteration) on: human society including indigenous ways of life; cultural heritage; socio-economic systems; other human activities (e.g., tourism, scientific research, fishing, and shipping); overall landscape (e.g., fragmentation); subsistence ways of life (e.g. harvest practices and availability of food supply); oil spill preparedness and response in sea ice conditions; permafrost and transition zones; climate; sustainability of renewable resources; flora and fauna including marine mammals; air, water and sediment quality; ports and shore reception facilities; Arctic shipping routes; ice dynamics; human health; and the interaction among any of the above.</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>environment risk assessment</b></p>	<p>Baseline environmental studies should be done on a regional basis to provide information for the EIA process. Regional baseline and monitoring programs should be established prior to activities and may be done as part of the SEA.</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>Effects on the Environment and Ecosystems</b></p>	<p>When monitoring biodiversity the best available knowledge, including indigenous and traditional knowledge should be employed. Independent scientific peer review and public input should be used to assure program quality.</p>			
<p>AOOGG, 2009: Section 3</p>	<p><b>Effects on the Environment and Ecosystems</b></p>	<p>Since project impacts may have international effects, it is important that environmental monitoring programs are adequate and intercompatible so that results may be compared from one year to another and from one place to another allowing changes to be measured and transboundary effects considered</p>			
<p>AOOGG, 2009: Section 3.2</p>	<p><b>environment risk assessment</b></p>	<p>For the EIA, the risk criteria should be documented and the regulator and/or operator should update the criteria during the course of operations as appropriate and necessary for enhancing the safety level and as an effort to achieve the objectives defined for the activities. Risk or acceptance criteria must at a minimum incorporate national and international laws and standards.</p>			

AOOGG, 2009: Section 3.2	<b>environment risk assessment</b>	Consultation should also include input from local communities and interested parties for risk criteria analysis.			
AOOGG, 2009: Section 3.2	<b>environment risk assessment</b>	If data is insufficient to define risk criteria, then the risk assessment should also incorporate the precautionary principle as reflected in Principle 15 of the Rio Declaration.			
AOOGG, 2009: Section 3.3	<b>environment risk assessment</b>	The use of Strategic Environmental Assessment (SEA) is recommended on a regional basis to determine the potential environmental impacts of human activity including opening areas for oil and gas.			
AOOGG, 2009: Section 3.3	<b>environment risk assessment</b>	As part of an SEA it is recommended that all available regional baseline monitoring information be used, as well as meaningful stakeholder and public involvement, and incorporation of indigenous traditional ecological knowledge.			
AOOGG, 2009: Section 3.4	<b>environment risk assessment</b>	A PEIA (or similar process) is a screening level review that should contain sufficient detail to permit assessment of whether a proposed activity may have a significant impact and should include: a description of the proposed activity, including its purpose, location, duration, and intensity; consideration of alternatives to the proposed activity and any impacts that the activity and its alternatives may have, including consideration of cumulative impacts in the light of other existing and known planned activities; a determination whether significant impacts, that would require further assessment, are likely to occur; and consideration of input from early engagement with local communities potentially impacted from the development			
AOOGG, 2009: Section 3.6	<b>environment risk assessment</b>	For EIAs, SEAs, and PIEAs, consultation is an effective dialogue between and amongst regulators, potential operators and stakeholders. In general, consultation should commence at the planning stage and continue throughout the lifetime of a project.			
AOOGG, 2009: Section 3.6	<b>environment risk assessment</b>	To ensure that various deliberative processes protect social and environmental values, timely release and dissemination of critical information to potentially affected parties is essential.			
AOOGG, 2009: Section 3.6	<b>environment risk assessment</b>	In order to ensure that local communities are informed and involved in all appropriate phases, alternative methods for communicating information such as translation into indigenous languages, multimedia, radio, TV, public meetings, etc. should be explored.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	The operator should carry out environmental monitoring to ensure that the basis for decisionmaking and the knowledge about the marine environment are sufficient to maintain acceptable environment conditions as a result of petroleum activities. Sufficient information should be obtained to see that all pollution and disturbance caused by the activities is detected, mapped, assessed and alerted so that necessary measures can be implemented.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Environmental monitoring should measure physical, chemical, and biological conditions that may impact or be impacted by the activities being conducted.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Before activities commence, environmental monitoring should begin with a comprehensive baseline investigation, which should incorporate existing information, and comprise as a minimum all monitoring sites and variables planned to be used in the long term monitoring program. The environmental monitoring program should continue through the decommissioning and reclamation phases.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Environmental monitoring should be carried out regionally and be integrated so that interactions between multiple activities may be more easily detected.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Environmental monitoring should preferably be conducted so as to distinguish impacts due to oil and gas activities from other relevant sources.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Environmental monitoring programs should be reviewed on a regular basis to determine whether the results they are yielding indicate a need for changes in operational practices (for example, as a result of failing to achieve the initial hypotheses set out in the EIA or because of unforeseen impacts).			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Programs should also be reviewed to determine whether they should continue, be modified or terminated. Ultimately, the length and breadth of environmental monitoring programs will be determined by the scale and duration of offshore oil and gas activities and the immediate or longer-term impacts.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	Programs for identification and understanding of spatial and temporal distribution of biota particularly sensitive to pollution/discharges and emissions from petroleum activities should not only include adult stages and established communities (e.g. seabird feeding grounds, shoreline communities) but also early stages in the life cycle of plants and animals including larval stages, which may be more vulnerable to oil and chemicals than adult stages, if they are spatially or temporally relevant.			
AOOGG, 2009: Section 4	<b>Effects on the Environment and Ecosystems</b>	The monitoring programs should not only be centered around field monitoring, but also include laboratory experiments and combinations of laboratory experiments and field studies whenever relevant.			
AOOGG, 2009: Section 4.3	<b>Effects on the Environment and Ecosystems</b>	Data from environmental monitoring should be harmonized in collaboration with AMAP and could be collected and stored in Arctic database repository, such as Circumpolar Biodiversity Network and GINA (Geographical Information Network Alaska), Arctic Ocean Observatory, and others, where it would be available freely to all national environmental protection and monitoring authorities and to other users.			
AOOGG, 2009: Section 4.4	<b>Effects on the Environment and Ecosystems</b>	Results of environmental monitoring should also be utilized by regulators in compliance audits and on-site regulatory supervision as the basis for requiring any modification, postponement, or shut-down of operations or specific components of an operation and also as a basis of revising legislation when necessary. Authorities should use environmental audits to verify that the results of monitoring are used by the petroleum companies and reflected in their environmental strategy			
AOOGG, 2009: Section 5	<b>Standards for Arctic oil and gas activities</b>	Before oil and gas activities are approved, regulatory bodies should require the operator to demonstrate financial capacity to carry out all aspects of the operation, including responding to environmental emergencies and decommissioning of facilities. This should also include the proven ability to adequately clean up oil spills.			

AOOGG, 2009: Section 5	<b>Safety Culture</b>	Whether required by the regulator or conducted voluntarily within industry, environmental and safety planning should be contained in a formal management system. Often referred to as EMS (Environmental Management System), HSEMS (Health and Safety and Health Environmental Management System) or SEMP (Safety and Environmental Management Program) these systems focus attention on the influences that human behaviour and organization have on accidents.			
AOOGG, 2009: Section 5	<b>Safety Culture</b>	The operator should also take steps to ensure that all contractors engaged in operations are also able to meet the requirements of the operator management system and applicable laws and regulations.			
AOOGG, 2009: Section 5.1.1	<b>Safety Culture</b>	The operator's management should define and document its safety and environmental policies and strategic objectives and ensure that these: have equal importance with the operator's other policies and objectives; are implemented and maintained at all organizational levels; are publicly available; commit the operator to meet or exceed all relevant regulatory and legislative requirements; commit the operator to reduce the risks and hazards to health, safety and the environment (HSE) of its activities, products and services; and provide for the setting of safety and environmental objectives that commit the operator to continuous efforts to improve performance.			
AOOGG, 2009: Section 5.1.3	<b>Managing Oil and Gas Development: Laws and regulations</b>	The operator should maintain procedures to select, evaluate and implement measures to reduce risks and effects throughout the project. Risk reduction measures should include both those to prevent incidents (i.e. reducing the probability of occurrence) and to mitigate chronic and acute effects (i.e. reducing the consequences).			
AOOGG, 2009: Section 5.1.3	<b>Managing Oil and Gas Development: Laws and regulations</b>	In all cases, risks should be reduced to a level deemed as low as reasonably practicable, reflecting amongst other factors, local conditions and circumstances, the balance of costs and benefits and the current state of scientific and technical knowledge.			
AOOGG, 2009: Section 5.1.4	<b>Managing Oil and Gas Development: Laws and regulations</b>	The operator should develop, document and maintain and review plans and procedures for responding to emergencies.			
AOOGG, 2009: Section 5.1.4	<b>Managing Oil and Gas Development: Laws and regulations</b>	These response plans and procedures should reflect site-specific characteristics.			
AOOGG, 2009: Section 5.1.4	<b>Managing Oil and Gas Development: Laws and regulations</b>	In order to assess effectiveness of response plans, the operator should maintain procedures to test emergency plans by scenario drills and other suitable means at appropriate intervals. Plans should be revised and updated as necessary in light of experience gained.			
AOOGG, 2009: Section 5.1.4	<b>Managing Oil and Gas Development: Laws and regulations</b>	Response plans should be available to the affected communities and the public at large.			
AOOGG, 2009: Section 5.1.4	<b>Managing Oil and Gas Development: Laws and regulations</b>	The operator should also stress and encourage individual and collective responsibility for safety and environmental performance to all employees. It should ensure that personnel are properly trained, competent, and have necessary authority and resources to perform their duties effectively			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	The regulatory supervision should cover all stages of design, fabrication, installation, operations and removal of offshore installations. It should address all relevant parts of the operating company's management systems, such as procedures for ensuring compliance with legislation, licences, permits, and approved plans, as well as how the carrying out of activities are documented and reported.			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	The regulatory supervision should also encompass the company's systems for pollution control and environmental monitoring, drilling and well operations techniques, production, and pipeline operations.			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	Representatives of the regulatory agencies should have the legal base to take appropriate action in case of violations, noncompliance, or if the operator fails to react adequately to dangerous situations. These actions can include issuing warnings, injunctions, shutting down specific operation, a complete shut-down of the installation, withdrawal of environmental licence or permit, or initiating prosecution by the relevant authority.			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	The regulatory agencies should establish plans for these supervisory activities. The extent and the issues to be covered should be based on the relevant regulatory requirements, the previous experience with the operators' compliance, environmental and geologic conditions, the type of activity carried out by the operator, the type of technology applied, reported accidents and incidents, and general knowledge regarding the operator and its ongoing activities.			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	The plans for these supervisory activities should be available to the public.			
AOOGG, 2009: Section 5.2	<b>Managing Oil and Gas Development: Laws and regulations</b>	Procedures should be maintained for compliance monitoring to: determine whether environmental management system elements and activities conform to requirements in the legislation, and are implemented effectively; examine line management systems and procedures, field operations, internal compliance monitoring practices, and data to see if they fulfill the company's environmental policy, objectives, and performance criteria; review incident reporting and remedy schemes in relation to incidents that have occurred; find out how identified current and potential environmental problems have been dealt with the operator and how this is reflected in the environmental management system; determine compliance with relevant legislative and regulative requirements; identify areas for improvement, leading to progressively better environmental performance; and formulate the conclusions in a report, which must be well documented.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Laws and regulations</b>	Waste management should be included in the overall planning from the beginning and combined with pollution prevention measures.			

AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Laws and regulations</b>	Waste management should be included in the overall planning from the beginning and combined with pollution prevention measures. Prevention and elimination of these discharges and emissions, which pose pollution threats to the Arctic environment, should be a targeted goal of regulatory activity. New technology makes this goal achievable in some situations.			
AOOGG, 2009: Section 6.1	<b>Standards for Arctic oil and gas activities</b>	Arctic governments should set discharge standards.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	The operator should to the extent possible avoid generation of waste. Any waste generated should be handled in an environmentally and hygienically adequate manner.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Solid waste should not be discharged into the sea.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	The operator should prepare a plan connected to waste, including possibilities for waste reduction, waste segregation, reuse, recycling, energy recovery or treatment. The need for enhanced onshore infrastructure should be looked into.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Recommended Preventative Management Techniques: consider no discharge of the main waste streams at the planning and construction stage, in particular drilling waste and produced water; reduce waste at the source by process modification, material elimination, material substitution, inventory control and management, improved housekeeping, and water recovery; reuse of materials or products such as chemical containers, and oil-based or synthetic-based drilling fluids; recycle/recovery by the conversion of wastes into usable materials and/or extraction of energy or materials from wastes such as recycling scrap metal, recovery of hydrocarbons from tank bottoms and other oily sludge, burning waste oil for energy, and the use of produced water for enhanced recovery; reduce toxicity of effluents through the careful selection of drilling fluids and chemical products used in separation equipment and wastewater treatment systems; perform radiation surveys of equipment and sites to prevent or minimize the spread of Naturally Occurring Radioactive Materials (NORM); and where NORM-scale formation is anticipated, use scale inhibitors to minimize or prevent the buildup of radioactive scale in tubulars.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Where water-based drilling fluids are employed, additives containing oil, heavy metals, or other substances with negative ecotoxicological properties should be avoided or removed prior to discharge. Persistent and toxic substances should be avoided.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Criteria for the maximum allowable concentration of harmful or hazardous substances should be established.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	If the option of land disposal is used, then both the properties of the drilling fluid and the environmental conditions at the proposed disposal site should be carefully considered to determine acceptability of the disposal site.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Regulators and the industry should give consideration to the options for reduction and possible elimination of produced water discharged to the sea through the application of BAT, for example, injection, down hole separation or water shut-off. The focus should be on reducing the volume of discharges of produced water with the highest loads of oil and other substances.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Regulators and industry should ensure that BAT and BEP are implemented on each platform and that BAT and BEP are regularly reviewed.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Regulators and industry should ensure that new offshore platforms or major modifications to existing platforms should consider design changes that minimize discharges, and preferably aspire to produced water not being discharged at all.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Deck wash and chemical/fluid releases are another concern to the marine environment, especially where oil-based drilling fluids are in use.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	A facility plan should be developed to address these potential conditions and methods of spill control and leak minimization should be incorporated into facility design and maintenance procedures.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Facility plans, minimization efforts and controls shall be applied to, but not limited to, material storage areas, loading and unloading operations, oil/water separation equipment, wastewater treatment, waste storage areas, and facility runoff management systems.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	The availability of adequate disposal facilities should be ensured prior to allowing an activity to generate hazardous wastes.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Hazardous wastes requiring transport to a disposal site should be packaged, labeled, and transported in conformity with generally accepted and recognized international rules and standards in the field of packaging, labeling, and transport. Due account should be taken of relevant internationally recognized practices. Transported hazardous wastes should be accompanied by a movement document from the point at which movement commences to the point of disposal.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Disposal of solid and domestic wastes should be done in conformity with international law, such as MARPOL 73/78, and national legislation.			
AOOGG, 2009: Section 6.1	<b>Managing Oil and Gas Development: Technology and Practices</b>	Sanitary wastes such as sewage and gray waters should be processed according to international or local government standards prior to discharge into the marine environment. Processing in an acceptable sanitary waste treatment unit will generally properly treat waste streams prior to discharge.			
AOOGG, 2009: Section 6.2	<b>Risk Assessment/Hazard Identification</b>	All substances in chemical preparations should be tested for their ecotoxicological properties such as potential for bioaccumulation, biodegradation rate and acute toxicity. The tests should be performed by laboratories that are approved in accordance with established international standards, for example, OECD's principles for good laboratory practice (GLP) or equivalent.			

AOOGG, 2009: Section 6.2	<b>Risk Assessment/Hazard Identification</b>	The operators should ensure that risk evaluations are done based on the chemicals' intrinsic properties, time, place and amounts of discharge, and also other conditions of significance for the risk. The operator should choose the chemicals which according to environmental risk evaluations poses the lowest risk of harming the marine environment.			
AOOGG, 2009: Section 6.2	<b>Risk Assessment/Hazard Identification</b>	The operator should have plans to ensure that hazardous chemicals are substituted with substances which pose less risk of harm to the environment. The plans shall give a description of which chemicals are prioritized to replace, and when this can take place.			
AOOGG, 2009: Section 6.2	<b>Managing Oil and Gas Development: Technology and Practices</b>	Chemicals should be stored in a safe and prudent way.			
AOOGG, 2009: Section 6.3	<b>Managing Oil and Gas Development: Technology and Practices</b>	Flaring permits can be issued after a thorough assessment of environmental considerations and evaluations in accordance with technology, economy, resources, safety, infrastructure, jurisprudence etc. The regulators should early in the process of awarding licenses specify what the operators must expect with regard to limiting flaring of associated gas.			
AOOGG, 2009: Section 6.3	<b>Managing Oil and Gas Development: Technology and Practices</b>	Some gas may be utilized for power production at the installation, but if a large amount of gas is produced, possible solutions may be injection into the reservoir or export through pipelines. Every effort should be made to flare only where necessary for safety purposes.			
AOOGG, 2009: Section 6.3	<b>Managing Oil and Gas Development: Laws and regulations</b>	The regulators can apply terms and conditions when awarding licenses, as requirements connected to EIAs, in emission or discharge permits, and/or in production permits. Such terms may include taxes on emissions of CO2 and NOx. Using such economic measures may be used to enhance power generation efficiency and reduce emissions.			
AOOGG, 2009: Section 6.3	<b>Managing Oil and Gas Development: Technology and Practices</b>	All large combustion plants offshore (both existing and new) should apply integrated prevention and reduction of pollution. This implies application of Best Available Techniques (BAT). Regulators should refer to BAT when discharge limits are set in the discharge permits, and reflect what levels of reduction can be achieved without a definite resolution on what technology to use.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Offshore oil and gas activities should make use of the best available and safest technologies as appropriate and be conducted in a manner to minimize impact on the environment. Operators should identify technologies and procedures to be employed for each step of the process from prospecting to exploration, development, production, platform decommissioning, and site clearance. Regulators should examine technologies and procedures proposed for use by operators and their adequacy to ensure that they are appropriate for the Arctic.			
AOOGG, 2009: Section 6.4	<b>Risk Assessment/Hazard Identification</b>	When planning an offshore oil and gas operation, a risk analysis may be used as a tool to identify potential hazards and prevent personal injuries, loss of human lives, and pollution of the environment. Criteria used for conducting such an analysis should be based on local regulatory requirements, local environmental conditions in the area of operation, and the planned operational activity.			
AOOGG, 2009: Section 6.4	<b>Risk Assessment/Hazard Identification</b>	A risk analyses should: address prevention of injuries, loss of human life, and pollution of the environment; include risk criteria that has been defined prior to conducting the analysis and document the evaluations forming the basis of the acceptance criteria; be used to follow the progress of activities in planning and implementation; identify risk that has been assessed with reference to the acceptance criteria, form the basis of systematic selection of technical operational and organizational risk to be implemented; be updated on a continuous basis and included as part of the decision making process; and systematically follow-up implemented risk reducing measures and assumptions made in the analysis to ensure safety within the defined criteria.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Offshore platforms and other structures used for oil and gas activities in the Arctic should be designed, built, installed, maintained, and inspected to ensure their structural integrity taking into account the site-specific environmental conditions. Standards exist for the construction of fixed offshore platforms, including those constructed of steel and concrete; mobile offshore drilling units; and floating production, storage and offloading units (FPSOs). (FPSOs should be double hulled). Standards, such as those under the International Organization for Standardization (ISO), are under development for offshore artificial islands including those constructed of sand, gravel and ice. .			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	In iceberg-prone areas, provision should be made for the emergency removal of removable installations.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Employment of effective well control technology and practices including incident drills and exercises will lower the risk of blowouts and unintended release of other hazardous substances. Blowout preventers and related equipment should be suitable for operation in subfreezing conditions.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Drilling fluids, well casing programs, cements, emergency well shut-in procedures and well safety programs should also be suited to Arctic conditions including moving ice and possible subsurface permafrost.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Pipelines should be installed, operated, and maintained in a manner that minimizes disturbance of sea floor habitat and does not unreasonably interfere with other uses of the sea floor in the area.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Pipelines should be installed only after a thorough survey of the seafloor for hazards or cultural resources.			
AOOGG, 2009: Section 6.4	<b>Standards for Arctic oil and gas activities</b>	Design of offshore Arctic pipelines should follow recommended practices such as those from Det Norske Veritas or the American Petroleum Institute and take into account factors such as thaw settlement, near shore strudel scouring, and ice keel gouging. Pipe properties, instrumented internal inspection techniques, leak detection systems and techniques, cathodic protection, and preventive maintenance must also be considered in the design of Arctic pipelines.			

AOOGG, 2009: Section 6.5	<b>Measuring Occupational Health and Safety</b>	Operators should ensure that all contractors pursue established safe working environment objectives. Safe working procedures should be established for all persons, including contractors, to ensure safe working conditions for all offshore activities.			
AOOGG, 2009: Section 6.5	<b>Measuring Occupational Health and Safety</b>	Work permits may be required for specific work activities including hot work, cutting, and welding			
AOOGG, 2009: Section 6.6	<b>Standards for Arctic oil and gas activities</b>	Offshore transportation by air and water should be planned and carried out in a manner to eliminate or minimize adverse impact on the environment. The sections in these guidelines on management systems, monitoring programs and planning for emergencies should be applied, with adaptations where necessary, to transportation activities.			
AOOGG, 2009: Section 6.6	<b>Standards for Arctic oil and gas activities</b>	Information gathering and mitigation measures identified at the environmental assessment stage of project planning should be fully utilized for minimizing the environmental impacts associated with transportation of supplies and people to and from offshore operations.			
AOOGG, 2009: Section 6.6	<b>Standards for Arctic oil and gas activities</b>	Ship-based transportation of supplies to offshore oil and gas installation are to be carried out under the administration of those requirements and guidelines laid down in the Safety of Life at Sea Convention, including in particular Chapter IX pertaining to the International Safety Management (ISM) Code, The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), and the International Convention on the Prevention of Pollution from Ships (MARPOL 73/78), among others.			
AOOGG, 2009: Section 6.6	<b>Standards for Arctic oil and gas activities</b>	The basis of the ship owners management system should include guidelines, codes and relevant international conventions to safeguard those additional requirements of the harsh environment of the Arctic such as those established by the Marine Environment Protection Committee (MEPC) and Maritime Safety Committee (MSC) of the International Maritime Organization.			
AOOGG, 2009: Section 6.7	<b>Training and Competence for the Arctic</b>	Trained operator and contract personnel are the key to safe and environmentally sound oil and gas activities. Appropriate training plans, programs, and practices addressing offshore Arctic oil and gas activities should be established and implemented for these personnel in accordance with their duties and job responsibilities.			
AOOGG, 2009: Section 6.7	<b>Training and Competence for the Arctic</b>	All personnel should be provided with training on basic safety and environmental issues and procedures specific to the offshore environment prior to assuming their duties. This training should provide personnel with the necessary skills and knowledge needed to conduct their jobs in a safe manner, provide for health and safety of all persons, and protect the environment. Training programs should provide instruction on the operation of equipment, offshore operating practices, offshore emergency survival and fire fighting, local or regional regulatory requirements. It should include Arctic cultural, social, and environmental concerns including marine mammal interactions as dictated by an individuals' job responsibilities. Where appropriate, indigenous and traditional knowledge should be used in training programs.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Operators should establish and maintain emergency preparedness so that the mitigation of an incident will be carried out without delay in a controlled, organized, and safe manner.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Risk analyses should be carried out in order to identify the accidental events that may occur and the consequences of such accidental events. Hazardous situations and accidents should be defined for the operations in question. An analysis should be carried out to design the emergency preparedness requirements so as to meet the specific circumstances of the operation. Such an analysis should include oil spill response strategies, techniques, and capabilities.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The emergency preparedness required for the operation should be incorporated in the design and modification of the oil and gas installation, and for the selection of equipment.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The performance requirements expected of both standby vessel and ice roads in emergencies should also be defined. This should include design criteria, equipment and manning requirements for standby vessels and design criteria and construction and maintenance requirements for roads. Emergency preparedness should be part of the safety and environmental program to ensure its integration into all phases of the operation in question.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Preparedness relating to oil pollution should ensure that the source of any oil pollution is first secured, and any release is effectively contained and collected near the source of the discharge as quickly as possible. Particular attention should be paid to response contingencies in ice conditions, where oil spill response, including containment, may require a range of techniques depending on the condition of the ice.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The preparedness should also address protection of public health, environmental resources including shorelines, ice and water interfaces, and economic and cultural resources. The health and safety of all persons who may be involved in an incident (e.g., local populations and their representatives, responders, volunteers, etc.) should be a predominant consideration, and should be integrated into the overall emergency preparedness regime.			
AOOGG, 2009: Section 7.1	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The communication within the emergency preparedness organization should ensure effective administration and control of all response resources when abnormal conditions and emergencies occur. The means of communication and their use should ensure unambiguous and effective transmission of information.			
AOOGG, 2009: Section 7.1	<b>Standards and Best Practices</b>	Governments are responsible for oversight including national emergency contingency planning. Governments should also make appropriate arrangements that facilitate international coordination and cooperation.			

AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Emergency response plans should address abnormal conditions and emergencies that can be anticipated during the oil and gas operation being carried out, including: personnel injury or loss of life; loss of well control, or release of flammable or toxic gas; fire, explosion or other emergencies that may occur; damage to the oil and gas installation; loss of support craft including aircraft; spills of oil or other pollutants; and hazards unique to the operation including ice encroachment; uncontrolled flooding of the installation; loss of ballast control or stability; pipeline leaks or ruptures; vessel collision; and heavy weather and difficulties with support facilities such as ice roads, aircraft or shuttle tankers.			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	An emergency response plan should contain at least the following elements: a description of the response organization, clearly stating its structure, roles, responsibilities and decision-making authorities; policies and procedures for responding, including a summary of equipment to combat the particular condition or emergency situation, clearly stating the make and type of equipment, its capacity, location, type of transport, field of operation and operational procedures and training for operating staff. The procedures should include each key person's duties, when and how the emergency equipment is to be employed, and the action to be carried out. Policies should state measures for limiting or stopping the event in question and conditions for terminating the action. The procedures should be designed so as to be expedient to use for the emergency; a description of the alarm and communication systems, including notification criteria, reporting procedures and policies regarding government notification. Primary and secondary communication facilities among operational components should also be identified; Alert Criteria, whose procedures should list precautionary measures to secure the well and evacuate personnel in the event of damage from severe weather, sea,			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Operators should be required to have site-specific or operator-specific plans. An oil spill response plan addresses an oil spill volume based on relevant well data, catastrophic loss of a tank ship or barge, or damage to a pipeline.			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The Plan should be supplemented by resource sensitivity maps arranged sequentially by month for those areas identified by spill trajectories as being potentially exposed to oil pollution. The plan should also describe the process for its development, which should include involvement by response entities, both government and private, health officials, scientists, local populations that may be affected, wildlife experts, trustees of resources, and anyone else who may be affected or who may have a role in the response.			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	Operators should allow the opportunity for public review and comment of the Plan			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The plan should also describe the process for its development, which should include involvement by response entities, both government and private, health officials, scientists, local populations that may be affected, wildlife experts, trustees of resources, and anyone else who may be affected or who may have a role in the response.			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The oil spill response plan should include the qualifications and training of personnel responsible for the management of oil spill responses. It should clearly define their authority to take actions to respond to such emergencies.			
AOOGG, 2009: Section 7.2	<b>Managing Oil and Gas Development: Spill Prevention and Response</b>	The oil spill response plan should include the qualifications and training of personnel responsible for the management of oil spill responses. It should clearly define their authority to take actions to respond to such emergencies.			
AOOGG, 2009: Section 7.2	<b>Training and Competence for the Arctic</b>	To enhance response capabilities, response organizations should conduct regular safety and emergency response drills during which trained workers and emergency responders carry out regular exercises. Drills include desk-top exercises and actual equipment and operational deployment exercises. Such drills should be conducted by operators as well as by relevant government authorities in their areas of responsibility, such as coast guards for marine spills.			
AOOGG, 2009: Section 7.2	<b>Standards for Arctic oil and gas activities</b>	Where there may be pack ice, drifting icebergs or ice islands at the operational site, the operator should develop an ice management plan that provides for the protection of the installation. The Plan should include details regarding ice detection, ice surveillance, data collection, forecasting and reporting of ice encroachment, multiyear ice hazards, ice loading, and structural loading.			
AOOGG, 2009: Section 7.2	<b>Standards for Arctic oil and gas activities</b>	If required, the ice management plan should also include details of ice avoidance or ice deflection, including forecasting oil-in-ice drift.			
AOOGG, 2009: Section 7.2	<b>Standards for Arctic oil and gas activities</b>	The ice management plan should include alert criteria and alert procedures to ensure a totally effective mobilization of all relevant emergency preparedness resources, including procedures for moving the installation. Measures for danger limitation should be implemented when a hazardous situation occurs in order to prevent its developing into an accident situation.			
AOOGG, 2009: Section 8	<b>Standards for Arctic oil and gas activities</b>	A decommissioning plan should be site- and condition-specific and should take into account sound science and field experience and balance environmental, safety, health, economic and technological factors as well as any constraints imposed by intergovernmental agreements. It is noted that those Arctic States that are Contracting Parties to the OSPAR Convention have agreed to a binding package of measures (via OSPAR Decision 98/3) which generally prohibits disposal of installations at sea, but which allows for derogation from this prohibition in a limited number of instances. These include leaving in place the footings of a large steel jacket platform (with a jacket weight in excess of 10,000 tons) as well as a broad exemption for gravity-based concrete structures for which leaving in place and/or disposal at a designated site may be considered.			
AOOGG, 2009: Section 8	<b>Standards for Arctic oil and gas activities</b>	Decommissioning plans should be developed in consultation with the competent authorities and stakeholders, including indigenous residents, fishing groups and other interested parties. The decommissioning plan should address both the facilities and the environment. (The London Convention (1972) Waste Assessment guidance is a useful reference in this regard.)			



AOGG, 2009: Section 8	<b>Standards for Arctic oil and gas activities</b>	Decommissioning plans should be developed in consultation with the competent authorities and stakeholders, including indigenous residents, fishing groups and other interested parties. The decommissioning plan should address both the facilities and the environment. (The London Convention (1972) Waste Assessment guidance is a useful reference in this regard.)			
AOGG, 2009: Section 8	<b>Accountability and Responsibility</b>	Development of a trust fund that can be used to decommission the infrastructure when its production life is over should be considered.			