General Comment

The **Scoping Document** (Section 5.4 Cumulative Effects) requests that a description of other projects or activities that have been or will be carried out (i.e., other seismic activities, fishing activities, including Aboriginal fisheries, other oil and gas activities, marine transportation) be included. This does not appear to be the case and the EA should be revised accordingly.

Specific Comments

Section 4.0, Page 19, Physical Environment: The scoping document for this EA specified the requirements for the description of the physical environment: "*For the Study Area, provide a summary description of the meteorological and oceanographic characteristics, including extreme conditions, and any change to the Project that may be caused by the environment*".

The information on winds and waves presented in the EA is fairly general and brief. It is based on the description of winds and waves in the Strategic Environmental Assessment for western Newfoundland offshore areas (C-NLOPB 2005). Data for that SEA were obtained from the deep water AES40 hindcast of modeled winds and waves (Swail et al 2000). However, there should be some additional analysis of both winds and waves specific to the project area. It would also be advisable to consider potential effects of storm surge and sea-ice.

Section 4.2.2, Page 27, Waves: Although the rig would be on land, it would be located at low elevations close to the shore. Figure 3.1 shows the drill hole on Shoal Point at an elevation of 1.21 m, about 45 m from the highwater mark. Other equipment on the drill site would be closer. Section 3.5.3 Site Plans mentions a berm to contain potential spills but no height was specified. The EA should consider the possibility of high waves breaking on shore in extreme storms. Thus shallow water wave modelling of the transformation of high, long period, deep water waves is important. There is no discussion of this, or any mention of future plans to do this analysis. This would be relevant for waves from the north, entering Port au Port Bay and breaking on Shoal Point. In addition, the western shore of Long Point is fully exposed to waves in the Gulf of St. Lawrence. There should be some discussion in section 6.8 of the potential effects of waves reaching the drill site. A related issue is the effect of icing from freezing spray on the structure. This was not mentioned yet may be important.

Storm Surge

There should be some discussion of storm surge for the project area and its effects on the project. It seems that there is potential for flooding of low lying parts of Shoal Point or Long Point during an extreme event combining high storm surge, high waves, and high tide. As noted, the centre of the project site on Shoal Point is only 1.21 m above sea level and close to the water's edge. The estimate by Bernier and Thompson (2006) of 40-year return period storm surge height along the western coast of Newfoundland is 0.7 m. However, that value may be larger within the bay due to wave set-up with north to

northeast winds. Section 4.3.2 Tides gives the tidal amplitude as up to 0.53 m. What would be the combined effect on a drill rig or storage tanks of waves carried onshore by storm surge arriving at high tide?

Section 4.3.1, Page 29, Currents: The figure presented gives a typical summer surface circulation pattern. This information is not applicable to 2007 drilling activities, as the project is scheduled to take place in fall and winter. Circulation patterns appropriate for the project timeline should be presented instead.

Section 5.1.1, Page 40, Marine Ecosystem: The descriptions of the marine ecosystem provided focus mainly on commercially important fish and invertebrate species, and are based on landings data (which would not give the location of capture) and on stock assessment information, much of which is outside of the Port au Port Bay area. This represents a data/knowledge gap for the area in terms of allowing an adequate assessment of the potential impacts of accidental release of hydrocarbons. At the very least, these data gaps should be identified in a separate section of the report and the resultant limitations of the effects assessment acknowledged.

Section 5.1.1.4, Page 79, Nesting Populations and Breeding Biology, 3rd paragraph: The statement "*Shorebird species (plovers and sandpipers) nesting along the west coast of insular Newfoundland include the nationally endangered Piping Plover. Nesting has not been recorded in the Study Area…*". This statement contradicts the statement made on page 84 under Bird Species at Risk "*Piping Plover is designated endangered in Schedule 1 under the federal Species at Risk Act (SARA) and the Endangered Species Act of Newfoundland and Labrador. This species has nested at a number of coastal sites within the Study Area discussed above.*"

Section 5.1.3.1, Page 110, SARA: The statement: "*Currently, there are no recovery strategies, action plans, or management plans in place for species under Schedule 1 and known to occur in the Study Area*" is incorrect. Wolffish (spotted and northern) occur in the area, are on Schedule 1 of SARA and have recovery plans as stated on page 116. A recovery strategy for Leatherback Turtles (Atlantic population) is also on the SAR Public Registry, as is a management plan for striped wolffish. The proponent should refer to these recovery strategies/plans to ensure that proposed mitigation is consistent with these documents.

Section 5.1.3.4, Page 110, Profiles of Species Listed as Endangered, Threatened or Special Concern on Schedule 1 of SARA: There does not appear to be a description of the "Sowerby's beaked whale" in the report. If relevant to the project area, it should be included.

Table 5.15, Page 111: While Atlantic cod in general is listed on Schedule 3 of SARA, the Newfoundland and Labrador population is not on any SARA schedule and currently has no status under SARA. The species was considered a single unit and assigned a status of Special Concern in April 1998. However, the species was split into separate populations for consideration in May 2003. Please refer to the species profile on the

SARA Registry for further explanation.

Section 5.2, Page 119, Notable Areas: There is no reference in the report to the Community-based Coastal Resource Inventory7 (CCRI). This database is an important source of qualitative biological information for many coastal marine areas, including Port au Port Bay. The proponent should access the CCRI database at the following website: http://public.geoportal-geoportail.gc.ca/publicGeoBrowser/public/GeoPortalBrowser.jsp and reference relevant information to Port au Port Bay in the EA.

DFO recently released a report on ecologically and biologically significant areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and characterization. DFO Can. Sci. Advis. Sec., Sci. Adv. Rep. 2007/016. (http://www.dfo-mpo.gc.ca/csas/Csas/status/2007/SAR-AS2007_016_E.pdf). One of these areas is adjacent to the study area and should be noted in the document and in the potential impacts assessment.

Section 6.8, Page 136, Effects of the Environment on the Project: The effect of sea-ice on the project was not discussed in section 6.8. What is the potential for damage caused by ice ride-up (ice carried onshore by wind stress, ice pressure, or storm surge)? During the extreme storm of January 20-22, 2000, the high storm surge caused ice to ride-up along the shores of PEI and southeastern NB, which caused significant damage to coastal infrastructure (McCulloch et al. 2006; also see Parlee 2006).

Section 8.2.3, Page 172, Releases from the Crude Oil Holding Tank: The likelihood that hydrocarbon released from failure of diesel fuel tank storage reaching the environment was provided. The same should be provided for the crude oil holding tank.

Section 8.2.5, Page 173, Release of Contaminated Drilling Fluids: Drilling fluid used in the offshore typically has a hydrocarbon content of 80%, yet the assumptions used in the analysis is for 50% hydrocarbon content. Please clarify.

Section 8.4.2.3, Page 178, Oil Spill Trajectory Modeling-General Model Results: It is concluded that the likelihood of accidentally released hydrocarbons moving beyond the northern boundary of the study area is negligible. There are potentially other factors besides the prevailing winds that could influence surface currents and the movement of oil beyond the study area. Some of these are described earlier in the report (section 4.3, Physical Oceanography). It is recommended that these factors be considered or addressed in the modeling carried out in relation to this aspect.

Section 8.7, Page 180, Alternatives to Containment and Recovery: Use of dispersants and *In situ* burning are not approved mitigations. Approval must be obtained before use.

Section 8.8.1, Page 181, Proposed Mitigations for Port au Port Drilling Project: The mitigations listed are primarily to prevent terrestrial-related impacts. Mitigation measures for the marine environment should be included. In particular, the oil spill response plan should include contingency measures for hydrocarbons and/or chemicals

that reach the marine environment. Clarification regarding the types of mitigations proposed for the marine environment, under the OSRP, should be provided.

Section 8.8.5.1, Page 189, Effects of Exposure to Hydrocarbons: The name Oldsquaw has been changed to Long-tailed Duck.

Section 8.8.9, Page 195, Species at Risk: For clarity, a reference to Table 5.15 should be included after the first sentence.

References

Bernier, N. B., and K. R. Thompson. 2006. Predicting the frequency of storm surges and extreme sea levels in the northwest Atlantic, *J. Geophys. Res.*, *111*, C10009, doi:10.1029/2005JC003168.

McCulloch, M.M., Forbes, D.L., Shaw, R.W. and the CCAF A041 Scientific Team. 2002. Executive summary, *Coastal impacts of climate change and sea-level rise on Prince Edward Island* (Forbes, D.L. and Shaw, R.W., editors). Geological Survey of Canada, Open File 4261. Study report available on CD from: Geological Survey of Canada, Bedford Institute of Oceanography. [Executive summary at http://atlantic-web1.ns.ec.gc.ca/slr/default.asp?lang=En&n=D9D1EAF2-1/].

Parlee, Kathryn A. 2006. Climate Change Impacts and Implications: The Coastal Zone of the Southern Gulf of St. Lawrence, C-CIARN Coastal Zone Poster 06-1. **[**Online at the Geological Survey of Canada (Atlantic) C-CAIRN website http://www.c-ciarn.ca/pdf/sgslposter_final29march06.pdf]

Swail, V.R., E.A. Ceccafi, and A.T. Cox. 2000. The AES40 North Atlantic wave reanalysis: Validation and climate assessment, in 6th International Workshop on Wave Hindcasting and Forecasting, Monterey, California, USA, 2000.

Swail, V.R., V.J. Cardone, M. Ferguson, D.J. Gummerz, E.L. Harris, E.A. Orelup, and A.T. Cox. 2006. The MSC50 Wind and Wave Reanalysis. Proceedings of the 9th International Workshop on Wave Hindcasting and Forecasting, Sept. 25-29, 2006, Victoria, BC. [http://www.waveworkshop.org/9thWaves/].

WMO. 1998. Guide to Wave Analysis and Forecasting. World Meteorological Organization-No.702.

Information for Project Planning Purposes

The following comments are offered for consideration in the design and planning of drilling activities.

Section 4.2.1, Page 24, Wind: The AES40 winds used in the EA are representative of one-hour mean winds at 10-m. Estimates of extreme winds of shorter averaging periods such as a one-minute mean and a 3-second gust are generally used by industry for design

purposes. There should be some discussion of adjustment factors to convert maximum one-hour mean winds to maximum winds at shorter averaging intervals or to gust values. Wind climate data from nearby stations, including hourly reports from Stephenville, available online from Environment Canada, should be assessed for the severity and frequency of extreme wind events. Any known local effects should be described. The importance of this information is clear from Section 6.8, which states that given the high winds anticipated at Shoal Point, the rig's derrick will be stabilized using high strength guy wires.

Section 4.2.2, Page 27, Waves: The wave information provided in the EA is based on the AES40 hindcast for the deep water to the west of the project area. The MSC50 hindcast dataset is now available and should be examined also, as it improves upon the AES40 in a number of ways including finer grid spacing and time step, and the inclusion of shallow water wave physics (Swail et al 2006). The EA gives the maximum value for the significant wave height (Hs) during the 5 decades of the AES40 hindcast as Hs 9.43 m. Typical winter peak wave periods in winter were given as 6 to 7 seconds. Normally the peak wave period associated with the highest waves is given, rather than the typical peak wave periods. The MSC50 Wind and Wave Climatology Atlas [at http://www.oceanweather.net/msc50waveatlas/] shows a 50-yr return period extremal analysis of Hs 8 to 9m and Tp of 12 s for western Newfoundland. Waves with Tp of 12 s would be in transitional depth water for depths of less than 58 m (WMO 1998), which is the condition for nearly all of the project area.

Section 7.0 Routine Project Activities

Use of Concrete in the Aquatic Environment
Section 7.1.4.2 indicates that cement will be used in drilling operations. The proponent should be aware of the following best practices relating to cement or concrete production near water:

- If concrete is to be produced on-site, the location and design of the concrete production area and yard should be described with provisions for environmental protection.
- Drainage from a concrete production area and yard, and wash water from the cleaning of batch plant mixers, mixer trucks, conveyors and pipe delivery systems, are very alkaline and may be harmful to fish. Drainage and wash water also contain sediment, and concrete additives and agents, which may be harmful to fish. Therefore, appropriate mitigation should be employed to ensure such drainage does not enter receiving waters. All drainage from the concrete production area and yard, including wash water, should be directed to a settling pond for control and treatment, as appropriate.
- Aggregate used in the production of concrete may be stored and processed on site. Sediment-laden drainage from an aggregate storage area, and any wash water from the processing of aggregate may be harmful to fish. All drainage from an aggregate storage area should be directed to a drainage control device such as a settling pond.

Effluent should be treated as appropriate before release to receiving waters, or alternatively, effluent should be recycled for reuse after treatment. Solids that accumulate in a settling pond should be removed on a regular basis to ensure the settling pond remains effective.

Section 8.5, Page 179, Spill Response: It should be noted that any spills in waters frequented by fish or likely to enter waters frequented by fish must be reported immediately to the Canadian Coast Guard 24 Hour Spill Line at 1 800 563-9089.

Comments related to issues that are outside the scope of the Environmental Assessment

The environmental assessment included information and discussion on a number of issues that were outside the scope of the assessment. The following comments from regulatory agencies are offered for your consideration.

Section 3.5.6, Page 15, Well Testing: Please provide an assessment of the air quality impacts of flaring and use of an on-site burner. More detail is needed than what is provided in section 3.5.9.7, such as the potential health impacts of these air emissions.

Section 3.5.10, Page 18, Sound: The noise levels mentioned are quite high, therefore more information is needed. What is the distance to the nearest receptor, and what would be the sound levels at that receptor?

Section 4.1.4.2, Page 22, Groundwater: Please provide an assessment of effects of project operation and potential spills on the 173 groundwater wells identified in this section.

Section 5.1.2.1, Page 94, Vegetation: Please identify if there is any local harvesting of the blueberries and raspberries mentioned in this section and assess the potential effect of spills on these berries.

Section 8.0, Page 164, Accidental Events: Assess if there are any human health effects resulting from potential spills, such as contamination of food sources.