Responses to Information Requirements and Clarifications – Round 1 (Part 1)

For

Flemish Pass Exploration Drilling Program
(CEAR 80129)

pursuant to the *Canadian Environmental Assessment Act, 2012*

Statoil Canada Ltd.

May 2018

Responses to Information Requirements and Clarifications – Round 1 (Part 1)

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INFORMATION REQUIREMENTS

STATOIL

INFORMATION REQUIREMENT – IR-71

(N/A)

Project Effects Link to CEAA 2012: All –project description relevant to all Section 5 effects.

Reference to EIS Guidelines: Part 2, Section 3 Project Description.

Reference to EIS: Section 2.1 Project Scope (Flemish Pass Exploration Drilling Project).

Context and Rationale

The EIS states that up to 30 exploration and delineation/appraisal wells could be drilled. It is not clear from the description how many exploration (versus appraisal/ delineation) wells specifically are anticipated and in which ELs they may be located.

Specific Question or Information Requirement

Clarify the following:

- how many exploration wells could be drilled within Statoil-operated ELs 1139, 1140, 1141, and 1142 as part of the first drilling program on those ELs;
- how many delineation/appraisal wells could be drilled within ELs 1139, 1140, 1141, and 1142 in relation to proposed exploration wells drilling as part of the first drilling program on those same licences; and
- how many (if any) delineation and appraisal wells could be drilled outside ELs 1139, 1140, 1141, and 1142 in relation to exploration wells on ELs 1139, 1140, 1141, and 1142 drilled as part of the first drilling program.

Describe whether there are differences between the activities associated with exploration and delineation drilling and the associated environmental effects.

Response

The number of exploration wells that could be drilled within Statoil Canada Ltd. (Statoil) Exploration Licenses (ELs) 1139, 1140, 1141 and 1142 is not known as the well locations are currently being determined by internal Exploration personnel, however, based on experience there will likely be one to two exploration wells in each EL for the first drilling program. Specific details, including exploration wells count, will be outlined in the *Operations Authorization* (OA) Application that will be submitted to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) for review and approval. Specific locations of wells will be submitted to the C-NLOPB via the Application to Drill a Well.

The number of delineation/appraisal wells that could be drilled within Statoil ELs 1139, 1140, 1141 and 1142 is not known as delineation/appraisal wells would only be required if the exploration drilling well was successful in identifying potential hydrocarbons. The number of appraisal wells will depend on geological conditions, particularly faulting/segmentation and fluid contacts (oil/water) for the discovery. If delineation/appraisal wells are required, the specific details, including number of

delineation/appraisal wells, will be outlined in the OA Application that will be submitted to the C-NLOPB for review and approval. Appraisal well objectives and location would be specified in the Application to Drill a Well, which is submitted to the C-NLOPB.

The number of delineation/appraisal wells that could be drilled outside Statoil ELs 1139, 1140, 1141 and 1142 in relation to exploration wells on those ELs is not currently known as delineation/appraisal wells would only be required if the exploration drilling well was successful in identifying potential hydrocarbons. Specific locations of wells will be communicated to the C-NLOPB via the Application to Drill a Well.

The methods and equipment required to drill an exploration well and a delineation/appraisal well are the same, therefore there are no additional environmental effects to consider in the EIS. The key difference is the time their data is retained confidential by the C-NLOPB prior to public release; 2 years for an exploration well and 90 days for a delineation assuming the related exploration well is released (C-NLOPB 2011).

References

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). 2011. Data Acquisition and Reporting Guidelines. Available online: http://www.cnlopb.ca/pdfs/guidelines/data_aq_guide.pdf?lbisphpreq=1. Accessed April 2018.

INFORMATION REQUIREMENT – IR-72

(KMKNO-19)

Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat.

Reference to EIS Guidelines: Part 2, Section 6.3.1 Fish and Fish Habitat and 6.6.3 Cumulative Effects Assessment.

Reference to EIS: Section 2.9.5.2 Sound Emissions, 10.3.1 Approach and Methods, 10.3.3 Presence and Operation of Drilling Installation, 10.3.7 Project Related Surveys, Appendix C.

Context and Rationale

The EIS Guidelines require a description, assessment, and determination of the significance of potential effects from underwater noise on fish and marine mammals (Part 2, Section 6.3.1 and Section 6.6.3).

The EIS states that the acoustic modeling conducted for the Scotian Basin Exploration Drilling Project (in Nova Scotia) was used to support to the effects assessment for the Project, given similarities in project components and activities, locations, and relevancy of recent data, and directs the reader to Appendix C for more information on comparability of the projects (Section 10.3.1).

It is noted that the Scotian Basin model was conducted in relation to operation of a single drilling unit, while two drilling units may be operating simultaneously for the Project. The effects of noise from two drilling units operating simultaneously is not addressed in Appendix C, nor carried through the effects assessment.

Specific Question or Information Requirement

Assess the effects of noise from operating multiple drilling units simultaneously, as proposed for the Project.

Update the effects assessment, as applicable.

Response

As noted by the reviewer, the description of the Project provided in the Environmental Impact Statement (EIS), and thus the scope of the Project for environmental assessment (EA) purposes, includes the potential for multiple drilling installations to be actively engaged in drilling activities in the Project Area at any one time over the life of the Project. It should be noted, however, that there is low potential for two drilling installations to be active at the same time as part of the Project, as discussed in the response to Information Requirement (IR) IR-01. This is due primarily to commercial and logistical factors, including the availability of drilling equipment, as well as the typical sequencing of exploration drilling activity in any particular Exploration Licence (EL), where an initial well is drilled and its results are analysed and evaluated as part of an operator's decision-making about whether, when, and where to drill any additional exploration or delineation wells in that area. There is therefore very little possibility that two drilling installations would operate at the

same time in proximity to one another as part of the Project. The environmental effects assessment has, however, considered this potential occurrence, in order to be conservative and fully inclusive of all such possible scenarios, including the potential for "overlapping" or combined environmental effects to a valued component (VC) resulting from multiple, concurrent drilling campaigns occurring as part of the Project. In addition, the cumulative effects assessment presented in Chapter 14 of the EIS is largely focussed on assessing the potential for the environmental zones of influence of individual Project-related activities and those of other projects and activities in the Regional Study Area (RSA) to overlap in space and time to result in combined effects on any VC. However, these concepts are also applicable to potential "within Project" effects resulting from multiple, concurrent Project activities as well. Furthermore, each of the mitigation measures outlined in the EIS would be applicable to and implemented for each individual drilling campaign, whether concurrent or consecutive in nature.

In assessing the potential effects of underwater noise on marine species, the EIS relied on literature source levels, the results of acoustic modelling for other projects, and field measurements during comparable drilling operations (EIS Appendices C and D). To summarize the soundscapes around the Project Area, JASCO analyzed sound pressure levels from a data collection program conducted in 2015-2016. Hydrophone Station 18 was 35 km from the Hibernia platform in the existing Jeanne d'Arc Basin development area in 80 m of water, and sound pressure levels here were recorded as 110–120 dB re 1 µPa continuously. Field measurements taken at this hydrophone station reflect the combined sound levels of three producing platforms and the support vessel traffic associated with their activities. Conclusions reached in the EIS factored in results for the Scotian Basin Exploration Drilling Project modelling, which predicted that sound levels from an operating drilling installation would attenuate to below NOAA's marine mammal behavioural disturbance thresholds (120 dB re 1 µPa RMS sound pressure levels [SPL]) at distances from the source ranging from 23 km (in summer) to approximately 150 km (winter) (BP 2016). The measured sound levels at Station 18, which reflect cumulative sounds produced by three operating developments fall well within this range. The results of the environmental effects assessment presented in the EIS are fully inclusive of, and reflect, the potential (but unlikely) use of multiple drilling installations at any one time during the Project.

References

BP. 2016. Scotian Basin Exploration Drilling Project. Environmental Impact Statement. Available online: http://ceaa.gc.ca/050/evaluations/document/116118. Accessed May 2018.

INFORMATION REQUIREMENT – IR-73

(KMKNO-47 and -48)

Project Effects Link to CEAA 2012: Multiple VCs- Accidents and Malfunctions.

Reference to EIS Guidelines: Part 2, Section 6.6.1 Effects of Potential Accidents or Malfunctions.

Reference to EIS: Section 15.0 Accidental events; 15.3 Spill Risk and Probabilities; Appendix E Trajectory Modelling (Flemish Pass Exploration Drilling Project).

Context and Rationale

The EIS guidelines require the EIS to identify plausible worst case scenarios for each accident and malfunction type, describing the quantity, mechanism, rate, form and characteristics of the contaminants likely to be released into the environment during the accident or malfunction.

The EIS blowout model scenarios consisted of two sites:

1) Eastern Project Area at 1100m depth; release duration of 113 days; release rate of 15,000 m^3/day.
2) Northern Project Area at 2700m depth; release duration of 36 days at a release rate of 4,980 m^3/day.

However, no rationale was provided in the EIS for not modelling both sites for the same release durations (i.e. 113 days).

Specific Question or Information Requirement

Provide rationale for why modelling of the 113 day release was not warranted for the Northern Project Area site or re-analyze fate and behaviour modelling to reflect the longest estimated flow duration (113 days).

Response

The Environmental Impact Statement (EIS) guidelines require that a plausible worst-case scenario be modelling for a subsea blowout. The 113-day release period at the Southern Project Area (SPA) location was selected to represent the plausible worst-case scenario for Statoil's Project Area. At the SPA the release rate is significantly higher (three times higher) than the Northern Project Area (NPA). Therefore, with a larger release rate, for a longer duration, a spill of 113 days at the SPA represents the worst-case scenario within the Statoil Project Area.

References

N/A

INFORMATION REQUIREMENT – IR-74

(C-NLOPB)

Project Effects Link to CEAA 2012: Multiple VCs- Accidents and Malfunctions.

Reference to EIS Guidelines: Part 2, 6.6.1. Effects of Potential Accidents or Malfunctions.

Reference to EIS: 15.4.1 Study Area and Scenarios (Flemish Pass Exploration Drilling Project).

Context and Rationale

The water depths at which potential blowouts are modelled are 1100 m and 2700 m. However, the water depths within the Flemish Pass Exploration Drilling Project ELs range from 1000 m to 3500 m. It is not clear why the deepest depth was not modelled as representative of the worst-case scenario.

Specific Question or Information Requirement

If drilling could occur in deeper water (>2700 m) provide a rationale as to how the 2700 m blowout modeling site represents a worst-case scenario and why associated effects analysis can be applied to depths of up 3500 m.

Response

The worst-case scenario that was modelled in Appendix E of the Environmental Impact Statement (EIS) was determined based on release rate and a representative water depth of a possible drilling location, rather than the deepest section within the Exploration Licence (EL). The worst-case scenario considers a subsea blowout with a release rate of 15,000 cubic metres per day (m^3/day) for 113 days, which represents the duration to drill a relief well. If other water depths were modelled then they would provide a footprint of the likely area to be potentially affected; however, the resulting environmental effects, as outlined in Section 15.5 of the EIS, would not change.

References

N/A

INFORMATION REQUIREMENT – IR-75

(N/A)

Project Effects Link to CEAA 2012: Multiple VCs- Accidents and Malfunctions.

Reference to EIS Guidelines: Part 2, Section 6.6.1 Effects of Potential Accidents or Malfunctions.

Reference to EIS: Section 15.5.4.3.2 Uncontrolled Well Event (Flemish Pass Exploration Drilling Project).

Context and Rationale

The EIS states that "(t)his modelled blowout scenario involved a 113-day partially unmitigated 15,000 m3/day release…" . Partially unmitigated has not been defined and it is a different scenario than has been modelled in other Sections, which are unmitigated releases.

Specific Question or Information Requirement

Clarify what "partially unmitigated" entails. Describe which mitigations were considered in the modelling. Explain whether "partially unmitigated" represents a worst-case analysis and its potential influence on effects predictions.

Response

The 15,000 cubic metres per day (m^3/day) release was modelled in the Statoil Canada Ltd. (Statoil) Environmental Impact Statement (EIS) at the Eastern Project Area (EPA) release location. The term "partially unmitigated" was not used in the spill modelling technical report. The modelled release for Statoil were all completely unmitigated. The word "partially" can be stricken from the identified section.

References

N/A

INFORMATION REQUIREMENT – IR-76

(N/A)

Project Effects Link to CEAA 2012: Multiple VCs – Accidents and Malfunctions

Reference to EIS Guidelines: Part 2, Section 6.6.1 Effects of Potential Accidents or Malfunctions.

Reference to EIS: Section 15.1.2.2. Well Capping and Containment Plan (Flemish Pass Exploration Drilling Project)

Context and Rationale

Statoil's EIS indicates that capping stacks are located at four strategic locations around the world, and that it is anticipated that if needed a capping stack would be sourced from Norway and/or Brazil. Statoil's EIS indicates that the capping of a well is estimated to take between 18 and 36 days.

Specific Question or Information Requirement

Confirm the timeline associated with the mobilization of the capping stack, in particular if mobilization would occur immediately following a blowout or at a later time.

Response

As outlined in Appendix H of the Environmental Impact Statement (EIS), in the event of a subsea blowout the Capping Stack System (CSS) would be mobilized from the Oil Spill Response Limited (OSRL) facilities in Norway and Brazil.

The OSRL Notification and Activation Procedure, as outlined in Appendix H of the EIS, would be initiated immediately following a subsea blowout. General timelines associated with mobilizing the capping stack are as follows:

- If a subsea blowout occurs OSRL would be immediately activated via the 24-hour emergency phone number.
- The CSS is typically mobilized by sea. However, it can also be mobilized by air but requires breaking down and containerizing the equipment into fourteen 6.1 metre (m) (or 20 feet) containers and thirteen shipping skids, and then rebuilding and testing prior to deployment. Shipment by sea is preferred.
- A conservative estimate for a capping operation, including mobilization, installation offshore and capping operations, is estimated to take 36 days.

References

N/A

INFORMATION REQUIREMENT – IR-77

(KMKNO-52)

Project Effects Link to CEAA 2012: Multiple VCs- Accidents and Malfunctions.

Reference to EIS Guidelines: Part 2, Section 6.6.1 Effects of Potential Accidents or Malfunctions.

Reference to EIS: Section 2.5.2.3 Offshore Well Drilling; 15.0 Accidental Events (Flemish Pass Exploration Drilling Project).

Context and Rationale

The water depth in two of Statoil's ELs (1139 and 1140) ranges from 3 000 m to 3 500 m. It is not clear whether capping stacks are currently rated to a maximum water depth.

Specific Question or Information Requirement

Provide information on capping stack limitations in deep water environments and how those limitations would affect the length of time it may take to stop the flow from a well in case of a blowout.

Based on these additional considerations, re-visit the assumptions for worst-case scenarios considered in Section 15 of the EIS, and update the effects assessment, as required.

Response

For deepwater applications, the Oil Spill Response Limited (OSRL) capping stacks are currently rated to operate in water depths up to 3,000 metres (m). If drilling occurs in a location with waters deeper than 3,000 m, further analysis and modifications would be performed to confirm the capping stack technology selected is fit for purpose prior to initiating drilling operations.

As presented in Section 15.1.2.2 of the Environmental Impact Statement (EIS), the approximate duration to install a capping stack is estimated to take between 18 and 36 days, which includes mobilization and deployment of a capping stack. For the purposes of modelling, the longest duration (i.e. 36 days) was assumed. However, the longer duration of 113-day, associated with drilling a relief well, was also modelled to provide information on potential effects should the 36-day duration not be met. The results of the trajectory model are presented in Figures 15-1 to 15-9 and in Appendix E of the EIS. In reference to the response to Information Requirement (IR) IR-73, the 113-day blowout duration scenario is the plausible worst-case scenario, which was modelled, and effects assessment are addressed in Chapter 15 of the EIS. No further updates to the EIS are required.

References

N/A

CLARIFICATIONS

STATOIL

CLARIFICATION – CL-22

(ECCC-15)

Project Effects Link to CEAA 2012: Multiple Valued Components (VCs) – Accident and Malfunctions

Reference to EIS Guidelines: Part 2, Section 6.6.1 Effects of Potential Accidents or Malfunctions.

Reference to EIS: Section 15.0 Accidental Events (Flemish Pass Exploration Drilling Project).

Context and Rationale

It is important to understand the logistical and operational constraints involved with drilling a relief well so that well control timeframes can be fully appreciated and the magnitude of environmental effects resulting from such delays can be properly determined and characterized to the greatest extent possible so as to help inform a determination of significance of any residual effects.

Required Clarification

Provide information on any mutual aid agreements in place with other operators in the region and describe any limitations to such agreement(s).

Provide information specific to potential drill rig assistance to other mutual aid agreement operators in the region that may require the emergency drilling of a relief well.

Response

As mentioned in Information Requirement (IR) IR-44, Statoil Canada Ltd. (Statoil) is a participating party to the Grand Banks Operators Mutual Emergency Assistance Agreement (herein referred to as the Agreement). The Agreement came into effect on 01-Dec-2017 and the purpose is for various operators in the Grand Banks to provide assistance to each other in the event of an emergency. The current parties in the Agreement include:

- Hibernia Management and Development Company Ltd.;
- Suncor Energy;
- Husky Energy;
- ExxonMobil Canada Ltd.; and
- Statoil.

Assistance provided by other operators will depend on the situation, however, it may include the following:

- Providing current, or forecasted, ice, weather and/or oceanographic information;
- Providing MedEvac support from an offshore location; and
- Providing personnel, vessels, equipment, facilities, and other company or contracted resources to assist during the emergency response operation.

To utilize other operators in the event of an emergency, a notice and informal request is required to be made, which is typically by telephone. Formal written confirmation is also completed by the operator Incident Commander. Under the Agreement each operator agrees to use reasonable effort to make the available designated resources available, however, resources will only be provided to the extent that the responding operator's operation is not jeopardized or its personnel or facilities are put at risk.

The type of rig required to drill a relief well is identified in advance of any drilling operations occurring. Statoil also can utilize other rigs that are contracted globally. Statoil also meets with the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) on a regular basis to discuss various emergency response aspects including rig availability for drilling a relief well.

References

N/A

CLARIFICATION – CL-23

(N/A)

Project Effects Link to CEAA 2012: All –project description relevant to all Section 5 effects.

Reference to EIS Guidelines: Section 6.6.1 Effects of Potential Accidents or Malfunctions

Reference to EIS: Section 15.5.2.3.2 Uncontrolled Well Event (Flemish Pass Exploration Drilling Project)

Context and Rationale

The EIS states that "(t)he likelihood, however, of a subsurface blowout occurring with the relevant mitigations in place has been calculated to be extremely low, with a single event once in 37,000 years (Section 15.3.3; Table 15.12). It is not clear how the likelihood stated has been derived from the probability table referenced.

Required Clarification

Provide additional information to show how the likelihood stated was derived from the probabilities listed in Table 15.12.

Response

Refer to response in Clarification (CL) CL-17.

References

N/A