Comments

Submitted by the Natural Resources Defense Council

to the Environmental Impacts Review Board

Draft Terms of Reference for the Environmental Impact Review of the Beaufort Sea Exploration Joint Venture Drilling Program

April 30, 2014

Contact:
Danielle Droitsch, Senior Attorney
Canada Project Director, International Program
Natural Resources Defense Council
1152 15th St. NW, Suite 300
Washington, DC 20005
202.513.6243 | ddroitsch@nrdc.org

Josh Axelrod, Consultant
Canada Project, International Program
Natural Resources Defense Council
1152 15th St. NW, Suite 300
Washington, DC 20005
802.989.3433 | jaxelrod@nrdc.org

The following comments were prepared by the Natural Resources Defense Council's Canada Project (NRDC) in response to the Environmental Impacts Review Board's (EIRB) request for public comment on its Draft Terms of Reference for the Environmental Impact Review of the Beaufort Sea Exploration Joint Venture Drilling Program (Draft ToR). NRDC's Canada Project focuses on oil and gas development in Northern Alberta and throughout Canada, oil and gas pipeline construction in Canada and the United States, and climate change and health impacts related to natural resource development in Canada. NRDC's Arctic Program, which was consulted in preparing these comments, has long focused on oil and gas development in Alaska and the risk of severe wildlife and ecosystem impacts that this development creates.

NRDC's interest in this project stems from the risk of cross-boundary impacts from an oil spill; the unknown and likely significant challenges of cleaning up an oil spill in deep offshore Arctic waters; the risk of significant negative impacts to migratory species such as whales, polar bears, and numerous bird species; and the long term climate impacts of oil and gas development in the Arctic region. The comments below provide the page numbers on which material referenced is located and also provide material from the Draft ToR (in italics) to provide context for the comments that follow. In general, NRDC's comments highlight our position that the Draft ToR require additional detail and the addition of a greater number of affirmative duties for the Developer (i.e., less discretion).

1. **"Principles to consider" – Draft ToR, pg. 3.**

The precautionary approach or "precautionary principle" can mean "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (Principle 15 of the 1992 Rio Declaration on Environment and Development). The Developer should clearly demonstrate how it has applied such an approach in the EIS and in what circumstances.

NRDC Comment
The statement of the "precautionary principle" is phrased so as to suggest that the principle promotes development in the face of serious environmental threats (so long as there are "cost-effective measures to prevent environmental degradation").

Given the vulnerability of the Arctic ecosystem, the remoteness of the proposed development, and the lack of necessary infrastructure in the area, NRDC believes that the European Commission's (EC) definition of the "precautionary principle" is a more appropriate guide than that given. According to the EC, "where the scientific data are insufficient, inconclusive or uncertain; [and] where a preliminary scientific evaluation shows that potentially dangerous effects for the environment and human, animal or plant health can reasonably be feared. . . . the risks are incompatible with the high level" of environmental protection that should be sought.

This definition places the burden on the Developer to show two things: (1) that the scientific data regarding risks and impacts is sufficient to quantify the environmental impact risks of operation in the Canadian Beaufort; and (2) that these risks, while possible, are very unlikely to occur.

2. **"Purpose and Alternatives" – Draft ToR, pgs. 3-4**

- *Purpose of the proposed Development*
- *Description of the proposed Development*

- *Alternative means of carrying out the proposed Development, including the advantages and disadvantages of each alternative, that are technically feasible and the environmental impacts of any such alternatives*
- *Rationale for choosing the proposed undertaking as the preferred option, including the advantages and disadvantages, and explanation as to why the proposed approach is the best option*

NRDC Comment

As currently defined by the Draft ToR, these requirements are not likely to result in a useful framework for environmental impacts analysis. Instead of framing the purpose and alternatives analysis solely in terms of the proposed development, this section should require the consideration of a range of alternatives, which includes the alternative of no action. Requiring a "no action alternative" would allow the Developer and the EIRB to better utilize the information developed in the description of base line conditions to analyze the environmental costs and benefits of the proposed development. In addition, the alternative of no action would allow the Developer to better understand its own economic risks, and could provide a useful tool for weighing whether the costs of a high-risk development such as the one proposed outweigh the distant and unquantified economic benefits. In addition to consideration of a "no action alternative," the alternatives analysis should address the following factors:

- Operation alternatives that address periods of increased ecosystem sensitivity. These alternatives would require consideration of the effectiveness of restrictions in operations during migration periods for key species, restrictions in operations during periods when key species are likely to be present in the development area, restrictions in operations during periods of subsistence activities by the Inuvialuit, and restrictions in operations during periods of expected severe weather. A complete analysis of these types of alternatives would discuss the extent to which such operational changes might mitigate possible environmental harms
- Operation alternatives that recognize changing operating conditions such as those seen during late spring and late summer when sea ice is melting and refreezing respectively; such an alternative should address how operations could be modified throughout the operating season to substantially lessen the risks of a spill due to various limiting weather events, especially in the late season when spill mitigation may become impossible
- Mitigation measures appropriate for all environmental impacts of each alternative should be identified

3. "Information required regarding methodology" – Draft ToR, pg. 5

The Developer must describe the methods used to predict the potential effects of the Development on the biophysical and socio-economic environment, and the effects of the environment on the Development. . . . In identifying the valued components, the Developer shall consider those identified to be of concern during any public workshops or meetings held by the Developer, or that the Developer considers likely to be affected by the Development. In justifying the methods used to select the valued components, the Developer shall note that the value of a component not only relates to its role in the ecosystem, but also to the value placed on it by humans. . . . This list of valued components shall be modified as appropriate by the Developer following consultations with the Inuvialuit of the ISR, the communities within the ISR, public and relevant stakeholders.

NRDC Comment

The Draft ToR appear to allow the Developer to decide whether to use a "valued ecosystem component" (VEC) or a "valued socio-cultural component" (VSC) methodology for predicting potential environmental impacts of the development. However, as currently drafted, the Draft ToR bestows far too much discretion on the Developer and should be written so as to ensure that the Developer provides the necessary detail to adequately assess the potential impacts of the development. Instead, the Draft ToR provides a brief list of possible "valued components" and then states that the "list . . . shall be modified as appropriate by the Developer following consultations with the Inuvialuit of the ISR, the communities within the ISR, [the] public and relevant stakeholders." While it is a positive sign that those most affected by this development will have a say in how the impact analysis is done, the Final ToR should be far more stringent. Thus, the following changes should be considered:

- Valued components identified by the Inuvialuit of the ISR and all other communities within the ISR must be analyzed by the Developer
- Valued components identified by the general public should be analyzed given the fact that VEC's are often not limited to local benefits and, in the Arctic context, may in fact have value to the wider international community
- Valued components requiring analysis should not be discretionary. The Final ToR must address the scope of impact assessment that the EIRB wishes to see; if the Developer believes that certain valued components will not be impacted, the analysis of this conclusion should be provided, along with the methodology and other background materials that support such a conclusion

4. **Definition of "appropriate boundaries used for . . . assessment for each biophysical or socio-economic element assessed" and "spatial boundaries to be used in assessing the potential environmental impacts" – Draft ToR, pgs. 5-6**

For all components of the Development, the Developer will define the appropriate boundaries used for its assessment for each biophysical or socio-economic element assessed. . . .

NRDC Comment
Allowing the Developer to determine the appropriate geographic scope of its impact analysis is inappropriate and has the potential to result in an insufficient or unduly narrow environmental impact statement. Instead, given the fact that the Draft ToR require the development of a worst case scenario, the scope of the Developer's impact analysis should be guided by the scope of potential impacts under this worst case scenario. Providing a complete picture of possible impacts is the goal of a robust environmental impact analysis.

In addition, the Draft ToR appear to focus solely on the environmental impacts of exploratory drilling. Because the purpose of exploratory drilling is to eventually enable the Developer to begin drilling for the production of oil, the temporal scope of the Developer's analysis must be expanded. An appropriate analysis would include the reasonably foreseeable environmental impacts of oil production following a potentially successful exploratory drilling program. Under this analysis, any significant operational changes expected during production as compared to exploration should be disclosed and analyzed. These operational changes might include differences in volume of oil extracted, shipping traffic, noise production, waste discharge, and the seasonal timeline of operations. Because the Developer plans to use tankers navigating around Alaska to ports in British Columbia, the Developer must also analyze the potential risks posed by this increase in tanker traffic; in addition, should the Developer seek to take

advantage of the opening of the Northwest Passage at any point during annual operations, the Developer must discuss the potential risks posed by navigating this relatively unknown route.

5. **"Information required regarding baseline data" – Draft ToR, pgs. 6-8**

[The Developer will provide b]aseline information that will provide a complete description of the biophysical and socio-economic setting, including the current state of the environment within the study area. This is equally applicable for the terrestrial and marine components of the Development. The Developer is not required to provide extensive descriptions of features of the environment or socio-economic elements that are not relevant factors or issues related to the Development, however, the Developer must provide a sufficient description of the local setting to allow the EIRB, other regulators, the public, and stakeholders to clearly understand the rationale for environmental assessment decisions. If the baseline data have been extrapolated or otherwise manipulated to depict environmental conditions in the study areas, modelling methods and equations should be described, and should include calculations of margins of error and other relevant statistical information, such as confidence intervals and possible sources of error.

NRDC Comment

The requirement that the Developer prepare a description of baseline conditions represents a rare and unique opportunity in the Canadian Beaufort. Because this environment is largely untouched by human activity, a "baseline" here is equivalent to a description of the physical environment free from human activity. The statement that the "Developer is not required to provide extensive descriptions of features of the environment or socio-economic elements that are not relevant factors or issues related to the Development" must be tightly constrained to make certain that the description of baseline conditions includes the entire range of conditions potentially affected (i.e., including those affected by a worst case scenario). As such, the Developer must be required to provide extensive detail regarding the "current state of the environment within the study area" in order for the EIRB, other regulators, and all stakeholders to understand precisely the scope of possibly impacted environmental resources.

Further, given that the Arctic environment is under considerable strain due to the amplified effects of climate change in the Polar Regions, the Developer should not rely on out-of-date research or conclusions about the Arctic environment. Because of this state of ecosystem flux, the Developer may be required to undertake significant study to adequately describe the existing environmental baseline, as any conclusions based on outdated research are likely to be inaccurate. A report prepared by the U.S. Geological Survey published in 2011 highlights many of the existing gaps in knowledge regarding the Arctic ecosystem and the impacts of resource development on that ecosystem. The report is available here: http://pubs.usgs.gov/circ/1370/pdf/circ1370.pdf. To address many of these gaps in knowledge, NRDC believes that the following factors must also be described:

- A complete statement of the ecosystem(s) present within the study area. This statement should include:
    - Examination and disclosure of all plant and animal species known to be present; identification of only sensitive species is insufficient, as many sensitive species are heavily dependent on less sensitive species
    - Explanation of how the ecosystem(s) function including a full description of the food chain(s)

    - Explanation of the functioning ecosystem services within the area; "ecosystem services" are those processes through which the environment produces resources or conditions that are important and valuable to human life including clean air and water, adequate habitat for fisheries, pollination of agricultural crops, dispersal of seeds, regulation of disease, etc.
    - Existing threats to plant and animal species and how these threats might impact the ecosystem functionality within the study area even if the proposed development were not to take place
    - Explanation of the studied ecosystem's ability to recover from adverse environmental impacts, including a timeline of such recovery and factors that might complicate such a recovery
- A comprehensive discussion of the noise environment that includes the entire area likely to experience noise impacts by all exploration activities including seismic testing, vessel noise, and drilling noise due to the proposed development. This must be required due to the extreme noise sensitivity of the marine mammals known to be in the area
    - For example, the Developer must disclose the types of seismic testing devices it plans to use during its exploratory activities. Because use of these devices has been tied to significant harms to a number of marine species, including large numbers of deaths, the Developer must discuss how it plans to mitigate the potential for harm posed by seismic testing
    - The Developer must also disclose any and all mitigation measures that it plans to deploy in order to reduce the risks created by increased noise in the marine environment
- A complete discussion of all activities that may result in harassment of threatened and marine mammal species
- A complete description of oceanography must include expected water temperatures and ocean current behavior at all depths and during each season in the entire area likely affected by development, including the area likely affected under a worst case scenario situation
- A complete discussion of human health concerns including current known levels of contaminants present in the areas likely to be impacted by development activities and under a worst case scenario situation. This discussion should focus on levels of known contaminants currently present in plant and animal species, in the soil, in the water, and in the air
- A description of use of monitors and inspectors must include frequency of monitoring efforts and monitoring objectives; in addition, any reporting on monitoring/inspection done throughout the areas potentially impacted by development must be made available to the public

6. "Information required regarding the Impact Assessment including cumulative effects" – Draft ToR, pgs. 8-12

Identify the sources of potential cumulative effects. Specify other past, present or reasonably foreseeable physical activities and developments, including current and potential marine shipping, planned offshore exploration and development and current and planned onshore physical activities that could cause effects on each selected VEC or VSC within the boundaries defined, and whose effects would act in combination with the residual effects of the Development.

NRDC Comment

When considering the cumulative effects of the proposed development, the "sources of potential cumulative effects" must include the activities of other developers in the area. Because this proposed development has the possibility of being precedential, the EIRB should require the Developer to provide

significant analysis of the impact that approval of development in the Beaufort Sea would have on other Developers who may be interested in pursuing projects in the area. While the increases in activity listed in the Draft ToR will be helpful, the Final ToR should include more stringent analytical boundaries so as to ensure that all relevant cumulative effects are considered. Additional factors that should be required under a robust cumulative effects analysis include:

- The transboundary effects of an oil spill on migratory species such as bowhead and beluga whales, polar bears, and bird species
- The effects of potential increases in black carbon production due to operational emissions, especially given the risk of increased deposition in snow and ice throughout the region
- The limitations of any response and cleanup plan in completely mitigating the effects of an oil spill such that long term environmental impacts result. In the event of a spill, even if quickly brought under control, the Developer should discuss the long term environmental impacts caused by any exposure to released oil
- The long term impact of the project on possible Arctic development by other Arctic nations including the United States, Greenland (Denmark), Russia, and Norway
- The project's effects, at both the exploration and production stages, on climate change and the stresses climate change is placing on the Arctic Ocean and surrounding ecosystems

7. "Prevention (how to drill and work safely while protecting the environment)" – Draft ToR, pgs. 12-13

- *Design and operating limits of the proposed drilling system and support vessels*
- *Policies, procedures, and practices that would be used to modify operations as conditions approach or are forecast to approach operating limits*
- *Hazard identification, risk management and mitigation measures*
- *Ice management*
- *Training and competency expectations*
- *Governance and bridge documentation*
- *Well control, including relief well*
- *Environmental and aquatic effects monitoring plan(s)*

NRDC Comment

The Developer must be required to provide significant detail outlining current and proposed spill prevention and hazard identification techniques and how effective the Developer believes these measures will be and why. Specifically, more detail must be required in reference to the following factors identified in the Draft ToR:

- In regard to "policies, procedures, and practices to anticipate, prevent, mitigate, and manage" hazards, the Developer must be required to append all pertinent policies and procedures and should alert the EIRB to how it has tailored its policies and procedures to address the particular challenges faced by this proposed development
    - Similarly, in describing "policies, procedures, and training to secure the well," the Developer must append all pertinent policies and procedures relevant to securing a well during conditions that might threaten the well's integrity. These policies must account for the unique operating conditions likely to be experienced and should provide sufficient detail for the EIRB to be able to adequately judge whether such policies and

procedures are likely to be effective. A recent report, prepared by the National Research Council and appended to these comments, highlights many of the current shortcomings of spill response techniques and policies in the Arctic and should be provided to the Developer for consideration and response

- This same level of detail must accompany the Developer's "description of the effectiveness and reliability" of well management and monitoring methods. The Developer must be required to describe every method anticipated to be used, as must a description of where these methods have been used and how effective they have been in practice. For emerging methods/technologies, the Developer must be required to not only describe how these methods will work, but must also discuss how these emerging methods are being or will be tested prior to deployment

- When describing ice management and support activities, the Developer must provide sufficient detail about the types of vessels that it plans to use and how these vessels have been designed or modified to withstand expected operating conditions during all periods of operation. For reference, the PEW Charitable Trusts published a report in 2013 that makes specific recommendations for standards to be applied to operators in Arctic waters. The report is available here: http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/Arctic-Standards-Final.pdf. For more direct guidance regarding requirements for vessels operating in Arctic waters, the PEW report points to an expert report prepared by the International Maritime Organization on safety requirements for vessels operating in Arctic and Antarctic waters. This report is available here: http://www.imo.org/KnowledgeCentre/PapersAndArticlesByIMOStaff/Documents/International%20requirements%20for%20ships%20operating%20in%20polar%20waters%20-%20H.%20Deggim.pdf
- In the Developer's "description of how a robust and effective culture to promote safety . . . would be implemented," the Developer must be required to discuss its safety and environmental track record to date, including disclosure of all accidental releases, what caused the releases, how quickly the Developer was able to address the releases, and how operations were altered following such releases to better ensure that similar situations do not arise in the future
- When describing "lessons learned from past events," the scope of events must be broad and thorough. The Draft ToR reference the Macondo disaster, which represents a good starting point. However, the Developer must pay particular attention to the difficulties encountered by Shell's operations in the nearby Chukchi Sea and any historic issues encountered by the original operators in the Beaufort Sea. Reports prepared by the U.S. Coast Guard and the U.S. Department of the Interior provide a good summary of the numerous factors that led to Shell's problems with the Modu Kulluk drilling rig and are available here: http://www.doi.gov/news/pressreleases/upload/Shell-report-3-8-13-Final.pdf and http://oceana.org/sites/default/files/KULLUK_COMPLETE_REDACTED_2.pdf. Additional prior events requiring attention include the Godafoss tanker disaster in Norway, and the Exxon Valdez disaster in the Prince William Sound, Alaska
- When describing "factors that affect human performance," the Developer must describe how the factors listed in the Draft ToR are likely to affect any emergency operations that may arise. These include operations related to well control, spill mitigation, and uncontrolled blowouts. Because human performance is likely to change depending on the time of year during which an issue arises, the Developer must differentiate among likely human performance challenges across all relevant operational time periods

8. **"Preparedness and Response (responding effectively when things go wrong)" – Draft ToR, pgs. 13-15.**

- *Same season relief well plan*
- *Worst-case scenario*
- *Capping and containment equipment and personnel*
- *Incident management*
- *Oil and other chemical spill countermeasures*

NRDC Comment

Because the NEB clearly requires offshore Arctic operators to demonstrate same season relief well (SSRW) capability, the Developer must be required to discuss the logistics of drilling an SSRW in the relevant operating areas. This discussion should include a complete timeline for drilling, known or reasonably foreseeable challenges likely to be encountered during drilling, and the time it would take to regain control of a well following the completion of an SSRW in both optimal and suboptimal operating conditions. A description of the benefits and challenges of SSRW capability must be included in any environmental impact analysis, regardless of the Developer's plans to pursue an SSRW or an alternative to SSRW.

In the event that the Developer continues to claim that it will not pursue a same season relief well (SSRW) and will instead seek to demonstrate that its oil spill response plan achieves SSRW equivalency, this portion of the environmental impact analysis demands intensive scrutiny by the EIRB, other regulators, and all interested parties. As such, the Developer must be required to provide extensive documentation of the methods and technologies it plans to use in the case of a significant release of oil or and/or an uncontrolled blowout. In describing these methods and technologies, the Developer must discuss the purposes for which the methods and technologies were developed, where the methods and technologies have been deployed, how the methods and technologies have been tested, and whether the methods and technologies have been successful in the field. More specifically, the following factors require further elaboration than currently required under the Draft ToR:

- The Developer must disclose its plans for ensuring redundancy in operating and emergency response capabilities. Typically, redundancy in operating capability is achieved by ensuring that a second drilling rig is able to move into the operating area within 24 hours of unanticipated problems in operations. Redundancy must also be demonstrated by the Developer to ensure that if any planned safety or emergency measures fail upon initial deployment, the Developer will be able to deploy secondary or even tertiary measures to ensure safety and mitigate any possible negative environmental impacts
- The Developer must disclose its plans for how to deal with oil that does not rise to the surface following an accidental release and how long an operation of this type is expected to take under varying operating conditions
- The Developer must determine the possibility that undissolved and unremovable oil (or other chemical) particles will remain in the water column and the environmental impacts that are likely to follow from the presence of such particles in the environment
- The Developer must provide extensive detail about how it plans to meet the NEB's SSRW policy, which requires the demonstration of SSRW capability. Given that the Developer has already

stated that it cannot achieve SSRW capability in the Beaufort Sea, the following information must be provided by the Developer in its environmental impact statement:

- The full extent of spill mitigation measures that will be available to operators in the case of an uncontrolled blowout; in explaining these mitigation measures, the Developer must disclose the full extent of limitations that might exist for deploying each of these measures such as wind conditions, meteorological conditions, ocean currents, ice cover, temperature, etc.
- The technological methods that the Developer plans to have available for responding to an uncontrolled blowout. When describing these technological methods, the Developer must disclose where the methods were developed, if they have been used in the field previously, if they have been tested under Arctic conditions, if the Developer has performed drills to deploy these technologies under realistic operating conditions, etc.
    - The Developer must be required to discuss National Academy of Engineering findings that blowout preventers designed to kill uncontrolled wells are not designed to operate effectively in deep water. If the Developer plans to utilize blowout preventers as part of its oil spill response plan, the Developer must disclose how the blowout preventers it plans to use have been modified to operate effectively in deep water and in Arctic conditions

9. "Description of the worst case scenario" – Draft ToR, pgs. 14, 17

Information required:

- *Description of the worst case scenario*

[. . .]

The Developer shall:

- *develop, in collaboration with the Inuvialuit, a worst-case scenario for the*
- *Development (paragraph 13(11)(b) of the IFA)*
- *document the process used to develop the scenario including information concerning the consultation with the Inuvialuit*
- *provide a complete description of the worst-case scenario*

NRDC Comment

NRDC strongly recommends a detailed and comprehensive evaluation of a worst-case scenario that is given adequate space for analysis. To achieve this, the EIRB should require that the Developer provide an independent section in its environmental impact analysis that is focused solely on a worst case scenario that considers the numerous factors listed below. Further, because a worst case scenario must be developed under paragraph 13(11)(b) of the IFA, the comments below also apply to the "Worst Case Scenario and Wildlife Compensation" section of the Draft ToR. Under a worst case scenario description, the Developer must not limit the scope of its analysis by suggesting that a worst case scenario is not likely to happen. Instead, the EIRB should require that the Developer discuss, in significant detail, all of the following factors:

- The expected flow rate of oil escaping during an uncontrolled blow out (i.e., barrels/hour) and the maximum duration such oil could flow

- Types/characteristics of oil likely to escape during an uncontrolled blow out (i.e., API gravity, etc.) and whether the Developer anticipates other types of hydrocarbons to be present if a blowout were to occur
- Modelling of an uncontrolled blow out under conditions that will actually provide for a "worst case" (i.e., a blowout occurring during difficult operating conditions and taking place at the end of the viable drilling season)
- Environmental factors likely to affect spill rate and spill dispersion such as water temperature, ocean currents, and wind direction and velocity
- Factors that could exacerbate the scope and effects of an uncontrolled blowout such as timing (i.e., late in the drilling season), weather, ice cover, human performance, etc.
- Possible and/or foreseeable challenges in deploying spill prevention or emergency response methods in the case of an uncontrolled blowout
- Maximum geographic area impacted under a worst case scenario, including not only impacts to land, but also impacts to the entire biophysical environment
- Identification of any long term impacts due to the presence of oil and other chemicals associated with drilling, mitigation, spill dispersal, and/or in situ burning that may occur; this identification should include likely impacts to critical seafloor species which represent the first step in the Arctic food chain, it should also include a discussion of impacts up the entire food chain, both short and long term

See Appended Material: National Research Council, "Responding to Oil Spills in the U.S. Arctic Marine Environment" (2014).