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Filing Requirements for Offshore Drilling in the Canadian Arctic

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Chapter 1 Purpose of filing requirements

The *National Energy Board Filing Requirements for Offshore Drilling in the Canadian Arctic* (Filing Requirements) specify the information to be submitted to the National Energy Board (NEB or Board) in support of an application for an authorization for offshore drilling activities. The Filing Requirements are intended to provide clarity regarding the NEB's expectations for the information to be filed with an application. The applicant must demonstrate to the Board that it has complied with applicable legislation and regulatory requirements. The Filing Requirements should be read in association with the *Canada Oil and Gas Operations Act* (COGOA) and its regulations, particularly the *Canada Oil and Gas Drilling and Production Regulations* and Guidelines issued by the NEB regarding these regulations.

The NEB regulates oil and gas exploration and production activities, including the drilling of offshore wells in the Canadian Arctic, under the COGOA and its regulations[1]. The purpose of the COGOA, among other things, is to promote safety, protection of the environment, and the conservation of oil and gas resources. Land tenure or rights issuance, benefits plans, and royalty management are administered by federal government departments (Department of Aboriginal Affairs and Northern Development or Department of Natural Resources) and these aspects are outside the scope of this document. The reader is referred to these departments for information on these matters.

An Exploration Licence identifies "where" drilling could take place but does not authorize the undertaking of oil and gas exploration drilling and production activities (see *Canada Petroleum Resources Act* for details[2]). Drilling activities can only take place when the NEB is satisfied that the applicant has demonstrated that drilling can take place safely while protecting the environment, and can respond effectively when things go wrong. Additional Well Approvals would also be required under the *Canada Oil and Gas Drilling and Production Regulations* for drilling or changing the condition of a well, formation flow test, and co-mingling of multiple reservoir zones.

Finally, the applicant would need to comply with all acts and regulations applicable to the Canadian Arctic offshore. Such acts include, but are not limited to: *Arctic Waters Pollution Prevention Act; Canada Shipping Act; Fisheries Act; Nunavut Land Claims Agreement Act*;

[1] These regulations include:

- *Canada Oil and Gas Drilling and Production Regulations;*
- *Canada Oil and Gas Installation Regulations;*
- *Canada Oil and Gas Certificate of Fitness Regulations;*
- *Canada Oil and Gas Operations Regulations; and*
- *Oil and Gas Spills and Debris Liability Regulations.*

[2] The *Canada Petroleum Resources Act* provides information on Exploration Licences (sections 22 to 27).

Finally, the applicant would need to comply with all acts and regulations applicable to the Canadian Arctic offshore. Such acts include, but are not limited to: *Arctic Waters Pollution Prevention Act; Canada Shipping Act; Fisheries Act; Nunavut Land Claims Agreement Act*; *Nunavut Land Claims Agreement; Oceans Act; Western Arctic (Inuvialuit) Claims Settlement Act* or the *Inuvialuit Final Agreement;* and any act of general application.

1.1 Development of the Filing Requirements

The Filing Requirements are based on input received by the Board during its Arctic Offshore Drilling Review. Many of the specific requirements are derived from the Board's Calls for Information issued during the Review.

As explained in our Report, *The past is always present – Review of Offshore Drilling in the Canadian Arctic – Preparing for the future* dated December 2011, to determine the scope of the Arctic Review, the Board issued a preliminary scope and invited comments on it. After considering the comments received, the Board finalized the scope and listed 11 elements, including one for Filing Requirements: "Information to be required from applicants seeking authorization to drill an offshore well".

The outcome of the Arctic Review was made clear from the beginning: the results of the Review would be incorporated in the examination, by the Board, of future applications for offshore drilling in the Arctic. The Arctic Review gathered information and knowledge collaboratively to develop the Filing Requirements through meaningful engagement and dialogue.

In Phase 1, the Board gathered information and knowledge from a broad range of participants and invited submissions to help build a record of best available information with respect to the matters set out in the scope. The Board issued two Calls for Information, asking questions on the various elements of the scope. The Board also asked experts to prepare a number of reports. In addition, the Board held numerous open community meetings in the North where people were invited to make comments on the information and facts gathered so far and, generally, to share their concerns.

In Phase 2, more public information meetings were held in various Northern locations where people could come in and express comments on the information collected to date. This led to the five-day Roundtable in Inuvik.

The Roundtable provided an opportunity for all participants to examine and comment on all elements of the scope of the Arctic Review, to pose questions, and express their views. People who did not attend in person could also provide comments and ask questions by telephone. As outlined in the Roundtable agenda and explained by the facilitators, the focus of the discussion was information the Board should require if an application for offshore drilling in the Canadian Arctic is filed.

It was through this extensive, open, and public information and knowledge gathering that the Board developed these Filing Requirements.

Filing Requirements specify the information that the Board will need to assess future applications for drilling in the Arctic offshore. For every application, the Board will determine the information that is required to be filed in order to assess that particular project on its merits. The information set out in the Filing Requirements does not prevent the Board from requesting any additional information it may find relevant or from waiving certain Filing Requirements if they are not relevant to that project. When a proposed project attracts public interest, there would be a process to allow participation from the public. People would then have the opportunity to ask additional questions.

These Filing Requirements are not a static document. The Board is committed to continually improving its regulatory processes and to ensuring that its decisions on drilling applications will be made in a manner that is safe and protects the environment. The Filing Requirements will be updated from time to time. The Board understands that as the values and the interests of the public evolve over time, so do the Board's filing expectations of project applicants. It is important that the Board communicate these expectations so that it has all relevant facts when considering an application.

Chapter 2 Environmental assessment

As part of its environmental protection responsibilities, the NEB must ensure that an environmental assessment (EA) is conducted for proposed activities in the Canadian Arctic offshore. The NEB coordinates EAs with Northern boards and agencies for proposed oil and gas projects. The proposed project location determines which process is used in conducting the assessment. An EA must be completed before a COGOA authorization can be granted.

An applicant is encouraged to provide an initial description of the project as early as possible in the project planning phase. This will help the NEB to efficiently coordinate the EA with Northern boards and agencies. Proponents should provide the same information to the NEB and Northern boards and agencies so that conclusions are based on evaluation of consistent information.

The applicant's project specific EA is to include detailed information on: the project development; potential impacts to the environment, including potential impacts from accidents and malfunctions; consultation with Aboriginal groups and the public; socio-economic impacts arising from environmental effects; cumulative effects; and mitigation measures to protect the environment.

For drilling projects that require a COGOA authorization from the NEB, the NEB will also conduct its own EA as part of the overall decision the Board must make under the COGOA. In this part of the assessment, the applicant must submit an Environmental Protection Plan (EPP) which includes management of waste. The applicant must also submit a Safety Plan and a Contingency Plan which includes emergency response procedures. The NEB will expect the applicant to agree to make those plans public.

2.1 Project location and regulatory regimes

Depending on where a project is located in the North, a different set of legislative and regulatory EA requirements may apply. EA is required under federal legislation such as the *Canadian Environmental Assessment Act,2012* (CEAA 2012), the *Inuvialuit Final Agreement* (IFA) section 11, or the *Nunavut Land Claims Agreement* (NLCA) Article 12 and must be completed for exploratory or development projects that require an NEB authorization under paragraph 5(1)(*b*) of the COGOA. The reader should refer to the various land claims agreements and the CEAA 2012 for additional information.

CEAA 2012

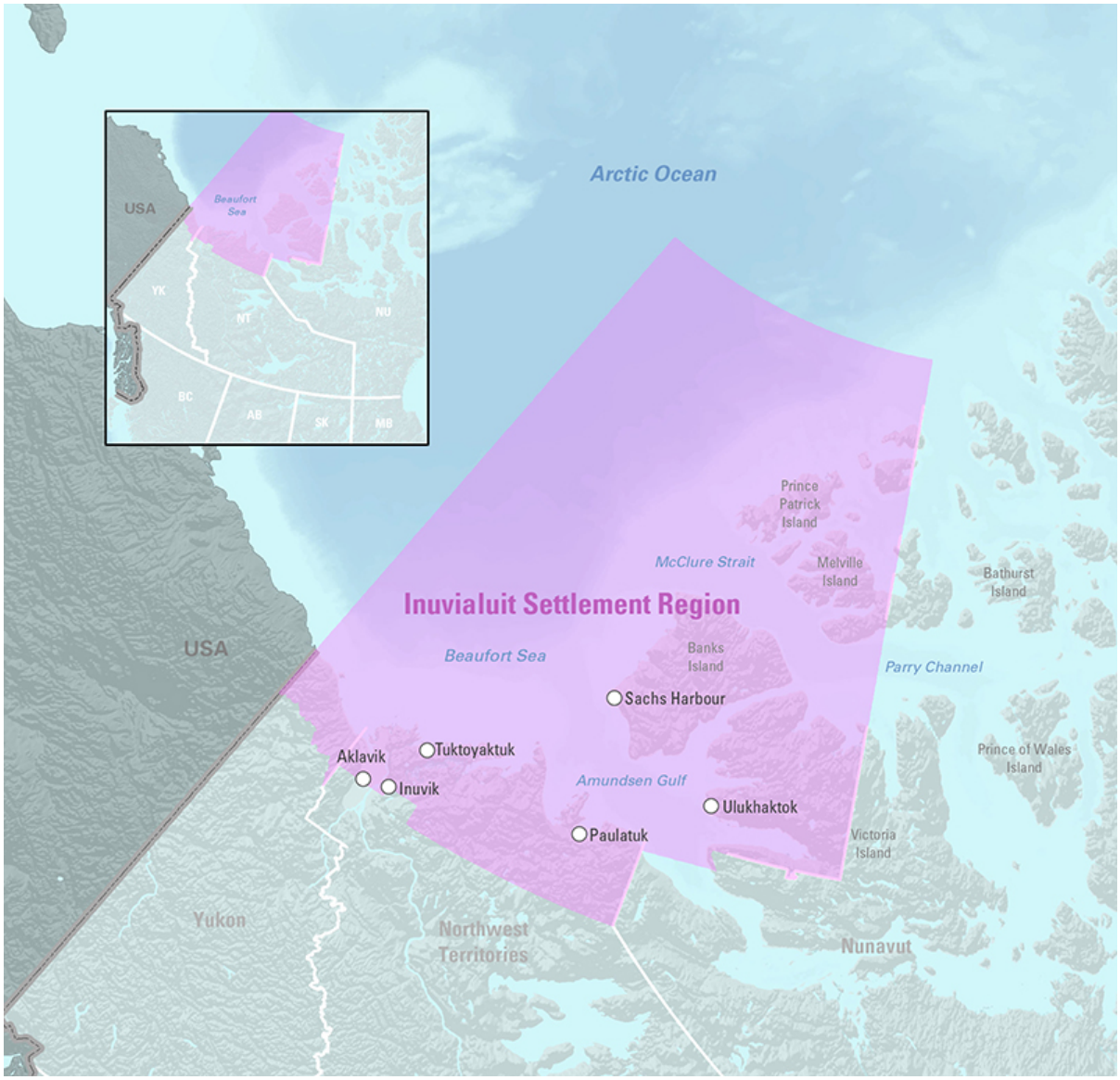
The CEAA 2012 may apply to Arctic offshore drilling projects in the Inuvialuit Settlement Region (ISR) and projects or portions of projects outside of the *Nunavut Land Claims Agreement* area. An EA is required under the CEAA 2012 if a project is listed in the *Regulations*

Designating Physical Activities. These “designated” projects include, for example, the drilling, testing and abandonment of offshore exploratory wells in the first drilling program in an area set out in one or more exploration licenses issued in accordance with the *Canada Petroleum Resources Act.*

The CEAA 2012 assessment must take into account the factors listed in section 19 of the CEAA 2012, such as the environmental effects of the designated project, including the environmental effects of malfunctions or accidents and any cumulative environmental effects; comments from the public; mitigation measures; and feasible alternative means of carrying out the project.

As the responsible authority under the CEAA 2012, the NEB must ensure that a report is prepared with respect to the EA of a designated project and determine whether the project is likely to cause significant adverse environmental effects. If the NEB decides the project is likely to cause significant adverse environmental effects, the NEB must refer to the Governor in Council the matter of whether those effects are justified in the circumstances. The NEB cannot grant an authorization pursuant to paragraph 5(1)(*b*) of the COGOA until a determination has been made pursuant to the CEAA 2012.

Inuvialuit Settlement Region



Proposed development projects that occur in the Inuvialuit Settlement Region require environmental screening or review under the *Inuvialuit Final Agreement*. An environmental screening is conducted by the Environmental Impact Screening Committee (EISC). Projects may be referred to the Environmental Impact Review Board (EIRB) which carries out environmental impact assessments and public reviews. Proponents should provide the same information to the NEB and EISC or EIRB so that conclusions are based on the review of consistent information.

Typically, during the EISC or EIRB processes there is extensive consultation that ensures local perspectives and issues are identified. The IFA addresses the prevention of loss or damage to wildlife and habitat and subsequent compensation if there is loss in terms of harvesting opportunities.

The IFA requires the NEB to wait for an EISC or EIRB decision before issuing any regulatory authorization. The NEB considers the recommendations before it can decide, on the basis of environmental impact considerations, whether or not the development should proceed and, if so, on what terms and conditions, including mitigative measures.

Nunavut Settlement Area

The Nunavut Impact Review Board (NIRB) screens proposed projects in the Nunavut Settlement Area (NSA) under the *Nunavut Land Claims Agreement* to determine whether or not an environmental impact review is required. Projects or portions of projects that are located outside of the NSA are assessed by the NEB. The NEB will keep the NIRB updated on the process and, although the NIRB may not be a party to the EA, the NIRB is able to provide comments during the EA process. Typically, for projects located completely outside of the NSA, the proponent will provide project information to the NIRB to determine if potential trans-boundary effects would trigger an assessment under the NIRB.

2.2 Applicant's Project Specific EA content

The following filing requirements describe the information the NEB will want to see included in the EA. Information about details to be provided in the EA may also be found under a number of sources, including:

- section 19 of the CEAA 2012, Factors to be Considered, and the CEA Agency website for additional guidance regarding EA;
- EISC Environmental Impact Screening Guidelines, "provide guidance and direction to parties participating in the environmental screening of proposed developments" in the ISR;
- EISC Environmental Impact Screening Guidelines, Appendix F: Example Project Description Submission Content Guide;
- EIRB Environmental Impact Review Guidelines, "provide guidance and direction to parties participating in the environmental impact review of proposed developments" in the ISR; and
- NIRB Guide 3 – Filing Project Proposals and the Screening Process, Guide 5 – The NIRB Review Process, and Guide 7 – Preparation of Environmental Impact Statements.

2.2.1 Unique Arctic environment

Goal

The applicant's EA provides sufficient detail to demonstrate:

- an understanding of how the unique Arctic environment will interact with the project; and
- that this knowledge has been incorporated in the project design to address safety and protection of the environment.

Filing Requirements

Provide detailed information in the EA regarding the unique Arctic environment.

1. Describe Arctic marine and land animals that would be particularly sensitive to a major oil spill.

2. Describe unique surface and subsea features in the Arctic that would be particularly sensitive to an oil spill.

3. Describe how marine protected areas and seasonal movements of marine animals (e.g., feeding, calving, and migration) will be addressed in the planned drilling activity.

4. Describe how environmental factors in the Arctic, including extreme temperatures, darkness, polynyas, ice cover, ice movement, sea state, currents, shoreline features, and seafloor features, could potentially affect the project. Address the following:

    a) design or selection of the drilling unit, drilling rig, equipment, and working conditions;
    b) well design and drilling operations, including emergency disconnect; and
    c) well completions, suspension, and abandonment.

5. Describe any knowledge gaps regarding the environmental setting of the project (biological, physical, and geological) and how these gaps will be addressed.

6. Describe how results of ongoing research or information gathering initiatives will be incorporated into the project.

7. Describe contingency measures if drilling unit, drilling rig, or equipment design or operating limits are exceeded.

2.2.2 Consultation

Context

The Board requires the applicant to consult with persons or groups who may be affected by the proposed project. The extent of consultation required for any given application will depend on the nature of the project and its scope. The applicant will be expected to justify the consultation carried out for each application.

Evidence filed in support of an application should reflect the outcomes of the consultation process in sufficient detail to demonstrate that any concerns raised have been considered and addressed as appropriate or, if not, why not.

The Board expects each applicant to include information on their consultation activities to date in the initial project description, when applicable. The applicant's EA should provide the results of the consultation conducted up to that point and offer sufficient details to justify the extent of that consultation. It should also provide a description of plans for future consultation activities that will be carried out during the regulatory review and through construction, operations and abandonment.

Goal

The applicant's EA provides evidence to outline the policies and principles by which an applicant will ensure that it adequately consults with, and respects the rights and interests of those potentially affected. The applicant's EA also describes the project's consultation program and explains why its design and implementation are appropriate for the nature of the project and its scope.

Filing Requirements

1. Provide an overview of the consultation approach, including:

   a) the policy or vision with respect to consultation;
   b) the principles and goals established for the project's consultation program; and
   c) a copy of the consultation protocol, if established, along with any documented policies and principles for collecting traditional knowledge or traditional land use information, if applicable.

2. Identify any government authorities (Aboriginal, local, territorial, and federal) who were included in the consultation process.

3. Demonstrate that all groups or persons potentially affected by the project have been made aware of the project and are aware of when the project application to the Board will be filed.

4. Identify the groups or persons potentially affected by the project who have been consulted, along with a summary of their concerns and comments.

5. Provide a summary of the response made regarding each of the concerns or comments identified above, including:

   a) the measures taken, or that will be taken, to address those concerns or an explanation of why no further action is required to address the concerns or comments;
   b) how outstanding concerns will be addressed; and
   c) how information from persons or groups, including local and traditional knowledge, has influenced the design or operation of the project.

2.2.3 Socio-economic effects

Context

The NEB, when conducting an EA under the CEAA 2012 and assessing an application under the COGOA, considers environmental effects, including effects on socio-economic conditions resulting from a change in the environment. For example, if a socio-economic effect (such as job loss) is caused by a change in the environment (such as loss of fish habitat) which is in turn caused by the project or a malfunction of the project, then the socio-economic effect is an environmental effect within the meaning of the CEAA 2012. On the other hand, if the socio-economic effect is not caused by a change in the environment, but by something else related to the project, then the socio-economic effect is not an environmental effect within the meaning of the CEAA 2012 and cannot be considered. The significance of any residual environmental effect after mitigation must also be assessed.

For projects in the ISR and the NSA, the responsibility for an EA is also set out in the *Inuvialuit Final Agreement* and the *Nunavut Land Claims Agreement.* Under these agreements, there are provisions intended to prevent loss or damage to wildlife and its habitat and to avoid disruption of wildlife harvesting activities caused by development. If damage does occur, these agreements

provide for restoration of wildlife and its habitat, as well as compensation for lost harvesting opportunities.

Goal

The applicant's EA identifies anticipated socio-economic changes arising from a project-induced change to the environment.

Filing Requirements

1. Provide an assessment of socio-economic effects as defined under the CEAA 2012 (i.e., resulting from environmental effects). This should include an assessment of potential significant negative impacts on wildlife habitat and on present or future wildlife harvesting and how those impacts can be mitigated.

2.2.4 Cumulative effects assessment

Context

Every EA of a project shall include consideration of any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out.

For those projects that are designated under the CEAA 2012, cumulative effects are considered pursuant to section 19(1) of the CEAA 2012.

Goal

The applicant's EA provides information about the interactions between predicted residual environmental and socio-economic effects of the project and effects from other projects or activities that have been or will be carried out. This information must provide enough detail to:

- identify and analyze predicted cumulative environmental and socio-economic effects;
- identify proposed mitigation measures to address the cumulative environment and socio-economic effects, and analyze the effectiveness of such mitigation measures; and
- evaluate the significance of any predicted cumulative effects.

Filing Requirements

1. Identify the valued components for which residual project-effects are predicted, and describe and justify the methods used to predict any residual effects.

2. Describe (with rationale) the spatial and temporal boundaries used to assess the potential cumulative effects.

3. Identify other physical facilities or activities that have been or will be carried out, including those that are reasonably foreseeable and those that are assumed to take place in the justification for the project, within the identified spatial and temporal boundaries for the cumulative effects assessment.

4. Where other physical facilities or activities may affect the valued components for which residual effects from the project are predicted, describe the extent of the cumulative effects on valued components.

5. Describe the general and specific mitigation measures, beyond project specific mitigation already considered, that are technically and economically feasible to address any cumulative effects, including broader-scale planning measures or initiatives. Describe who would control and implement such mitigation, how it will be monitored, and indicate the likelihood of success in reducing or avoiding cumulative effects.

6. After taking into account any appropriate mitigation measures for cumulative effects, identify the remaining residual adverse total cumulative effects.

7. Evaluate the likelihood of significant, residual adverse total cumulative effects occurring and substantiate the conclusions made. The definition of significance must be clearly explained and take into account local, regional and national policy and management objectives (e.g., recovery strategies, action plans, management plans) and thresholds. If the total cumulative effects on a given valued component are considered significant, describe the incremental increase in total cumulative effects caused by the project.

Chapter 3 Benefits plans

A benefits plan is a plan for the employment of Canadians and for providing Canadian manufacturers, consultants, contractors, and service companies with a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in any proposed work or activity.

Under the COGOA (section 5.2), no approval of a development plan nor any authorization of any work or activity shall be issued until the Minister of Aboriginal Affairs and Northern Development (or the Minister of Natural Resources, depending on the location of the project) has approved, or waived the requirement of approval of, a benefits plan in respect of the work or activity.

For additional information on benefits plans and rights management see the Department of Aboriginal Affairs and Northern Development website under "Benefits Plan" at http://www.ainc-inac.gc.ca/eng/1100100036925.

The NEB has no role in the approval of, or the waiver of a requirement for approval of, a benefits plan, nor the content of such a plan. As noted above, the NEB cannot make its regulatory decision regarding oil and gas exploration and production activities pursuant to the COGOA until the Minister has approved, or waived the requirement of approval of, a benefits plan. The NEB focuses solely on safety and protection of the environment and does not have a role in economic considerations

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Chapter 4 Operations Authorization

The NEB may issue an authorization for each work or activity proposed to be carried out. Authorizations may be subject to such approvals that the NEB determines. The Operations Authorization and the Well Approval are the primary regulatory approvals necessary to conduct a drilling program.

4.1 Operating Licence

An Operating Licence is a prerequisite for any oil and gas operations activity. Any individual or corporation may apply to the Board for an Operating Licence. For additional information on Operating Licences see the *Canada Oil and Gas Operations Regulations* at http://laws-lois.justice.gc.ca/eng/regulations/SOR-83-149/FullText.html.

4.2 Exploration Licence

Exploration Licences are issued by the Department of Aboriginal Affairs and Northern Development for most of the Arctic offshore. The Department of Natural Resources is responsible for issuance of licenses in Hudson Bay, James Bay, and Hudson Strait. These Exploration Licences are issued pursuant to the *Canada Petroleum Resources Act* (sections 22 to 27) and confer to the licensee the right to explore for, and the exclusive right to drill and test for, petroleum; the exclusive right to develop those frontier lands in order to produce petroleum; and the exclusive right to obtain Production Licences (subject to compliance with other provisions of the *Canada Petroleum Resources Act*). Exploration Licences have a maximum term of nine years from the effective date of the licence, and shall not be extended or renewed. For additional information on rights management see the Department of Aboriginal Affairs and Northern Development website under "Rights Management" at http://www.ainc-inac.gc.ca/eng/1100100036364.

The NEB has no role in the issuance of an Exploration Licence. The Exploration Licence identifies "where" an applicant may seek authorization to undertake drilling activities. The NEB determines whether a particular application has adequately demonstrated "whether and how" an applicant may drill safely while protecting the environment.

4.3 Declaration of fitness

Goal

The application provides a declaration of fitness confirming that equipment and installations are fit for their intended purpose throughout the proposed activity.

Filing Requirements

1. Provide a declaration executed by the most senior officer of the applicant company that, at commencement and throughout execution of the activity, the equipment and installations that are to be used in the work or activity are fit for the locations and purposes for which they are to be used, the operating procedures relating to them are appropriate for those uses, and the personnel who are to be employed in connection with them are qualified and competent for their employment.

2. Describe the processes used to monitor compliance with the declaration of fitness. Describe the actions taken should the applicant find a violation of any condition upon which its declaration was made, which should include taking immediate corrective action or ceasing the activity until such time as the validity of the declaration can be re-established.

3. Describe the process for reporting to the NEB non-compliance with the declaration of fitness.

4.4 Certificate of Fitness

Context

The COGOA (section 5.12) provides for a certificate by an independent expert organization (certifying authority) that:

- the equipment or installation proposed for an oil and gas exploration and production activity is fit for the purpose for which it is to be used;
- may be operated safely without posing a threat to persons or to the environment in the location and for the time set out in the certificate; and
- the equipment or installation is in conformity with all of the requirements and conditions imposed by regulations or by the NEB.

The holder of this certificate must ensure that the certificate remains in force for as long as the equipment or installation to which the certificate relates is used in the work or activity in respect of which the authorization is issued. The NEB shall not issue an authorization for an oil and gas exploration or production activity until it has received from the applicant a certificate issued by a certifying authority in the form fixed by the NEB.

The list of certifying authorities and their responsibilities is provided in the *Canada Oil and Gas Certificate of Fitness Regulations* at http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-114/FullText.html.

Goal

The application describes the third party verification process with enough detail to demonstrate that a qualified independent third party has confirmed that the offshore installation, drilling

system, and all safety critical systems are fit for purpose for the range of activities and location in which the activities will take place.

Filing Requirements

1. Provide a Certificate of Fitness issued by a recognized certifying authority pursuant to the requirements of the COGOA and the *Canada Oil and Gas Certificate of Fitness Regulations* for any:

    a) offshore installation;
    b) offshore drilling unit and any drilling unit designated for relief well backup;
    c) drilling rig and equipment;
    d) equipment critical to the safety of the conduct of the activity;
    e) blowout preventer and well control systems; and
    f) any ancillary well control systems such as supplementary shear rams and well-capping devices.

2. Provide the certifying authority report, including:

    a) the scope of work approved by the Chief Safety Officer;
    b) the scope of work completed;
    c) all assumptions, restrictions, or conditions attached to the Certificate of Fitness;
    d) if applicable, a schedule of additional activities to be conducted by the certifying authority during the term of the Certificate of Fitness to confirm certificate conditions or maintain the validity of the Certificate of Fitness; and
    e) confirmation that the Certificate of Fitness will remain in force throughout the duration of all authorized activities to be conducted.

4.5 Management systems

Goal

The application describes the management system with enough detail to demonstrate:

- the integration of operations and technical systems with financial and human resource management for the purposes of achieving safety, security, environmental protection, and conservation of resources;
- how the system ensures compliance with the COGOA and its regulations, and any authorizations and approvals issued by the Board;
- that it applies to plans, programs, manuals, and systems required under the COGOA and its regulations;
- that it corresponds to the size, nature, and complexity of activities authorized under the COGOA and its regulations, and the associated hazards and risks; and
- that it provides a strong foundation for a pervasive culture of safety, forcefully affirmed by the organization's leadership, rigorously documented in writing, known to all

employees involved in safety and environmental protection, and consistently implemented in the field and on the drilling platform.

Filing Requirements

1. Identify the name and position of the person accountable for the establishment, implementation, and maintenance of the management system. Provide evidence of the person's acceptance of these responsibilities.

2. Describe the policies upon which the system is based, including goals and objectives respecting management and improvement of process and occupational safety, security, environmental protection, and conservation of resources.

3. Describe how the applicant's organizational structure clearly identifies and communicates roles, responsibilities, and authorities at all levels of the organization. Demonstrate that resourcing is adequate based on the size, nature, and complexity of organizational activities.

4. Identify safety critical positions within the organization and provide a job description for each.

5. Demonstrate that the management system has systematic, explicit, comprehensive, proactive, and documented processes for:

    a) the development of annual objectives and targets related to safety, security, environmental protection, and conservation of resources, and a means to measure these objectives and targets;
    b) the identification and analysis of potential hazards, including the maintenance of an inventory of hazards;
    c) the evaluation and management of risks associated with all hazards, including the risks related to normal and abnormal operating conditions, and the development, implementation, and communication of preventative, protective, and mitigative measures for identified hazards and risks;
    d) ensuring and maintaining the integrity of all facilities, structures, installations, support craft, and equipment necessary to ensure safety, security, environmental protection, and conservation of resources;
    e) the identification and monitoring of applicable acts, regulations, approvals, and orders as they relate to the applicant's obligations with respect to safety, security, protection of the environment, and conservation of resources, and the maintenance of a table of concordance to monitor compliance and identify and resolve any non-compliance;
    f) the identification and management of any changes in the applicant's activities that could affect safety, security, environmental protection, or conservation of resources, including changes related to new hazards, risks, designs, specifications, standards, procedures, organizational changes, and legal requirements;
    g) the establishment of competency requirements and effective training programs so that employees, operators, contractors, subcontractors, consultants, agents, and any other

persons working with or on behalf of the applicant are trained, competent, and appropriately supervised to perform their duties;

h) internal and external communications that support safety, security, environmental protection, conservation of resources, and the effective implementation and operation of the applicant's management system;
i) ensuring that the records supporting and demonstrating the implementation of the management system and related requirements are developed, retained, accessible, and maintained;
j) the identification of documentation requirements for the development, review, revision, and control of documents, with approval by the appropriate authority for effective implementation of the management system;
k) the coordination and management of activities undertaken by employees, operators, contractors, subcontractors, consultants, agents, and any other persons working with or on behalf of the applicant;
l) the internal reporting of hazards, near misses, and incidents and the maintenance of measures for taking corrective actions to prevent their recurrence, including a data system to monitor and analyze trends;
m) preparation and response for safety, security, environmental incidents, and emergency situations;
n) monitoring, measuring, and recording safety, security, environmental management, and resource conservation performance to evaluate the implementation and effectiveness of the management system;
o) a quality assurance program to improve the activities authorized under the COGOA and the *Canada Oil and Gas Drilling and Production Regulations*; and
p) conducting audits and reviews of the management system and taking corrective and preventative actions if a non-compliance is identified.

4.6 Management system implementation

Goal

The application describes the management system oversight program with enough detail to demonstrate that:

- it has been fully implemented across the organization and is functional for the purposes of achieving safety, security, environmental protection, and conservation of resources;
- all hazards that pose a threat to the safety and integrity of drilling operations, including those related to human factors, have been identified and mitigated; and
- it is subject to an internal quality assurance process for continual improvement.

Filing Requirements

1. Describe and provide supporting evidence of the most recent internal and external management system audits, including the corrective and preventative action plans generated as a result of any related findings.

2. Describe all hazards identified in association with this project, including the methods used to eliminate or mitigate the related risks.

4.7 Safety culture

Goal

The application describes the management system with enough detail to demonstrate organizational commitment and support for the development and maintenance of a positive safety culture.

Filing Requirements

1. Describe and provide supporting evidence of the commitments, policies, practices, and programs that support continual improvement of the organization's safety culture, including that of contractors and subcontractors.

2. Describe and provide evidence of leadership commitment and acceptance of accountability for safety performance by the most senior executive of the organization.

3. Describe how the organization measures safety culture and provide the results from the three most recent assessments, including employee perception survey results.

4. Provide a copy of the action plan designed to respond to the safety culture assessment and to support the development and maintenance of a positive safety culture.

5. Describe how workers will be actively engaged in the process of safety management throughout the life cycle of the project.

6. Describe and provide evidence of the organization's policy and procedures for safety "stand downs", including the conditions and activities during which this practice is deemed mandatory.

7. Describe how the organization encourages workers to actively report safety threats, hazards, near-misses, and incidents without fear of recrimination.

8. Provide evidence of the applicant's stop work authority policy and its implementation. How is this authority exercised by workers? Describe how the policy, procedure, and related responsibilities are communicated to all personnel, contractors, and subcontractors.

9. Describe how the organization would implement, maintain, assess, and improve safety culture for a project in the unique Arctic environment when project activities are of short duration or are discontinuous.

10. Describe how a safety culture is maintained during periods when there is no activity or when there is a change to the drilling crew.

4.8 Human factors

Goal

The application describes the management system with enough detail to demonstrate that:

- human performance has been taken into consideration during project planning and risk assessments; and
- the human performance challenges associated with the unique Arctic environment have been addressed.

Filing Requirements

1. Describe how human factors are identified and addressed during the project planning phase in order to effectively manage the potential for human error during drilling operations.

2. Provide a list of all human factors assessed and the proposed controls, including those which are unique to the Arctic environment.

4.9 Lessons learned

Goal

The application describes the management system with enough detail to demonstrate that lessons learned from internal and external incidents and near-misses are incorporated into policies, processes, and procedures, and ensure continual improvement.

Filing Requirements

1. Describe the process by which lessons from incidents and near-misses in the organization, the offshore industry, and other industry sectors are and will be incorporated into the organization's management system and related programs.

2. Describe how these lessons will be communicated to all workers to ensure they are aware of potential threats, hazards, and remedies.

4.10 Risk assessment

Goal

The application describes the risk assessment and risk management processes with enough detail to demonstrate that the applicant has:

- effective processes in place to identify threats and hazards to safety and the environment, to identify and select effective mitigative measures, and to evaluate and manage the associated risks; and
- taken, or will take, all reasonable precautions to ensure that safety and environmental protection risks have been addressed for the proposed work or activity, including taking into account the interaction of all components, including structures, facilities, equipment, operating procedures, and personnel.

Filing Requirements

1. Provide a summary of the studies undertaken to identify threats and hazards and to evaluate risks to safety and the environment related to the proposed work or activity.

2. Describe the processes and procedures used to identify and select all reasonable precautions pursuant to the requirement of section 19 of the *Canada Oil and Gas Drilling and Production Regulations.*

3. Describe the safety critical and environmental protection critical threats and hazards identified for all stages or phases of the activity from design through to completion of operations, including those related to:

    a) well integrity;
    b) well control;
    c) facility and drilling unit integrity;
    d) station keeping of the drilling unit; and
    e) equipment critical to the safe conduct of the activities.

4. Provide a summary of and rationale for the measures selected to anticipate, avoid, prevent, and reduce safety critical and environmental protection critical threats and hazards and to manage the risk.

5. Describe how the management system will be applied to the proposed work or activity and how the duties set out within the COGOA and *Canada Occupational Safety and Health Regulations* with regard to safety and environmental protection will be fulfilled.

4.11 Safety Plan

Goal

The applicant must include a Safety Plan in all applications for an authorization. See section 8 of the *Canada Oil and Gas Drilling and Production Regulations* and the *Safety Plan Guidelines* for further information on the contents of a Safety Plan. The Safety Plan should provide enough detail to demonstrate that it sets out the procedures, practices, resources, sequence of key safety-related activities, and monitoring measures necessary to ensure the safety of the proposed work or activity.

Filing Requirements

1. Provide evidence that the Safety Plan was developed in accordance with the *Safety Plan Guidelines*.

2. Describe the procedures, practices, resources, sequence of key safety-related activities, and monitoring measures used to ensure the safety of the proposed work or activity.

3. Where a mobile offshore drilling unit is employed in the activity or specified as a backup unit for the relief well contingency, provide a valid and current Health, Safety and Environment Case (HSE Case) developed in accordance with the International Association of Drilling Contractors HSE Case *Guidelines for Mobile Offshore Drilling Units*. The HSE Case should be addressed in the Safety Plan as a means of demonstrating that the drilling contractor's management systems are comprehensive and effective, and aligned with the applicant's management systems.

4.12 Ice management

Goal

The application describes the ice management program with enough detail to demonstrate:

- the adequacy and effectiveness of the program in support of the proposed drilling activity;
- that the drilling system (the drilling platform and any supporting vessels) is able to stay at the drilling location so that drilling and related operations can be carried out safely; and
- that there is sufficient time to secure and suspend or abandon well operations properly in the event that the drilling system or personnel have to move away from the drilling location.

Filing Requirements

1. Describe the design and operating limits of the drilling system in the anticipated ice-ocean-atmospheric conditions in the operating area and at the drilling location. Information on how the limits were established and validated should be included.

2. Describe the conditions and ice features that would constitute hazards to the drilling system and its ability to stay at location. Provide information on the threshold used to identify conditions and ice features that could be a hazard, and a description of the conditions and ice features that would be at or above this threshold for the drilling system.

3. Describe how hazards will be identified and located. Provide information on ice detection systems and capabilities, and their effective range.

4. Describe how ice hazards will be predicted and tracked. Provide specifications of the forecasting and tracking systems that would be used. Provide information on system capabilities, reliability, and frequency of forecasting and tracking updates.

5. Describe how ice hazards will be managed. Provide information on ice management system capabilities, reliability, and contingencies.

6. Describe how the drilling unit and well operations would be managed when ice hazards are predicted to exceed the ice management capability.

4.13 Transportation and helicopter safety

Goal

The application describes the helicopter transportation safety plan with enough detail to demonstrate that:

- the plan effectively manages the hazards and risks associated with helicopter transportation in the unique Arctic environment;
- all safety equipment, including personal protective equipment (PPE), is suitable and adequate for the hazards and risks associated with helicopter transportation; and
- adequate planning and assistance are in place for aircraft in distress and airborne emergencies.

Filing Requirements

1. Describe and confirm the availability of a dedicated first-response helicopter to respond to aircraft in distress, including its base, operational limits, and wheels-up time.

2. Describe the helicopter operator’s protocol to cover instances in which an in-flight transport helicopter has an indication of a potentially serious malfunction, including the

dispatch of a first-response helicopter to meet the transport helicopter and accompany it to its chosen destination.

3. Describe the procedures for workers to familiarize themselves with the non-technical aspects of helicopter transportation and safety, including the requirement to receive a pre-flight passenger briefing from the pilot or co-pilot.

4. Describe all on-board safety equipment.

5. Describe the policies governing night flights, including the risk assessments used to support those policies.

6. Describe employee helicopter safety training, including the name of the training provider and a detailed syllabus for each program with duration by module.

7. Describe how the physical fitness of workers is assessed in preparation for helicopter safety training. Include a description of how the minimum requirements were determined and, where applicable, identify the stakeholders engaged.

8. Describe the mandatory PPE required to be worn by passengers and crew during helicopter transportation.

9. Describe and provide evidence of the helicopter operator's risk management policies and practices.

10. Describe and substantiate the ongoing evaluation of the helicopter operator's safety culture.

11. Describe the consultation process related to all helicopter safety matters, including a list of stakeholders who would be engaged.

12. Describe how offshore passengers will be informed of operational safety issues, such as airworthiness directives and incident reports.

4.14 Environmental Protection Plan

Goal

Applications for authorizations include an Environmental Protection Plan. See section 9 of the *Canada Oil and Gas Drilling and Production Regulations* and the *Environmental Protection Plan Guidelines* for further information on the contents of an EPP. The EPP should provide enough detail to demonstrate that:

- the EPP has the procedures, practices, resources, and monitoring necessary to manage hazards to and protect the environment from the impacts of the proposed work or activity; and

- the predicted environmental hazards and risks, including the mitigation measures in the EA, are incorporated.

Filing Requirements

1. Provide evidence that the EPP is developed in accordance with the *Environmental Protection Plan Guidelines*.

2. Demonstrate how the management system that will be applied to the proposed work or activity ensures that the duties set out in the *Canada Oil and Gas Drilling and Production Regulations* with regard to environmental protection will be fulfilled.

3. Provide a summary of the studies undertaken to identify environmental hazards and to evaluate environmental risks relating to the proposed work or activity.

4. Describe the hazards to the environment that were identified and the results of the risk evaluation.

5. Describe the measures to anticipate, avoid, prevent, reduce, and manage environmental risks.

6. Describe all structures, facilities, equipment, and systems critical to environmental protection, and a summary of the system in place for their inspection, testing, and maintenance.

7. Describe the organizational structure for the proposed work or activity and the command structure on the installation, which clearly explains their relationship to each other.

8. Provide the contact information and position of the person accountable for the EPP and the person responsible for implementing it.

9. Describe the procedures for the selection, evaluation, and use of chemical substances, including process chemicals and drilling fluid ingredients.

10. Provide evidence that the chemical selection process was developed with reference to the *Offshore Chemical Selection Guidelines*.

11. Describe the equipment and procedures for the treatment, handling, and disposal of waste material.

12. Describe all discharge streams and limits for any discharge into the natural environment, including any waste material.

13. Describe the system for monitoring compliance with discharge limits, including the sampling and analytical program to determine if those discharges are within the specified limits.

14. Describe the arrangements for monitoring compliance with the EPP and for measuring performance in relation to its objectives.

4.15 Waste management

Context

"Waste material" is any garbage, refuse, sewage, waste well fluids, or any other useless material that is generated during drilling, well, or production operations, including used or surplus drilling fluid, drill cuttings, and produced water. Offshore operators are expected to take all reasonable measures to minimize the volumes of waste materials generated by their operations, and to minimize the quantity of substances of potential environmental concern contained within these waste materials. No substance should be discharged unless the Board has determined that the discharge is acceptable.

The NEB, the Canada-Newfoundland and Labrador Offshore Petroleum Board, and the Canada-Nova Scotia Offshore Petroleum Board prepared the *Offshore Waste Treatment Guidelines* to aid operators in the management of waste material discharged to the natural environment from offshore drilling and production installations regulated by the Boards. These guidelines supplement the *Environmental Protection Plan Guidelines*.

Source control and the selection of chemicals for use offshore are addressed under the *Offshore Chemical Selection Guidelines for Drilling and Production Activities on Frontier Lands*.

Goal

The plan to manage discharged waste material is complete and adequate.

Filing Requirements

1. Describe all of the planned discharges, the limits of these discharges, and, for waste discharges, the equipment and procedures for treatment, handling, and disposal of waste material. This may be described as part of the EPP or in a separate Waste Management Plan (WMP).

2. Identify the limits for any waste material and reference any guidance or standards that were used to establish those limits.

3. Describe the system for monitoring compliance with limits for discharges to the environment contained in the EPP or WMP, including the sampling and analytical program to quantify that compliance. The sampling and analytical program must form part of the EPP or WMP, or alternatively the EPP or WMP may summarize and reference a separate document commonly known as an Environmental Compliance Monitoring Plan.

4. Describe the arrangement for monitoring compliance with waste management under the EPP, or as part of a WMP, and details for measuring performance in relation to its objectives.

5. Describe the procedures for the systematic observation and reporting of sheens, or presence of oil, on ice near the installation, including the estimation of the areal dimensions and temporal persistence of each, and the tentative identification of the discharge with which it is associated.

6. Provide details of incident reporting procedures, including reporting exceedances of limits described in the EPP or WMP.

7. Describe any agreements or arrangements for disposal of waste material associated with drilling activities.

8. Indicate the best practices and technologies available for waste management. Identify those to be used during this project and provide the rationale for selection.

9. Provide evidence that the waste management process was developed with reference to the *Offshore Waste Treatment Guidelines*.

4.16 Pollution monitoring and response

Context

"Pollution" is the introduction into the natural environment of any substance or form of energy outside the limits of discharge applicable to the activity that is subject to an authorization, including spills.

Goal

The applicant demonstrates its commitment to minimize the impacts to the environment from pollution.

Filing Requirements

1. Identify all discharge streams and limits for any discharge into the natural environment.

2. Describe the processes and procedures to detect, report, investigate and correct the causes and causal factors of pollution, and to prevent re-occurrences.

4.17 Contingency Plan for an uncontrolled release of reservoir fluids

Context

The *Canada Oil and Gas Drilling and Production Regulations* (section 6) require an applicant to provide Contingency Plans to mitigate the effects of any reasonably foreseeable event that might compromise safety or environmental protection. An out-of-control well is an example of such a foreseeable event. Loss of well control may include a blowout at surface, an uncontrolled underground flow of fluids from one formation into another, or release of fluids at the seafloor.

Goal

The application describes the Contingency Plan for an uncontrolled release of reservoir fluids or a blowout event with enough detail to demonstrate the adequacy of the surface, sea floor, and sub-surface response capability to stop the flow from an uncontrolled well.

Filing Requirements

a) General

1. Describe the worst-case scenario, including the estimated flow rate, total volumes of fluids, oil properties, and maximum duration of a potential blowout.

2. Describe criteria that would be used to select the appropriate contingency measure to regain well control during Arctic offshore well operations, minimizing spill duration and environmental effects. This is notwithstanding the requirement to demonstrate same season relief well capability.

3. Describe the measures available to regain well control through same-well intervention, and by drilling a relief well. For each measure, provide details on:

    a) the sequence in which these measures would be implemented;
    b) the time it would take to implement each of these measures;
    c) any constraints or limitations, including prevailing environmental conditions (e.g., ice encroachment, adverse weather); and
    d) the availability of competent people, equipment, drilling unit, and consumables.

4. Describe how lessons learned from previous major hazard incidents and near-misses have been incorporated into the proposed Contingency Plan.

b) Capping and containment

5. Describe the capping and containment methods and system proposed to appropriately respond to the worst-case scenario.

6. Describe the plan for mobilization, deployment, and operation of the capping and containment system, including any clearance of debris or damaged pieces of sub-sea systems.

7. Describe the execution plan, resources, reliability, and redundancies of the capping and containment system in the unique Arctic environment.

8. Describe the required support systems, including vessels, icebreakers, riser system, and remotely operated underwater vehicles (ROV).

9. Describe the testing and certification process of the capping and containment system, including qualification of new technology where applicable.

c) Same season relief well capability

Policy

In the Canadian Arctic offshore, we have a policy that says the applicant must demonstrate, in its Contingency Plan, the capability to drill a relief well to kill an out-of-control well during the same drilling season. This is the Same Season Relief Well Policy. The intended outcome of this policy is to minimize harmful impacts on the environment. An applicant must demonstrate this capability.

A relief well is one contingency measure employed to respond to loss of well control. An operator is also expected to continue well intervention using all available means to bring into control a well blowout while designing, mobilizing, and undertaking a relief well operation.

Filing Requirements

10. Describe the relief well plans, procedures, technology, and competencies required to kill an out-of-control well during the same drilling season, including:

    a) identification of the drilling unit that will be used, including mobilization details;
    b) identification of a minimum of two suitable locations for drilling a same season relief well, including shallow seismic interpretation of the top-hole section;
    c) a hazard assessment for positioning the relief well close to the out-of-control well;
    d) confirmation that the relief well drilling unit, support craft, and supplies are available and can drill the relief well and kill the out-of-control well in the same drilling season; and
    e) confirmation of the availability of well equipment and specialized equipment, personnel, services, and consumables to kill the out-of-control well during the same drilling season.

11. Describe the Contingency Plans for the relief well.

12. Provide an estimate of the time that it would take to drill the relief well and kill the out-of-control well in the same drilling season.

13. Describe how all available intervention techniques, in addition to a relief well, will be used so that the flow from an out-of-control well can be stopped as quickly as possible.

14. Describe the related strategies and preparedness to drill a relief well using a second drilling unit, including any advanced planning, preparation, and staging to reduce the time required to kill the out-of-control well.

4.18 Spill Contingency Plan

Context

Spill Contingency Plans provide emergency response procedures to mitigate environmental and safety impacts from unplanned or accidental discharges to the environment. Pollution, which includes spills, also refers to situations where discharges from authorized operations or activities exceed the authorized discharge limits.

Goal

The Contingency Plans for spill response will provide enough detail to demonstrate that effective systems, processes, procedures, and capabilities will be in place to:

- minimize the impacts to the marine, terrestrial, and atmospheric environments from unauthorized or accidental discharges; and
- protect workers and the public.

Filing Requirements

1. Describe the sources of potential spills within the scope of the application for authorization, including:

    a) the drilling unit and associated equipment;
    b) drilling operations;
    c) support craft and operations;
    d) supply vessels and operations;
    e) response vessels;
    f) fixed-wing and rotary-wing aircraft; and
    g) emergency response equipment and operations.

2. Describe each substance that could foreseeably be discharged into the natural environment during activities or operations within the scope of application for authorization, including:

    a) discharges, emissions, or escapes of oil or gas from drilling operations or the drilling unit; and
    b) discharges from a vessel or craft.

3. Describe scenarios for small-volume spills during drilling operations.

4. Describe the worst-case oil spill scenario for a major loss of containment of oil from a well.

5. Describe the consequences of the worst-case oil spill scenario, including:

    a) the volume of oil that could be released;
    b) the volume of oil that would be recovered;
    c) the likely short-term impacts on the environment and Northern communities;
    d) the residual long-term impacts on the environment and Northern communities; and
    e) how long it would take to regain well control in worst-case operating conditions.

6. Describe at which points in the drilling program or under which physical environmental conditions the scenarios pose the greatest risk.

7. Describe the process and criteria to be used to identify priority valued environmental and socio-economic components (VESCs) for protection.

8. Provide a map of environmentally sensitive marine areas and pre-determined shoreline clean-up segments based on a shoreline cleanup assessment technique (SCAT) process.

9. Describe the oil spill trajectory modeling used, its features and limitations, its validation, and its outputs for the worst-case spill scenario. Describe any three-dimensional capabilities to simulate spill movements in or under ice cover in the unique Arctic environment.

10. Describe the capability to implement an oil spill trajectory model, using real-time wind and current data to support response operations.

11. Provide response organization charts describing the emergency response command structure and responder positions, including the duties, responsibilities, and accountabilities for the various levels or tiers of emergency.

12. Describe the process and procedures for chemical countermeasures and for containing and recovering, or eliminating and cleaning-up, spilled substances.

13. Describe the process for collection, handling, storage, and disposal of wastes anticipated for various spill scenarios, including a worst-case spill scenario.

14. Describe the process and procedures to report and monitor all spills and spill response progress.

15. Provide the decision criteria and flow chart to be used for determining the appropriate oil spill countermeasures.

16. Describe the key response strategies and methods for spill containment, monitoring, tracking recovery, and clean-up on surface water, the subsurface, shoreline, ice, and ice-infested waters.

17. For each response method, describe operational limitations (response gaps) caused by unique Arctic environmental conditions such as wind, waves, ice, temperature, visibility, and daylight.

18. Describe the criteria and procedures to monitor the effectiveness of each response strategy and method.

19. Provide an inventory of dedicated and readily-deployable spill-response vessels, equipment, materials, and communications equipment and facilities, and identify expected mobilization and field deployment response times.

20. Describe the competent responder resources that would be brought to bear for each type of spill scenario.

21. Describe proposed improvements or additions to existing infrastructure to support and facilitate the response strategies and manage equipment, material, and human resources.

22. Describe proposed new infrastructure facilities to support and facilitate response strategies and manage equipment, material, and human resources, as applicable.

23. Describe the training qualification requirements, or competency measures, for personnel, and the proposed scope and frequency of field practice exercises for oil spill countermeasures under Arctic conditions.

24. Describe the scope and frequency of Arctic-based pre-drilling and operational spill-response exercises intended to test response and further verify effectiveness of response strategies, methods, and emerging technologies.

25. Describe how emergency response procedures will provide for appropriate coordination with relevant municipal, territorial, and federal emergency response plans and mutual aid agreements. Include the sharing or augmenting of response resources and any international arrangements. Describe how this could be done in advance of proposed drilling activities.

26. Identify any responder roles and response equipment and training, such as shoreline cleanup assessment technique, that may be provided to Arctic community-based responders.

27. Describe the plan to monitor adverse impacts to the Arctic environment from significant or persistent spills.

28. Describe the procedures for identifying clean-up priorities for potentially impacted valued environmental, physical, and socio-economic components, offshore and onshore.

29. Describe the criteria and procedures for both short-term and long-term monitoring and reporting of the effects of spill countermeasures on the environment.

30. Describe the procedures for aerial observation and tracking during the emergency phase.

4.19 Emergency Response Procedures

Goal

The application describes the emergency response procedures with enough detail to demonstrate that any incident will be managed by integrating a combination of facilities, equipment, personnel and communications within a common organizational structure. The NEB expects that the application would describe an incident management system that is both consistent and compatible with the Incident Command System (ICS), thereby:

- minimizing the impacts to the marine, terrestrial, and atmospheric environments from unauthorized or accidental discharges;
- protecting workers and the public; and
- permitting coordinated emergency response activities when multiple jurisdictions or response agencies are involved.

Filing Requirements

1. Describe the criteria used to determine the severity of the emergency, including the definitions of levels or tiers of the emergency.

2. Describe the process and criteria to activate, escalate and de-escalate the emergency response.

3. Describe the process and criteria to downgrade the level of an emergency and to stand down the emergency phase. Describe the procedures to communicate this information to all responders and agencies.

4. Describe the incident management system, including roles, responsibilities and organizational charts that identify clear chain of command to address:
   a) Command, including safety, communications and liaison;
   b) Operations;
   c) Planning;
   d) Logistics; and
   e) Finance and administration.

5. Describe the process to enable the full engagement of applicable government agencies and stakeholders in the command structure, which shall include Unified Command, where appropriate.

6. Describe how the emergency response procedures provide appropriate coordination with relevant municipal, territorial and federal emergency response plans and, where appropriate, with jurisdictions outside of Canada.

7. Describe the mutual aid agreements, including the sharing or augmenting of response resources, and any international arrangements to be in place in advance of the proposed drilling activities.

8. Describe how designated personnel will be alerted to be deployed to an emergency and how additional resource needs will be assessed throughout the emergency.

9. Describe how the conditions associated with an emergency and the effectiveness of the response will be continually assessed throughout the emergency phase.

10. Describe the protocol for company/inter-agency operational communications (including land, air and marine).

11. Describe the procedures for communications with communities potentially impacted by an emergency and with the media.

12. Describe the logistical support, locations and timelines for implementation for a worse case incident, including:
    a) all facilities that support the emergency response including:
        i. a Command Post, suitable to support the applicant's incident management team, as well as agency personnel;
        ii. pre-designated primary and alternate coordination centres;
        iii. staging areas for equipment (including countermeasures) and personnel;
        iv. facilities for repairing out-of-service equipment;
        v. lodging for all personnel;
        vi. locations where heli- and the required fixed-wing resources could land;
        vii. disposal and clean-up;
    b) meals;
    c) communications;
    d) medical support; and
    e) on-water support.

13. Describe the internal and external incident notification procedures and reporting requirements. Include:
    a. a listing of agencies and companies;
    b. the role of the agencies and companies;
    c. critical information types to be shared;
    d. maximum timeframe for issuance of initial notification or reporting;
    e. ongoing notification or reporting frequency; and
    f. a situation report template.

14. Provide a list of the incident management system forms and documents to be used during an emergency.

15. Describe:

    a) the incident management system training curriculum, targeted participants, training frequencies, competency requirements and competency evaluation;
    b) the type and frequency of conducting emergency response exercises, with varying degrees of complexity, scale, and interaction with agencies, mutual aid partners, stakeholders and local participants; and

c) the mechanisms to ensure that lessons learned from exercises are documented and that corrective actions are developed, implemented and evaluated.

16. Describe the target timelines for response to a worse case spill under weather and sea conditions that will allow for the appropriate response strategies. Include the timelines for each phase of the response including activation of incident command, command post and mobilization of required personnel, resources, equipment and air and sea support.

Chapter 5 Well Approval

An operator who has obtained an Operations Authorization and who intends to drill, re-enter, workover, complete, recomplete, suspend, or abandon a well or part of a well shall obtain a Well Approval.

5.1 Detailed drilling schedule

Goal

The application describes the operations plan with enough detail to demonstrate how well operations, including critical operations, will be completed within a safe operating window considering the unique Arctic drilling environment.

Filing Requirements

1. Provide a schedule for each of the drilling intervals.

2. Provide approximate durations of critical operations.

3. Describe the critical operations such as drilling through reservoir section, running and cementing production casing, coring, open-hole logging, perforation, stimulation, and testing. Summarize how these activities fit into the drilling schedule so that the operations are completed without compromising the integrity of the well.

4. Describe the process by which critical well operations are flagged in the drilling schedule where additional approval or notification may be required to effectively implement a safety "stand down".

5. Describe how the relief well is scheduled and linked to the drilling program should a relief well be required to regain control in response to a blowout event.

5.2 Geophysical aspects of oil and gas targets

Goal

The application describes the oil and gas targets in sufficient detail to demonstrate that they have been identified according to industry best practices.

Filing Requirements

1. Provide comprehensive seismic information that includes the proposed well trajectory, an interpretation of the reservoir and seal horizons, the trap architecture, along with structure and isopach maps of the objective horizons. Information should include an integrated analysis of seismic, gravity, and magnetic data that was used to determine the hydrocarbon potential of the well.

2. Provide any geophysical attribute information, such as amplitude, coherence, and frequency that was used to infer the possibility of resource existence at the target location.

3. Describe the analysis of any seismically-unresolved zones that may be encountered or are close to the well path, that remained after correction techniques for acquisition and processing challenges had been applied. Unresolved zones may include shale core, gas chimney, inverted structure, velocity anomalies, or fault shadow.

4. Identify all faults and unconformities that will be crossed by the well and detail the approach, using seismic or other tools, to determine possible hazards at these junctures. Identify any mitigation strategies to be employed.

5.3 Site surveys for geohazards

Goal

The application describes the geophysical and geotechnical hazards evaluation program and well site evaluation program with enough detail to demonstrate that the applicant has taken all reasonable precautions and used industry best practices to identify and manage hazards and promote safety.

Filing Requirements

1. Describe the means of surveying, identifying, and mapping seabed and subsurface geohazards in or near the vicinity of the well. Hazards include shallow water flow sands, shallow gas, hydrates, permafrost, active faulting, weak formations, seabed collapse, slope stability, iceberg scour, shipwrecks, wells, and pipelines.

2. Describe geohazards, including those in the immediate area of the proposed location and on the seafloor.

3. Describe geohazards expected during the drilling of the surface hole.

4. Provide an interpretation of the results obtained from the various seabed and subsurface geohazard evaluation surveys at the well site.

5. Provide documentation that an independent geotechnical engineering consultant has evaluated the geotechnical and foundation characteristics of the seabed at the well site.

5.4 Pressure prediction during planning

Goal

The application describes the geophysical techniques for pressure prediction, before and while drilling, with enough detail to demonstrate that they adhere to industry best practices and the best available proven technology.

Filing Requirements

1. Describe the methods used to predict formation pressure before and while drilling.
2. Provide a detailed analysis of how pressure data will be integrated into the well design and operation.
3. Describe the operational procedures that will be employed to integrate pressure data derived through real-time methods to introduce timely corrections.

5.5 Drilling system

Goal

The application describes the proposed drilling system with sufficient detail to demonstrate that the system:

- is appropriate for the prevailing and extreme physical environmental conditions (atmosphere, water, ice, and geotechnical) where the proposed drilling activities would be undertaken, and that these conditions have been addressed in the design and operating limits of the drilling system;
- is suitable and appropriate for the proposed well operations, and that proposed well operations have been addressed in the design and operating limits of the drilling system; and
- meets the requirements of the *Canada Oil and Gas Drilling and Production Regulations, Canada Oil and Gas Installations Regulations,* and *Canada Oil and Gas Certificate of Fitness Regulations*.

Filing Requirements

1. Identify the design and operation limits of the drilling system (including the drilling unit and any support craft such as icebreakers) in the prevailing and extreme physical conditions anticipated in the unique Arctic environment where drilling would take place.
2. Describe the ability of the drilling unit to secure the well and safely disconnect from the well in an emergency.
3. Provide a copy of the operations manuals for the drilling unit and any backup unit designated for drilling a relief well.
4. Describe how the various drilling systems are adequate to carry out proposed drilling activities and to meet the operational limits, including those for:

    a) hoisting, lifting, rotating and pipe handling system, derrick, and derrick support structures;
    b) drawworks and rotary system;
    c) power generation and fuel storage capability;
    d) bulk storage, circulating, and transfer system;
    e) marine drilling riser system;
    f) motion compensation systems;
    g) well control system; and
    h) waste management system.

5.6 Marine capability of the drilling system

Goal

The application describes the proposed drilling system with sufficient detail to demonstrate that:

- the proposed drilling system is suitable and appropriate for the prevailing and extreme physical environment conditions (atmosphere, water, ice, and geotechnical) where the proposed drilling activities would be undertaken;
- the extreme physical environmental conditions have been addressed in the design and operating limits of the drilling system; and
- the proposed drilling system is suitable and appropriate for the proposed well operations, and that proposed well operations have been addressed in the design and operating limits of the drilling system.

Filing Requirements

1. Describe the drilling unit and support craft that will be used to drill in the extreme physical conditions anticipated in the unique Arctic environment, including:

a) design and operation limits for the drilling system, including the drilling unit and any support craft such as icebreakers;
b) procedures for identification, detection, tracking, forecasting, and management of hazards to the drilling system;
c) means for identifying the accuracy and integrity of the drilling unit's station keeping, including reliability of any positioning system, the reliability and redundancy of such systems, and procedures and practices when one or more of such systems deteriorate or fail for any reason;
d) procedures for planned and emergency securing of the well, and disconnect method in the event the prevailing conditions approach the operating limits of the drilling system;
e) procedures for planned and unplanned well events (e.g., kick, loss of circulation, or stuck pipe) that could affect the safe operations of the well, could result in release of material to the environment, or could require a rapid securing and departure from the drilling location;
f) all safety and pollution prevention features; and
g) systems for escape, evacuation, and rescue of personnel involved in drilling and support operations in all operating conditions, including personnel in transit to the drilling installation in the Arctic offshore.

5.7 Well description

Goal

The application includes essential information about the drilling program and geological conditions to ensure safety and integrity of the drilling operation.

Filing Requirements

1. Provide a description of the well, including:

   a) the purpose of the proposed well and an overview of the drilling program;
   b) schematics of the proposed well illustrating the hole sizes, casing and cementing program, and other information necessary to illustrate the proposed well design;
   c) identification and description of the target formations, emphasizing structural and depositional interpretations, and rationale for selecting the well location and target formations;
   d) the directional plan;
   e) the formation temperature and fracture gradients;
   f) the plans for conducting leak-off tests or formation integrity tests; and
   g) well evaluation plan for each interval.

5.8 Casing design

Goal

The application describes the casing design with enough detail to demonstrate that the casing shall withstand the anticipated conditions, forces, and stresses that may be placed on the casing and tubing, and maintain the wellbore and reservoir integrity.

Filing Requirements

1. Describe the conductor casing and surface casing design features to demonstrate that the casings have sufficient structural strength to support the load imposed by the marine riser and by the diverter or the blowout preventer system, and to mitigate shallow gas hazards.

2. Describe how the casing will be designed and installed in order to withstand burst, collapse, tension, bending, buckling, or other stresses that are known to exist or that may reasonably be expected to exist, including earthquake loads.

3. Describe the production casing or casing liner tie-back program, and the design of the shoe track and casing float system.

4. Describe in detail the selection and qualification processes applied to the casing and casing accessories, including the shoe track and casing float system.

5. Describe the quality control and testing procedures for the casing and casing accessories, including the shoe track and casing float system.

6. Describe the testing program and the procedure for the cased hole and casing seal assemblies, as applicable, to ensure wellbore integrity.

7. Describe the policies respecting casing pressure testing, including the casing pressure-test values and the criteria for successful pressure tests.

5.9 Cementing program

Goal

The application describes the cementing program with enough detail to demonstrate that the cementing will:

- isolate oil, gas, and water zones;
- provide support for the casing, including the prevention of corrosion of the casing, over the cemented interval; and
- support the integrity of the wellbore and the reservoir.

Filing Requirements

1. Describe the cementing program that will create an effective well barrier, prevent the movement of formation fluids in the casing-formation annuli or casing-casing annuli, effectively support the casing strings, and retard corrosion of the casings.

2. Describe the laboratory testing method used to ensure the minimum compressive strength that is sufficient to support the casing and provide zonal isolation.

3. Describe the policies and procedures for casing positive-pressure tests to ensure that they are tested against the maximum anticipated bottom-hole pressure.

4. Describe the policies, procedures, and evaluation standards for well negative-pressure tests.

5. Describe the criteria for a successful cement job, including specific references to the laboratory tests and cement bond logs or any other methods used.

5.10 Drilling fluids system and program

Goal

The application describes the drilling fluids system and program with enough detail to demonstrate that:

- it meets the objective of preventing the loss of well control;
- the system and associated monitoring equipment is designed, installed, operated, and maintained to provide an effective barrier against formation pressure; and
- the system and associated monitoring equipment is designed, installed, operated, and maintained to allow proper well evaluation while drilling safely without polluting the environment.

Filing Requirements

1. Demonstrate that the program addresses industry best practices with regard to drilling fluids safety, testing, monitoring, quality control, handling, and storage of the drilling fluids equipment and products.

2. Describe the drilling fluids testing and monitoring technologies used to accurately measure flow rate, volumes, density, and other properties.

3. Describe the drilling fluids system and required quantities based on known or anticipated drilling conditions, rig storage capacity, weather conditions, and estimated time for delivery to ensure redundancy in case of circulation loss or well control events.

4. Describe the capacity for mixing and building additional mud in case of unanticipated loss of fluids or need for greater quantities.

5. Identify the minimum inventory of drilling fluids and material to maintain well control according to industry best practices.

6. Describe the necessary solids control and monitoring system to enable the efficient removal of drill solids and to minimize drilling waste.

7. Describe the indicators and alarms associated with the drilling fluids system, which should be capable of accurately measuring, displaying, and recording all parameters that may indicate a hazard to personnel, affect the integrity of the well and loss of well control, or indicate a possible loss of drilling fluids to the sea or in the formation.

5.11 Well barriers

Goal

The application describes the well integrity and well barriers with enough detail to demonstrate that:

- at least two independent and tested physical well barriers are in place during all well operations;
- reliable well control equipment is installed to control kicks, prevent blowouts, and safely carry out all well activities and operations, including drilling, completion, and workover operations; and
- if well control is lost, or if safety, environmental protection, or resource conservation are threatened, the operator will take any action necessary to rectify the situation without delay, despite any condition to the contrary in the Well Approval.

Filing Requirements

1. Describe the policies, procedures, and evaluation standards to establish and test well barriers.
2. Describe the well barriers for each phase of each well operation such as those described in the NORSOK Standard D-010.
3. Demonstrate that tested well barriers would be in place for each phase of the drilling operation to prevent loss of well control.
4. Describe the testing method and procedure for well barriers and demonstrate that each of the physical well barriers qualify as an independent and tested barrier and is monitored and maintained.
5. Describe the well barrier policies, procedures, and work instructions that ensure that personnel are aware of the well barrier envelopes that are being relied on at any given point in time to prevent uncontrolled flow.

6. Describe the monitoring program in place to ensure that well integrity is maintained throughout the life of the well.

5.12 Blowout preventers and well control system

Goal

The application describes the well control system with enough detail to demonstrate that:

- the well control system will be able to arrest the worst-case loss of well control;
- during all well operations, reliable well control equipment is installed to control kicks, prevent blowouts, and safely carry out all well activities and operations, including drilling, completion, and workover operations; and
- all well control equipment, including blowout preventers (BOPs), is fit for purpose.

Filing Requirements

1. Identify the minimum BOP requirement, including consideration of redundancies for the proposed activities, and demonstrate how the proposed BOP is appropriate, adequate, and effective for the proposed well in the unique Arctic environment.
2. Describe the well control system to be used and how the equipment meets the best industry standards and practices, and how it will maintain well integrity under the unique Arctic drilling conditions.
3. Describe the processes to be used for safety critical equipment selection, testing, and maintenance, which will ensure well control in foreseeable conditions and circumstances in the Arctic, including consideration of redundancy.
4. Provide evidence that safety critical equipment, including shear rams installed in the BOP stack, are capable of shearing and sealing any pipe or wireline in the hole under maximum anticipated surface pressure.
5. Provide evidence that the BOP stack:

    a) is designed for the specific rig and appropriate for the specific well design;
    b) has not been compromised or damaged;
    c) will operate in the conditions in which it will be used; and
    d) has been maintained according to the original manufacturer's specifications.
6. Describe the process to ensure that no unauthorized modifications are made to any of the safety critical equipment.
7. Discuss the applicability, effectiveness, and reliability of well control equipment in an Arctic offshore environment and demonstrate how Arctic offshore drilling conditions are simulated while testing well control equipment, including the BOP.

8. Provide a schedule indicating timing and location of BOP system tests, including shear and seal tests.
9. Describe the best available and safest drilling technology to monitor and evaluate well conditions, and the proven technology to minimize the potential for the well to flow or kick.
10. Describe how the drilling BOP and BOP control system have been adapted to lessons learned from the Macondo well blowout event.
11. Describe the string configurations that will be in the hole during the well operations and whether the BOP will be able to shear and seal the well the first time and every time the BOP shear ram system is activated. Describe the approach that would be used in situations where this is not be possible.
12. Describe the BOP fail-safe system and the reliability of the system.
13. Demonstrate that the well control system is adequately supported by various systems and logistics, including:

    a) lower marine riser package;
    b) choke and kill system and equipment;
    c) diverter system and equipment;
    d) mud circulation system and equipment;
    e) motion compensation system;
    f) mud products, bulk storage, circulating, and transfer system;
    g) hoisting, lifting, and rotating and pipe handling system; and
    h) power generation and control systems.

14. Describe the training, competency evaluation and/or qualification requirements of personnel for the BOP and well control operations. Describe the essential personnel and positions to be in place during all phases of drilling and completion operations that will have successfully completed the required training, competency evaluation and/or qualification requirements.
15. Demonstrate that the essential personnel to be involved in BOP and well control operations will meet or exceed the International Association of Drilling contractor certification requirements.
16. Describe the well control exercise program including the types of exercises, scenarios, frequency and personnel to be involved in the exercises.

5.13 Well control system redundancy and reliability

Goal

The application describes the operations plan with enough detail to demonstrate that well control operations and the BOP system, in particular, have built-in redundancies with respect to equipment, control, and power system.

Filing Requirements

1. Identify the critical well control equipment and systems that should have redundancy.
2. Describe how well control redundancy in relation to well control will be achieved.
3. Demonstrate that the BOP activation systems have full redundancy for the power sources and the control system.
4. Describe the BOP activation systems, including manual, fail-safe, remotely operated underwater vehicles, and acoustic activation methods in the unique Arctic environment.

5.14 Pressure prediction and monitoring during drilling

Goal

The application describes the pressure-prediction and pressure-monitoring process during drilling with enough detail to demonstrate effective pore-pressure prediction and monitoring, in order to determine appropriate drilling fluids density and prevent unwanted formation fluid influx.

Filing Requirements

1. Describe methods that are available to reliably predict and monitor formation pressure during drilling.
2. Describe the reliable technology that will be used to predict formation pressure ahead of the drill bit and downhole pressure while drilling.

5.15 Well completion program

Goal

The application describes the well completion program with enough detail to demonstrate that:

- the testing of any completion interval is conducted safely and does not cause waste or pollution; and
- all barriers are tested to the maximum pressure to which they are likely to be subjected.

Filing Requirements

1. Describe the equipment and procedures that will ensure safety of operations and protect the environment during well completion operations in Arctic drilling conditions.
2. Demonstrate that the well control system and operations will be designed, utilized, maintained, and tested as necessary to control the well in foreseeable conditions and circumstances, including subfreezing conditions.
3. Demonstrate how the well will be continuously monitored during well completion operations, including confirmation that the well will not be left unattended at any time unless it is shut in and secured.
4. Demonstrate that the working pressure rating of the well control system and components will exceed the expected surface pressure to which they may be subjected.
5. Demonstrate that the well control system planning considered various wireline operations and is equipped with complete redundancy.
6. Describe all wellhead equipment, including valves, that is designed to operate safely and efficiently under the maximum load conditions.

5.16 Formation flow testing program

Goal

The application describes the formation flow testing program with enough detail to demonstrate that:

- formation flow tests have evaluated the productive capacity or injectivity potential of a well; and
- testing will be conducted when Arctic offshore conditions permit without endangering personnel, equipment, and the environment.

Filing Requirements

1. Provide evidence that the formation flow test will be conducted and terminated in a safe, controlled, and environmentally responsible manner in accordance with best oilfield practices.
2. Provide evidence that the formation flow test is designed to acquire data necessary to assess productive capacity or injectivity potential of the well in accordance with good oilfield practices.

5.17 Well suspension and abandonment program

Goal

The application describes the well suspension and abandonment program with enough detail to demonstrate that the suspended or abandoned well can be readily located and:

- isolates all hydrocarbon-bearing zones and discrete pressure zones;
- prevents any formation fluid from flowing through or escaping from the wellbore; and
- will be monitored and inspected to maintain its continued integrity and to prevent pollution.

Filing Requirements

1. Describe plans, policies and procedures, materials, and equipment needed to facilitate the orderly suspension of operations and securing of the well.

2. Describe Contingency Plans to suspend the well in response to emergency scenarios, including approaching storms, hazardous ice features, or any other hazardous circumstances.

3. Describe the plans to ensure well integrity during emergency events, including:

   a) an emergency disconnect;
   b) a structural failure of the marine riser system; and
   c) any other situation or event involving the marine riser system, that fails to actuate the BOP stack via the BOP hydraulic or multiplex control system.

4. Describe the procedures associated with inspection of the wellhead following an emergency disconnect, including how it will be determined that the barriers are effective and that there are no fluids leaking from the wellbore.

5. Estimate the duration that the well is planned to be suspended, and describe future plans for the well.

6. Describe the plan for subsea wells that are to be permanently abandoned. Provide information on any plans for the recovery of the wellhead, guidebase, and any other subsea equipment, together with any plans to conduct an ROV seabed clearance survey.

7. Describe the plans for ongoing monitoring and inspection of suspended or abandoned wells.