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Comments on the Hebron Development Project Comprehensive Study Report

Submitted to the Canadian Environmental Assessment Agency

Dr. Len Zedel
zedel@mun.ca
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Nature Newfoundland and Labrador

Nature Newfoundland and Labrador (NNL), formerly the Natural History Society of Newfoundland and Labrador, is primarily a society that exists for promoting interest in and appreciation of all aspects of the natural environment. Nature Newfoundland and Labrador does not consider itself as an organisation for environmental activism however NNL does make submissions to Government when it is felt it is important to preserving the natural heritage of the Province. Any offshore development activity would clearly fall into this category.

We have a substantial appreciation for the technical details and issues associated with offshore development projects gained through detailed reviews that we have presented concerning the Terra Nova, and the White Rose developments. The comments that we are presenting concerning the Hebron project are made from the context of that experience. The objective of the present comments is not to provide a comprehensive review of the proposal but to be sure that important areas of environmental concern are not overlooked.

Our key concerns focus on the areas of the environment most at risk. Oil and other pollutants will tend to concentrate at boundaries such as the ocean surface, the ocean floor and coastlines. It is these areas where the greatest potential for environmental impact occurs. The largest anticipated sources of environmental pollutants are the operational discharge of produced water.

Presentation

The organisation and structure of the Hebron CSR was found to be very efficient in terms of navigating through the document. In particular, the summary of concerns that had been raised through the public consultation process provided by Table 5-2 (Comments Related to the Environment) allowed for quick identification of those sections of the CSR that were of most consequence to NNL concerns. The presentation of all measurements in metric units was greatly appreciated since they are universally familiar unlike some of the industry specific units.

It was frustrating to be faced with the comment that details would only become available or decisions would be deferred until some point in the Front End Engineering Design (FEED). It is clear that some decisions could not be made until well along in the design process however, whenever such a statement was provided it was hard if not impossible to make a judgment on the consequences because there is no final position to evaluate. For example, from page 3-112:

> "An evaluation of design loads on the Hebron Platform, due to the metocean environment and associated uncertainties, will be conducted during FEED, and further refined during detailed design."

All that could be concluded from such a statement is that the proponent is aware of sea state and wind considerations and will adjust the design as they proceed.

Project Need and Justification

This section appeared short sighted as if there was no question that the there was a need for the project. The opening statements focus on how the Hebron project will be a major contributor to the economy of Newfoundland and Labrador. That statement is not being disputed but the economics by themselves do not justify or motivate the project. A more fundamental need (and justification) for the project is its role in providing for the dependence our society has on convenient sources of energy. A discussion on the merits of how that energy is sourced is beyond the scope of the CSR but ultimately, that need motivates the project. Some comment as to the timing of the development might also be appropriate; is this really the best time to develop this resource?

Produced Water

Produced water from an offshore oil development is a fact of life and that water must be disposed of. In the case of the Hebron project, the CSR anticipates a project total of 366 million cubic meters of produced water. If discharged into the ocean, this produced water would have an average oil content of 30 mg/L and that would introduce a total of 13,000 cubic meters of oil into the environment (or 80,000 bbl in industry units). That is a lot of oil and if introduced all at once as an oil spill it would be a very major environmental catastrophe. Introduced as produced water it represents a chronic source of oil pollution that raises concerns over long term environmental effects. For this reason it is pleasing to see the proponent's commitment to re-injecting the produced water. It is understood that a final decision on this matter is impossible until somewhat into the project when a better understanding of the reservoir chemistry is possible. However, by deferring that final decision, it is necessary to consider the environmental impact of this development assuming that produced water will not be reinjected.

In addition to the issue of oil in produced water, it is important to recognise that produced water contains a cocktail of chemicals including (low level) radioactive constituents. And, it is not clear if the regulated oil-water-concentration applies to the more soluble aromatic hydrocarbons including benzene, toluene, and the xylenes which are the more toxic constituents. The concentration and component make-up of produced water is different for different oil reservoirs and will even change over the production life of the field. These factors make prediction of the impact difficult. Re-injection is the best way of keeping these pollutants out of the ocean environment: we strongly encourage the proponent's initiative in this stated commitment.

With regards to monitoring of produced water, the proponent has clearly acknowledged requests for more timely information concerning the flow of produced water. Table 5.2 indicates under "monitoring" one of the comments that was received was the request "Provide public access to 24-hour monitoring raw data for produced water and other waste streams". Information on this issue is indicated in chapter 15, but chapter 15 only notes that EMCP will adhere to all regulatory requirements. From that statement it is not clear if EMCP has really responded to the input or simply continued with the business as usual approach of only releasing that information that is required by legislation.

In the Hebron Project Produced Water Management Strategy (page 13) it is stated that

> "PW treatment is inherently difficult to predict, and the system has been designed based on the limited information and well samples available.
>
> Upset conditions, and operations learning-curve periods can be expected, particularly during early operations."

It would be particularly reassuring to know if these upset conditions lead to any environmental impact. The present Environmental Effects Monitoring programs implemented on the Grand Banks do nothing more than record the events (and details of those events are not generally made public). There is no attempt to validate the environmental impact of these events.

Operational Discharges

Produced water is by far the largest of the operational discharges but there are other waste discharges including displacement water, deck drainage, ballast and bilge water. These latter operational discharges are regulated to have oil-in-water contents of less than 15 mg/L. This concentration limit complies with Annex I of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). We find it ridiculous that these smaller quantity discharges have more stringent oil-in-water limits than the 30 mg/L specification for produced water. It is clear that the regulations are not dictated by environmental safety but rather by technological limitations.

Here again we can only hope that reinjection of produced water becomes a practical reality for the Hebron field.

Chronic spills

We recognise the industry's efforts to control chronic spills; such spills can be minimised but never completely eliminated. Even small spills are of concern primarily because of the impact that they can have on birds at the water surface. Along with actual spills, the variations in performance of oil-in-water separators can also result in harmful discharges.

To date, the industry has monitored the accidental spills by recording their events. For example, the CNLOPB records for the Newfoundland offshore industry from 1997 to 2010 as published in table 14-13 of the CSR are 2923.5 L of spills less than 1 bbl (159 L), and only 62.83 L in spills of less than 1 L. Recording the existence of these spills is valuable and would identify areas of operation that could be improved but it does nothing to measure the impact of those spills on the environment.

As has already been mentioned, the key issue for these small spills is the occurrence of surface slicks that could impact birds. It would be ideal if there were some automated means of detecting surface slicks because that would allow effective continuous monitoring of the important environmental effect. In the absence of such technology, the only effective monitoring means would be to place trained and dedicated observers on the operating platform.

Tsunami Risk

The potential for damage associated with a large tsunami has been made all too obvious by the tsunami in March of this year that struck Japan and the tsunamis in the Indian Ocean in 2004. The proponent argues that tsunami risks are “low” based on the low seismic activity characteristic of the Newfoundland and Labrador region and by noting the one recorded tsunami event of 1929. We agree in principal that tsunami risks are “low” (not knowing exactly what that means) but we do believe that the proponent could firm up this assertion and attend to some details that they have overlooked.

First, tsunamis do not always originate in the region which they devastate: in fact there are many incidences of damage caused by tsunamis originating on the other side of an ocean. As an example, consider tsunamis caused by the 2004 Indian Ocean earthquake that impacted countries on both sides of that ocean. The Atlantic Ocean does not have a great deal of tsunamigenic seismic activity but it would be valuable to quantify this fact. Importantly, the Canary Islands have been identified as a potential source for a large tsunami affecting the Atlantic Ocean.

Tsunamis are not always caused by seismic activity. For example, volcanoes and land slides have been known to cause tsunamis. Important to the Newfoundland region is the formation of tsunami like waves by the rapid passage of low pressure areas over shallow seas. This process caused damage to various towns along the Newfoundland coast in1999 and 2000 and that risk should be given due recognition. (See Mercer et al., 2002: Barotropic waves generated by storms moving rapidly over shallow water. Journal of Geophysical Research 107:C10, Online publication date: 1-Jan-2002.). The importance of waves of this origin should be evaluated.

One last factor regarding the risk associated with tsunamis is that being located well into a deep bay may not provide total protection from damage. The important Canadian experience with this danger is provided by the 1952 Tsunami that struck Port Alberni (located at the end of a 50 km long fjord).

Light Pollution

Light pollution in the offshore region is a concern. The CSR addresses this issue noting that birds in general and Leach's Storm-Petrel in particular will be attracted to lights and any flares. The CSR notes that any impact will be mitigated: from page 9-64:

> "The stranding of birds at offshore platforms is largely mitigated by bird handling and release protocols so that any cumulative environmental effects, if they occur, would be low and not significant."

Can this statement be truly substantiated? Surely this mitigation is only effective for those birds that have been fortunate enough to fall onto a horizontal surface, those that land in the water are less fortunate. What proportion of the affected birds is actually identified?

Cumulative impact here is not just the extended presence of one artificially lighted structure. It is the occurrence of four such structures contained within a ~50 km radius. What is the cumulative impact of this network of illuminated structures. What is the effective area of impact?

Noise Pollution

For the most part there is nothing outstanding in the offshore component of this proposal with regard to the generation of sounds. Seismic surveys are likely the most significant sound source generating high levels of low frequency sound that will be detectable by some animals for 100's of km. The proponent expresses a commitment to operate seismic surveys applying industry standard mitigations which for the most part address issues of impact to individual animals. These sound sources are operated continuously for weeks at a time when seismic surveys are underway and therefore they represent an alteration to the acoustic environment over a large area of the Grand Banks. The degree to which this noise impacts the environment is not clearly understood and so it is an area of concern.

In the near-shore area of operation, there may be periods of time when high levels of noise are generated by pile-driving operations and/or underwater blasting. We note the mitigations intended by the proponent which include the use of observers. The use of models to establish regions where noise will exceed dangerous levels is good to establish zones of influence. Modeling of sound propagation is very sensitive to ocean bottom and sound speed characteristics: for this reason we especially appreciate the intention to monitor actual noise levels to validate model predictions.

One component of the noise pollution management program that we would like to see more commitment to would be the practice of planning any pile driving or blasting operations for those times of the year when sensitive animals are less likely to be present in Trinity Bay.

Environmental Management

ExxonMobil is a large corporation with a well established structure for regulating environmental impacts. Chapter 16 of the CSR provides details on the principles and policies that make up the ExxonMobil Environmental Policy. We have to agree with the intentions of this Policy; only by fostering a culture of environmental sensitivity is it possible to achieve an environmentally sensitive operation. We look forward to seeing this successfully realized as the Hebron project proceeds.

Independent Observers

250 km to the east of St. John's there will soon be a fourth large industrial installation. Everyone in the Province can clearly see the favourable economic impact of that industry. But from St. John's, aside from the coming and going of supply ships, it is not possible to see any trace of that heavy industry; out of sight, out of mind. It is critical that we put in place safeguards to assure that the environmental integrity of the Grand Banks is maintained. This oversight is needed to protect the renewable resource that is represented by the commercial fisheries and also to protect the ecosystems that the Grand Banks support. At present, there is no direct and independent observation of the offshore industry. We would like to believe that such monitoring is not required, that between the industry itself, the CNLOPB, and the environmental effects monitoring programs there is no concern. But, as long as the industry refuses to allow independent observers on oil production facilities, we will wonder why they are not allowed?

In the past when requests for observers have been made it has been pointed out by operators that this is not possible; there is insufficient room on the platforms, it is too expensive, observers would have to be trained. All of these reasons are just excuses because any of these points could be addressed especially when identified at the early project design stages. Here we see an opportunity for ExxonMobil to demonstrate an increased level of openness and a commitment to environmental monitoring and protection.