Information for Project Planning Purposes & Future Environmental Assessments

The following comments were provided by reviewers and are offered for consideration in the design and planning of drilling activities and future environmental assessments.

General Comments

Monitoring

CWS has developed a pelagic seabird monitoring protocol that is recommended for all offshore oil and gas projects. These protocols are a work in progress and the CWS would appreciate feedback from the observers using them in the field. A guide sheet to the pelagic seabirds of Atlantic Canada is also available through CWS in Mount Pearl.

Description of the Physical Environment and Effects on the Project

Use of the MSC50 wind and wave hindcast dataset is appropriate for climate analysis, but it would be of considerable value to augment the study with analysis of historical wave measurements and adjusted wind measurements from platforms in the area. The analysis of the MSC50 winds and waves was well done and included adjustment of peak winds to different averaging intervals. Winds from the ICOADS dataset of platform and ship reports were analyzed as well. However, there was no attempt to present the platform wind measurements separately, so the dataset is rather inhomogeneous and the error estimates of all calculated values would be higher. Monthly mean wind speed maps from the Quikscat dataset were presented as well, which is useful. However, the maps do not give any information about extreme conditions, which are most important for assessment of risk and operational planning.

a. It is recommended that the platform wind measurements are analyzed separately, adjusting the winds to a common reference height. The platform wind data are relatively continuous in ICOADS since about 1990. This would improve the value of the wind climatology, particularly for extremes. The peak sustained wind speeds from the platforms are frequently stronger than hindcast winds, even after adjustment to a common reference height and averaging interval. There is some uncertainty inherent in the wind adjustment method, particularly in unstable or stable boundary layer conditions, however not doing the adjustment results in a large systematic bias between platform winds and winds at 10 metres. Results of the height adjustment can be validated against QuikScat winds (e.g. Cardone et al 2004).

b. It is recommended that the description of the wave climate be augmented by analysis of wave measurements on the Northern Grand Banks. There is now a relatively long and relatively continuous record of wave height and period

from wave buoys and radars used by platforms in the Northern Grand Banks since about 1980. These wave data are available from Fisheries and Oceans Canada Integrated Science Data Management (ISDM) division (formally MEDS).

c. This analysis of instrumental wave data would be useful for the joint frequency distributions of height and period, which were presented based on the MSC50 hindcast data. The hindcast of peak wave period tends to be biased slightly low. Wave period is an important parameter for floating platforms - most likely to be used in this project - since the platform response to the waves is sensitive to the wave period.

The Oceans study used as background for the EA presents interesting results on climate variability. This is important to consider given the project would span nearly a decade. It should be noted that Wang and Swail (2002) found increases in summer and fall to early winter (Dec) AES40 wave heights in the area of interest. Since the MSC50 replaces the AES40 with a number of improvements, the proponent may wish to consider monthly or seasonal trend analyses based on the MSC50 dataset.

It is recommended that the EA include consideration of freezing spray and precipitation, which causes ice to build up on the superstructure. There is a brief reference to ice accretion in the effects of the environment on the project but no information about frequencies or severity. It has been assessed to some degree in earlier EAs for the area using modelling studies. It may be possible to access industry archives of ice accretion monitoring data, to better understand the frequency and severity of ice accretion events and their effect on particular types of platforms.

It is recommended that the EA also consider the frequency of low cloud ceilings (in addition to the visibility statistics presented) as these both have a major impact on helicopter operations.

The description of Effects of the Environment on the Project would be improved by a more thorough consideration of the effects of the various hazardous elements, specific for each type of platform under consideration. For example, the platform most likely to be used is an anchored semi-submersible, which requires longer lead times than a dynamically-positioned platform to move off station in event of particular extreme event. This information would be valuable for assessment of the contribution of the marine climate to the probability of accidental events. Also, poor marine conditions complicate the response to an accidental event.

References

Cardone AT, Harris EL, Orelup EA, Parsons MJ, and Graber HC. 2004. Impact of QuikSCAT Surface Marine Winds on Wave Hindcasting. *8th International Workshop on Wind and Wave Hindcasting and Forecasting*, Hawaii, Nov. 14-18, 2004. [http://www.waveworkshop.org/8thWaves/Papers/F1.pdf]

Wang, X.L. and Swail, V.R., 2002. Trends of Atlantic Wave Extremes as Simulated in a 40-Yr Wave Hindcast Using Kinematically Reanalyzed Wind Fields, Journal of Climate, 15, pp. 1020-1035.

Underutilized Species
DFO recommends that the EA document include a detailed description of any underutilized species commonly found in the study area as determined from analyses of past DFO R/V survey data, with emphasis given to those being considered for future potential fisheries.

Overview of Offshore Petroleum Exploration Activity
The report should include a better overview of offshore petroleum exploration activity that has occurred in the past, and is presently occurring, on the Grand Banks. This would then offer an objective and regional context for offshore oil and gas activities and may help frame the discussion of the potential for cumulative effects. A map depicting other projects in the NL offshore, and specifically the Jeanne d'Arc Basin, would also be helpful in assessing cumulative impacts.

Specific Comments

Section 1.0, Figure 1.1, page 2 - The figure and title illustrate Exploration Licenses (ELs) 1092 and 1093, but these are not included in the list of ELs to be targeted within this drilling program (page 1). Please revisit and edit the figure to accurately reflect the information provided in the text.

Section 3.6.1, General & Section 7.2.1.10, pages 14 and 185 - If wellhead removal explosives are to be used during abandonment, then mitigation protocols for marine mammals and sea turtles should be conducted prior to detonation of the wellhead removal charge.

Section 3.7, Consultations, page 23 – Reference should be made to Section 6.2, pg. 160 and Appendix 2 where the consultations are discussed in more detail. Environment Canada is listed twice in this section. A "period" should be placed after "EA".

Section 4.2, Climatology, page 27, para. 3 - The following statement "*The Study Area… has a highly variable wind climate due to the large extent of the area*" is false and not sufficient.

Section 4.2, Climatology, page 27, para. 4 - The assertion that the "*The stronger, and slightly more westerly, wind field*..." is due to the proximity of the Icelandic Low and Azores High is highly doubtful; a more reasonable explanation would cite sea surface temperature and the proximity to the Labrador Current and Gulf Stream.

Section 4.4, Ice and Icebergs, page 81, para. 1 - Please provide the source for the ice analyses "update."

Section 5.2.1.2, Benthic, page 89, 2nd para. – The statement "*It is noteworthy that the comprehensive summary….Research Fund (ESRF)*" is not appropriate in this type of document.

Section 5.3, Commercial Fisheries, page 103 – The relevant UA's should be identified in the text.

Section 5.3.4.4, Principal fisheries, page 123, para. 2 - Scientific names should be in italics.

Section 5.4.1 Seasonal Abundance of Seabirds in the Study Area, page 130 - In the first paragraph on page 133, it is stated that there are increased bird numbers along the continental shelf edge from July to September, however Figure 5.49 does not support this conclusion. There is an increasing pattern of effort from July to September, but comparisons between blocks for which there is both summer and winter data, for example, shows similar patterns of abundance along the shelf edge.

In the first paragraph on page 136, the first letter of each word should be capitalized when spelling Programme Intégré de Recherches sur les Oiseaux Pélagiques out in full.

Section 5.5, Marine Mammals & Section 5.7.1.1, Blue Whale, pages 138 and 150. Several of the marine mammal monitoring programs listed as *in prep.* should be completed and available as the observations were taken over 18 months ago.

Section 5.7.1.6 Ivory Gull, page 154 - It should be noted in this section that the Ivory Gull is listed as a species of special concern on SARA's schedule 1. However, as noted, COSEWIC has recently assessed the Ivory Gull as endangered. In the case that the Ivory Gull is uplisted to endangered on SARA's schedule 1 during the construction or operation of the proposed new drill center, the regulations associated with the Species at Risk Act (SARA) must be applied.

Section 5.8, Sensitive/Special Areas, page 159 - Contrary to the statement provided, Figure 1.1 does not indicate '*the spatial relationships between proximate sensitive/special areas …and the Project and Study areas.*'

Section 7.1, Potential Effects of the Environment on the Project, page 173, 1st para., last line – There is no Section 4.5.

Section 7.2.2.1 Fish Habitat, page 186 - Here and elsewhere the assessment makes appropriate use of the EEM data available from the White Rose EEMP. However, the discussion is focused on the distribution of chemical tracers found in sediments as indicators of the spatial extent of effects, whereas the EEMP also examines the effects of drilling activity on benthic fauna. Given that the fish habitat VEC includes benthos it would be useful for the report to also summarize the results of drilling activity on benthic community structure. Similarly, it might be suitable to summarize the results of taint testing under the Fisheries VEC and fish health indicators under the Fish VEC.

In general, the application of relevant EEM data to the EA analysis is applauded and proponents are encouraged to make greater use of these programs in support of impact predictions.

Section 7.2.2.1, Fish Habitat, page 187, last line – What is meant by "(refs?)"?

Section 7.2.2.1, Fish Habitat, page 190, Table 7.6 – Some of the Project Activities have the number "6" in the Duration column. The number "6" does not appear in the legend.

Section 7.2.2.4 Residual Effects on Seabirds, page 205 - In the second paragraph of this section, it may be appropriate to mention that the recommended mitigation measures for stranded Storm-petrels are contained in the document by Williams and Chardine entitled, *The Leach's Storm Petrel: General Information and Handling Instructions*. Proponents should be aware that a permit is required from the CWS to implement this protocol.

Section 7.2.2.5, Marine Mammals and SeaTurtles, page 212 – Project Residual Effects - Possible mitigations should also include marine mammal monitoring activities if wellhead removal explosives are employed.

Section 7.2.2.5, Marine Mammals and Sea Turtles, Table 7.17, page 213 – The table should reflect marine mammal observations as a mitigation if wellhead removal explosives are to be employed for abandonment/ suspension.

Section 7.2.2.6, Species at Risk, page 226 - Marine Mammals and Leatherback Sea Turtles - Possible mitigations should also include monitoring activities if wellhead removal explosives are to be employed during abandonment/suspension.

Section 8.1.6.2, Newfoundland and Labrador Offshore Area, Table 8.7, page 237 - The Newfoundland and Labrador Offshore Area (NLOA) experience over the 1997-2006 timeframe is less successful regarding small and medium-sized spills than the US GOM experience decades earlier. One would expect that experience and technological advances in environmental and safety equipment would have led to a decrease in spill frequency percentage, especially in closely regulated jurisdictions. Based on the values provided, it can be expected that 9 small spills and 1 medium spill will occur as a result of drilling 27 wells; statistics this Region should be striving to reduce.

Section 10.1, Environmental Assessment Validation Process, page 278 - As Mobile Offshore Drilling Unit (MODU) selection and acquisition is required well in advance of actual drilling, the information regarding location and timing of drilling should be available much earlier than the first quarter of the drilling year and should therefore be submitted earlier for planning/assessment purposes. Previous coordination between offshore oil and gas operators and DFO has proved to successfully mitigate the potential for overlap between offshore oil and gas activities and DFO/Industry research surveys. It is requested that the Department be notified of well site locations as soon as they are known.