Environmental Protection Branch
16th Floor, Queen Square
45 Alderney Drive
Dartmouth, NS B2Y 2N6

File No.: 4194-1

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July 5, 2004

CNSOPB Rec'd
Date: JUL - 5 2004

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Doc. Reg. No.:	4723	
File No.:	CP54.011 / 30.008.8	

Mr. Andy Parker
Canada-Nova Scotia Offshore Petroleum Board
1791 Barrington Street
Halifax, NS B3J 3K9

Dear Mr. ~~Parker~~ Andy

RE: Cohasset-Panuke Project Phase II Decommissioning EAS #2003-463B
Comments on EA

Environment Canada (EC) has reviewed the environmental assessment (EA) for the Phase II decommissioning of the Cohasset-Panuke Project.

Project Description

It is understood that Phase I decommissioning activities were conducted in 2000. At that time, platforms and installations were rendered hydrocarbon- and chemical free. Structures remaining at the site include: the Cohasset- and Panuke wellhead jackets; two 10-kilometre subsea flowlines; two 2.5 kilometre export flowlines; a power cable; two pipeline end manifolds (PLEMs); and about 500 concrete stabilization mattresses.

EnCana intends to conduct the Phase II decommissioning program between 2004 and 2009. Two program options are under consideration. The *Partial Removal Option*, which is preferred by the proponent, consists of the removal and disposal on-shore of platforms and subsea equipment presenting a snagging hazard. Flowlines, concrete mattresses and possibly PLEMs would be stabilized and abandoned offshore.

The *Total Removal Option* is consistent with decommissioning commitments made by the proponent in its 1990 Development Plan Application and the related EA. This option consists of the removal and disposal on-shore of all remaining material associated with the Cohasset Panuke project (e.g., flowlines, cables, PLEMs, mattresses, jackets).

EC Determination of EA Obligations

In previous correspondence, EC confirmed that it has expertise pertinent to the EA of the decommissioning project, and offered guidance on how issues could be assessed. EC also described project details needed to establish whether the department was responsible for conduct of the EA.

Based on the information provided, it is understood that proposed activities could involve the dredging and airlifting of sediment. The disposal of air-lifted and/or dredged sediment into the marine environment will likely require a Disposal at Sea permit pursuant to the *Canadian Environmental Protection Act*. EC is responsible for ensuring an EA of these activities is conducted under the *Canadian Environmental* Assessment *Act* (CEAA) before reaching a decision on whether such a permit can be issued.

Approach to Review

EC must ensure that its obligations as an RA are fulfilled. Several important items require resolution in this regard (e.g., scope of project and assessment must include attention to activities related to disposal at sea).

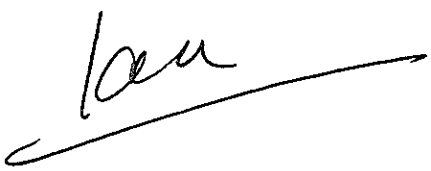
In general, EC has conducted its review and structured expert commentary on the EA in terms of scope of project, Aboriginal consultation, establishing site conditions, effects of the environment on the project, protection of water quality, protection of air quality, protection of species at risk, protection of marine birds, cumulative effects and post-decommissioning monitoring. For each topic of concern, EC commentary is premised on a desired outcome which is stated at the outset. At this time, detailed comments are offered for discussion at our July 5th meeting (attachment 1). These comments will be finalized to take into account any further information that may be exchanged at the meeting.

As there is no previous Atlantic experience in decommissioning offshore petroleum facilities, such as the Cohasset-Panuke project, EC has reviewed the EA in conjunction with applicable international guidance and experience. Certainly, recognition of global standards is a welcome and defining element of EnCana's Corporate Responsibility Policy that would apply to the Cohasset-Panuke project.

In EC's opinion, the broader policy issues raised by the proposal to decommission an offshore facility require further investigation. International guidance and experience provides useful reference points. While beyond the scope of this specific project EA, a policy that sets out expectations for decommissioning petroleum facilities in Canada's offshore would help guide project planning and decision-making. For example, a policy could identify criteria for evaluating decommissioning options and set out the conditions under which abandonment of materials could be deemed acceptable. The opportunity to follow-up on predictions ventured during an EA of the proposed operational phase of the project, and the lessons learned, could also be emphasized during the decommissioning phase. EC is certainly prepared to work with the CNSOPB and others in developing such a policy. At this time, some key policy elements are highlighted for discussion based on the department's review of the Cohasset-Panuke proposal and international experience with governance of decommissioning activities in the offshore (attachment 2). Again, this item will be finalized to take into account information exchanged at our July 5 meeting.

I trust this information will be helpful to the ongoing EA. We look forward to meeting with the CNSOPB and Fisheries and Oceans Canada to review the comments and next steps. In the interim, should you have any questions, please do not hesitate to contact me at 426-5845 or Friederike Kirstein at 902-426-8066 (friederike.kirstein@ec.gc.ca).

Yours truly,



Ian Travers
Manager, Pollution Prevention Division
Environmental Protection Branch (Atlantic Region)

Attachments (2)

cc F. Kirstein
A. Gauthier
R. Gautreau
M. Hingston
B. Jeffrey
K. Keddy
A. MacDonald
K. McAloney
J. Roma
M. Sirois
L. Fanning
K. Doe
E. Hundert
B. Horne
J. Kozak

D. McDonald (CEAA)
P. Zamora (DFO)

Attachment 1:
Detailed EC Review Comments on the EA for Discussion

Scope of Project

EC Goal:

The project description provides an adequate basis for assessing impacts including those related to disposal at sea activities.

EC Perspective on EA:

Project Activities

The scoping of Phase II project activities subject to EA, such as transportation and disposal, requires further attention. As set out in Appendix A: *Scoping Document Issued by the CNSOPB*, disposal options are to be addressed in the EA in at least general terms. And certainly, in Sections 1.0 and 1.2 of the EA, the proponent indicates that the ultimate "disposal" of platforms and other project materials are a component of Phase II decommissioning. However, in Sections 2.6.1 and 3.1 of the EA, the proponent states that transportation and disposal are outside the scope of the assessment[1].

Clarification on expectations for the EA is required. Based on the nature of EC decision-making authority, and the approaches to the EA of decommissioning activities adopted in other jurisdictions, a more inclusive consideration of transportation and disposal activities in the Cohasset-Panuke EA would be appropriate.

Information on the following points is important to the EA:

- What is the linkage of the decommissioning project, if any, to land-based EnCana facilities (e.g., Sable Island helicopter refuelling pad)?
- The proponent contends that Phase I decommissioning activities rendered platforms and installations hydrocarbon- and chemical free. It should be confirmed that any hazardous materials or CEPA toxic substances (e.g., PCBs, asbestos, mercury ozone-depleting substances) in use during operation of the Cohasset-Panuke project have been removed. For example, it should be confirmed that power cables are not PCB-contaminated Paper Insulated Lead Covered Cables (PCB PLIC), that transformers are PCB-free and that all PCB lamp ballasts have been identified, removed and properly disposed.
- A description of the methods employed to plug wells should be provided along with a description of any monitoring conducted to affirm their integrity.
- The proponent indicates that Phase II decommissioning activities commenced in 2003 with the preparation of platforms for removal and completion of well abandonment work (p. 2-1). What was involved in the "preparation of platforms for removal"? What is the relationship of these already-commenced Phase II decommissioning activities to the ongoing EA of same?

Defining the Options

The level of information presented on project activities related to the *Partial Removal Option* and *Total Removal Option* is limited. In the absence of such details, EC has referenced recent EA work on decommissioning activities in the UK (e.g., Brent Field[2], Maureen Field[3]). That work is premised on a finer breakdown of the decommissioning options and a more detailed comparative analysis. For example, pipelines have been categorized in terms of their defining features (e.g., diameter, coatings, sediment coverage) and the

[1] Similarly, the proponent indicates in Section 3.1 that transportation and vessel activity should not be included in the EA due to limited activity; uncertainty of routes; and existing shipping requirements.

[2] Available from: www.shell.com.

[3] Available from www.phillips66.com/maureen/decommprog/section1.htm.

specific decommissioning methods that could be implemented (e.g., abandon with trenching and burial as appropriate; reverse lay and return to shore for recycling; cut on seabed, lift to surface and return to shore for recycling; reverse reel for return to shore for recycling). The removal of concrete mattresses has been considered in terms of pipeline removal activities and use of a diving support vessel. As another example, principal methods for decommissioning of concrete anchor blocks have been identified as including the following: 1) leave or bury in place; 2) removal with a heavy lift vessel; 3) removal by auxiliary buoyancy; 4) cut and lift; and 5) dispose elsewhere at sea. Options for dealing with concrete blocks, if retrieved, have included: a) onshore dismantling and scrapping; b) onshore re-use as construction material; and c) re-deployment to another offshore location for re-use.

In terms of the Cohasset-Panuke project, it is understood that 4,700 tonnes of platform materials are associated with the *Partial Removal Option* and another 3,200 tonnes of subsea equipment with the *Total Removal Option*. The proponent intends to deliver these materials to a third-party contractor for re-use, recycling or disposal onshore in compliance with applicable standards and legislation (p. 2-10). The proponent has committed to ensuring that the contractor develops a Waste Management Plan in accordance with the Waste Management Hierarchy (p. 2-21).

Given that the purpose of the project is to decommission Cohasset-Panuke facilities and to manage the remaining materials, the following information should be provided:

- the objective of the waste management plan;
- a listing of materials subject to management (including main components, hazardous constituents and general quantities);
- a description of applicable onshore and offshore provincial, federal and international regulations and guidance; and
- a listing re-use and recycling opportunities (e.g., for platforms, PLEMs, pipelines, metals).

An understanding of re-use and recycling opportunities is important to detailing the decommissioning options under consideration (e.g., retrieval methods, equipment needs) and related environmental impacts. The perspective of provincial regulators on proposed alternatives and the additional waste resulting from the removal of subsea equipment would also be helpful. Clarification of the following points is important to the EA:

- The proponent states that "(t)he subsea equipment is very unlikely to be re-used or recycled, and would most likely have to be disposed of in an onshore landfill" (p. ix). Similarly, pipelines are predicted to have passed their lifetime (p. 2-21). On what basis have these conclusions been reached?
- From the information reported in Table 2.4, it is calculated that over 6000 kg of anodes are associated with subsea equipment. Anodes are comprised primarily of zinc, but contain over 6 kg of other metals, such as cadmium and aluminium. The recovery of zinc anodes and reuse opportunities should be investigated. Other metals associated with anodes should also be described.
- Either PLEM or PLEM-topsides will be removed as part of the *Partial Removal Option*. When, and on what basis, will the decision regarding removal of PLEMs be made?
- In reporting on international experience, the proponent states that in many cases "miscellaneous debris is removed" from the seafloor (p. 1-5). Nevertheless, information on the presence of miscellaneous debris associated with the Cohasset-Panuke project, and on the need for removal of this material, is needed.

Again, in the UK examples, the level of detail provided in relation to decommissioning options leads to a better appreciation of potential project-environment interactions, the significance of impacts and the approach to decommissioning that is likely to have the least environmental consequence while respecting health, safety, technical and cost constraints. Indeed, the comparative analysis of options inclusive of transportation and 'disposal/recycling/reuse' of the waste material is the most substantive component of the EA effort.

Disposal at Sea

While the proponent states that air-lifted and/or dredged sediment associated with the *Partial Removal Option* could be disposed of in the marine environment, no further information on these activities has been provided.

Given the likely requirement for a Disposal at Sea permit, pursuant to the *Canadian Environmental Protection Act* (CEPA), additional information is needed on all project elements that could result in the deliberate disposal of sediment.

Although contaminated sediment may occur in the immediate proximity of the well sites, it is anticipated that the majority of sediment along flowline corridors is suitable for open-water disposal. Nonetheless, additional information is required to determine whether sediment that may be disposed of at sea will meet the chemical screening criteria found in the Disposal at Sea Regulations. This includes information on the volumes and physical and chemical properties of sediment potentially associated with disposal at sea activities. Along flowlines, data representative of the area may suffice. In characterizing sediment quality at the well heads, however, detailed site-specific information is required.

While the department has been consulted during the scoping phase of the EA as an expert federal authority (as noted in Section 3.2.1.1), not all of the issues raised by EC to date have been taken into account. In light of the department's current Responsible Authority (RA) obligations, it is important that the scope of project subject to EA include activities pertinent to disposal at sea, be consistent with direction set out in the Canadian Environmental Assessment Agency's Operational Policy Statement *Establishing the Scope of the Environmental Assessment* and accommodate the level of detail which has been judged appropriate in other jurisdictions with experience in assessing decommissioning activities.

Aboriginal Consultation

EC Goal:

Aboriginal communities and organizations are adequately consulted with respect to the proposed undertaking.

EC Perspective on EA:

It is important that the proponent be directed to consult with Aboriginal communities and organizations on proposed decommissioning activities. Results of the consultation program must be taken into account in the EA.

Establishing Site Conditions

EC Goal:

Present conditions at the site are understood so as to facilitate assessment of potential impacts associated with decommissioning options and related material-management options, including disposal at sea.

EC Perspective on EA:

Subsea Equipment

In 1998, roughly 85 percent of the interfield flowlines, power cable, and Cohasset PLEM were sand-covered. Approximately 50 percent of the Panuke export line and the edges of the Panuke PLEM and mattresses were likewise covered by sand. Given that the latter components were installed a year prior to the survey, the proponent hypothesizes that the sand coverage would be more extensive today (p. 2-2).

The following clarification is important to the EA:

- How extensive (i.e., deep) is the sand coverage of subsea equipment?
- The "possible uncovering (of subsea equipment) during large storms" is listed in Table 3.5 as a possible long-term outcome. What is the probability that subsea equipment will remain buried in the long-term, given the dynamic nature of the Scotian Shelf? If equipment was to be exposed, would this pose a hazard

to other ocean users and what actions, if any, would be taken were this to occur? How would this be monitored?

- While the proponent states that "cuttings piles are no longer evident due to physical re-working by currents and storms" (p. 4-5), the proponent also postulates that subsea equipment will be buried by sediment (p. 2-2). Further explanation of what appears to be distinct oceanographic processes influencing the fate of cuttings piles and the extent of subsea equipment coverage, respectively, is needed.

Drill Cuttings and Environmental Quality

The EA does not demonstrate that careful consideration has been given to the presence of drill cuttings, although several hundred tonnes of oil were discharged over the lifetime of the project. The most recent sediment sampling surveys indicate evidence of cuttings, yet the EA provides only limited information on locations, volumes, composition and dimensions.

It is unclear if the sediment data presented in the EA refers to surface sediment or both surface and sub-surface sediment. Moreover, sediment transport modelling predictions are not presented (i.e., how will potentially contaminated sediment behave during decommissioning?). Other than ROV surveys, which do not reliably indicate the presence/absence of drill cuttings, a follow-up program to establish the continuing presence of cuttings has not been proposed.

In the UK examples of decommissioning programmes and assessments previously cited, considerable attention is given to characterizing drill cuttings and the need for long term management. The Cohasset-Panuke decommissioning EA should address potential sediment contamination, management options for any remaining cuttings, and follow-up needs. A description of the number of wells drilled, and associated cuttings discharged over the lifetime of the project, would provide useful context.

Table 4.2 presents hydrocarbon concentrations. However, the EA does not provide information on when and where samples were taken. Additional information on study design and/or a reference to the source document is required.

Table 4.3 – The proponent lists a "final subsea ROV survey and a follow-up report" as *mitigation/follow-up* for the "disturbance and/or smothering of benthic communities from sediment disturbance adjacent to structures" (p. 4-12). Does the proponent intend to report on the impact of decommissioning activities on benthic communities? What would be used as baseline for this report? It is noted that UK Department of Technology and Industry (DTI) guidance specifies that operators in the UK conduct post-decommissioning seabed sampling (DTI, Section 12.7)[4]. Is this best practice applicable to the proposed project?

The definition of a 'significant adverse environmental effect' has several shortcomings as it pertains to the marine benthos (p. 4-10). A very large effect, lasting one generation or less, would by this definition, be considered "not significant", although it could last a year or longer depending on the generation time of the organism. By application of this definition, most detectible adverse environmental effects would be classified as "not significant". It is recommended that project-induced impacts should be quantified and considered in terms of vulnerable species and in terms of cumulative effects, whenever possible.

Effects of the Environment on the Project

EC Goal:

Effects of the environment on the project are taken into account in assessing the environmental consequences that could result.

[4] "In addition to debris surveys, a post-decommissioning environmental seabed sampling survey should be undertaken in particular to monitor levels of hydrocarbons, heavy metals and other contaminants in sediment and biota". (DTI, Section 12.7).

EC Perspective on EA:

The possibility for sea ice to occur in the project area is fairly rare, but nonetheless should be taken into account in the EA. With persistent northerly winds in March, sea ice could drift into the Sable Island area. This is illustrated by the map, "Sea Ice Climatic Atlas East Coast of Canada 1971-2000", which shows the frequency of occurrence of sea ice on March 12th for the last 30 year (to be provided directly). The frequency of occurrence is generally between 1 percent and 15 percent. As you are aware, sea ice drifted into the Sable Island area during March of this year.

In an effort to minimize the risk of malfunctions and accidental events, the proponent states that "activities will be carefully planned to ensure that they coincide with appropriate weather conditions" (p. 2-19). Under which weather conditions might work not be conducted?

Protection of Water Quality

EC Goal:

Project activities do not result in the deposit of a deleterious substance into waters frequented by fish (Section 36, *Fisheries Act*).

EC Perspective on EA:

Corrosion-inhibited Seawater

During Phase I of the decommissioning process, flowlines were filled with corrosion-inhibited seawater. Phase II decommissioning will involve disconnecting flowlines from risers (p. 2-9), resulting in a release of the corrosion-inhibited seawater. The EA concludes that the release of this fluid will not result in an environmental impact because the associated chemicals met Chemical Selection Guidelines (p. 7-12).

Adherence to the guidelines does not in itself preclude the potential for impacts. It is expected that a revised EA will include data to indicate whether the corrosion inhibitor is acutely lethal to fish and whether its release would be in compliance with the *Fisheries Act* (Section 36). The release of residual water from flowlines should be included as an "Interaction to be Assessed" in Table 3.5 (p. 3-13).

It is understood that there has been a break in the Cohasset export flowline, and that the corrosion-inhibited seawater within the flowline has likely dispersed to the ocean (p. 2-4). What was the cause of the break (e.g., corrosion, collision)? If unknown, the proponent should indicate how it intends to investigate the matter. Ultimately, it is important to establish how the risk of such incidents will be minimized in the future.

Leaching of Metals and Toxic Substances

The "(l)eaching of corroded metals or toxic substances into the water" is identified as a potential interaction from the abandonment of flowlines, power cable, mattresses and PLEMs (Table 4.3, p. 4-12). The "metals or toxic substances" should be identified and the potential consequences assessed.

Naturally Occurring Radioactive Material

Naturally Occurring Radioactive Material (NORM) contamination is cited as a potential impact associated with the *Partial Removal Option* (p. 3-14), however, no further information is offered. The potential for NORMs to be associated with the *Partial Removal Option*, and the related environmental consequences, should be assessed.

Ballast Water

The proponent states that a heavy lift vessel will be mobilized from Europe or the Gulf of Mexico (p. 2-10). In discussing the associated discharges, the proponent concludes that "ballast water (will not be) treated or contaminated" (Table 2.4, p. 2-16). On what basis has this conclusion been reached? Additional information

on the potential discharge of ballast water is required to enable an assessment of impacts (e.g., origin of vessels, volumes discharged, management actions to prevent the transmission of invasive species). Transport Canada's "Guidelines for the Control of Ballast Water Discharge from Ships in Waters under Canadian Jurisdiction[5]" provide an important starting point for such an analysis.

Vessel Discharges

Routine discharges from vessels are not considered based on assumption that compliance with applicable standards will suffice (p. 3-13). It should be recognized in the EA that these discharges will contribute to cumulative effects, and must comply with Section 36 of the *Fisheries Act*.

Protection of Marine Birds

EC Goal:

Migratory birds, their eggs, nests and young are protected taking into account general prohibitions in the *Migratory Birds Convention Act* (MBCA) and regulations such as prohibitions against the deposit of oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.

EC Perspective on EA:

Definition of Significance

In defining impact magnitude, the proponent ascribes a rating of low magnitude to impacts "affect(ing) a specific group or critical habitat for one generation or less; within natural variation" (p. 3-15). It should be recognized that by application of this definition hundreds of birds could be affected by the project and the impact be described as "low". Project-induced impacts from proposed activities should be quantified and considered in terms of vulnerable species and in terms of cumulative effects, whenever possible.

Potential for Discharges

The proponent states that water in risers contains less than 5 mg/L of oil in water (p. 2-4). Is it possible that oil has risen to the top of the water column in risers? If so, is it feasible to remove oil from riser water prior to its release to the marine environment? If possible, it should be clarified (1) how much less than 5 mg/L of oil is contained in riser water and (2) how many litres of water containing oil are expected to be released to the marine environment. Is it possible that a slick could occur with the release of water from risers?

Given that small quantities of oil can have deleterious effects on birds, it is recommended that no oily fluids be released into the marine environment, if possible. It should also be confirmed that the release of seawater containing corrosion inhibitors from flowlines will not result in deleterious impacts to migratory birds.

It is recommended that a follow-up monitoring plan be developed to help ensure that marine birds are not impacted by discharges. This plan should be submitted to the department for review well in advance of proposed decommissioning activities.

Potential for Spills

Every effort should be made to ensure that spills do not occur. The proponent should make certain that precautions are taken by contractors to prevent fuel leaks from equipment.

Furthermore, a contingency plan is required in the even of a spill. While a spill response plan is referenced in the EA (p. 2-20), the measures that would be taken to protect environmental resources in the event of a spill have not been described. For example, what measures would be taken to contain and clean-up spills (of various sizes) either at the decommissioning site or during transport? What equipment would be available to

[5] Available from: www.tc.gc.ca/MarineSafety/Tp/Tp13617/menu.htm.

contain spills? Would birds be kept away from oil, and if so, how would that be achieved? What strategy would be in place in the case that birds were oiled and/or sensitive habitat were contaminated (i.e., if birds were oiled, would the operator do nothing, or capture and kill the birds, or capture and clean the birds?). Consideration of these questions is important, and must be part of the mandatory assessment of environmental effects related to malfunctions and accidents, as even a small spill could be significant if it were to impact species at risk, sensitive habitats, or large numbers of birds.

It is recommended that a mitigation plan be prepared outlining measures to reduce impacts on birds in the event of a spill. The plan should be submitted to regulators for review well in advance of proposed decommissioning activities.

Handling of Marine Birds

The potential for birds to be attracted to vessels is noted in the EA (p. 4-37). Should storm-petrels or other species become stranded on vessels, the proponent is expected to adhere to the protocol described in Williams and Chardine's brochure entitled, *The Leach's Storm Petrel: General Information and Handling Instructions* (to be provided directly). A permit is required to implement the Williams and Chardine protocol. The proponent should be advised that it is required to complete a permit application form prior to proposed decommissioning activities. This form is available from Keith McAloney at the Canadian Wildlife Service, who can be reached at keith.mcaloney@ec.gc.ca or at 506-364-5013.

Protection of Species at Risk

EC Goal:

Wildlife species at risk are protected taking into account the general prohibitions set out in the *Species at Risk Act* (SARA) and the need for mitigation and monitoring to be consistent with species recovery and management planning.

EC Perspective on EA:

In Table 4.9, the potential for vessel collisions with marine mammals is characterized as "infrequent" and the magnitude is described as "low". These criteria may not provide a sufficient level of protection for species at risk. For example, the proponent recognizes that the loss of a single individual may be significant in the case of a species at risk (p. 4-29). Department of Fisheries and Oceans expertise is critical to this issue. The 2004 EC publication, *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada*, should also be consulted.

Protection of Air Quality

EC Goal:

Emissions to the atmospheric environment are understood and appropriate measures are taken to comply with applicable legislation, objectives, standards and guidelines.

EC Perspective on EA:

The proponent states that emissions to air will result from proposed activities, and confirms its intent to comply with the Nova Scotia Air Quality Regulations and CEPA Ambient Air Quality Objectives. No further attention is given to this interaction.

Emissions to air should be described and reviewed in the context of contributions to cumulative environmental effects that take into account the applicable ambient standards, reduction targets and emissions caps.

Cumulative Effects

EC Goal:

Cumulative effects are adequately considered for all ecosystem components of particular concern to EC.

EC Perspective on EA:

The discussion of cumulative effects is framed by other previous, existing and upcoming projects in the study area (e.g., seismic, shipping). While consideration of these projects is an obvious requirement of the EA, the necessary analysis of cumulative effects should be shaped primarily by implications for the valued ecosystem components under study.

Cumulative environmental effects from the proposed project in association with other activities are predicted to be unlikely for special areas, marine mammals, marine birds, marine fish, and marine benthos, based on the "limited duration and geographic extent of the project" (p. 6-5). As the proponent is aware, habitat degradation and population declines over time have been the result of cumulative environmental effects (e.g., past projects and activities). Given the potential for environmental impacts to be associated with decommissioning activities (regardless of scale), there is likewise a potential for the occurrence of cumulative environmental effects. Fuller attention to this matter is warranted.

Post- Decommissioning Monitoring

EC Goal:

Verification that decommissioning activities have been adequately completed.

EC Perspective on EA:

It is recommended that a monitoring strategy be prepared in association with the two decommissioning options. A long-term commitment to monitoring should be made in the case that subsea components are abandoned on the seabed. The strategy should include a consideration of the following elements.

ROV Seabed Survey

An ROV subsea survey to verify that the work program has met its stated objectives is proposed in the EA (p. 7-3). These objectives should be clearly articulated upfront. What course of action will be taken if the program has not met its objectives?

Post-Decommissioning Contaminant Sampling

Has the proponent considered the need for a post-decommissioning seabed sampling program (e.g., for hydrocarbons, heavy metals)?

Abandoned Equipment

The proponent states that "(i)n keeping with the spirit of UNCLOS, these (pipeline) remains should be removed, or protected and monitored, with the aim of ensuring that anything left behind does not adversely affect the marine environment or other users of the sea" (p. 1-5, emphasis added). Nevertheless, the monitoring of abandoned materials is not considered in the EA. A post-project strategy to monitor abandoned material should include information on:

- the material that will be monitored;
- the intervals at which monitoring will occur;
- methods of monitoring;

- potential outcomes and courses of action that could be taken (e.g., if subsea equipment is not covered by sand); and
- reporting of monitoring results.

Attachment 2:

Recommended Elements of a Policy on Offshore Decommissioning Activities

General

A useful model for a policy on offshore decommissioning activities is the *DTI Guidance Notes for Industry Decommissioning of Offshore Installations and Pipelines under the Petroleum Act 1998.* UK Department of Trade and Industry. Available from www.og.dti.gov.uk/regulations/guidance/guidenote.htm.

Follow-up and Lessons Learned

The decommissioning phase is an opportunity to review project development outcomes (e.g., current site conditions, accuracy of impact predictions set out in the EA of the development project). Such a review exercise should be undertaken in support of the necessary EA and management of decommissioning activities, and may inform the EA and management of future petroleum projects.

Consideration of Alternative Decommissioning Options and Methods

Consistent with available international standards, a priority should be placed on removal of all structures associated with offshore projects for reuse, recycling or disposal on land. Examples include,

- UN Law of the Sea ratified by Canada which specifies that "any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation....such removal shall also have due regard to fish, the protection of the marine environment..."
- The 1992 Convention on the Protection of the Marine Environment of the North East Atlantic (OSPAR) which prohibits "...the dumping and leaving wholly or partly in place of offshore installations... unless there are significant reasons why an alternative disposal option is preferable to reuse or recycling or final disposal on land".
- s. 10.8 of the UK DTI guidance which states "Small diameter in-field or inter-field pipelines and flexible flowlines which are neither trenched nor buried should normally be entirely removed".

Consistent with international practice, all feasible decommissioning options and methods should be investigated and evaluated based on explicit criteria including energy use, gaseous emissions release, waste minimization, and environmental impacts.

In cases where partial removal can be justified, IMO's 1989 *Guidelines And Standards For The Removal Of Offshore Installations And Structures On The Continental Shelf And In The Exclusive Economic Zone* state that "...an unobstructed water column sufficient to ensure safety of navigation, but not less than 55 m, should be provided above any partially removed installation or structure which does not project above the surface of the sea".

Developing a Waste Management Plan

A Waste Management Plan that considers all materials associated with decommissioning (including subsea equipment) should be required. The following factors should be addressed for each waste material:

- waste description (e.g., structural members, anodes, pipelines, transformers),
- general quantity estimates,
- main components (e.g., steel, zinc),
- hazardous constituents (e.g., lead and inhibitor coatings, PCB, asbestos, mercury),
- hazardous waste classification,
- method of removal,
- packaging requirements,

- land and sea transport,
- storage requirements,
- final destination,
- detailed waste management (e.g., re-use, recycling, disposal) options and justification of final choice, and
- impacts on the environment.

Information on waste classification can be obtained from the Organisation for Economic Co-operation and Development's (OECD) 94(152) Annex, available from webdomino1.oecd.org/horizontal/oecdacts.nsf/linkto/6E96C34CC3A3E403C1256BDD002C5B02/$FILE/ANNEX.pdf.

Placing a Priority on Reuse and Recycling (Waste Minimization)

The proponent should demonstrate how environmentally- and economically sound waste management practices, such as waste minimization, have been pursued on a priority basis. Waste minimization includes the reduction of waste generated at any time during the full lifecycle of the project, such as recycling through materials exchange programs and re-use of abandoned materials (e.g., alternative use of platforms for renewable energy generation, recovery of metals from zinc anodes), whenever possible. Waste disposal should be practiced only as a last resort. Such an analysis should support the analysis of decommissioning options.

The Canadian Materials Exchange Program may provide opportunities for material re-use. Further information on this program is available from www.recycle.net/exchange. Additional materials exchange programs include the Nova Scotia Materials Exchange Program: (www.nsmaterials.com), Ontario Materials Exchange Program (www.owe.org); and the Recycling Council of British Columbia's Materials Exchange (www.rcbc.bc.ca/resource/matexframe.htm). A recycling industry framework is maintained by Natural Resources Canada at http://www.recycle.nrcan.gc.ca/background_e.htm while the Canadian minerals and metals recycling database is found at http://www.recycle.nrcan.gc.ca/recyclingdb.asp.

Comparative Energy Use and Emissions (Minimizing Energy Use)

Minimizing anthropogenic contributions to climate change (i.e., emissions of greenhouse gases) is a priority of the Government of Canada. Indeed, comparative energy use and gaseous emission assessments, are used in other jurisdictions, such as the UK, to support the analysis of decommissioning options.

The calculation of total net energy use has included a consideration of the energy required to (1) remove materials, (2) transport materials to shore, (3) recycle materials, (4) monitor abandoned materials and (5) replace recyclable material abandoned offshore. In 2000, the Institute of Petroleum published, *Guidelines for the Calculation of Estimates of Energy Use and Emissions in the Decommissioning of Offshore Structures*, which has been referenced in such assessments in the UK.

Managing Drill Cuttings

Drill cuttings require investigation (e.g., delineation, characterization) and determination of appropriate management options. The UK Offshore Operators Association (UKOOA) conducted a "research programme to tackle the historical issue of drill cuttings, which have accumulated beneath offshore installations..." (p. 4, *UKOOA Drill Cuttings Initiative Final Report*, February 2002). Among the management options studied were bioremediation, covering, retrieve and dispose, and natural degradation with an overall finding that the appropriateness of any particular option was dependent on a case-by-case assessment.

Applicable Regulatory Regime

A decommissioning project should demonstrate provisions for compliance with applicable onshore and offshore provincial, federal and international regulations as well as applicable waste management guidance. Some examples are identified below. Responsible agencies should be contacted for further information.

Provincial

In Nova Scotia, hazardous wastes are regulated by the Nova Scotia Department of Transportation and Public Works under the *Dangerous Goods Transportation Act* and by the Nova Scotia Department of Environment and Labour (NSDEL) under the *Environment Act*. Applicable regulations under the *Environment Act* include, but are not limited to, the following:

- *Asbestos Waste Management Regulations*
- *PCB Management Regulations*
- *Dangerous Goods Management Regulations*
- *Emergency Spill Regulations*.

NSDEL *Construction and Demolition Debris Disposal Site Guidelines* (October 1997) and *Guidelines for the Application and Removal of Structural Steel Protective Coatings* (1997) may be applicable to proposed activities.

Federal

Transportation

Under CEPA 1999, EC is responsible for administration of the *Interprovincial Movement of Hazardous Waste Regulations* (IMHWR) (2002) and the *Export and Import of Hazardous Wastes Regulations* (EIHWR) (1992, as amended). These regulations allow the transboundary movement of hazardous wastes in Canada to be monitored and tracked to ensure that they are recycled or disposed of in an environmentally sound manner.

If hazardous wastes are to be transported to provinces other than Nova Scotia, or exported to countries other than Canada, then all requirements under the IMHWR or the EIHWR would be applicable, respectively. For more information concerning either regulations, Ms. Marie-Josée Sirois, Hazardous Wastes Advisor can be contacted at (902) 426-3574 or at marie-josee.sirois@ec.gc.ca.

In addition, any handling, offering for transport or transporting dangerous goods must be in compliance with the *Transportation of Dangerous Goods Regulations* (TDGR) administered by Transport Canada. For information concerning the TDGR, Transport Canada (Dartmouth office) can be contacted at (902) 873-1376.

Transport Canada should be contacted for additional information on *Oil Pollution Prevention Regulations* of the *Canada Shipping Act*. These are available at www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/040/csa049/csa49.html.

Environmental Emergency Regulations

Project management should take into account the potential applicability of the Environmental Emergency (E2) Regulations under Section 200 of CEPA 1999, which came into force on November 18, 2003. The E2 Regulations apply to any person in Canada who owns, or has charge, management or control of, a substance listed on Schedule 1 of the regulations where either the total amount of the substance or the single largest container on site is equal to or greater than that specified in the Schedule. Where either or both of the criteria are satisfied, that person must undertake a number of actions. For more information on the regulations, please contact Mr. Sinc Dewis, Emergency Science Advisor at (902) 426-6318 or visit www.ec.gc.ca/ee-ue.

Other

The potential applicability of other CEPA regulations, guidelines or codes governing specific substances should be investigated. Information on CEPA is available at http://www.ec.gc.ca/CEPARegistry/default.cfm.

Provisions for Long-Term Monitoring

The applicability of the following best-practice standard should be taken into account:

- "any remains of installations or pipelines will be subject to monitoring at suitable intervals as specified in each decommissioning programme... and may require maintenance or remedial action in the longer term" (UK DTI Guidance, Section 15.2).