

**Hebron Development Project - Environment Canada Reply  
to ExxonMobil Canada Response to Review Comments  
April 19, 2011**

**EMCP Comment 11: EC 02**

Environment Canada is satisfied with this response.

**EMCP Comment 15: EC 03**

Environment Canada is satisfied with this response.

**EMCP Comment 24: EC 10**

Environment Canada is satisfied with this response, providing the information to EC once the detailed design process has advanced is acceptable.

**EMCP Comment 28: EC 14**

EC 14 a and b, on the Offshore Wind Climate

Clarification on the source for the platform winds being Ocean Ltd archives, rather than ICOADS as assumed, is acknowledged.

Request: specify, in the revised CSR, the source for the platform winds (Oceans Ltd archives, based on MANMAR data), since this was not indicated. This should also specify that MANMAR refers to reports generated in ship code format (World Meteorological Organization (WMO)-FM13) for transmission on the Global Telecommunications System (GTS).

EC 14 c and d, on the Offshore Wave Extremal Analysis

1) The cited reference (Berek and Wang 2009) was provided as requested, although it only states that it was a memo, and does not give number of pages. This was cited in the Nov. 2010 response to request for information about how the MSC50 hindcast significant wave heights (H<sub>s</sub>) were calibrated to Hibernia measurements, prior to development of the design wave criteria (as described in CSR Section 3.2.2.1 Waves, referencing ExxonMobil Upstream Research Company (2009)). The Nov. 2010 response gave the calibration equation derived by Berek and Wang 2009 ( $H_{s,calibrated} = 1.0507 * H_{s,hindcast} - 0.4793$ ).

Only the first 2 years of the detailed Hibernia wave radar measurements are available on the Integrated Science Data Management (ISDM) online archive at Fisheries and Oceans Canada. The Nov 2010 response indicated that the Hibernia wave radar data are considered proprietary and are not being provided to ISDM, even though ISDM is the repository for the detailed wave measurements provided by wave buoys at the other sites on the Northern Grand Banks. Thus most of the detailed wave radar data, on which the calibration equation was based, are not available and are of unknown quality.

**Request:**

a) Include the calibration equation and its reference in the revised CSR in the section on wave extremes, along with the information that the calibration was based on MIROS Wave Radar measurements from Hibernia, rather than nearby wave buoy measurements.

b) Include in the revised CSR or a background supporting document, validation information (or a published reference), if available, for the Hibernia MIROS wave radar measurements compared to nearby wave buoy measurements. If not available, it may be advisable to consider such comparisons for any further more detailed design studies.

c) Complete the CSR Reference for ExxonMobil URC (2009) to indicate that it is a Memo dated 2 September 2009, 91 p. (as indicated by the Oceans Ltd and AMEC (2010), AMEC (2010) report).

2) The Nov 2010 response states that the calibration leads to a reduced operation criteria and increased extreme criteria. However the CSR extremal analysis in Section 3.2.2.6 and the Oceans Ltd and AMEC (2010) report-Oceans Ltd (2010), which appears to be based on MSC50 data without the Berek and Wang calibration, gives 100-yr extreme significant wave heights that are slightly higher: 15.1m or 15.8 m, depending on the method, compared to 14.8 m from ExxonMobil URC 2009.

**Request:** In the revised CSR, please indicate the level of uncertainty or confidence interval for the extreme wave estimates, given the different results presented in the CSR and its sources.

3) The CSR gives a Table 3-33 Wave Height Directional Weighting Factors, which the text says may be used to scale the extreme wave estimates for consideration of waves from a particular direction. The text says the directional factors account for the reduction in long period waves as they move over the relatively shallow sea bottom. However, it would not be appropriate to scale results for depth based on the MSC50 data since these are based on a wave model that includes the bathymetry and shallow water wave physics.

**Request:** Please clarify in the revised CSR how these factors are intended to be used, or justify why they would be used with MSC50 derived wave statistics.

**EMCP Comment 61: EC 30**

The proponent was not specifically asked for an emissions prediction, but just for more information related to emissions from upset scenarios of a more catastrophic nature. This could take the form of a discussion highlighting the range of scenarios based on historic upsets - i.e. how long did these last until they were brought under control? What do we know about the ranges in both magnitude and constituents of the emissions in situations such as this? While recognizing that the probability of such an upset is very low, it is not zero.

**EMCP Comment 82: EC 37**

Environment Canada is satisfied with this response.

**EMCP Comment 119: EC 47**

Environment Canada is satisfied with this response.

**EMCP Comment 129: EC 46**

Environment Canada is not satisfied with the response. The draft CSR indicates that "attraction to illumination on structures and vessels during all phases of the Project are predicted to be "...*low in magnitude, geographic extent, duration, frequency when mitigation measures are practiced*". To EC's knowledge, these effects have not been adequately demonstrated due to there being very little data worldwide on seabird attraction to platforms, and no studies in Atlantic Canada. It is our understanding that research is planned for the near future to assess attraction of sea birds to platforms in Nova Scotia, but has yet to be initiated.

Environment Canada is satisfied that the detailed study design can be completed after the CEA Act section 38 decision is made, however, the need for, and the requirements of, any follow-up program in respect of the project is a clearly identified factor to be considered in the comprehensive study report. Environment Canada will not be able to exercise its section 38 decision making authority until this matter is resolved.

