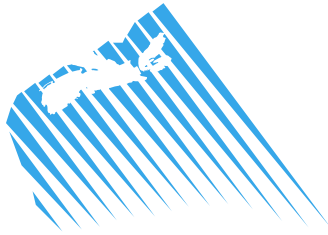


**CANADA - NOVA SCOTIA  
OFFSHORE PETROLEUM BOARD**

**APPLICATION TO AMEND THE COHASSET DEVELOPMENT PLAN**

**DECISION REPORT**





**CANADA - NOVA SCOTIA OFFSHORE PETROLEUM BOARD**  
6th Floor TD Centre 1791 Barrington Street Halifax Nova Scotia B3J 3K9 Tel 902-422-5588 Fax 902-422-1799

File No.: CP 40,304

December 21, 2004

The Honourable R. John Efford  
Minister of Natural Resources  
Natural Resources Canada  
580 Booth Street, 21st Floor  
Ottawa, Ontario  
K1A 0E4

The Honourable Cecil Clarke  
Minister of Energy  
Nova Scotia Department of Energy  
5151 George Street  
Halifax, Nova Scotia  
B3J 1M5

Dear Ministers:

**Re: FUNDAMENTAL DECISION - Application to amend the Cohasset Development Plan**

The purpose of this letter is to give you notice of a recent fundamental decision made by the Board pursuant to the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act, S.C. 1988, c. 28 and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act, S.N.S. 1987, c. 3.

On December 11, 2003, EnCana submitted, to the Board, an application to amend the Cohasset Development Plan, and requested regulatory approval to leave the flowlines, and related subsea materials, in place. The Board sought written public comment on the proposed amendment in May of 2004, as part of its review of the application. Additionally, a screening level assessment was conducted, as required under the Canadian Environmental Assessment Act (CEAA). The environmental assessment conducted pursuant to CEAA determined that, taking into account the implementation of the mitigation measures set out in the *Environmental Screening Report - Cohasset Phase II Decommissioning* (Screening Report), neither partial nor total decommissioning proposals is likely to cause significant adverse environmental effects.

At a Board meeting held on December 17, 2004, the Board approved, with conditions, the application to amend the Cohasset Development Plan. A copy of the Board's Decision Report is enclosed.

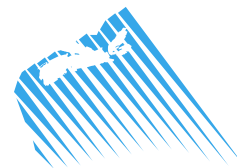
The approval of this amendment to Part 1 of the Development Plan is a fundamental decision under the Accord Implementation Acts. The Board cannot implement this decision for a period of thirty days following your receipt of this notice unless earlier advised in writing that both ministers approve the decision.

We trust you will advise the Board of your decisions at your earliest opportunity.

Yours truly,

J. E. (Jim) Dickey  
CEO





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## 1.0 SUMMARY

1.0

The Cohasset - Panuke offshore oil project (Cohasset Project) development plan was approved, with conditions, by the Canada-Nova Scotia Offshore Petroleum Board (“the Board” or “CNSOPB”) in 1990. When it began production in 1992, it became Canada’s first offshore oil project. The project was developed by LASMO Nova Scotia Limited (LASMO), in partnership with Nova Scotia Resources (Ventures) Limited. PanCanadian (EnCana) acquired LASMO’s 50% ownership in January 1996 and became operator of the project. The Cohasset Project operated from 1992 to 1999, producing a total of 7.1 million cubic metres of oil (44.5 million barrels).

The original development plan, as approved by the Board, included provisions for the decommissioning of project infrastructure, including: plugging the wells with cement, removing casing to a depth of 6m below the seafloor, and removing all fabricated materials, including the interfield flowlines and related material.

The Board approved commencement of the decommissioning of the Cohasset Project in 2000 with the removal of the CALM Buoy, demobilization and removal of all mobile components, and the depressurization and de-energization of all platforms and subsea facilities. The Board authorized the operator to suspend the decommissioning plans for the rest of the facilities pending a determination regarding the use of the jackets and topsides for the proposed Deep Panuke project. In January 2002, EnCana determined that it would not use the existing facilities for Deep Panuke and the Board requested a final decommissioning plan. Further decommissioning work took place in the summer of 2003 after the Board authorized the operator to abandon 14 production wells.

In December 2003, EnCana submitted an amendment to the Cohasset development plan to the Board and requested regulatory approval to leave the flowlines, and related subsea materials, in place. The Board sought written public comment on the proposed amendment in May of 2004, as part of its review of the application. Additionally, a screening level assessment was conducted, as required under the *Canadian Environmental Assessment Act* (CEAA).

The environmental assessment conducted pursuant to CEAA determined that, taking into account the implementation of the mitigation measures set out in the *Environmental Screening Report - Cohasset Phase II Decommissioning* (Screening Report), neither partial nor total decommissioning proposals is likely to cause significant adverse environmental effects.

The Board has reviewed the Applicant’s proposal taking into account such factors as health and safety, environment, the commercial fishery, international decommissioning practices, liability issues and Canada-Nova Scotia Benefits.



## 1.0 SOMMAIRE

1.0

Le projet extracôtier Cohasset de mise en valeur des hydrocarbures (Projet Cohasset) a été approuvé, sous conditions, par l'Office Canada - Nouvelle-Écosse des hydrocarbures extracôtiers (l'Office ou l'OCNEHE) en 1990. Lorsque l'exploitation a commencé, en 1992, le Projet Cohasset était le premier projet extracôtier de mise en valeur des hydrocarbures au Canada. Le projet a été mis sur pied par LASMO Nova Scotia Limited (LASMO), en partenariat avec Nova Scotia Resources (Ventures) Limited. PanCanadian (EnCana) s'est portée acquéreur de la part de 50 pour cent détenue par LASMO en janvier 1996 et est par la suite devenue l'exploitant du projet. Le Projet Cohasset a été en exploitation de 1992 à 1999, produisant 7,1 millions de mètres cubes de pétrole (44,5 millions de barils).

Le plan original de mise en valeur approuvé par l'Office renfermait des dispositions sur le démantèlement de l'infrastructure du projet, notamment l'obturation des puits avec du béton, le retrait des tubages à une profondeur de 6 mètres sous le fond marin et le retrait de tous les matériaux fabriqués, y compris les lignes de flux entre les gisements et le matériel connexe.

L'Office a approuvé le début du démantèlement du Projet Cohasset en 2000, soit le retrait de la bouée d'amarrage à chaîne caténaire, le repli et le retrait de tous les composants mobiles ainsi que la dépressurisation et la mise hors tension de toutes les plates-formes et de toutes les installations sous-marines. L'Office a autorisé l'exploitant à suspendre l'exécution du plan de démantèlement du reste des installations en attendant une décision sur l'utilisation des treillis et des hauts de plates-formes pour le projet Deep Panuke proposé. En janvier 2002, EnCana a déterminé qu'elle n'utiliserait pas les installations existantes pour le projet Deep Panuke et l'Office a demandé que soit soumis un plan de démantèlement définitif. D'autres travaux de démantèlement ont été faits pendant l'été de 2003, après que l'Office eut autorisé l'exploitant à cesser l'exploitation de 14 puits de production.

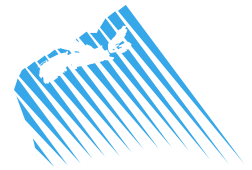
En décembre 2003, EnCana a présenté à l'Office une modification au plan de mise en valeur du gisement Cohasset et demandé une approbation réglementaire pour laisser en place les lignes de flux et les équipements sous-marins connexes. En mai 2004, dans le cadre de son examen de la demande, l'Office a demandé des observations publiques écrites sur la modification proposée. En outre, un examen préalable a été fait, conformément aux dispositions de la *Loi canadienne sur l'évaluation environnementale* (LCEE).

L'évaluation environnementale faite sous le régime de la LCEE a mené à la détermination que si l'on prend en compte la mise en œuvre des mesures d'atténuation mentionnées dans le document intitulé *Environmental Screening Report - Cohasset Phase II Decommissioning* (Rapport d'examen préalable - Cessation d'exploitation du projet Cohasset Phase II), ni le démantèlement partiel ni le démantèlement complet ne sont susceptibles d'avoir des effets environnementaux négatifs importants.

L'Office a examiné la proposition d'EnCana et étudié divers facteurs comme la santé et la sécurité, l'environnement, la pêche commerciale, les pratiques internationales en matière de cessation d'exploitation, les questions relatives à la responsabilité et les retombées économiques Canada - Nouvelle-Écosse.



## 2.0 DECISION



2.0

**It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the amendment to the Cohasset development plan, proposed by the Applicant, is approved subject to the following conditions:**

### **CONDITION 1: SCREENING REPORT REQUIREMENTS, MITIGATION AND FOLLOW-UP**

The Applicant shall comply with all requirements, mitigation and follow-up measures identified in the Environmental Screening Report - Cohasset Phase II Decommissioning, as listed in Appendix 1, of this Decision Report.

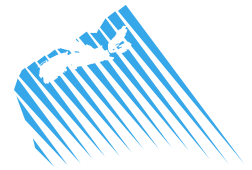
### **CONDITION 2: REMOVAL OF PLEM TOPSIDES**

The Applicant shall remove the topsides from the PLEMs, including lifting shackles, sacrificial anodes and any other material that extends beyond the PLEM base.

### **CONDITION 3: ONGOING LIABILITY**

Prior to the Board issuing a work authorization for Phase II decommissioning work, the Applicant shall submit to the Board a plan, satisfactory to the Board, which addresses post abandonment ongoing liability.

## 2.0 DÉCISION



2.0

**La décision de l'Office Canada - Nouvelle-Écosse des hydrocarbures extracôtiers est la suivante : la modification au plan de mise en valeur du projet Cohasset proposée par demandeur est approuvée sous réserve des conditions ci-après :**

### **CONDITION 1 : EXIGENCES DU RAPPORT D'EXAMEN PRÉALABLE, MESURES D'ATTÉNUATION ET SUIVI**

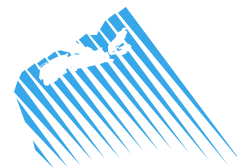
Demandeur doit satisfaire à toutes les exigences et se conformer à toutes les mesures d'atténuation et de suivi énoncées dans le Rapport d'examen préalable - Cessation d'exploitation du projet Cohasset Phase II, telles qu'elles sont détaillées dans l'Annexe 1, dans le présent Rapport de décision.

### **CONDITION 2 : RETRAIT DES VANNES AU-DESSUS DU SOL**

Demandeur doit retirer les parties supérieures des vannes au-dessus du sol, y compris les dispositifs de levage, les anodes sacrificielles et tout autre élément qui dépasse de la base des vannes.

### **CONDITION 3 : RESPONSABILITÉ PERMANENTE**

Avant que l'Office ne délivre une autorisation de travail pour les travaux de démantèlement de la Phase II, demandeur doit soumettre à l'Office un plan, satisfaisant pour ce dernier, relativement à la responsabilité permanente après la cessation de l'exploitation.



## 3.0 BACKGROUND

### 3.1 BOARD AUTHORITY

3.1

The Board was established in 1990 by the proclamation of the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, S.C. 1988, c.28 by the Government of Canada, and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*, S.N.S. 1987, c.3 by the Province of Nova Scotia (“Accord Acts”). The Board is an independent body and manages petroleum resources in the Nova Scotia offshore area on behalf of the federal and provincial governments. The Board is empowered to make decisions respecting petroleum resource activities in the offshore area. In the case of fundamental decisions, the federal and provincial Ministers with responsibility for the Accord Acts, have certain powers to set aside the decisions of the Board.

### 3.2 DEVELOPMENT PLAN REGULATORY FRAMEWORK

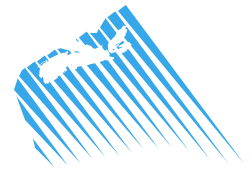
3.2

In accordance with the Accord Acts, prior to undertaking any work or activity in the offshore area relating to developing a pool or field, a development plan must be submitted to the Board and approval of this plan must be obtained. Part 1 of the development plan must outline the general approach to development including details regarding the location, nature and timing of development, pool and field evaluations, amount of petroleum to be recovered and production rates, costs and environmental factors, preferred production systems, decommissioning plans and any technical studies required to support the proposed plan. The Accord Acts contemplate that revisions to an approved development plan may be made from time to time with the Board’s approval.

Notwithstanding the approval of a development plan, no activities related to the exploration for, development of or transportation of petroleum can be conducted without a specific authorization issued by the Board. This applies to the Cohasset Project decommissioning activities. Prior to issuing any such authorizations, the Board requires that the following be submitted in a satisfactory form:

- Canada-Nova Scotia Benefits Plan
- Safety Plan
- Environmental Assessment
- Environmental Protection Plan
- Financial Security
- Summary of Proposed Operations
- Certificate of Fitness, if applicable
- Declaration of Operator

If a development plan has been approved by the Board, all operations related thereto must be conducted in accordance with the approved plan unless the Board approves an amendment. The approval of an amendment to Part I of a development plan is a fundamental decision. Notice of a fundamental decision must be given to both the federal Minister of Natural Resources and the provincial Energy Minister. The Board’s decision cannot be implemented during the 30 day notice period. However, the federal minister and provincial minister may jointly approve the Board’s decision or, the provincial minister acting alone, may set the decision aside during the 30 day notice period.



### 3.3 COHASSET PROJECT DESCRIPTION

3.3

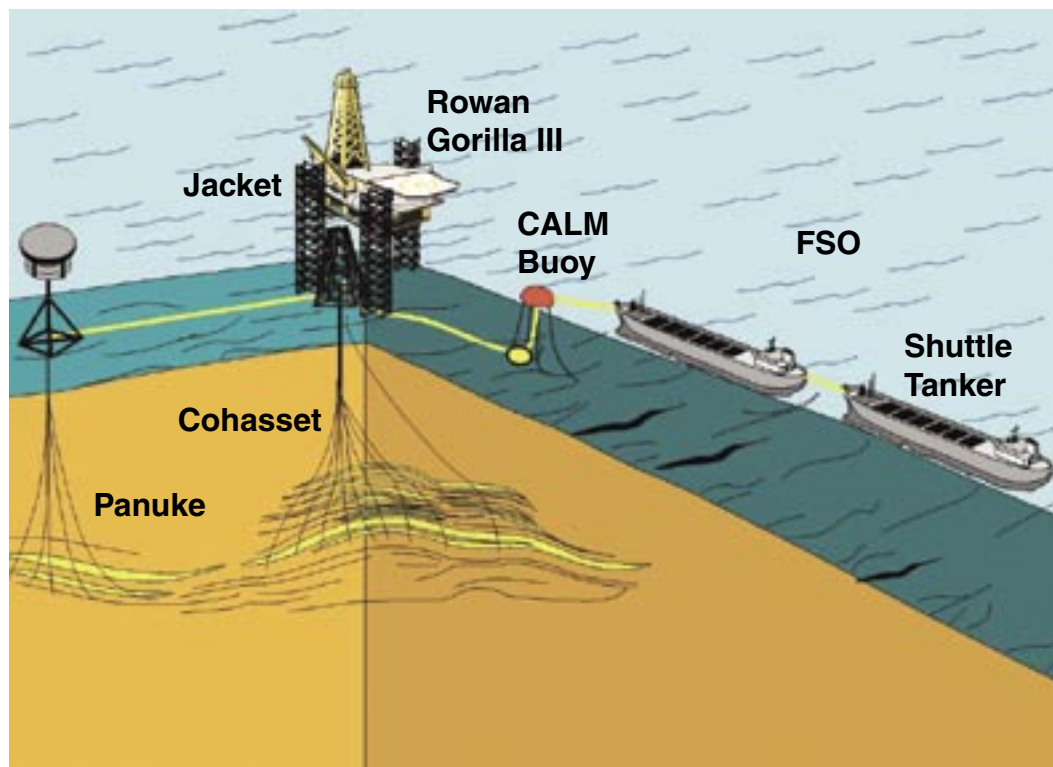
In 1990, the Cohasset Project development plan was approved, with conditions. The project began production in June 1992, and became Canada's first offshore oil project. It reached its economic limit and production ceased on December 17, 1999. The project produced a total of 7.1 million cubic metres of oil (44.5 million barrels) over its seven-year life, 1.5 million cubic metres of oil (9.5 million barrels) more than the original development plan estimates.

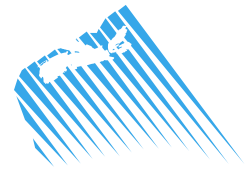
The project site is located approximately 41 kilometres southwest of Sable Island. The project was initially developed by LASMO Nova Scotia Limited (LASMO), a wholly-owned subsidiary of LASMO plc of the United Kingdom, in partnership with Nova Scotia Resources (Ventures) Limited, a provincial crown corporation. Pan-Canadian (EnCana) acquired LASMO's 50% ownership in January 1996 and became operator of the project.

The project produced light oil from two separate fields, called Cohasset and Panuke, which are about eight kilometres apart. A platform was located at each field. A number of wells were drilled through jackets at each of these platforms using the jack-up drilling rig, Rowan Gorilla III, which also served as the production facility. Production flowed between the fields through a subsea flowline. The oil was processed through facilities and equipment located on the rig. Following processing, it was stored in a specially adapted tanker, which was moored to a nearby buoy. Processed oil was periodically transferred from the storage tanker to a shuttle tanker, which delivered the oil to markets (See Figure 1).

In 1999, the operator completed an evaluation of production operations, and determined that the project was no longer economically viable. The operator subsequently notified the CNSOPB of its intention to cease production and received the necessary approvals.

FIGURE 1. SCHEMATIC OF THE PROJECT DURING ITS OPERATIONAL PHASE





## 4.0 1990 APPROVED DEVELOPMENT PLAN

### 4.1 ORIGINAL DECOMMISSIONING PLAN

4.1

The existing decommissioning requirement is stated on page 59 of the Board's 1990 Development Plan Decision Report:

*“Wells will be abandoned below the seabed using well established procedures. Leased equipment, including the jack-up rig, CALM Buoy, storage tanker and shuttle tankers will be released and removed completely from the site. Subsea flowlines will be retrieved from the seabed and removed to shore. Wellhead jackets will be removed by severing the piles holding them to the floor. Experience in these procedures is being established through platform abandonments in the Gulf of Mexico. The Applicant did not state if the wellhead jackets would be brought to shore for scrap or disposed of at sea. Regulations require that the Applicant submit specific plans for abandonment of each part of the installation prior to conducting these operations.”*

The Applicant's plans for decommissioning and abandonment of the project at the end of economic production were satisfactory to the Board at the time the development plan was approved.

### 4.2 PHASED DECOMMISSIONING

4.2

In 1999, the operator applied to the CNSOPB and received approval to complete the decommissioning of the project in two independent phases. The first phase consisted of rendering the facilities free of hydrocarbon and other substances by abandoning the wells, flushing and cleaning the process and utility systems, ensuring all the vessels and pipe work were gas and oil free and preserving the fixed components for potential future use in the proposed Deep Panuke Project. Subsequently, the Deep Panuke development options were refined to the point where reuse of the Cohasset Project facilities was no longer a consideration and the decision was made to permanently abandon and decommission the facilities and the fields.

Phase I of decommissioning was completed, with Board authorization, between 1999 and 2003. This work included the following:

- Shutdown of production facilities;
- Demobilization and removal of all mobile components;
- Transition of the Cohasset and Panuke platforms and all subsea equipment to a 'cold' depressurized and de-energized state;
- Abandonment of all wells associated with the Cohasset Project.

Phase II of decommissioning was to be carried out following final approval from the Board. Phase II consisted of disconnecting the flowlines and cable from the Cohasset and Panuke platforms and PLEMs, removal of stabilization mattresses from the seafloor, removal of the flowlines, cable and PLEMs from the seafloor, removal of both platforms and re-using, recycling or disposing of all recovered material. The Applicant has applied to amend Phase II of decommissioning.



## 5.0 PROPOSED AMENDMENT TO PART ONE OF THE DEVELOPMENT PLAN

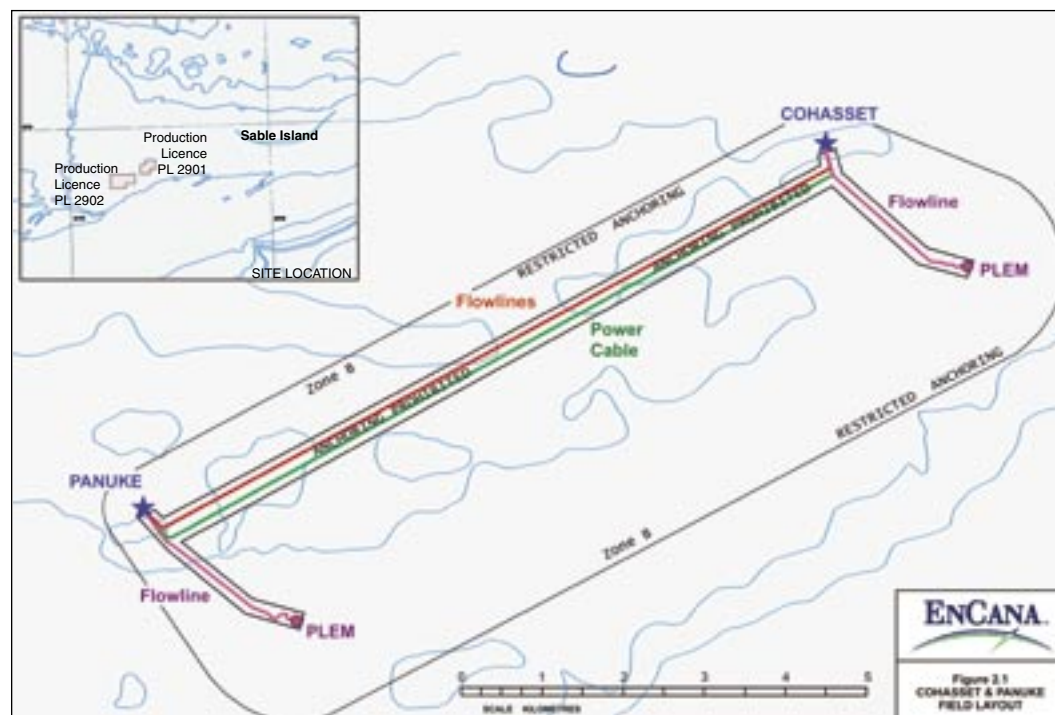
5.0

In December 2003, the operator submitted an application to the CNSOPB to amend the Cohasset development plan to allow a decommissioning program based on the partial removal of the subsea equipment and material (see Appendix 2). Under the partial removal option, “the flowlines will be disconnected from the platforms and decommissioned in situ” and “the export line Pipeline End Manifolds (PLEMs) or PLEM topsides may require remedial action to eliminate any snagging hazards.” (See Figure 2). The equipment and material that the Applicant proposes to leave in place is as follows:

Item	Quantity	Description	Weight (tonnes)
1	10 km	8” flexible inter-field production flowline	610
2	10 km	6” flexible inter-field water injection flowline	485
3	2.5 km	6” flexible export flowline - Cohasset location	106
4	2.5 km	6” flexible export flowline - Panuke location	106
5	10 km	Inter-field power cable	122
6	1	Pipeline End Manifold (PLEM) - Cohasset	54
7	1	Pipeline End Manifold (PLEM) - Panuke	52
8	512	Concrete mattresses - various designs	1735
		Total Weight	3270

The Applicant has indicated that the reuse of the pipelines and the power cable is not a viable option as they have reached the limit of their useful design life.

FIGURE 2. LOCATION OF THE PROJECT AND SCHEMATIC OF PIPELINE STRUCTURE





## 6.0 REVIEW PROCESS

### 6.1 CNSOPB REVIEW PROCESS

### 6.1

Decommissioning was considered in the original Cohasset Project public review, undertaken as part of the development plan review process in 1990. The Board has since been designated a federal authority under CEAA. Therefore, the decommissioning proposal required a CEAA environmental assessment, regardless of the decommissioning option proposed by the Applicant. The Board's review process for this amendment has integrated the technical and CEAA review components.

An important aspect of both the technical and CEAA review components was public comment on the proposal. In May of 2004, the Board sought written submissions from the public in a 45 day comment period on EnCana's application to amend the Cohasset Project development plan and on the Environmental Assessment (EA) for the decommissioning. Notices were published in several publications. The proposed amendment to the development plan, CEAA project description, scope of assessment and EA, as well as the Comparative Risk Assessment were placed on the CNSOPB's website and made available for public comment. A chronological listing of the consultation process can be found on the CNSOPB website ([www.cnsopb.ns.ca](http://www.cnsopb.ns.ca)).

The Board also utilized its Fisheries Advisory Committee (FAC) as a means of providing information to the fishing industry and obtaining advice regarding the proposed amendment. EnCana made a presentation regarding its proposal to the FAC on December 10, 2003. The membership of the FAC is shown in Appendix 3.

During the 45 day public comment period, which ended on June 23, 2004, the Board received five written submissions from the public. Additionally, written comment was received from Department of Fisheries and Oceans (DFO) and Environment Canada (EC).

### 6.2 CEAA ENVIRONMENTAL ASSESSMENT

### 6.2

Pursuant to CEAA, EnCana submitted a project description on November 19, 2003. Following consultation among the Responsible Authorities in accordance with Federal Coordination Regulations, a determination was made that a screening level assessment would be carried out.

The CNSOPB prepared the scoping document titled, *EnCana Corporation Cohasset/Panuke Phase II Decommissioning: Description of the Factors and Scope of Those Factors* (April 16, 2004). In developing this document, the CNSOPB consulted with other regulators and circulated a draft for comment to the CNSOPB's FAC. The CNSOPB broadened the scope of the project by requiring an assessment of the total removal option as well as the proposed amendment.

The Applicant prepared the EA. This included consultation with regulators and fisheries groups and a review of relevant international and Canadian regulatory requirements with respect to decommissioning. The scope of the EA also included any potential accidental events and malfunctions that may occur in relation to the decommissioning project.

In addition to the public consultation noted above, the CNSOPB indicated on the CEAA registry that public participation was requested as part of the EA process. All public comments received by the CNSOPB on the EA were distributed to the Responsible Authorities (RAs) and EnCana. They were also posted on the public registry.

The CNSOPB, in conjunction with EC and DFO prepared a Screening Report which was completed on November 8, 2004. It concluded that, taking into account the implementation of the mitigation set out in the Screening Report and those committed to by EnCana, neither partial nor total removal proposals is likely to cause significant adverse environmental effects. A copy of the Screening Report was made public on November 8, 2004 and five written comments on the Screening Report were received. EnCana responded to these comments on November 22, 2004. The Screening Report and all related correspondence are available on the CNSOPB website, and at the Board offices.





## 7.0 DISCUSSION AND CONDITIONS

### 7.1 INFORMATION CONSIDERED BY THE BOARD

7.1

The Board considered information submitted by the Applicant, including the revised development plan for the Cohasset Project, submitted on December 10, 2003, the CEEA Screening Environmental Assessment and the Cohasset Project Subsea Decommissioning Comparative Risk Assessment. The Board also considered the public comments received during the two public comment periods and the information and recommendations that arose from the CEEA Screening Report.

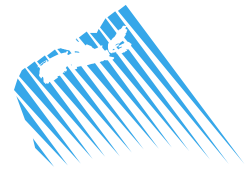
### 7.2 COHASSET PROJECT DEVELOPMENT PLAN AMENDMENTS

7.2

The Board received comments which suggested that the Applicant should be held to the original decommissioning and abandonment plan, proposed by LASMO in 1990, as set out in the approved development plan, because it constituted a “commitment” or “agreement”. As previously stated, the legislation allows for the amendment of development plans. Amendments must be approved by the Board, and may be based upon such factors as new information, advancements in technology, operational experience, enhancements in safety and environmental protection, and optimizing resource conservation. The Board believes that an operator should not be held to the specific provisions of an approved development plan, where alternative means would be justified based upon these factors. In fact, the Board has previously approved amendments to the Cohasset development plan which are summarized below:

Original Development Plan	Approved Amendment
Development called Cohasset/Panuke Project.	Development called Cohasset Project.
Production jack-up to be moved to Cohasset location prior to project start up after drilling all Panuke wells.	Production jack-up to remain at Panuke location for the first production season, then move to Cohasset after Panuke wells are drilled.
Panuke reservoir to come on stream first with Cohasset wells coming on gradually as they are drilled over the first production season.	Cohasset wells to be delayed until the second production season, after the production jack-up is moved.
Peak Oil rates of 4770 cubic metres per day (30,000 barrels per day), average oil rates of 4530 cubic metres per day (28,500 barrels per day).	Peak oil rates of 11130 cubic metres per day (70,000 barrels per day), average oil rates of 6360 cubic metres per day (40,000 barrels per day).
Three producers, one injector at Panuke, with one spare well slot; possible conversion of injector to producer discussed.	Three initial producers, injector delayed to evaluate aquifer, up to five producers depending on results.
Cohasset depletion with five producers, two injectors, three spare well slots.	Cohasset depletion with six producers, injectors dependent on aquifer evaluation.
5,551,000 cubic metres oil (34.9 million barrels) recovered.	7,584,000 cubic metres oil (47.7 million barrels) recovered
Project costs total \$565 million (1989 dollars)	Project costs total \$913 million (1991) dollars
First producing season to end October 31, 1992	First producing season to end November 30, 1992





### Original Development Plan

### Approved Amendment

### 7.2 CON'T

Remedial and development work at the Panuke field will be postponed until the Cohasset field has been depleted.

Full development of the Panuke field at an early stage and the concurrent production of both fields over the life of the project.

Use of storage tanker on a full-time basis.

Shuttle tankers will be allowed to connect to the loading buoy to take oil directly from the production facilities with specific approval for each occasion.

## 7.3 HEALTH AND SAFETY

## 7.3

The health and safety of offshore workers is of paramount concern to the Board. All offshore operations involve some level of risk which must be assessed prior to activities being carried out to determine if the risk falls within acceptable levels. In some cases mitigative measures must be incorporated or the activities must be carried out by alternative means.

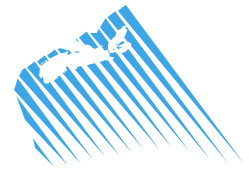
EnCana commissioned WS Atkins to conduct a risk assessment of the two decommissioning options (partial removal and total removal) for the Cohasset Project subsea equipment. This assessment was performed in three stages:

- a Hazard Identification (HAZID) exercise to identify the main hazards associated with the decommissioning operations;
- a Qualitative Risk Assessment making use of an EnCana established risk matrix; and
- a Quantitative Risk Assessment making use of historical data available from the UK Health and Safety Executive (HSE) where applicable.

The results of this assessment are contained in a report titled *Cohasset Project Subsea Decommissioning Comparative Risk Assessment*, dated April 2004 (CRA). This report was submitted by EnCana in support of its application to amend the approved development plan.

The CRA concludes that the partial removal options results in the lowest risk to personnel during the period that the decommissioning operations are being conducted. This is primarily due to the reduced number and duration of activities to be performed, and the lower staffing levels that would be required. The quantitative risk assessment performed shows that the total removal option is 8 to 10 times more likely to result in a fatality than the partial removal option for which only the pipeline end manifolds (PLEM's) topsides would be recovered, depending on the type of flowline recovery option selected.

The qualitative risk assessment categorized each of the identified risks as low, medium, high, or extreme. The only extreme risk activity identified in the CRA is the offshore cutting activity on the flowline (total removal) for both the manual and hydraulic operations. The CRA states that this is primarily due to the manual handling requirements of both operations. This extreme risk activity is eliminated if the partial removal option is chosen, and if the reel recovery method is chosen for flowline removal under the total removal option. There were no other extreme risk activities identified.



### 7.3 CON'T

The main high risk activities identified by the CRA are as follows:

- breaking the flowline connections subsea as the diver may be exposed to hydrostatic pressure or containment issues with the contents of the riser;
- lifting the mattresses to the sea surface as the diver may be exposed to a dropped object risk and personnel on the deck will also be exposed to risks associated with lifting heavy items;
- lifting the PLEM's to the sea surface as similar risks to the mattress recovery operation may occur.

The longest duration of these high risk activities is the lifting of the approximately 512 concrete mattresses. The design of these mattresses varies, but two are shown in Appendix 4. This high risk activity is only required for total removal of material; the partial removal involves abandoning the concrete mattresses in place. EnCana estimates the total removal would involve an offshore diving program of at least 480 person-days. It is anticipated that a twelve person saturation diving team would be utilized for recovery rigging for all the subsea components. In contrast, EnCana estimates the partial removal program would involve a diving program of approximately 66 person-days.

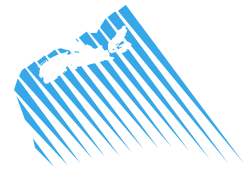
The number of occurrences of each type of risk is summarized in the CRA as follows:

Risk Category	Total Removal Case - Reel Case	Total Removal - Manual Cut	Total Removal - Hydraulic Cut	Partial Removal - Full PLEM	Partial Removal - PLEM Topsides only
Low	34	36	39	6	5
Medium	33	33	33	10	9
High	13	16	14	4	4
Extreme	0	1	1	0	0
Total	80	86	87	20	18

The quantitative risk assessment used historical HSE data and estimated personnel levels to assess risk to life. The increased risk of fatality ("fatality factor"), for the various removal options, compared to the partial removal option where the PLEM topsides are removed, is summarized in the CRA as follows:

Removal Option	Fatality Factor
Partial Removal - PLEM Topsides	-
Partial Removal - Full PLEM	1 .5
Total Removal - Reel Recovery	8
Total Removal - Semi Automatic Cutting	8 .5
Total Removal - Manual Cutting	10

The Board has compared the conclusions of the CRA with findings from other jurisdictions internationally in which similar studies have been conducted. Such risk assessments commonly demonstrate that pipeline removal options, as compared to abandoning them in place, carry a greater risk to personnel due to increased hands-on activities.



## 7.3 CON'T

Diving programs represent one of the highest risk activities associated with offshore oil and gas operations. Therefore, diving operations are, to the extent possible, kept to a minimum. Considering the amount of material involved with the recovery of flowlines, mattresses and other associated materials, the number of diving hours required is considerable, significantly increasing the risk of injury or fatality during the execution of the decommissioning work. Furthermore, the Board is concerned that the condition of the concrete mattresses is unknown. If they have deteriorated to the point that some of the concrete is beginning to break apart, risks associated with handling these mattresses would be significantly higher than that contemplated by the CRA.

Given that the environmental assessment shows that partial removal is not likely to cause significant adverse environmental effects, the Board does not believe that it would be prudent to put personnel at increased risk to remove the flowlines and related material.

The Board is satisfied that partial removal can be executed safely provided that appropriate safe work practices are followed. The level of individual risk for activities related to the partial removal option was confirmed by the author of the CRA to be within the ALARP (As Low As Reasonably Practicable) tolerable risk band.

## 7.4 ENVIRONMENT

## 7.4

The decommissioning proposal was subject to the CEAA environmental assessment process. A detailed description of the state of the environment and a thorough environmental assessment analysis is provided in the Screening Report, available on the Board's website.

The CEAA environmental assessment determined that, taking into account the implementation of the mitigation measures set out in the Screening Report, neither partial nor total removal is likely to cause significant adverse environmental effects. However, the Screening Report did identify certain requirements, mitigation and follow-up that must be carried out.

### **CONDITION 1: SCREENING REPORT REQUIREMENTS, MITIGATION AND FOLLOW-UP**

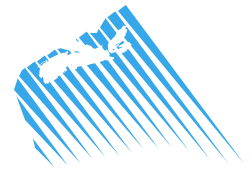
**The Applicant shall comply with all requirements, mitigation and follow-up measures identified in the Environmental Screening Report - Cohasset Phase II Decommissioning, as listed in Appendix 1, of this Decision Report.**

## 7.5 COMMERCIAL FISHERIES

## 7.5

The CEAA environmental assessment considered all environmental effects including the potential impact of a partial removal on commercial fisheries. During the consultative process, the fishing industry expressed its opposition to the partial removal option, both during the initial public comment period and in response to the Screening Report. Concerns expressed included that the fishery would be restricted in the area, either because of known interaction, in the case of the quahog fishery, or to avoid the possibility of gear damage for the conventional fishery. Concern was also expressed respecting cumulative effects of other decommissioned pipelines in the future and a compensation process if gear damage did occur.

When abandonment has been completed, the restricted anchoring and prohibited anchoring zones, as shown in Figure 2, will be removed. Application will be made to the Canadian Hydrographic Service to remove all charted features associated with the project, except for a notification of the abandoned flowlines. The Board acknowledges that for certain fisheries, a small area may not be accessible. However, as noted in the Screening Report, this area will not represent a significant restriction to the fishery. For example, in the case of the quahog fishery, less than 0.01 percent of the available resource will be affected. The Board also acknowledges that other projects, specifically the Sable Offshore Energy Project, plan to decommission its flowlines in place, however these are buried and should have minimal impact on the fishery.



The Board believes that the materials which will be left on the sea floor, at the Cohasset Project location, will not be a hazard to conventional fishing gear. However, the Board wishes to further reduce this risk of interference with the fishery. Although EnCana has indicated the Cohasset PLEM is essentially buried, and the Panuke PLEM (pictured in Appendix 4) base is almost covered, the Board will require that the material which poses the greatest potential for snagging be removed. This, coupled with the self-burial process described in Section 7.7, should greatly reduce the potential impact on commercial fisheries.

## **CONDITION 2: REMOVAL OF PLEM TOPSIDES**

**The Applicant shall remove the topsides from the PLEMs, including lifting shackles, sacrificial anodes and any other material that extends beyond the PLEM base.**

### **7.6 INTERNATIONAL DECOMMISSIONING PRACTICE**

**7.6**

The Applicant asserted that the proposed approach of abandoning the subsea flowlines in place is consistent with international decommissioning practice as well as decommissioning plans for other offshore developments in Atlantic Canada. Given that this is the first decommissioning of an offshore oil project in Canada, international experience with decommissioning, primarily from the North Sea and the United States, has been reviewed by the Board. Key international decommissioning practices pertinent to the decommissioning proposal are summarized below:

Norway:

- All platforms must be removed except those over 10,000 tonnes which may be considered for in situ disposal.
- Preferred option is to abandon pipelines and associated materials in place provided they do not impede other users of the sea (Norwegian Petroleum Directorate, 2003).

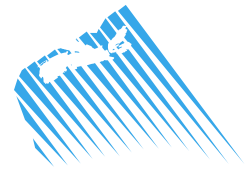
United Kingdom:

- All platforms must be removed except those over 10,000 tonnes which may be considered for in situ disposal.
- Pipelines are addressed case by case. Major pipelines are candidates for abandonment in place. Small diameter flowlines that are neither trenched nor buried are normally removed (Department of Trade and Industry, 2000).

United States:

- All platforms must be removed.
- Pipelines and associated materials can be abandoned in place provided they do not constitute a hazard to navigation or commercial fishing (Minerals Management Service, 2002).

The Board believes that the proposed partial removal of the subsea flowlines and associated material is consistent with international conventions and practices regarding decommissioning of oil and gas facilities.



## 7.7 SELF-BURIAL PROCESS

7.7

The Applicant stated that the flowlines will be self-burying and although they may become unburied by events such as severe storms, they are expected to bury again after such events. The results of the September 2004 subsea survey inspection indicate that the self-burial process predicted in the Applicant's earlier submissions is now essentially complete. Uncertainty remains as to the rate at which covering and uncovering of the subsea equipment occurs and the effect of severe storms on the process. A monitoring and reporting program would reduce the level of uncertainty. The Board notes that EnCana will, pursuant to the CEEA Screening Report, be required to submit a monitoring program to assess the self-burial process following decommissioning. This monitoring requirement is incorporated into this Decision Report by Condition 1.

## 7.8 ONGOING LIABILITY

7.8

The Applicant has acknowledged that the partial removal option presents some potential for well bore and seafloor ongoing liability. In this regard, the Board's most significant concern is the potential impact on commercial fisheries as discussed in Section 7.5. While the potential for this will be significantly reduced by the Applicant's adherence to Condition 2, the Board believes the issue of ongoing liability must be addressed.

The Applicant has proposed entering discussions with the CNSOPB regarding post decommissioning liability. The Board currently holds financial responsibility documentation totaling 35 million dollars (\$35,000,000) for abandonment of the Cohasset Project. These funds will be maintained until the project abandonment has been completed and ongoing liability for material to be left in place has been addressed to the satisfaction of the Board.

### CONDITION 3: ONGOING LIABILITY

**Prior to the Board issuing a work authorization for Phase II decommissioning work, the Applicant shall submit to the Board a plan, satisfactory to the Board, which addresses post abandonment ongoing liability.**

## 7.9 SOCIO-ECONOMIC IMPACT

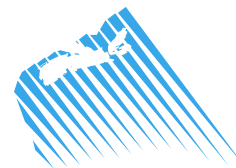
7.9

Due to the limited scope of the proposed activities, the Board has not identified any negative socio-economic impacts related to the Cohasset Project decommissioning and abandonment.

## 7.10 CANADA-NOVA SCOTIA BENEFITS

7.10

Provisions for industrial benefits are found in the July 16, 1990 Revised Canada-Nova Scotia Benefits Plan for the Cohasset Project, which was approved, with conditions, in the Cohasset Project Decision Report of April 7, 1992. The scope of this Plan includes abandonment of the Cohasset facilities. The Applicant is required to comply with the approved Canada-Nova Scotia Benefits Plan.



## APPENDIX 1

### SCREENING REPORT REQUIREMENTS, MITIGATION AND FOLLOW-UP

#### REQUIRED MITIGATION AND FOLLOW-UP

The following is a list of the proposed conditions to be imposed on the proponent for mitigation and follow-up:

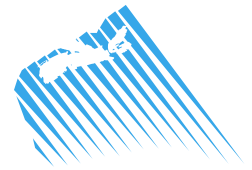
#### SUMMARY OF MITIGATION

##### TOTAL AND PARTIAL REMOVAL:

- a) EnCana shall adhere to its own mitigation commitments outlined in the EA and supporting documents.
- b) EnCana has committed to having an environmental observer to monitor any interaction with marine mammals, marine birds and species at risk. Reports shall be submitted to the CNSOPB, for review by the RAs.
- c) EnCana shall prepare and submit a protocol to the CNSOPB, for review by the RAs, prior to the onset of project activities, which outlines the steps to be taken should any harmful interaction occur with marine mammal or turtle species at risk.
- d) EnCana shall remove any oil found in the top of risers or flowlines prior to releasing riser water into the marine environment.
- e) EnCana shall be required to follow its Code of Practice for Sable Island throughout the Project activities. If vessels or helicopters approach within 2 km of Sable Island, the circumstances under which this occurred shall be reported to the CNSOPB.
- f) EnCana shall monitor weather forecasts throughout operations to allow sufficient time to suspend activities should weather conditions dictate.
- g) EnCana shall prepare and submit to the CNSOPB for review by the RAs, a plan that describes measures that will be taken to protect environmental components (e.g. birds, Sable Island, and whales) in the event of a spill. All vessels working on the Project shall have a spill response kit onboard with sufficient capacity to deal with small spills.
- h) 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." A permit is required from the Canadian Wildlife Service of EC to implement this protocol.
- i) EnCana shall prepare and submit a Waste Management Plan to the CNSOPB, for review by the RAs, prior to the onset of project activities. The plan shall consider all materials associated with decommissioning and take into account those elements included in EC comments dated 5 July 2004 (Appendix II, Developing a Waste Management Plan).

EnCana shall consult with EC, the Nova Scotia Department of Environment and Labour, and the Nova Scotia Department of Transportation and Public Works to ensure that hazardous wastes are properly disposed of in compliance with applicable regulations. If hazardous wastes are to be disposed of in provinces other than Nova Scotia or outside of Canada, the proponent will ensure adherence to the *Interprovincial Movement of Hazardous Waste Regulations* and the *Export and Import of Hazardous Wastes Regulations*.

## APPENDIX 1 CON'T



## APPENDIX 1 CON'T

- j) All vessels used in the removal that have been mobilized from foreign waters will be required to follow the Transport Canada Guidelines for Ballast Water Exchange in Canadian Waters. Transport Canada is now proceeding with Ballast Water Regulations, finalization and enactment anticipated during 2004/05. Upon enactment, vessels will be required to adhere to the ballast water regulations.
- k) EnCana shall submit an updated review of species at risk information, and any changes to its mitigation, to the CNSOPB for review by the RAs once the timing of the project is better known. At this time, EnCana shall reassess proposed mitigation and submit a plan, to be approved by the RAs, to protect species at risk.

### **TOTAL REMOVAL ONLY:**

- l) Should the Total Removal Option be selected, the proponent shall provide, if available, additional sediment quality information. If unavailable, or if the additional information is inadequate, the proponent shall design and implement a sampling and analysis program for sediments in close proximity to the two platforms. The plan shall be reviewed by EC in advance of implementation and the results shall be submitted as part of a Disposal at Sea Permit application.
- m) Should a HADD authorization be required, EnCana shall submit to DFO a compensation plan that adequately satisfies the requirements of the "No Net Loss" principle of DFO's Policy for the Management of Fish Habitat.

### **SUMMARY OF FOLLOW-UP AND MONITORING**

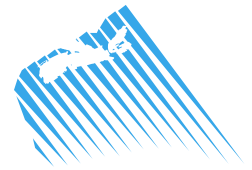
#### **TOTAL AND PARTIAL REMOVAL :**

- a) Upon completion of project activities, the proponent shall verify project-associated emission estimates of PM, NO<sub>x</sub>, SO<sub>2</sub>, VOC, CO<sub>2</sub> based on actual vessel operations and US EPA methods. This emission data will support an accounting of cumulative offshore emissions and contribute to a reasonable information base for future environmental assessments and continuous improvement initiatives.

#### **PARTIAL REMOVAL ONLY:**

- b) If the Partial Removal Option is chosen, EnCana shall prepare and submit a monitoring program, including the appropriate mitigation, to the CNSOPB for review by the RAs to monitor the state of burial of equipment following decommissioning.
- c) If interference with fishing equipment occurs, EnCana shall adhere to the CNSOPB *Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity (March 2002)*.

## APPENDIX 2



## APPENDIX 2

# AMENDMENT TO THE COHASSET PROJECT DEVELOPMENT PLAN PROPOSED BY THE APPLICANT

### SECTION 1.9 (ABANDONMENT)

*“It is expected that economic recovery limits will be reached at the end of the sixth production year. At that time, the offshore site at both Cohasset and Panuke will be restored on the following basis:*

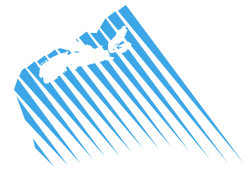
- *Wells will be plugged with cement and the casing removed to a depth of 6m below seafloor.*
- *Wellhead jackets will be removed by severing the piles below the seafloor.*
- *Interfield flowlines will be purged and **will be disconnected from the platforms and decommissioned insitu.***
- *The jack-up drilling and production unit will be demobilized and removed from location.*
- *The CALM mooring and loading buoy will be removed and all anchors and chains retrieved. The export loading lines will be **decommissioned insitu similar** to the interfield flowlines. **The export line Pipeline End Manifolds (PLEMs) or PLEM Topsides may require remedial action to eliminate any snagging hazards.***
- *Tankers will cease operations at the field facilities.”*

### REVISED SECTION 5.8.2 (PERMANENT ABANDONMENT)

*“When the Cohasset and Panuke fields have been depleted, the production facilities will be removed. Wells will be abandoned in accordance with all regulations and the well jackets removed to a level below the seabed. Residual hydrocarbons in the flowlines will be flushed out to the Cohasset facility, and the flowlines **will be disconnected from the platforms and decommissioned insitu.** Hydrocarbons from the condensate export line will be flushed out to the storage vessel and recovered for possible future use. **The export line Pipeline End Manifolds (PLEMs) or PLEM Topsides may require remedial action to eliminate any snagging hazards.**”*



### APPENDIX 3



### APPENDIX 3

## CNSOPB FISHERIES ADVISORY COMMITTEE MEMBERSHIP

- |                                                    |                                                     |
|----------------------------------------------------|-----------------------------------------------------|
| Area 19 Snow Crab Fishermen's Association          | Maritime Fishermen's Union                          |
| Area 24 Snow Crab Fishermen's Association          | Natural Resources Canada                            |
| Atlantic Herring Co-op Ltd. /                      | Netukulimkewé'l Commission                          |
| Full Bay Scallop Association                       | Nova Scotia Department of Agriculture and Fisheries |
| Clearwater Fine Foods Inc.                         | Nova Scotia Department of Energy                    |
| CNSOPB                                             | Nova Scotia Fish Packers Association                |
| Eastern Shore Fisheries Protective Association     | Nova Scotia Sword Fishermen's Association           |
| Fisheries & Oceans Canada                          | Seafood Producers Association of Nova Scotia        |
| Guysborough County Inshore Fishermen's Association |                                                     |

### APPENDIX 4

### APPENDIX 4

## PANUKE PLEM AND STABILIZATION MATTRESSES



Figure 3. Panuke PLEM



Figure 4. Stabilization Mattress



Figure 5. Stabilization Mattress



## APPENDIX 5

### ACRONYMS

### APPENDIX 5

***ALARP***

As Low as Reasonably Practicable

***CALM***

Catenary Anchor Leg Mooring

***CEAA***

Canadian Environmental Assessment Act

***CCO***

Chief Conservation Officer

***CNSOPB***

Canada-Nova Scotia Offshore Petroleum Board

***CRA***

Comprehensive Risk Assessment

***CSO***

Chief Safety Officer

***DFO***

Department of Fisheries and Oceans

***DSV***

Diving Support Vessel

***EA***

Environmental Assessment

***EC***

Environment Canada

***EPP***

Environmental Protection Plan

***FA***

Federal Authority

***FAC***

Fisheries Advisory Committee

***FSO***

Floating, Storage and Offloading

***HADD***

Habitat, Alteration, Disruption or Destruction

***PLEM***

Pipeline End Manifold

***RA***

Regulatory Authority

***ROV***

Remote Operating Vehicle

***VEC***

Valued Ecosystem Component





**CANADA - NOVA SCOTIA OFFSHORE PETROLEUM BOARD**  
**OFFICE CANADA - NOUVELLE-ÉCOSSE DES HYDROCARBURES EXTRACÔTIERS**