Shaping the future of hydraulic fracturing in the Canadian Arctic through environmental guidelines

Dr Sanna Elfving, School of Law, University of Bradford

Abstract

This paper addresses the regulation of energy resource projects on indigenous lands in the Canadian Arctic and the role of environmental impact assessment in these projects, specifically those involving hydraulic fracturing. Taking an environmental point of view, this paper argues that in the absence of specific territorial legislation applying to shale gas development in Nunavut and the onshore portion of the Inuvialuit Settlement Region in Northwest Territories the federal regulator, the National Energy Board, has a key role in promoting transparency, public participation, safety and sustainable use of natural resources. As part of its environmental protection responsibilities, the Board, *inter alia*, ensures that an environmental impact assessment is conducted before any proposed hydraulic fracturing activities commence on indigenous lands, which in some cases include an extensive public consultation. In 2013 the Board adopted rigorous guidelines for all onshore oil and gas projects involving hydraulic fracturing which address many of the concerns raised over shale gas development, including surface and groundwater contamination; impact on air quality; induced seismicity and reluctance of industry to disclose chemicals used in hydraulic fracturing. Although these guidelines are non-binding on the Board, their adoption means that it will be challenging for the operators to obtain an authorisation from the Board should they fail to conduct an environmental impact assessment. This paper argues that these guidelines exceed the best practices widely adopted by the Canadian shale gas industry. It concludes that because the guidelines address a number of concerns raised by the public they could potentially be used as the minimum standards for hydraulic fracturing operations in other regions outside Arctic Canada.

I Introduction

The focus of this paper is the legislative framework applying to shale gas development on indigenous lands in the Canadian Arctic (North of 60 degrees latitude). The paper explores the role of the federal regulator, the National Energy Board, in these projects and examines the question whether the non-binding guidelines[1] adopted by the Board sufficiently address the concerns raised over the development by indigenous populations of Arctic Canada. There are a number of requirements in the guidelines which reflect the need to ensure that the development will not have an adverse impact on the Arctic environment. This paper focuses particularly on the requirement to consult indigenous peoples, provide the Board with an

[1] National Energy Board, 'Filing Requirements for Onshore Drilling Operations Involving Hydraulic Fracturing' (September 2013) (National Energy Board Guidelines) para 4.5.5. <http://www.neb-one.gc.ca/clf-nsi/rpblctn/ctsndrgltn/rgltnsndgdlnsprsntthrct/flngrqrmntnshrdrllnghdrlcfrctrng/flngrqrmntnshrdrllnghdrlcfrctrng-eng.pdf> accessed 27 August 2014.

environmental protection plan as well as plans for monitoring and reporting seismicity and exploration and production activities.

The role of the National Energy Board in the approval of the operations is significant since no specific territorial legislation applying to shale gas development on lands owned by Inuit exists.[2] Indeed, under the Canadian constitution,[3] administration of oil and gas rights in Nunavut, Inuvialuit Settlement Region and the Arctic offshore remain under federal authority.[4] The responsibilities are shared between the National Energy Board and the Department for Aboriginal Affairs and Northern Development which is responsible for meeting the federal government's obligations and commitments to indigenous peoples.[5] While the National Energy Board issues operations authorisations to conduct work or activities related to drilling or production pursuant to section 5(1)(b) of the *Canada Oil and Gas Operations Act* 1985,[6] it does not administer land tenure processes, rights issuance,[7] royalty management and benefits plans. Instead, exploration, production and significant discovery licences are issued by the Northern Oil and Gas Branch of the Department for Aboriginal Affairs and Northern Development.[8] The situation of Inuit in Inuvialuit and Nunavut is unique since in all other Canadian provinces, the provincial government is responsible for regulating onshore oil and gas activities within their jurisdiction.

The life cycle of oil and gas industry activities in Arctic Canada is governed by the *Canadian Oil and Gas Drilling and Production Regulations* 2009.[9] Prior to the exploration and production approval phases the Northern Oil and Gas Branch issues a call for nominations followed by a call for bids.[10] Successful bidders are issued exploration licences, which provide an exclusive right to explore for and develop hydrocarbons from a specified parcel of land during the term of the licence.[11] Because much of natural gas deposits in Arctic Canada have not been developed, the governance system for regulating shale gas operations in the Arctic is yet to be tested in practice. At the time of writing, there are no operations involving hydraulic fracturing occurring either onshore or offshore in Nunavut or the Inuvialuit

[2] Inuit own their lands in fee simple as a result of conclusion of specific land claims agreements with the federal government. See eg Inuvialuit Final Agreement 1984, s 7(1); Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada 1993, s 19.2.1; Agreement between the Inuit of Labrador and Her Majesty the Queen in Right of Newfoundland and Labrador and Her Majesty the Queen in Right of Canada 2005, s 4.4.1; Agreement between Nunavik Inuit and Her Majesty the Queen in Right of Canada Concerning Nunavik Inuit Land Claims 2008, s 8.3.3.

[3] *Constitution Act*, 1867, 30 & 31 Victoria, c 3 (UK), 92A(1).

[4] In contrast, all other provinces are responsible for regulating onshore oil and gas activities within their jurisdiction.

[5] Lin Callow, 'Oil and Gas Exploration and Development Activity Forecast: Canadian Beaufort Sea 2013 – 2028 Prepared for Aboriginal Affairs and Northern Development Canada (March 2013) 14-15 <http://www.beaufortrea.ca/wp-content/uploads/2012/03/NCR-5358624-v4-BREA_-_FINAL_UPDATE_-_EXPLORATION_AND_ACTIVITY_FORECAST-__MAY_2013.pdf> accessed 18 January 2015.

[6] RSC, 1985, c O-7.

[7] exploration licences, significant discovery licences and production licences.

[8] Callow (n 5).

[9] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315 (*Drilling and Production Regulations* 2009).

[10] Callow (n 5) 14.

[11] ibid

Settlement Region.[12] This means that the regulators are in the best possible position to introduce appropriate management measures to avoid or reduce many of the negative impacts of the development on the environment and the Inuit population.

This paper argues that the National Energy Board's guidelines require that prospective operators must not only demonstrate that they have used industry best practices, but in some cases the guidelines go beyond best practices widely adopted by the shale gas industry in Canada. This is specifically so in the area of well abandonment. Further, it appears that shale gas development in the Canadian Arctic is subject to mandatory environmental impact assessment under the *Canadian Environmental Assessment Act* 2012.[13] Additionally, parallel assessment processes may occur at the local level concluded by the boards and committees established under land claims agreements concluded between the Inuit and the federal government. Under the Board's guidelines, operators also must submit a number of plans[14] to the Board at the application stage to demonstrate that the need to protect the environment, and specifically the groundwater resources, is taken into account; indigenous populations potentially affected by the development are consulted, and wells and installations are designed constructed with the view of ensuring that no unintentional escapes of fluids or gases occur.

On the other hand, it could also be argued that because many of the Board's requirements are non-binding on the operators and because all aspects of Arctic oil and gas exploration are administered by federal agencies, rather than the regions' indigenous population themselves, Inuit may be placed in a vulnerable position. Although the federal agencies essentially consult with indigenous groups, the ultimate decision concerning whether shale gas development proceeds in Nunavut or Inuvialuit Settlement Region is up to these agencies, rather than Inuit themselves.

II National Energy Board guidelines for the Arctic region

Following the release of the 2011 Arctic Offshore Drilling Review,[15] the National Energy Board made the strengthening of the regulatory framework in the Canadian Arctic its strategic priority.[16] This includes the exploration and development of oil and gas resources in the region. As a part of the Board's mandate under the *Canada Oil and Gas Operations Act* 1985[17] to promote safety and the protection of the environment in the Arctic, the guidelines

[12] National Energy Board, 'National Energy Board on the Latest Developments in Northern Oil & Gas Regulation' Gaétan Caron, Chair and CEO Speech to the 14th Annual Arctic Oil & Gas Symposium (11 March 2014) <http://www.neb-one.gc.ca/bts/nws/spch/2014/nrthrnlgsrgltn/nrthrnlgsrgltn-eng.pdf> accessed 15 January 2015.

[13] SC 2012, c 19, s 52.

[14] Operators must submit eg environmental protection plans, safety plans, and contingency plans or emergency response plans (if the latter exist separately from other contingency plans) to the Board. See National Energy Board, *Review of Offshore Drilling in the Canadian Arctic: Preparing for the future* (December 2011) 47 (Arctic Drilling Review) <https://www.neb-one.gc.ca/nrth/rctcffshrdrllngrvw/2011fnlrprt/2011fnlrprt-eng.pdf> accessed 27 August 2014.

[15] Arctic Drilling Review (n 14).

[16] National Energy Board, '2013-14 Report on Plans and Priorities', 6 <http://www.neb-one.gc.ca/bts/pblctn/plnprrt/2013-2014/rpp_2013-2014-eng.pdf> accessed 27 August 2014.

[17] RSC, 1985, c O-7.

are intended to clarify the Board's expectations for companies applying for operating licences in Nunavut and Inuvialuit Settlement Region.[18] In essence, these guidelines outline the information the Board needs to assess any future applications for development of shale resources on these lands.

Operators wishing to conduct shale gas operations in Nunavut and Inuvialuit Settlement Region must not only consider the environmental impact of their operations in the Arctic, but they must also consider the wider socio-economic impacts of the proposed activity.[19] According to the National Energy Board's guidelines, an operator's project description must provide sufficient detail to demonstrate an understanding of how the project is likely to affect the social, cultural and economic status of residents and communities in Nunavut and the Inuvialuit Settlement Region and identify measures to be implemented to protect well-being of Inuit.[20] Further, the project plan should demonstrate that the operator has the necessary procedures, practices, resources, and monitoring to manage hazards and to protect the environment from the impacts of the development, including potential impacts from accidents and malfunctions, specifically on groundwater,[21] socio-economic impacts arising from environmental impacts, and mitigation measures to protect the environment.[22]

In addition, the guidelines also appear to specifically address many of the concerns raised over the shale gas development not only in Arctic Canada, but also the other parts of the country, including surface and groundwater contamination, induced seismicity and the reluctance of the industry to disclose chemicals used in hydraulic fracturing.[23] Considering that there is uncertainty over the environmental impact of these operations,[24] it is positive that the Board explicitly recognises that since the scientific knowledge over hydraulic fracturing is evolving, applications must include issues requiring further research. This can be inferred from the requirement that with their application operators must submit an environmental protection plan which should address any existing knowledge gaps concerning the proposed development.[25] Rather encouragingly however the Board has recognised that groundwater monitoring is an essential element of a robust regulatory system in Arctic Canada.[26] Significantly, the Board has also acknowledged that the environmental factors specific to the Arctic region (eg extreme temperatures, limited daylight, and remoteness of the operations) can potentially affect the proposed work or activities. Thus, operators are expected to describe

[18] These licences are a prerequisite to carry out any oil and gas work or activity. For additional information regarding an operating licence, see the *Canada Oil and Gas Operations Regulations* 2009, SOR/2009-315.

[19] National Energy Board Guidelines (n 1) para 2.2.1.

[20] ibid para 2.2.2.

[21] For the purpose of operations authorisations, the term 'groundwater' is 'potable-quality water in permeable, sub-surface formations or zones that are typically above the depth of the surface casing shoe as set for oil and gas well drilling'.

[22] National Energy Board Guidelines (n 1) para 2.2.

[23] Since the introduction of the guidelines the energy regulator has requested the disclosure of the contents of fracturing fluids. However, this concerns only situation where operations have already taken place.

[24] For instance, there is no agreement over whether fresh water contamination is caused by hydraulic fracturing process or whether is caused by some other activities related to shale gas extraction.

[25] See section IV.

[26] See section 4.1.

at the application stage how the unique environmental conditions of the Arctic region are likely impact their operations.[27]

Lastly, it is worth noting that because the operators who seek to apply permits for their activities are responsible for complying with all applicable statutory and regulatory requirements, the guidelines should be read in association with the *Canada Oil and Gas Operations Act* 1985[28] and its regulations, particularly the *Canada Oil and Gas Drilling and Production Regulations* 2009,[29] *Canada Oil and Gas Operations Regulations* 1983,[30] and *Oil and Gas Spills and Debris Liability Regulations* 1987[31] and any guidelines issued by the Board regarding these regulations.

2.1. Rules concerning environmental impact assessments in Nunavut and Inuvialuit Settlement Region

The Board's guidelines apply to all shale gas development in Nunavut and onshore portion of the Inuvialuit Settlement Region in Northwest Territories,[32] and as part of the permitting process the Board expects each operator to submit various pieces of information described in the guidelines with their application. However, due to the non-binding nature of the guidelines operators may also be required to submit additional information with each subsequent application, such as a well approval or formation flow test approval.[33] On the other hand, the Board also has discretion to waive some of the requirements in the guidelines in cases where they are not relevant to the applied-for work or activities.[34] Therefore, the guidelines are indeed rather flexible and appear to afford considerable discretion to the Board unless specific legislative provisions exist on a specific matter, such as what information should be included in the operator's environmental protection plan discussed further in section IV.

As part of its environmental protection responsibilities, the National Energy Board ensures that an environmental impact assessment is conducted for all activities related to the proposed shale gas development in Nunavut and the Inuvialuit Settlement Region.[35] Essentially, this means that since the environmental impact assessment is a pre-requisite for any operations authorisations for drilling or production under the *Canada Oil and Gas Operations Act* 1985[36] in practice no operations will be able to proceed before an environmental impact assessment

[27] National Energy Board Guidelines (n 1).
[28] RSC, 1985, c O-7.
[29] SOR/2009-315 (*Drilling and Production Regulations* 2009).
[30] SOR/83-149.
[31] SOR/87-331.
[32] As of 1 April 2014, the devolution agreement transferred responsibility for most onshore oil and gas activities in the Northwest Territories to the Government of the Northwest Territories. The National Energy Board remains the regulator for the offshore, Norman Wells Proven Area, trans-border pipelines and the onshore portion of the Inuvialuit Settlement Region.
[33] National Energy Board Guidelines (n 1) para 2.
[34] ibid para 1.1.
[35] ibid para 2.
[36] RSC, 1985, c O-7.

is conducted.[37] The Board conducts its own environmental impact assessment before issuing any operational authorisations or coordinating environmental impact assessments with the boards or committees established by the 1984 Inuvialuit Final Agreement and the 1993 Nunavut Land Claims Agreement.[38] In addition, regional rules apply to any proposed projects that occur in the onshore portion of the Inuvialuit Settlement Region.

At this point it may be useful to explain the special legal position of Inuit under Canadian law. Because both the Inuvialuit and Inuit of Nunavut have concluded land claim agreements with the Government of Canada, their rights are found in each individual agreement, which usually covers matters such as land ownership, the protection of indigenous culture, wildlife harvesting rights and the right to manage or co-manage wildlife, resource development and the protection of the environment.[39] Both agreements also require that an environmental impact assessment is conducted for certain work and activities. Because the Canadian *Constitution Act*, 1982[40] guarantees constitutional protection for the rights[41] of indigenous peoples of Canada, the provincial and federal governments are under a duty to ensure that these rights are not disproportionally impacted by any type of infrastructure or resource development on or near lands used and owned by Inuit. Additionally, the Supreme Court of Canada has held in *Haida Nation*,[42] *Taku River*[43] and *Mikisew Cree*[44] that the federal and provincial governments have a legal obligation to consult when they contemplate any conduct that might adversely impact the rights of indigenous people. In 2008, in the Supreme Court's decision in *R v Kapp*,[45] McLachlin CJ held that in line with the court's earlier case law,[46] the federal government was under 'the duty to consult and accommodate Aboriginal communities with respect to resource development'.[47] According to her, this duty was constitutional and its fulfilment was consistent with the honour of the Crown.

As established by the Supreme Court of Canada, different levels of consultation may be required since the nature and scope of the duty of consultation varies with the circumstances. Indeed, in cases where the breach of the rights is likely to be 'less serious or relatively minor',

[37] It is worth noting that the federal government has also been recently criticised for amending the laws determining whether an environmental impact assessment must be concluded. See Maude Barlow, 'Blue Betrayal: The Harper government's assault on Canada's freshwater' (Council of Canadians 2015) <http://www.canadians.org/sites/default/files/publications/report-blue-betrayal-0315.pdf> 27 March 2015.

[38] National Energy Board Guidelines (n 1) para 2.

[39] *European Communities-Measures Prohibiting the Importation and Marketing of Seal Products*, First Written Submission of Canada (9 November 2012) paras 37-48.

[40] *Constitution Act*, 1867, 30 & 31 Victoria, c 3 (UK), 92A(1).

[41] This includes any rights acquired as part of any land claims agreements negotiated between indigenous peoples, the Government of Canada and the province or territory in which the group in question resides or over which it has claimed rights. *European Communities-Measures Prohibiting the Importation and Marketing of Seal Products*, First Written Submission of Canada (9 November 2012) paras 37-48.

[42] *Haida Nation v British Columbia (Minister of Forests)* [2004] 3 SCR 511.

[43] *Taku River Tlingit First Nation v British Columbia (Project Assessment Director)* [2004] 3 SCR 550.

[44] *Mikisew Cree First Nation v Canada (Minister of Canadian Heritage)* [2005] 3 SCR 388.

[45] *R v Kapp* [2008] 2 SCR 483, para 6.

[46] See eg *Delgamuukw v British Columbia* [1997] 3 SCR 1010.

[47] *Kapp* (n 45) para 6.

a mere duty to discuss important government decisions may be sufficient.[48] However, in most cases the duty to consult may be 'significantly deeper'.[49] According to the Court, cases where, for instance, hunting and fishing opportunities are affected the full consent of an indigenous group may be required.[50] Nevertheless in all cases where consultation is considered to be 'the minimum acceptable standard', consultation must be conducted in good faith, and with the intention of substantially addressing the concerns of the affected peoples.[51]

The federal government's guidelines on indigenous consultation and accommodation[52] set the minimum level of consultations required in Canada in relation to infrastructure projects and source development on or near indigenous lands. The guidelines specifically require that any large-scale resource projects south of 60° such as mineral and metal mining, oil sands development, and energy generation and transmission as well as all projects, which are subject to a comprehensive study, review panel, or a complex or multi-jurisdictional screening under the *Canadian Environmental Assessment Act* 2012[53] require incorporation of indigenous consultation activities into the federal government's regulatory process and the processes governing environmental impact assessment from early on and 'to the greatest extent possible'.[54] These guidelines further provide that even if no serious impact on the rights of indigenous people was anticipated, the government agencies and departments should provide adequate notice of any proposed activities, disclose relevant information and discuss issues raised by the indigenous group in response to notice.[55]

This means specifically that in order to make the consultation process meaningful and enable indigenous peoples to feedback their questions and concerns to the government during the consultation process government officials must be in continuous contact with those indigenous groups who are likely to be affected by federal decision making.[56] The guidelines further stipulate that the government must hold meetings, visit the affected site, conduct research and studies, provide an opportunity for the indigenous groups to make submissions to the agencies and bodies involved in decision-making, provide written reasons, and determine appropriate options to accommodate indigenous groups for the adverse impacts.[57] In line with these requirements, it appears that the National Energy Board regularly meets with indigenous and territorial governments, environmental nongovernment organisations,

[48] See *Delgamuukw v British Columbia* [1997] 3 SCR 1010 para 168.
[49] ibid
[50] ibid
[51] ibid
[52] Government of Canada, *Aboriginal Consultation and Accommodation: Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* (Department of Aboriginal Affairs and Northern Development 2011) (Guidelines on consultation and accommodation).
[53] SC 2012, c 19, s 52.
[54] Guidelines on consultation and accommodation (n 52) 25.
[55] ibid figure 3, 43.
[56] ibid
[57] Appropriate accommodation measures may include *inter alia* seeking to adjust project, developing mitigating measures, considering changing proposed activity, attaching terms and conditions to permit or authorisation, financial compensation, or considering to reject the proposed activity. ibid

regulatory agencies, and land claim institutions. Between 2013 and 2014, the Board held over 50 meetings throughout the Northwest Territories and Nunavut.[58]

Indigenous groups may also be invited to participate in the environmental impact assessment project committee as a way of fully integrating indigenous consultation into the environmental impact assessment process.[59] Therefore, the fact that the National Energy Board liaises with the northern boards and committees before issuing any permits for shale gas development means that the duty to consult has been incorporated into the decision-making process of the Board. This process involves the Board receiving evidence directly from affected indigenous peoples regarding the potential impact of any proposed shale gas project. Under the *National Energy Board Act* 1985,[60] the decisions of the Board can be challenged by judicial review to the Federal Court of Appeal, if the affected indigenous people consider that their right to be consulted has not been respected.[61]

2.2. Consultation under the Inuit treaties

Under the 1984 Inuvialuit Final Agreement shale gas development in the Inuvialuit Settlement Region requires an environmental screening or review.[62] An environmental screening is conducted by the regional Environmental Impact Screening Committee,[63] and depending on the outcome of the screening, projects may be referred to the regional Environmental Impact Review Board which carries out environmental impact assessments and public reviews.[64] Because the National Energy Board may conduct its own assessment under the *Canadian Environmental Assessment Act* 2012,[65] the Board's guidelines stipulate that shale gas operators should provide the same information to it as to the northern boards or committees in order for the conclusions to be based on the review of consistent information.[66] Typically, the Inuvialuit environmental impact assessment processes involve an extensive consultation that ensures identification of local perspectives and issues.[67] Additionally, the 1984 Inuvialuit Final Agreement addresses the prevention of loss or damage to wildlife and

[58] The meetings have involved discussing, *inter alia*, key concerns around oil and gas development in the Arctic Canada, the National Energy Board's role, and obtaining feedback on the Board's guidelines. See Gaétan Caron, 'National Energy Board on the Latest Developments in Northern Oil and Gas Regulation' Speech to the 14th Annual Arctic Oil and Gas Symposium (11 March 2014) <http://www.neb-one.gc.ca/bts/nws/spch/2014/nrthrnlgsrgltn/nrthrnlgsrgltn-eng.pdf> accessed 15 January 2015.

[59] Guidelines on consultation and accommodation (n 52) 25.

[60] *National Energy Board Act* RSC 1985, c N-7.

[61] ibid s 55(1) 'Judicial review by the Federal Court of Appeal with respect to any order made under subsection 54(1) is commenced by making an application for leave to the Court'.

[62] National Energy Board Guidelines (n 1) para 2.1.

[63] See Inuvialuit Environmental Impact Screening Committee, 'Environmental Impact Screening Guidelines' (guidance and direction to parties participating in the environmental screening of proposed developments in the Inuvialuit Settlement Region), Appendix F: Example Project Description Submission Content Guide. See also Inuvialuit Environmental Impact Review Board, 'Environmental Impact Review Guidelines'.

[64] National Energy Board Guidelines (n 1) para 2.1.

[65] SC 2012, c 19, s 52.

[66] National Energy Board Guidelines (n 1) paras 2.1-2.2.

[67] ibid para 2.1.

habitat and subsequent compensation in cases of loss in terms of harvesting opportunities offered by the ocean and land.[68] Lastly, the Inuvialuit Final Agreement requires the National Energy Board to wait for a decision by the regional environmental processes before issuing any operations authorisations.[69] However, as noted section 1, although the National Energy Board considers the regional recommendations before making its decision whether or not the work and activities should proceed, the decision to approve shale gas development is ultimately up to the National Energy Board and the Aboriginal Affairs and Northern Development and not the Inuit. Indeed, if the project is approved, the National Energy Board will determine on what terms and conditions it should proceed and whether there is a need to adopt any mitigating measures.[70] Therefore, it is unclear how much influence the Inuit in fact have in the Board's final decision.

Under the Nunavut Land Claims Agreement proposed projects are screened by the Nunavut Impact Review Board.[71] This regional board determines whether or not an environmental impact review is required.[72] The National Energy Board will keep the Nunavut Impact Review Board updated on the federal environmental impact assessment process, and although the latter may not be a party to this assessment, it is able to provide comments during the assessment process. [73] Typically, for projects located completely outside of the Nunavut Settlement Area, the operator will provide project information to the Nunavut Impact Review Board to determine if potential trans-boundary impacts would trigger an assessment under the Nunavut Impact Review Board.[74]

The purpose of these screenings is to ensure that an effective and timely mechanism exists for confirming that adequate consultation occurs, and that no activities, which violate constitutional obligations of the federal government, are inadvertently authorised on Inuit lands. Therefore, it is impossible for shale gas operators to assume that activities and practices which may be legitimate in other parts of Canada would be constitutionally valid in Nunavut or the Inuvialuit Settlement Region. It is also possible that in the future the Inuit governments will develop their own regulatory regimes or bodies to oversee the regulation of oil and gas activities on their lands. In fact, models to support devolution and to enhance indigenous

[68] Ibid. If an oil spill were to occur in the Arctic region, the loss of harvesting opportunities would challenge the foundations of Inuit way of life, because the effects on the environment and animals may be immediate. Additionally, the potential legal proceedings for compensation could last many years. As a result, Inuit could face significant delays before being compensated for loss or damage, including loss of harvesting opportunities. See Arctic Drilling Review (n 14) 47.
[69] National Energy Board Guidelines (n 1) para 2.1.
[70] Ibid.
[71] Ibid.
[72] Nunavut Impact Review Board, Guide 3: Filing Project Proposals and the Screening Process, Guide 5: The Inuvialuit Environmental Impact Review Board Review Process, and Guide 7: Preparation of Environmental Impact Statements.
[73] National Energy Board Guidelines (n 1) para 2.1.
[74] Ibid.

participation in the regulation of oil and gas development have been suggested by researchers.[75]

Although there is currently no shale gas development in Arctic Canada, if hydraulic fracturing was pursued there, Inuit governments should ensure that the existing decision-making process is robust enough to honour the rights of Inuit in any instances where those rights may be engaged.[76] Although the existing consultation protocol may be adequate for the time being, the parties may see value in adopting more specific additional provisions to address the unique aspects of hydraulic fracturing. For example, parties could choose to enhance consultation rights for higher level strategic decisions, address situations where the federal government and the Inuit governments reach diverging conclusions, and identify mutually acceptable mechanisms for addressing concerns over compliance with the federal legislation and the National Energy Board's guidelines. Alternately, there may be a need to develop entirely specific protocols for adequate consultation.

III Consultation by shale gas operators

In addition to the National Energy Board's engagement with the northern boards and committees, shale gas operators must consult with indigenous groups who may be affected by shale development in the Arctic before applying for operations authorisations from the Board.[77] The goal of the guidelines is that the project description provides evidence to summarise the policies and principles by which an operator aims to ensure adequate consultation with indigenous groups.[78] As such these requirements appear similar to those in place elsewhere in Canada, specifically in British Columbia where shale gas operators must conduct consultations with First Nations who are likely to be affected before applying for permits.[79] Further, the British Columbia energy regulator openly acknowledges that regulatory trends are influenced by the interests of First Nations residing the province, landowners and the general public, particularly with respect to protecting the environment.[80]

---

[75] Valentina Gamero, Erin Jackson and Nicole Neufeld, 'On Thin Ice: Sustainable energy development and governmental devolution in the Canadian Arctic' (Arctic Energy Conference, University of Tromsø, Norway September 2014) <http://uit.no/Content/392878/Valentina%20Nicole%20Erin%20Canada%20Devolution.pdf> accessed 10 October 2014.

[76] For similar arguments in the context of hydraulic fracturing in Nova Scotia see Frank Atherton and others, 'Report of the Nova Scotia independent panel on hydraulic fracturing' (28th August 2014) 299 <http://energy.novascotia.ca/sites/default/files/Report%20of%20the%20Nova%20Scotia%20Independent%20Panel%20on%20Hydraulic%20Fracturing.pdf> accessed 12 September 2014.

[77] National Energy Board Guidelines (n 1) para 2.2.1.

[78] ibid

[79] As an agent of the Crown, the British Columbia Oil and Gas Commission fulfils the provincial obligation to consult with indigenous groups prior to the authorisation of oil and gas activities under the *Oil and Gas Activities Act*, SBC 2008 ch 36. See British Columbia Oil and Gas Commission, 'Facility Application and Operations Manual, Version 2.28' January 2015, 73 <http://www.bcogc.ca/node/5925/download> accessed 23 January 2015.

[80] BC Oil and Gas Commission, '2014/15-2016/17 Service Plan' 15 <https://www.bcogc.ca/node/11169/download> accessed 15 April 2014.

In the context of the consultation process in Arctic Canada, the operator must incorporate the results of the consultation must be incorporated in the project description.[81] Additionally, an operator must offer sufficient details to justify the extent of the consultation.[82] The guidelines provide an overview of the consultation approach, including (i) the policy or vision with respect to consultation; (ii) the principles and goals established for the project's consultation program, and (iii) a copy of the consultation protocol, if established along with any documented policies and principles for collecting traditional indigenous knowledge or traditional land use information, if applicable.[83] Further, operators are expected to demonstrate that all affected indigenous groups have been made aware of the project and the approximate timescale when the project application will be filed to the Board and identify any parties who have been consulted, along with a summary of their concerns and comments.[84] The summary of the responses should include a description of how local and traditional knowledge has influenced the design of the project and how the operator will address any outstanding concerns of the Inuit.[85] Alternatively, an operator should offer an explanation of why no further action is required.[86]

IV Environmental protection Plan

As noted in the introduction applications for operations authorisations for drilling and production of shale gas must include, *inter alia*, an environmental protection plan.[87] Section 6(d) of the *Drilling and Production Regulations* 2009[88] require that the plan meets the requirements of section 9 of the 2009 *Regulations* and the Environmental Protection Plan Guidelines issued by the National Energy Board.[89] The plan should, *inter alia*, explain how the proposed work or activities are likely to interact with the environment and include any preventative and mitigating measures identified in the environmental impact assessment.[90] It should also describe any biological, physical, and geological knowledge gaps regarding the environmental setting of the proposed development and identify ways of addressing these gaps. [91] The plan must also describe how results of ongoing research or information gathering initiatives will be incorporated into the proposed work or activities.[92] As such these requirements appear to promote an approach which acknowledges the need to address uncertainties surrounding the impact of shale gas development on the environment. The next three subsections address specifically the National Energy Board's requirements to address

[81] National Energy Board Guidelines (n 1) paras 2.2-2.2.1.
[82] ibid
[83] National Energy Board Guidelines (n 1) paras 2.2-2.2.1.
[84] ibid para 2.2.1.
[85] ibid
[86] ibid
[87] ibid para 3.10.
[88] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315.
[89] National Energy Board, *Environmental Protection Plan Guidelines* (National Energy Board 2011) <https://www.neb-one.gc.ca/bts/ctrg/gnthr/drllngprdctnrg/nvrprtctngd-eng.html> accessed 12 October 2014.
[90] National Energy Board Guidelines (n 1) para 3.10
[91] ibid
[92] ibid

the protection of groundwater resources, induced seismicity, conduct an environmental risk assessment and the reluctance of industry to disclose chemicals used in hydraulic fracturing.

4.1. Groundwater monitoring and sampling

Significantly, unlike most regulatory frameworks elsewhere in Canada, the National Energy Board's guidelines highlight the importance of a groundwater monitoring and sampling programme.[93] Therefore, the requirements for baseline water monitoring set the guidelines apart from, for instance, the requirements under the regulatory framework of British Columbia. The National Energy Board's guidelines specifically state that when applying for operational authorisation the applicant must identify how its groundwater monitoring and sampling program will detect any contamination from hydraulic fracturing operations.[94] Such programmes have been identified as central in sustainable water management and use practices in relation to hydraulic fracturing.[95] Monitoring requirements form an indispensable part of an environmentally sound regulatory system because they can be argued to enable operators to identify potential risks to groundwater and make necessary modifications to their procedures as well as well design and construction, with a view of avoiding any unplanned escape of fracturing fluids or gases from the wells or reservoirs.

Any operators wishing to conduct hydraulic fracturing in the Canadian Arctic must also submit a drilling and hydraulic fracturing program to the National Energy Board to demonstrate that effective measures are in place to protect groundwater zones.[96] Operators are requested to describe their policies and procedures addressing groundwater protection and the process to identify groundwater zones.[97] The programme should also identify possible contamination pathways and measures to prevent contamination. Further, potential adverse impacts of shale gas development, such as increased groundwater use, have been loosely addressed in the guidelines in the context of the requirement that the operator's environmental protection plan should identify the volumes of water likely to be recycled, reused as fracture fluids, transported out of the region for approved disposal elsewhere, or disposed by deep well injection.[98] Additionally, operators must explain how surface water and groundwater quality will be assessed, protected and monitored for impacts from planned and unauthorised discharges from drilling, hydraulic fracturing, flaring, and formation flow testing, well suspension and abandonment and shale gas production activities.[99]

---

[93] In this context it is worth noting that some provinces in Canada such as Nova Scotia and Quebec have either banned hydraulic fracturing or are very critical towards the industry.

[94] National Energy Board Guidelines (n 1) para 3.10.

[95] See eg C J Salas and D Murray, "Developing a water monitoring network in the Horn River Basin, northeastern British Columbia (parts of NTS 094I, J, O, P)" Summary of Activities 2012 (Geoscience BC, Report 2013-1) 135-136 <http://www.geosciencebc.com/i/pdf/SummaryofActivities2012/SoA2012_Salas_Water_Monitoring.pdf> accessed 2 May 2014.

[96] National Energy Board Guidelines (n 1) para 4.4.1

[97] including the use of technology such as sample analysis, drilling log, cased hole log and open hole logs.

[98] National Energy Board Guidelines (n 1) para 3.10.

[99] National Energy Board Guidelines (n 1) para 3.10.

4.2. Induced seismicity

In general, seismic surveys are the first exploration activity to be undertaken in areas where exploration licences have been issued.[100] Companies wishing to conduct seismic surveys in Arctic Canada must apply to the National Energy Board for a geophysical operation authorisation.[101] Additionally, consultation with local communities and other agencies having regulatory authority is critical to the approval process for seismic surveys.[102] To address concerns over induced seismicity, National Energy Board guidelines state that in their application for operations authorisation operators must describe the target formations in sufficient detail to demonstrate that the best available technology and industry best practices have been considered.[103] Applicants must also provide an interpretation of all faults, especially those that potentially connect the shale gas formations to the groundwater zones. [104] This requirement addresses the concerns over freshwater contamination and is, thus, essentially linked to groundwater protection.

To further address the concerns over seismicity the operators must demonstrate that they have taken all reasonable precautions and used industry best practices to identify and manage any potential geophysical drilling hazards.[105] In the context of the Arctic, such hazards are considered to include, but not limited to, permafrost, active faulting, natural seismicity, shallow gas and fresh water aquifer containing potable water.[106] The application must also describe the mitigating and preventative measures which would be used to manage any risks during drilling and hydraulic fracturing. Lastly, an operator must describe with sufficient detail how suspected seismic events are monitored during drilling, completions, hydraulic fracturing and formation flow testing operations.[107] The monitoring requirements are aimed at ensuring that if seismic events occur during any phase of the development, the operations can be suspended in a safe manner. In relation to this, operators must provide the National Energy Board with a reporting plan and a safety termination plan in case of any suspected seismic events.[108] Should such an event result in a safety shutdown or disruption to drilling, completions, hydraulic fracturing operations or formation flow testing operators are expected to describe how these operations will be safely terminated. The referral to an operator's reporting and safety termination plan suggests that the Board has not adopted a set procedure or process according to which reporting occurs, but the industry seems to be rather loosely regulated in this regard.

---

[100] Callow (n 5) 16. Surveys are used to gain an understanding of the regional geologic structure and to identify target formations.
[101] ibid
[102] ibid
[103] National Energy Board Guidelines (n 1) para 4.3.2.
[104] ibid
[105] ibid para 4.3.1.
[106] The guidelines mention 'karst' which is a landscape formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum and it is characterised by underground drainage systems with sinkholes and caves.
[107] National Energy Board Guidelines (n 1) para 4.3.4.
[108] ibid

4.3. Environmental risks assessment

A shale gas operator's environmental protection plan must further outline the results of their risk assessment based on which they have identified environmental hazards as well as measures to anticipate, avoid, prevent, reduce, and manage such risks.[109] The risk assessment and risk management processes must be described in such as detail as to demonstrate that effective processes exist to identify environmental threats and hazards, evaluate and manage the associated risks, and identify and select effective mitigation measures. Additionally, the operator must demonstrate that all reasonable precautions are taken pursuant to the requirements of section 19 of the *Drilling and Production Regulations* 2009[110] to ensure that environmental risks have been addressed for the proposed development, taking account of interaction of all factors such as structures, facilities, equipment, operating procedures and personnel.[111]

The operator must also describe the risk assessment framework used to determine acceptable and tolerable levels of risk for the proposed work or activities and identify the criteria used for deciding the content of the term a 'reasonable precaution'.[112] The application must describe threats and hazards critical to safety identified for all stages or phases of the activities from well design through to completion of operations, including those related to facility, drilling unit and well integrity, well control and hydraulic fracturing operations.

4.4. Reluctance of industry to disclose chemicals used in hydraulic fracturing

Although shale gas operators are required to, as part of their environmental protection plan, describe the procedures for the selection, evaluation, and use of chemical substances used in hydraulic fracturing operations, including process chemicals and drilling fluid ingredients[113] and describe the drilling fluids testing and monitoring program,[114] the guidelines do not specifically address the need to make public the chemicals used in fracturing fluids. The guidelines merely state that an operator must indicate in their application whether they are willing to publically disclose such information.[115] Regrettably, this is unlikely to incentivise disclosure of fluid ingredients, whereas it could be argued that there is a need for transparency in order to assuage the public of the safety of shale gas development.[116] This is particularly

[109] ibid para 3.10.
[110] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315.
[111] National Energy Board Guidelines (n 1) para 3.9.
[112] ibid
[113] National Energy Board Guidelines (n 1) para 3.10.
[114] to accurately measure flow rate, volumes, density, and other properties.
[115] National Energy Board Guidelines (n 1) para 3.10.
[116] The requirement for transparency in shale gas operations is in line with the minimum principles advocated many international organisations, such as the International Energy Agency, according to which critical elements of a well-functioning shale gas regime include full transparency in order to gain the 'social licence to operate'. International Energy Agency (IEA), 'Golden Rules for a Golden Age of Gas: World Energy Outlook Special Report on Unconventional Gas' (OECD and IEA 2012), 17 (IEA Golden Rules)
<http://www.worldenergyoutlook.org/media/weowebsite/2012/goldenrules/weo2012_goldenrulesreport.pd> accessed 29 January 2015.

important in relation to Inuit of Canada whose rights are specifically protected by the Canadian constitution.[117]

It nevertheless appears that the National Energy Board is aware of the need for increased transparency in shale gas operations. In fact, since the publication of the guidelines in 2013, the Board has requested all operators regulated under the *Canada Oil and Gas Operations Act* 1985[118] to provide the Board with information on the composition of chemicals in fracturing fluids '30 days after the hydraulic fracturing operation has finished' with the intention of making the information publically available on the internet.[119] Indeed, in October 2014 the Board requested all operators to consent to waive the privilege period[120] provided by section 101(7)(a)-(c)[121] of the *Canada Petroleum Resources Act* 1985[122] by submitting a consent form for each shale gas well in cases where the privilege period of a shale gas well had not expired.[123] Although disclosure is required only after the operations have finished, the fact that the Board requires this at all is a positive development, considering that the need transparency is justified with the argument that it is necessary in order to avoid any potentially harmful impacts on the environment. Furthermore, the requirement for transparency in shale gas operations is in line with the minimum principles advocated by many international organisations, such as the International Energy Agency, according to which critical elements of a well-functioning shale gas regime include full transparency in order to gain the 'social licence to operate'.[124] Indeed, increased transparency and openness appear to be particularly important in the context of shale gas development not only in Canada but also in European where the public is very critical of unconventional gas industry.[125]

---

[117] *Constitution Act*, 1982, s 35(1), being Schedule B to the Canada Act 1982 (UK), 1982 c 11: 'The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed.'

[118] R.S.C., 1985, c.O-7.

[119] Namely www.FracFocus.ca. See National Energy Board, 'National Energy Board Procedures for the Public Disclosure of Hydraulic Fracturing Fluid Composition Information' <http://www.neb-one.gc.ca/bts/ctrg/gnthr/cndlgsprtnct/hdrlcfrctrng/dsclsrhdrlcfrctrng-eng.html> accessed 20 February 2015.

[120] *Canada Petroleum Resources Act* RSC, 1985, c 36 (2nd Supp), s 101(7)(a)-(c) establishes certain 'privilege periods' for well information and documentation that is privileged under s 101(2) in that it is not 'knowingly be disclosed without the consent in writing of the person who provided it, except for the purposes of the administration or enforcement of this Act, the *Canada Oil and Gas Operations Act* or Part II.1 of the *National Energy Board Act* or for the purposes of legal proceedings relating to its administration or enforcement'.

[121] According to s 101(7), s 101(2) does not apply in respect of information or documentation in respect of abandoned, completed or suspended (exploratory, delineation and development) wells, in accordance with any applicable regulations respecting the drilling for petroleum made under the *Canada Oil and Gas Operations Act*.

[122] RSC, 1985, c 36 (2nd Supp).

[123] National Energy Board, 'National Energy Board Procedures for the Public Disclosure of Hydraulic Fracturing Fluid Composition Information' <http://www.neb-one.gc.ca/bts/ctrg/gnthr/cndlgsprtnct/hdrlcfrctrng/dsclsrhdrlcfrctrng-eng.html> accessed 20 February 2015.

[124] International Energy Agency (IEA), 'Golden Rules for a Golden Age of Gas: World Energy Outlook Special Report on Unconventional Gas' (OECD and IEA 2012), 17 (IEA Golden Rules) <http://www.worldenergyoutlook.org/media/weowebsite/2012/goldenrules/weo2012_goldenrulesreport.pd> accessed 29 January 2015.

[125] United Kingdom Department of Energy and Climate Change, 'Underground Drilling Access: Government Response to the Consultation on Proposal for Underground Access for the Extraction of Gas, Oil or Geothermal Energy' (25 September 2014)

V Other relevant issues to be addressed in the applications to the National Energy Board

5.1. Waste management and spill contingency plans

Applications to the National Energy Board must include a spill contingency plan and a complete and adequate plan to manage all discharged waste material.[126] The term 'waste material' is understood to cover any solid and liquid wastes[127] and any other unusable material generated during drilling, completions, hydraulic fracturing, formation flow testing, well or production operations.[128] Further, there is clear need to ensure that no excessive volumes of waste are being generated, and therefore, operators are expected to take all reasonable measures to reduce the volumes of waste, and to minimise the quantity of substances of potential environmental concern contained within these waste materials. Although the guidelines also emphasise that no substance should be discharged to the environment unless the National Energy Board has determined that the discharge is acceptable,[129] the federal government has recently been criticised for allowing the discharge of mining wastes into surface waters in several provinces and territories including Nunavut under section 5(1) of the *Metal Mining Effluent Regulation* 2002,[130] which allows the deposit of 'waste rock or an effluent' of any pH and containing 'any concentration of a deleterious substance' into an area forming 'part of a natural water body frequented by fish' or a water body set out in Schedule 2. Lastly, the operators would be required to provide the Board with a spill contingency plan which covers their emergency response procedures to mitigate environmental impacts from unplanned or accidental discharges of any fluids or waste materials to the environment.[131]

5.2. Drilling programme and well construction and design

In order to ensure safety and integrity of their drilling activities any operators wishing to exploit shale gas resources in Arctic Canada must include essential information in their application about their drilling program and geological conditions in the proposed work location.[132] Their application must contain a description of the well, including (i) an overview of the drilling program; (ii) the purpose and schematics of the proposed well, illustrating the well design.[133] Additionally, in their applications operators must refer to specific target formations, emphasising structural and depositional interpretations; rationale for selecting the well location and the formations; formation temperature and pressure; fracture gradients, and

---

<https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/358521/Government_Response_FINAL.pdf> accessed 29 January 2015.

[126] National Energy Board Guidelines (n 1) para 3.11.

[127] including drill cuttings, garbage, refuse, sewage and waste well fluids, including used or surplus drilling and completion fluids, hydraulic fracture fluids, produced fluids (ie formation fluids and flowback fluids). ibid

[128] ibid

[129] National Energy Board Guidelines (n 1) para 3.11.

[130] SOR/2002-222.

[131] National Energy Board Guidelines (n 1) para 3.12.

[132] ibid para 4.1.

[133] eg the hole sizes, casing and cementing program and any other necessary information. ibid

the plans for conducting leak-off tests or formation integrity tests.[134] Significantly, due to the environmental conditions in the Arctic, operators should also describe how the proposed work or activities may be affected by environmental factors during winter operations, including extreme temperatures, limited daylight and remoteness of the operations.[135]

Detailed well integrity requirements in the guidelines are aimed to protecting groundwater zones and permafrost from drilling and hydraulic fracturing operations.[136] Operators should demonstrate that their wells are designed and constructed with the aim of preventing potential groundwater contamination by isolating the wells, target formations and saline water zones from all known, or reasonably estimated, utilisable groundwater zones, and preventing the movement of formation fluids and fracturing fluids in the casing annuli.[137] The well design contains a number of requirements concerning the surface casing, surface casing, intermediate casing, casing annuli and cementing of wells.[138]

5.3. Well abandonment

The last important requirements in the guidelines concern well decommissioning and abandonment which form the final phases of the life cycle of any oil and gas development. This issue has emerged as critical in managing adverse impact of shale gas development after economically feasible reserves have been depleted because a failure to seal wells appropriately may cause environmental contamination due to the entry of methane or other contaminants into the atmosphere, soil or groundwater.[139] Under the *Drilling and Production Regulations* 2009[140] operators must adopt a decommissioning and abandonment plan is required before well construction can be approved.[141] The plan must include decommissioning of installations, abandonment of fields and abandonment of wells. At the end of a project life cycle, once the requirements of all other regulatory authorities have been met, an operator can apply to the National Energy Board for a final authorisation for decommissioning and abandonment.[142]

In this context it is worth noting that rather significantly the Board's guidelines require that a shale gas operator's well suspension and abandonment program demonstrates that any suspended or abandoned wells on their installation will not only satisfy the requirements of the *Drilling and Production Regulations* 2009,[143] but also will also meet or exceed industry best practices.[144] Although this requirement may appear strict and difficult for the industry to

[134] National Energy Board Guidelines (n 1) para 4.1.
[135] ibid
[136] ibid para 4.4.2.
[137] ibid
[138] ibid
[139] See Richard J Davies and others, 'Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation' (2014) 56 Marine and Petroleum Geology 239, 252.
[140] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315
[141] Callow (n 5) 20.
[142] Callow (n 5) 20.
[143] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315
[144] National Energy Board Guidelines (n 1) para 4.5.5.

meet, it must be noted that under Canadian law an operator continues to be accountable and responsible for oil and gas wells after the abandonment, and may be required to carry out remediation or other maintenance work even after abandonment, should any leaks be discovered.[145] Additionally, the *Canada Oil and Gas Operations Act* 1985[146] imposes absolute liability on the oil and gas operator up to prescribed amounts, without the possibility to avoid liability on the basis of non-existence of fault or negligence. Further, operators are liable the loss or damage caused in accordance with the general laws of Canada.[147]

Therefore, it could be argued that the guidelines are not exceedingly stricter than any existing legislation or industry practices. This is specifically so since there are no monitoring requirements post-abandonment under the *Drilling and Production Regulations* 2009.[148] Therefore, any potential problems post-abandonment could go undetected for a considerable amount of time. It also appears that no best industry practices advocate post-abandonment monitoring, meaning that wells are rarely monitored any other jurisdictions where shale gas development takes place.[149] Section 56(a)-(b) of the 2009 Regulations merely stipulate that an operator must ensure that each abandoned well 'can be readily located and left in a condition that 'prevents any formation fluid from flowing through or escaping from the well-bore' and 'provides for isolation of all oil or gas bearing zones and discrete pressure zones…[and] potable water zones'.

The guidelines further specify that at the application stage an operator must identify and describe in detail the effective well barriers that are in place for the suspended or abandoned wells to prevent groundwater contamination from the reservoir fluids and wellbore fluids.[150] The operator is required to demonstrate that the well barriers remain effective after the hydraulic fracturing operations; provide the estimated duration of suspended status of any well proposed to be suspended, and describe future plans for the well.[151] Additionally, the operator must describe how the suspended well will be monitored and inspected, to ensure its continued integrity and to prevent pollution as applicable.[152]

VI Monitoring

The review of the National Energy Board's guidelines reveal that many questions remain over the effectiveness of these guidelines, specifically in terms of how the effective monitoring and reporting systems are to be implemented by the Board. For instance, although under the guidelines operators are required to describe the arrangements for monitoring compliance with the environmental protection plan and for measuring performance in relation to its

[145] Callow (n 5) 20.
[146] RSC, 1985, c O-7.
[147] National Energy Board, 'Review of Offshore Drilling in the Canadian Arctic' (n) 47.
[148] *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315
[149] See Davies and others (n 139).
[150] National Energy Board Guidelines (n 1) para 4.5.5.
[151] ibid
[152] ibid

objectives[153] the guidelines do not specify how frequently and through which mechanism the operators will be required to report their activities to the Board and whether any local regulating bodies are to be established, or is the industry largely self-regulated. Although the guidelines contain some monitoring requirements for operators they fail to specify what are the specific requirements concerning reporting for shale gas operators in the Arctic. However, an active monitoring system with compulsory and regular reporting requirements can be argued to form an essential part of an environmentally sound regulatory system. For instance, the requirements monitoring wells combined with weekly reporting requirements have largely prevented the occurrence of any large scale environmental accidents in British Columbia.[154] Although a number of smaller incidents have taken place, major threats to public safety and the environment have been avoided.[155]

The guidelines merely stipulate that an operator's application must describe 'the processes and procedures to detect, report, investigate and correct the causes and causal factors of pollution (exceedances of discharge limits), and to prevent re-occurrences'.[156] However, the vagueness of the guidelines makes them very ineffective in this regard. In order for the National Board's regulatory oversight and the regulatory system to be effective, it may be necessary to ensure that reporting occurs frequently, for instance, every Wednesday or more frequently, if necessary, for instance, when operations commence or when they are suspended. There are arguments that rigorous reporting requirements are an indispensable part of an efficient regulatory system and will enable the energy regulator to effectively monitor activities relating to the shale gas development.[157]

Since the guidelines have yet to been put in practice, thus far they appear to be the best effort by the Board to demonstrate that it is taking the protection of the environment and the interests of Inuit seriously. However, it should also be noted that the guidelines are the first attempt by the Board to demonstrate that a regulatory framework governing shale gas exploration in the Canadian Arctic exists and that the Board appears to be ready to constantly elaborate and shape the existing framework. It also appears that comprehensive monitoring requirements exist as the Board's Safety and Conservation Officers would monitor compliance with the operations authorisations and permit conditions, including daily reporting; field exercises; incident monitoring; environmental monitoring reports; auditing of the operator's management system or specific program elements[158] and conducting on-site inspections to review an operator's emergency and safety systems.[159] In the event of non-

[153] ibid para 3.10.
[154] British Columbia Oil and Gas Commission, 'Safety Advisories' <http://www.bcogc.ca/publications/safety-advisories> accessed 2 May 2014.
[155] See Sanna Elfving, 'How Robust is the Governance System of British Columbia for Regulating the Environmental Aspects of Shale Gas Development?' (2014) Oil, Gas and Energy Law Intelligence 12(3).
[156] National Energy Board Guidelines (n 1) para 3.10.
[157] Elfving (n 155).
[158] eg, safety program, emergency management program and environmental protection program.
[159] Ron Wallace, 'National Energy Board's full-life cycle regulatory process for the Arctic' Arctic Oil and Gas Symposium (Calgary, Alberta, March 2015) 5-6 <http://www.neb-one.gc.ca/bts/nws/spch/2015/fllcclrgltrprcss/fllcclrfltrprcss-eng.pdf> accessed 30 March 2015.

compliance or risk to the safety and protection of the environment, the Board has the ability to require compliance or in case of safety risks to shut down operations.[160] Although the Board has never had to intervene and take over operations in the past, in cases where an operator is unwilling, unable or incapable of managing their responses effectively the Board is able to do so.[161]

What is welcome about the guidelines is that they are based on the approach that operators' policies, processes, and procedures incorporate the lessons learned from internal and external incidents and near-misses elsewhere in North America.[162] Indeed, previous experience demonstrates that with continuous improvement of not only regulatory processes, but also industry best practices that it is possible to avoid, or reduce, some of the accidents or near misses in oil and gas development. Indeed, best practices developed both in Canada and in the United States can be harnessed to ensure continual improvement. For instance, the rapid evolvement of shale gas regulations in British Columbia demonstrates that the provincial energy regulator has taken on board the lessons learned from incidents and near-misses elsewhere.[163]

VII Conclusion

This paper took as its starting point an argument that the National Energy Board's guidelines exceed the best practices adopted widely by the industry in different jurisdictions in North America. This was based on the assessment that in some areas the guidelines appear much more progressive than elsewhere in Canada, whereas there are also obvious areas of weaknesses in the Board's approach for various reasons. For one, the Board has no jurisdiction to require disclosure of composition of fracturing fluids under federal law. Further, the guidelines are the first attempt by the Board to demonstrate that some form of regulatory framework governing shale gas in the Canadian Arctic exists, even if it needed further development. However, it also appears that the Board is willing to constantly elaborate and shape the existing framework. Therefore, overall, the Board's guidelines appear to be environmentally sound, despite the obvious disadvantages such as their legally non-binding nature, the Board's discretion to waive some of the requirements set out in the guidelines in cases where the requirement may not be relevant to the proposed development and the vagueness of some requirements considering that the regulatory framework for regulating shale gas operations in the Arctic is yet to be tested in practice. However, as noted in section II, the Board is in the best possible position to introduce appropriate management measures to avoid or reduce many of the negative impacts of the development on the environment and the Inuit population. Since the guidelines address rather comprehensively a number of concerns raised not only by Inuit, but the public elsewhere in Canada in general, they could potentially be used as the minimum standards for hydraulic fracturing operations in other regions outside

[160] Ibid.
[161] Wallace (n 159).
[162] National Energy Board Guidelines (n 1) para 3.7.
[163] Elfving (n 155).

Arctic Canada, and especially in those areas where development is likely to occur near or on lands of indigenous Canadians whose rights are specifically protected under the Canadian constitution.