CANADA-NOVA SCOTIA OFFSHORE
PETROLEUM BOARD

DEEP PANUKE OFFSHORE GAS DEVELOPMENT

CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

DEVELOPMENT PLAN DECISION REPORT

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CANADA – NOVA SCOTIA OFFSHORE PETROLEUM BOARD

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September 11, 2007

The Honourable Gary Lunn
Minister of Natural Resources
Natural Resources Canada
580 Booth Street, 21st Floor
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The Honourable Bill Dooks
Minister of Energy
Nova Scotia Department of Energy
5151 George Street
Halifax, Nova Scotia
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Dear Ministers:

Re: Fundamental Decision: Approval of Part I of *Deep Panuke Offshore Gas Development,* 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 (Accord Acts).

On November 9, 2006, EnCana Corporation submitted the *Deep Panuke Offshore Gas Development,* Development Plan and Canada-Nova Scotia Benefits Plan to the Board. Earlier this year, the Project underwent an extensive Public Process. At a Board meeting held on September 10, the Board approved, with conditions, the Deep Panuke Canada- Nova Scotia Benefits Plan and Development Plan. Copies of the Board's Decision Reports are enclosed.

The approval of Part I of the Development Plan is a fundamental decision under the Accord 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,

Diana L. Dalton
Chair & Acting Chief Executive Officer

Brian Giroux
Board Member

William Hogg
Board Member

Sara Jane Snook
Board Member

Keith R. Evans, QC
Board Member

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Executive Summary

The proposed Deep Panuke Offshore Gas Development Project (the Project) involves the production of natural gas from an offshore field located approximately 250 km southeast of Halifax and the transportation of that gas via subsea pipeline to shore, and ultimately, to markets in Canada and the United States. Production is scheduled to begin in 2010 and is anticipated to continue for a mean production life of 13 years. Over the life of the Project up to 25.1 E9M3 (892 Bcf) of natural gas will be produced through a facility sized for a peak gas rate of 8.5 X 10^6 m^3/d (300 MMscf/d). The Project will utilize a jack-up type Mobile Offshore Production Unit (MOPU) tied back to production wells with subsea flowlines and umbilicals.

In accordance with the Accord Acts a project such as this can only proceed if the CNSOPB has approved a Canada-Nova Scotia Benefits Plan and a Development Plan. Consequently, on November 9, 2006, EnCana Corporation (the Proponent) filed a Canada-Nova Scotia Benefits Plan and a Development Plan, along with other documentation, with the CNSOPB. Applications were also filed with the National Energy Board (NEB). The filing of these applications, and requirements for certain approvals under federal legislation, triggered a Comprehensive Study environmental assessment under the Canadian Environmental Assessment Act (CEA Act).

The CNSOPB appointed a Commissioner to conduct a public review of the Proponent's plans. The NEB authorized one of its members to hear evidence and acquire necessary information for the purpose of making a report and recommendation to the NEB. Pursuant to a Memorandum of Understanding (MOU) between the CNSOPB and the NEB and Joint Directions on Procedures (JDOP), a single coordinated and concurrent Public Process was held which provided a forum for the receipt of public comments and evidence respecting the Project, by both the CNSOPB and the NEB. The Public Process was also used by the Responsible Authorities (RAs) under the CEA Act as a means of collecting the views of the public to assist in the preparation of the Comprehensive Study Report (CSR). Oral public hearings were held in Halifax from March 5 to 9, 2007. The Commissioner and NEB member submitted a Joint Environmental Report (JER) to the CNSOPB and NEB on April 11, 2007. On May 8, 2007, the Commissioner submitted her report on the remaining aspects of the Project to the CNSOPB. Both of these reports have been considered by the CNSOPB in reaching its decisions.

The Board has approved *the Deep Panuke Offshore Gas Development* Canada-Nova Scotia Benefits Plan subject to certain conditions.

While the Board recognizes that the Offshore Strategic Energy Agreement (OSEA) between the Proponent and the Province of Nova Scotia will provide significant local benefits, it does not adequately address certain of the statutory requirements for a Canada-Nova Scotia Benefits Plan. The Board did not accept the definition of Nova Scotia resident proposed by the Proponent and has required that the definition used in the Board's Industrial Benefits Information Bulletin be used instead.

The Board has also set certain minimum requirements for the Proponent's local office and that of its MOPU contractor. To promote local hiring, the Board will require that the Proponent submit a comprehensive Human Resource Plan.

The Board agreed with the Commissioner that the proposed funding arrangement between the Proponent and the Province for Education and Training and Research and Development did not meet the requirements of the Accord Acts. The Board will require the Proponent to submit an Education and Training and Research and Development Plan which will be monitored by the Board in consultation with the Benefits Review Committee. A separate plan specifying initiatives planned for disadvantaged individuals and groups will also be required.

Other conditions imposed by the Board in its approval of the Canada-Nova Scotia Benefits Plan relate to the procurement and bidding process, monitoring, reporting and audit, pre-approval activities, a Supplier and Infrastructure Assessment and a Benefits Reference Manual for the Proponent's contractors and subcontractors.

The Board has also approved *the Deep Panuke Offshore Gas Development,* Development Plan, subject to certain conditions.

The Board is satisfied that, with conditions, and taking into account the regulatory regime that will govern the authorization of specific works and activities, the Project can be developed and operated safely, without significant adverse environmental effects and in a manner that optimizes resource conservation.

To ensure that safety related issues are addressed expeditiously, the Board has imposed conditions that require the submission of the Project Safety Plan and Concept Safety Analysis within specified time frames. These and other conditions address the fact that, as noted by the Commissioner, the Project will be operated from a single offshore platform handling sour gas and housing both the production facilities and accommodations for personnel.

The CSR accepted by the federal Minister of the Environment concluded that, taking into account the implementation of the commitments, mitigation and follow-up measures specified in the CSR, the Project is not likely to cause significant adverse environmental effects. The Board has made compliance with the CSR requirements a condition of its approval of the Development Plan. The Board has also incorporated as a condition, certain commitments the Proponent made regarding compensation of fishery participants. The timely submission of an Environmental Protection Plan and an Environmental Effects Monitoring Program, the results of which will be made public, will also be required.

The Board is satisfied with the Proponent's estimates of recoverable reserves. The stated sales gas production rate of 8.5×10^6 m^3/d (300 MMscf/d), is also reasonable. To ensure optimum resource recovery, the Board will require the submission of a detailed Reservoir Management Plan which will be updated annually. The Board will also require the Proponent to submit additional information respecting system deliverability and Project economics.

The Board has specified that its approval of the Development Plan will remain valid for an initial five year period. Following this initial period, the approval may cease to be valid if the Project has not been commenced and diligently pursued. The Proponent will also be required to pursue ongoing consultations with stakeholders and to have a fisheries liaison program in place during certain activities.

The Board is satisfied that subject to the conditions referred to above, and others set out in the Decision Reports, it is in the public interest that the Project be permitted to proceed.

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Deep Panuke Offshore Gas Development, Canada-Nova Scotia Benefits Plan is approved subject to the conditions specified in the Decision Report:

Condition 1: Project Sanction

Immediately upon making its Project Sanction decision, the Proponent shall advise the Board, in writing, of its decision and the date of that decision.

Condition 2: Local Office

The Proponent shall maintain a local office in Nova Scotia with an appropriate number of personnel who have decision-making authority, satisfactory to the Board, in areas such as overall project management, operations, health, safety and environment, reservoir management, and Canada-Nova Scotia benefits.

The Proponent shall require its MOPU contractor to maintain a local office in Nova Scotia with an appropriate number of personnel who have decision-making authority, satisfactory to the Board, in areas such as the following:

- operations input to design phase;
- operations organization;
- onshore pre-commissioning;
- installation phase logistics management;
- offshore hook-up and commissioning;
- facilities start-up;
- long term logistics management, and
- long term production management, operations and maintenance.

Condition 3: Employment and First Consideration

The Proponent shall submit to the Board, for approval, a comprehensive Human Resource Plan for the development phase of the Project within 60 days of Project Sanction, and for the production operations phase, within one year of Project Sanction. These plans shall include:

- an organizational chart providing the titles of all positions within the Nova Scotia office assigned to the Project, the percentage of time that personnel filling those positions are to work on the Project, and the residency of those filling the positions;
- the time frame associated with employment opportunities for each phase;
- identification of any special training requirements which might be needed to maximize the Canadian and Nova Scotian labour force participation and estimates of expenditures associated with such training requirements;
- any anticipated requirements for foreign workers, including job titles, descriptions of responsibilities and the duration of the proposed employment in Canada, and
- number of new employees to be hired throughout the year.

The Proponent shall provide the Board with an update to these plans on an annual basis for the life of the Project, or upon the request of the Board.

Condition 4: Education and Training / Research and Development

Within 90 days of Project Sanction, the Proponent shall submit a plan, for the Board's approval, to address the obligation in the Accord Acts that expenditures shall be made in the Province to advance both education and training and research and development in relation to petroleum resource activities in the offshore area. Expenditures shall not be less than 0.5% of the Gross Revenue from the Project, over the life of the Project, calculated using the methodology set out in Appendix C of the Proponent's Benefits Plan. The funds will be administered by the Proponent as directed by the Board, or in accordance with any new guidelines issued by the Board. The Plan will be monitored by the Board in consultation with the Benefits Review Committee.

Condition 5: Disadvantaged Individuals or Groups

Within 60 days of Project Sanction, the Proponent shall submit a plan, satisfactory to the Board, describing the specific initiatives planned with respect to disadvantaged individuals or groups. The Proponent shall provide an update on the results of these initiatives to the Board on an annual basis.

Condition 6: Benefits Reference Manual

Within 30 days of Project Sanction, the Proponent shall provide the Board with a copy of a Benefits Reference Manual to be used by the Proponent's contractors and subcontractors to reinforce the Proponent's benefits obligations. This manual shall be reviewed by the Proponent on an annual basis and the Board shall be notified of the results of the review and of any changes.

Condition 7: Pre-Approval Activities

Within 60 days of the implementation of this Decision Report, the Proponent shall submit to the Board a comprehensive report on its pre-approval contracting activity. The report shall contain sufficient detail to allow the Board to assess the extent to which the provisions of the Accord Acts and this Decision Report have been met.

Condition 8: Procurement Process

The Proponent shall provide the Board with a procurement forecast a minimum of 30 days prior to commencing its contracting process for each quarter. The forecast shall include a listing of all contracts, subcontracts and purchase orders greater than $250,000 in value. The list should include the following information:

- a description of the service or item to be contracted;
- the estimated value for direct contracts and purchase orders;
- the estimated value for subcontracts (+/- 20%), and
- the anticipated Request For Proposal (RFP) issuance date, RFP closing date and contract award date.

The Board will advise the Proponent by the first business day of each quarter, which contracts, subcontracts and purchase orders have been designated by the Board for review.

Condition 9: Bidding Process

For those contracts designated by the Board for review, the Proponent shall provide notifications to the Board as follows:

- Prequalification Stage – a copy of the Expression of Interest, a copy of the prequalification questionnaire, a list of companies to whom questionnaires will be issued, and anticipated dates for closure of prequalification and issuance of a Request for Proposals (RFP) or a Request for Quotations (RFQ). The Board will respond to this notification within three Board working days;
- Bidders List Stage – list of bidders, including location of office, estimated value of contract and anticipated dates for closure of bids and award of contract. The Board will respond to this notification within two Board working days, and
- Award Stage – name of selected contractor/vendor, a listing of designated or proposed subcontractors/subvendors, estimated Canadian and Nova Scotian labour content, estimated expenditure content, calculated in accordance with the Canadian General Standards Board definitions, for contracts, subcontracts and purchase orders designated by the Board. The Board will respond to this notification within one Board working day.

Condition 10: Monitoring, Reporting and Auditing

The Proponent shall submit semi-annual reports to the Board during the development phase of the Project, and annual reports during the production operations phase. The reports shall describe the Proponent's Canada-Nova Scotia Benefits initiatives and the results of those initiatives. The reports shall also include employment content by Canadian and Nova Scotian categories. In reporting, the Proponent shall comply with the Board's Industrial Benefits Information Bulletin of December 1999, as amended from time to time.

For contracts, subcontracts and purchase orders designated by the Board for review, the Proponent shall report expenditures in accordance with the Canadian General Standards Board definitions. The expenditures shall be reported to the Board on an annual basis and shall include actual, cumulative Canadian and Nova Scotian expenditure content in addition to employment content by Canadian and Nova Scotian categories. The Proponent may have the expenditure calculations done by an independent accounting firm.

Condition 11: Supplier and Infrastructure Assessment

During the development phase of the Project, and one year after first gas production, the Proponent shall submit to the Board, on an annual basis, a Canada-Nova Scotia Supplier and Infrastructure Assessment. The report shall include an assessment of local capability and shall identify areas where the local supply community may improve to provide for greater participation in the Project.

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Deep Panuke Offshore Gas Development, Development Plan is approved subject to the conditions specified in the Decision Report:

Condition 12: Benefits Plan Compliance

Compliance with the Deep Panuke Offshore Gas Development Canada-Nova Scotia Benefits Plan, and the Board's conditions of approval, is a condition of this Development Plan approval.

Condition 13: Validity of Development Plan Approval

This Development Plan approval shall be valid for an initial period of five years commencing on the date the Board notifies the Proponent that its decision has been implemented. It shall remain valid following the initial five year period unless the Board revokes its approval on the grounds that the Proponent has not commenced and diligently pursued development of the Deep Panuke field. Before considering revocation of Development Plan approval, the Board will give notice to the Proponent and provide it with an opportunity to be heard.

Condition 14: Management System

The Proponent shall have in place an effective management system that integrates operations and technical systems with the management of financial and human resources to ensure compliance with the Accord Acts and applicable regulations.

Condition 15: Third Party Access

The Proponent shall permit third party access to its offshore facilities on reasonable terms and conditions. By commencing production the Proponent shall be deemed to have agreed that, in the event of a dispute, and on application to the Board, the Board may:

- determine if third party access is to be provided to pipelines or process facilities;
- specify the proportion of production to be taken by the Proponent, and
- set pipeline tariffs and processing fees and fix the delivery location.

Condition 16: Financial Responsibility for Abandonment

Prior to the commencement of production, the Proponent shall provide the Board with a plan evidencing, in a form and amount satisfactory to the Board, financial responsibility sufficient to provide for the abandonment of offshore Project facilities in accordance with the Board's requirements.

Condition 17: Project Safety Plan

The Proponent shall submit a Project Safety Plan, acceptable to the Board's Chief Safety Officer, within 90 days of Project Sanction. At that time, the Project Safety Plan shall, as a minimum, identify the safety studies to be undertaken to identify hazards and to assess risks to the installation, and the schedule for completing the same.

Condition 18: Concept Safety Analysis

A minimum of 30 days prior to contract award for the MOPU, the Proponent shall submit to the Chief Safety Officer, a Concept Safety Analysis (CSA) that meets the requirements set out in the regulations. The CSA shall be planned and conducted with due consideration of the safety and occupational health concerns associated with the processing of sour gas on, and the subsequent handling and disposal of highly concentrated acid gas from, a single offshore production platform.

Condition 19: Escape, Evacuation and Rescue Study

The Proponent shall ensure that an Escape, Evacuation and Rescue Study is included in the Project Safety Plan. A copy of this study shall be provided to the Board early in the design phase of the MOPU and it shall demonstrate, to the satisfaction of the Board, that in circumstances that necessitate an escape, evacuation and rescue response, the risk of harm to personnel has been reduced to as low as reasonably practicable taking into account the environmental conditions that can reasonably be expected.

Condition 20: Well Design

The Proponent shall demonstrate to the satisfaction of the Board that the existing and proposed wells will be designed, or altered if necessary, to ensure that they are constructed to an appropriate level of sour gas service to maintain safety, protection of the environment, and optimum recovery of the resource.

Condition 21: Comprehensive Study Report Requirements

The Proponent shall comply with all commitments, mitigation and follow-up measures related to the portion of the Project within the Nova Scotia offshore area that are identified in the 2007 Comprehensive Study Report for the Deep Panuke Offshore Gas Development Project, including those adopted from the 2002 Comprehensive Study Report.

Condition 22: Stakeholder Consultation

The Proponent shall continue its consultation with stakeholders, at a minimum until construction of the Project is complete and shall report to the Board on a quarterly basis on the results of such consultation.

Condition 23: Compensation Commitments

During the execution of the Project, the Proponent shall honour the compensation commitments it made during the Public Process.

Condition 24: Fisheries Liaison Program

During the construction phase of the Project, the Proponent shall implement a Fisheries Liaison Program, acceptable to the Board, when major construction or installation activities are being carried out offshore or when otherwise directed to do so by the Board.

Condition 25: Environmental Protection Plan

A minimum of 45 days prior to the commencement of either the installation of Project components, or the drilling of new wells, the Proponent shall submit an Environmental Protection Plan, acceptable to the Board's Chief Conservation Officer.

Condition 26: Environmental Effects Monitoring

The Proponent shall implement an Environmental Effects Monitoring (EEM) Program for the life cycle of the Project. The EEM Program shall be submitted a minimum of 45 days prior to commencement of either the drilling of new wells or the installation of Project components. Once production has begun, no later than March 31 of each year, the Proponent shall submit its EEM results for the previous year, and shall update its EEM Program taking into account both the EEM results of the previous year and the environmental effects predictions contained in the 2002 CSR and 2007 CSR.

Condition 27: System Deliverability

The Proponent shall monitor and evaluate system deliverability on an ongoing basis. The Proponent shall report forecasts of system deliverability as well as pressures, temperature and rate relationships for the production facilities and pipeline, as part of the Annual Production Report, or more frequently if requested by the Board.

Condition 28: Completion Restrictions on the Acid Gas Disposal Well

The Board approves the D-70 well location for acid gas disposal on the condition that the well is only completed in the lower half of the tidal-fluvial sandstones of the Upper Missisauga formation.

Condition 29: Reservoir Management Plan

The Proponent shall provide the Board with a Reservoir Management Plan as part of the Management System. This Plan must be updated annually or more frequently if requested by the Board. The initial Reservoir Management Plan must be approved by the Board prior to the commencement of development drilling activities. Annual updates shall be submitted to the Board by December 31 of each year.

The Reservoir Management Plan shall document depletion plans for the Project pool(s). Documentation must also be provided to demonstrate that the Plan is optimized for the economic conservation of the resource. This Plan must set out a summary of pool(s) reservoir properties, original gas-in-place, recoverable gas-in-place, depletion strategy, number of wells and bottom hole targets, well operating philosophy and parameters, well evaluation plans, completion plans, proposed completion and production control equipment, fluid sampling and analysis, gathering system impacts and constraints, and anticipated routine and non-routine surveillance activity. It should ensure prudent management of the pool(s), the near wellbore regions, completions, tubing, and production facilities.

The Reservoir Management Plan shall specify goals, plan activities, define surveillance activity, and forecast production. Annual updates shall evaluate the progress, document decision paths and revisions, and forecast development activity for the next reporting period and provide updates on the Proponent's reservoir surveillance plan.

Condition 30: Submission of Economic Data

The Proponent shall inform the Board of any material changes to the cost information and production profiles that were submitted with the Development Plan. This information shall be included with the Annual Production Report. This should include details of the operating and capital expenditures for the previous two years, the current year and projections for the next two years as well as reserve revisions.

Sommaire

Le projet de mise en valeur du gisement extracôtier de gaz Deep Panuke (le projet) vise l'extraction de gaz naturel d'un gisement extracôtier situé à approximativement 250 kilomètres au sud-ouest de Halifax et son transport par pipeline sous-marin jusqu'à la côte et, ultimement, vers des marchés au Canada et aux États-Unis. On prévoit que la production commencera en 2010 et qu'elle se poursuivra pendant une vie moyenne de 13 années. Pendant la durée du projet, un maximum de 25,1 milliards de mètres cubes (892 milliards de pieds cubes) de gaz naturel pourraient être produits grâce à des installations conçues pour un taux d'extraction de pointe de 8,5 millions de mètres cubes par jour (300 millions de p^3 (std)/j). Le projet utilisera une unité mobile de production en mer (UMPM) de type autoélévatrice reliée aux puits de production par des lignes de flux et des câbles ombilicaux sous-marins.

Sous le régime des lois de mise en œuvre de l'Accord, un projet de ce genre ne peut être réalisé que si l'OCNEHE a approuvé un plan de retombées économiques Canada – Nouvelle-Écosse et un plan de mise en valeur. Par conséquent, le 9 novembre 2006, EnCana Corporation (le promoteur) a déposé à l'OCNEHE un plan de retombées économiques Canada – Nouvelle-Écosse et un plan de mise en valeur ainsi que d'autres documents. Des demandes ont en outre été déposées auprès de l'Office national de l'énergie (ONÉ). Le dépôt de ces demandes et l'obligation d'obtenir certaines approbations stipulées dans les lois fédérales ont déclenché une évaluation environnementale (étude approfondie) sous le régime de la *Loi canadienne sur l'évaluation environnementale* (LCEA).

L'OCNEHE a nommé une commissaire pour procéder à l'examen public des plans du promoteur. L'ONÉ a autorisé l'un de ses membres à entendre les preuves et à obtenir les renseignements nécessaires en vue de rédiger un rapport et de formuler des recommandations à l'ONÉ. Conformément aux dispositions d'un protocole d'entente entre l'OCNEHE et l'ONÉ et aux Directives conjointes sur les procédures (DCP), un processus public coordonné unique a été organisé et a constitué une tribune pour permettre à l'OCNEHE et à l'ONÉ de recevoir les commentaires du public et des preuves concernant le projet. Le processus public a en outre été utilisé par les autorités responsables (AR) sous le régime de la LCEA comme moyen d'obtenir les points de vue du public en vue de la rédaction du rapport d'étude approfondie (REA). Des audiences publiques ont été tenues à Halifax du 5 au 9 mars 2007. La commissaire et le membre de l'ONÉ ont présenté un rapport environnemental conjoint (REC) à l'OCNEHE et à l'ONÉ le 11 avril 2007. Le 8 mai 2007, la commissaire a remis à l'OCNEHE son rapport sur les autres aspects du projet. L'OCNEHE a pris ces deux rapports en considération pour arriver à sa décision.

L'Office a approuvé le projet de mise en valeur du gisement extracôtier de gaz Deep Panuke et le plan de retombées économiques Canada – Nouvelle-Écosse sous réserve de certaines conditions.

Même si l'Office reconnaît que l'entente stratégique sur l'énergie extracôtière (ESEE) entre le promoteur et la Nouvelle-Écosse amènera des retombées locales

considérables, elle ne satisfait pas adéquatement à certaines exigences réglementaires relatives à un plan de retombées économiques Canada – Nouvelle-Écosse. L'Office n'a pas accepté la définition de « résident de la Nouvelle-Écosse » proposée par le promoteur et a demandé d'y substituer la définition donnée dans le bulletin d'information de l'Office sur les retombées économiques.

L'Office a en outre fixé des normes de base relativement aux bureaux locaux du promoteur et de l'entrepreneur qui fournira l'UMPM. Pour favoriser l'embauche de travailleurs locaux, l'Office exigera que le promoteur soumette un plan exhaustif en matière de ressources humaines. L'Office a accepté la conclusion de la commissaire que les modalités de financement proposées entre le promoteur et la province relativement à l'éducation, à la formation ainsi qu'à la recherche et au développement n'étaient pas conformes aux exigences des lois de mise en œuvre de l'Accord. L'Office exigera du promoteur qu'il soumette un plan d'éducation, de formation, de recherche et de développement dont il surveillera la réalisation en consultation avec le Comité d'examen des retombées. Un plan distinct décrivant les mesures prévues pour les personnes et les groupes défavorisés devra aussi être préparé.

D'autres conditions imposées par l'Office lorsqu'il a approuvé le plan de retombées économiques Canada – Nouvelle-Écosse ont trait au processus d'appels d'offres et d'achats, à l'encadrement, à la préparation de rapports et à la vérification, aux activités préalables à l'approbation, à une évaluation des fournisseurs et de l'infrastructure ainsi qu'un Guide des entrepreneurs sur les retombées économiques pour les entrepreneurs et les sous-traitants retenus par le promoteur.

L'Office a également approuvé *le plan de mise en valeur du gisement extracôtier de gaz Deep Panuke* sous réserve de certaines conditions.

L'Office conclut que, sous réserve de certaines conditions et compte tenu du fait que le régime réglementaire qui régira l'autorisation de travaux et d'activités spécifiques, le projet peut aller de l'avant et être exploité de manière sécuritaire, sans effets environnementaux néfastes considérables et d'une façon qui maximise la conservation de la ressource.

Pour s'assurer que les problèmes de sécurité sont résolus rapidement, l'Office a imposé des conditions, notamment le dépôt d'un plan faisant état des mesures de sécurité et d'une analyse conceptuelle des mesures de sécurité dans des délais précis. Ces conditions, de même que d'autres conditions, sont en considération du fait que, comme l'a souligné la commissaire, le projet sera exploité d'une plate-forme extracôtière unique qui traitera le gaz acide et sur laquelle reposeront à la fois les installations de production et les blocs d'hébergement du personnel.

Le REA accepté par le ministre fédéral de l'Environnement a conclu que, compte tenu de la mise en œuvre des engagements et des mesures d'atténuation et de suivi spécifiées, le projet n'est pas susceptible d'avoir des effets environnementaux néfastes importants. L'Office a imposé, comme condition de son approbation du plan de mise en œuvre, le respect du REA. L'Office a en outre ajouté, comme conditions, certains engagements pris par le promoteur relativement à l'indemnisation aux exploitants de la pêche. Le dépôt, dans les délais prévus, d'un Plan de protection de l'environnement

(PPE) et d'un Programme de surveillance des effets environnementaux (PSEE) dont les résultats seront rendus publics, sera aussi exigé.

L'Office croit que les estimations des réserves récupérables faites par le promoteur sont fiables. Le taux estimatif de production de gaz propre à la vente mentionné, soit $8,5 \times 10^6$ m^3/j (300 millions de p^3 (std)/j) est aussi raisonnable. Pour assurer le recouvrement optimal de la ressource, l'Office exigera le dépôt d'un plan de gestion du gisement qui devra être mis à jour tous les ans. L'Office exigera en du promoteur qu'il communique des renseignements additionnels sur la capacité de livraison des systèmes et sur l'économie du projet.

L'Office a stipulé que son approbation du Plan de mise en œuvre sera valide pour une période initiale de cinq ans. Par la suite, l'approbation pourra ne plus être valide si le projet n'a pas été amorcé et exploité avec diligence. Le promoteur devra également tenir des consultations permanentes avec les parties intéressées et mettre en place un programme de liaison avec les pêches pendant certaines activités.

L'Office croit que, sous réserve des conditions auxquelles il est fait référence ci-dessus et des autres conditions stipulées dans les rapports sur les décisions, il est dans l'intérêt public d'autoriser la réalisation du projet.

Par conséquent, l'Office Canada – Nouvelle-Écosse des hydrocarbures extracôtiers a décidé d'approuver le projet de mise en valeur du gisement extracôtier de gaz Deep Panuke et le plan de retombées économiques Canada – Nouvelle-Écosse, sous réserve des conditions stipulées dans le rapport sur la décision :

Condition 1: Approbation du projet

Dès qu'il prendra sa décision relativement à l'approbation du projet, le promoteur en informera l'Office par écrit et lui indiquera la date de sa décision.

Condition 2: Bureau local

Le promoteur doit conserver en Nouvelle-Écosse un bureau local avec un nombre adéquat d'employés qui ont, à la satisfaction de l'Office, un pouvoir décisionnel dans des domaines comme la gestion de projets, l'exploitation, la santé, la sécurité et l'environnement, la gestion des gisements et les retombées économiques Canada – Nouvelle-Écosse.

Le promoteur devra demander à l'entrepreneur chargé de l'UMPM de conserver, en Nouvelle-Écosse, un bureau local avec un nombre adéquat d'employés qui ont, à la satisfaction de l'Office, un pouvoir décisionnel dans des domaines tels que :

- participation de l'exploitation à la phase de conception;
- organisation de l'exploitation;
- travaux sur la côte avant la mise en service;
- gestion de la logistique pendant la phase d'installation;
- raccordement extracôtier et mise en service;
- démarrage de l'équipement;
- gestion logistique à long terme;
- gestion, exploitation et maintenance à long terme.

Condition 3: Emploi et priorité

Le promoteur devra présenter à l'Office, dans les 60 jours suivant l'approbation du projet, un plan complet de ressources humaines pour la phase développement du projet; il devra présenter, au cours de l'année suivant l'approbation du projet, un plan similaire pour la phase de production et d'exploitation. Ces plans devront comprendre :

- un organigramme mentionnant les titres de tous les postes du bureau local de Nouvelle-Écosse qui seront affectés au projet, le pourcentage de temps que les employés occupant ces postes devront consacrer au projet et le lieu de résidence de ces employés;

- les périodes d'emploi prévues pour chaque phase;

- une description des besoins de formation spéciale qu'il pourra être nécessaire de combler pour maximiser la participation de la main-d'œuvre canadienne et néo-écossaise ainsi que des estimations des dépenses qu'entraîneront ces besoins de formation;

- les besoins prévus relativement aux travailleurs étrangers, notamment les titres de postes, la description des responsabilités et la durée de l'emploi proposé au Canada;

- le nombre de nouveaux employés à embaucher tout au long de l'année.

Pendant toute la durée du projet, chaque année ou sur demande, le promoteur devra remettre à l'Office une mise à jour de ces plans.

Condition 4: Études et formation / Recherche et développement

Dans les 90 jours de l'approbation du projet, le promoteur devra soumettre à l'Office, pour approbation, un plan relatif au respect de l'obligation stipulée dans les lois de mise en œuvre de l'Accord de dépenser, dans la province, des fonds pour l'éducation, la recherche et le développement concernant les activités d'exploitation des ressources pétrolières dans la zone extracôtière. Les dépenses ne doivent pas être inférieures à 0,5 % des revenus bruts du projet pendant toute sa vie, le montant étant calculé à l'aide de la méthode décrite à l'annexe C du plan de retombées économiques du promoteur. Les fonds seront administrés par le promoteur conformément aux consignes émises par l'Office ou aux nouvelles lignes directrices qu'il pourra émettre. L'Office surveillera l'application du plan en collaboration avec le Comité d'examen des retombées.

Condition 5: Personnes et groupes défavorisés

Dans les 60 jours de l'approbation du projet, le promoteur soumettra un plan satisfaisant à l'Office décrivant les initiatives spécifiques qu'il entend mettre place relativement pour les personnes et les groupes défavorisés. Le promoteur présentera à l'Office, chaque année, un rapport sur les résultats de ces initiatives.

Condition 6: Guide des entrepreneurs sur les retombées économiques

Dans les 30 jours de l'approbation du projet, le promoteur remettra à l'Office une copie d'un Guide des entrepreneurs sur les retombées économiques; le guide devra être utilisé par les entrepreneurs et les sous-traitants retenus par le promoteur pour permettre à ce dernier de respecter ses obligations en matière de retombées économiques. Le guide fera l'objet d'une révision annuelle par le promoteur et l'Office sera informé des résultats de la révision et des modifications apportées.

Condition 7: Activités préalables à l'approbation

Dans les 60 jours de la mise en œuvre de ce rapport de décision, le promoteur soumettra à l'Office un rapport exhaustif sur les contrats qu'il aura passés avant l'approbation. Le rapport doit être suffisamment détaillé pour permettre à l'Office de déterminer dans quelle mesure les dispositions des lois de mise en œuvre de l'Accord et celles du présent rapport de décision sont respectées.

Condition 8: Processus d'achats

Au moins 30 jours avant le début du processus de passation de marchés pour chaque trimestre, le promoteur remettra à l'Office ses prévisions d'achats qui devront comporter une liste de tous les contrats, contrats de sous-traitance et bons de commande d'une valeur supérieure à 250 000 $ ainsi que les renseignements suivants:

- description du service ou du matériel faisant l'objet du contrat;
- valeur estimée des contrats et des bons de commande, +/- 20% pour les contrats de sous-traitance;
- date prévue de l'émission des demandes de propositions (DDP), date de clôture des DDP et date d'attribution des contrats.

L'Office indiquera au promoteur, au plus tard le premier jour ouvrable de chaque trimestre, les contrats, les contrats de sous-traitance et les bons de commande qu'il aura désignés comme devant faire l'objet d'un examen.

Condition 9: Processus de soumissions

Le promoteur donnera à l'Office, pour les contrats désignés par ce dernier, les renseignements suivants :

- Étape de préqualification – une copie de la déclaration d'intérêt et du questionnaire de préqualification, une liste des entreprises auxquelles le questionnaire sera envoyé et les dates prévues de fermeture des préqualifications et de l'émission de la demande de propositions ou de la demande de prix. L'Office répondra à cette notification dans les trois jours ouvrables où ses bureaux sont ouverts;

- Étape de la liste des soumissionnaires – liste des soumissionnaires avec l'adresse de leur bureau, la valeur estimée du contrat, les dates limites pour la réception des soumissions et la date prévue pour l'attribution des contrats. L'Office répondra à cette notification dans les deux jours ouvrables où ses bureaux sont ouverts;

- Étape de l'attribution – nom de l'entrepreneur ou du fournisseur retenu, liste des sous-traitants ou des fournisseurs secondaires désignés ou proposés, estimation du contenu en main-d'œuvre canadienne et néo-écossais, estimation des dépenses, le tout calculé conformément aux définitions données par l'Office des normes générales du Canada pour les contrats, les contrats de sous-traitance et les bons de commande désignés par l'Office. L'Office répondra à cette notification le jour

ouvrable où les bureaux de l'Office sont ouverts qui suit la réception de la notification.

Condition 10: Surveillance, présentation de rapports et vérification

Le promoteur remettra à l'Office des rapports semi-annuels pendant la phase conception du projet, et des rapports annuels pendant la phase exploitation. Les rapports décriront les initiatives du promoteur en matière de retombées économiques Canada – Nouvelle-Écosse et leurs résultats. Les rapports feront en outre état du contenu en main-d'œuvre canadienne et néo-écossaise. Dans la préparation de ses rapports, le promoteur devra se conformer aux instructions contenues dans le bulletin d'information sur les retombées économiques publié par l'Office en décembre 1999 et à leurs modifications.

En ce qui a trait aux contrats, aux contrats de sous-traitance et aux bons de commande désignés par l'Office comme devant faire l'objet d'un examen, le promoteur devra faire rapport sur les dépenses conformément aux définitions données par l'Office des normes générales du Canada. Un rapport sur les dépenses devra être présenté à l'Office une fois par année et faire état, par catégories, du contenu en main-d'œuvre canadienne et néo-écossaise, des dépenses réelles et cumulatives en contenu canadien et néo-écossais. Le promoteur pourra retenir les services d'une firme comptable indépendante pour calculer ces dépenses.

Condition 11: Évaluation des fournisseurs et de l'infrastructure

Pendant la phase conception du projet, et un an après la première production de gaz, le promoteur soumettra à l'Office, chaque année, une évaluation Canada – Nouvelle-Écosse des fournisseurs et de l'infrastructure. Le rapport comportera une évaluation de la capacité locale et mentionnera les secteurs où la collectivité locale de fournisseurs pourrait améliorer son offre pour obtenir une participation plus importante au projet.

Par conséquent, l'Office Canada – Nouvelle-Écosse des hydrocarbures extracôtiers a décidé d'approuver le projet de mise en valeur du gisement extracôtier de gaz Deep Panuke, sous réserve des conditions stipulées dans le rapport sur la décision:

Condition 12: Conformité avec le plan de retombées économiques

La conformité avec le plan de retombées économiques Canada – Nouvelle-Écosse du projet de mise en valeur du gisement extracôtier de gaz Deep Panuke et le respect des conditions d'approbation imposées par l'Office est une condition de l'approbation du plan de mise en valeur.

Condition 13: Validité de l'approbation du plan de mise en valeur

L'approbation du plan de mise en valeur sera valide pour une période initiale de cinq ans commençant à la date à laquelle l'Office avisera le promoteur que sa décision a été mise en œuvre. L'approbation restera valide après la période initiale de cinq ans, à moins que l'Office ne la révoque parce que le promoteur n'aura ni amorcé ni poursuivi avec diligence le projet de mise en valeur du gisement Deep Panuke. Avant de révoquer son approbation du plan de mise en valeur, l'Office donnera avis de son intention au promoteur et lui donnera la possibilité de se faire entendre.

Condition 14: Système de gestion

Le promoteur mettra en place un système de gestion efficace intégrant les opérations et les systèmes techniques à la gestion des ressources humaines et financières pour assurer le respect des lois de mise en œuvre de l'Accord et des règlements applicables.

Condition 15: Accès par des tiers

Le promoteur autorisera l'accès par des tiers à ses installations extracôtières conformément à des modalités raisonnables. Le fait pour le promoteur de commencer l'exploitation sera considéré comme son assentiment à ce qui suit : en cas de différend et sur demande à l'Office, l'Office pourra :

- déterminer s'il y a lieu d'autoriser des tiers à avoir accès aux pipelines ou aux installations de traitement;
- spécifier la proportion de la production que le promoteur pourra prendre;
- fixer des droits tarifaires et des droits de traitement pour les pipelines et déterminer le lieu de la livraison.

Condition 16: Responsabilité financière pour le démantèlement

Avant le début de la production, le promoteur remettra à l'Office un plan énonçant, de manière et pour un montant satisfaisants à l'Office, l'engagement financier suffisant pour couvrir les coûts de démantèlement des installations extracôtières du projet, conformément aux exigences de l'Office.

Condition 17: Plan faisant état des mesures de sécurité

Le promoteur déposera, dans les 90 jours de l'approbation du projet, un plan faisant état des mesures de sécurité pour le projet, plan qui doit être acceptable au délégué à la sécurité. Le plan devra, au minimum, mentionner les études qui seront entreprises pour déceler les dangers et évaluer les risques relatifs aux installations ainsi que le calendrier d'exécution des études.

Condition 18: Analyse conceptuelle des mesures de sécurité

Au moins 30 jours avant d'accorder le contrat pour la fabrication de l'UMPM, le promoteur soumettra au délégué à la sécurité une analyse conceptuelle des mesures de sécurité qui satisfait aux exigences énoncées dans les règlements. L'analyse sera planifiée et réalisée en accordant l'importance qui leur est due aux préoccupations relatives à la santé et à la sécurité au travail associées au traitement de gaz acide sur une unique plate-forme extracôtière de production ainsi qu'à la manutention et à la destruction ultérieures de gaz acide en forte concentration.

Condition 19: Étude pour l'évacuation et le sauvetage

Le promoteur doit s'assurer qu'une étude pour l'évacuation et le sauvetage est comprise dans le plan faisant état des mesures de sécurité. Une copie de cette étude sera remise à l'Office au début de la phase de conception de l'UMPM et devra démontrer, à la satisfaction de l'Office, que dans des situations qui exigent l'évacuation et des opérations de sauvetage, les risques pour le personnel sont réduits au plus bas niveau raisonnablement possible, compte tenu des conditions environnementales auxquelles il est raisonnable de s'attendre.

Condition 20: Conception des puits

Le promoteur devra démontrer, à la satisfaction de l'Office, que les puits existants et proposés seront conçus ou seront modifiés au besoin pour l'extraction et le passage d'une quantité de gaz acide correspondant à un niveau adéquat pour assurer la sécurité et la protection de l'environnement et le recouvrement optimal de la ressource.

Condition 21: Exigences relatives au rapport d'étude approfondie

Le promoteur devra se conformer à tous les engagements, à toutes les mesures d'atténuation et de suivi pour la partie du projet qui doit être réalisée dans la région extracôtière de la Nouvelle-Écosse définie dans le rapport d'étude approfondie de 2007 pour le projet de mise en valeur du gisement extracôtier de gaz Deep Panuke, notamment les mesures adoptées dans le rapport d'étude approfondie de 2002.

Condition 22: Consultation des intervenants

Le promoteur poursuivra ses consultations avec les intervenants, à tout le moins jusqu'à ce que la construction des installations du projet soit terminée, et il fera rapport à l'Office tous les trimestres sur les résultats de ces consultations.

Condition 23: Engagements relatifs à la compensation

Pendant l'exécution du projet, le promoteur respectera les engagements relatifs à la compensation qu'il a pris pendant le processus d'examen public.

Condition 24: Programme de liaison avec les pêcheurs

Pendant la phase construction du projet, le promoteur mettra en place un programme de liaison avec les pêcheurs, programme qui devra être acceptable à l'Office et qui interviendra lorsque des travaux de construction ou d'installation importants devront être faits dans la région extracôtière ou lorsque l'Office lui en fera la demande.

Condition 25: Plan de protection de l'environnement

Au moins 45 jours avant le début de l'installation des composants du projet ou du forage de nouveaux puits, le promoteur déposera un plan de protection de l'environnement acceptable au délégué principal à l'exploitation de l'Office.

Condition 26: Surveillance des effets environnementaux

Le promoteur mettra en place, pour la durée de vie du projet, un programme de surveillance des effets environnementaux (SEE). Le programme de SEE sera déposé au moins 45 jours avant le début du forage de nouveaux puits ou de l'installation de composants du projet. Une fois la production commencée, au plus tard le 31 mars de chaque année, le promoteur déposera les résultats de la SEE pour l'année précédente et mettra à jour son programme de SEE, prenant en considération à la fois les résultats de la SEE de l'année précédente et les effets environnementaux prévus dont il est fait état dans les REA de 2002 et de 2007.

Condition 27: Capacité de livraison des systèmes

Le promoteur fera le suivi et l'évaluation continus de la capacité de livraison des systèmes. Le promoteur fera rapport sur les prévisions relatives à la capacité de livraison des systèmes ainsi que sur les relations entre les pressions, les températures et les vitesses pour les installations de production et le pipeline, dans le rapport annuel de production ou plus souvent, si l'Office lui en fait la demande.

Condition 28: Restrictions relatives à l'achèvement du puits de refoulement du gaz acide

L'Office approuve l'emplacement du puits D-70 pour le refoulement du gaz acide, à la condition que le puits ne soit achevé que dans la moitié inférieure de la formation de grès tidale-fluviale de la formation Upper Mississauga.

Condition 29: Plan de gestion du gisement

Le promoteur remettra à l'Office un plan de gestion du gisement faisant partie du système de gestion. Le plan devra être mis à jour tous les ans ou plus souvent si l'Office en fait la demande. Le plan initial de gestion du gisement doit être approuvé par l'Office avant le début des forages de reconnaissance. Les mises à jour devront être transmises à l'Office au plus tard le 31 décembre de chaque année.

Le plan de gestion du gisement devra décrire le plan d'épuisement pour les champs visés par le projet. Les documents pertinents devront également être déposés pour démontrer que le plan est optimisé pour la conservation économique de la ressource. Le plan doit comporter un sommaire des propriétés des réservoirs, mentionner les quantités de gaz présent, les quantités de gaz récupérable, la stratégie d'épuisement, le nombre de puits et la profondeur cible de forage, le mode et les paramètres d'exploitation des puits, les plans d'évaluation des puits, les plans de parachèvement, l'équipement proposé pour le parachèvement et le contrôle de la production, l'échantillonnage et l'analyse des fluides, les impacts et les contraintes relatifs aux systèmes de collecte ainsi que les activités régulières et particulières de surveillance. Le plan doit viser à assurer la gestion prudente des gisements, des zones proches des forages, des installations de conditionnement, des colonnes et des installations de production.

Le plan de gestion du gisement doit préciser les objectifs et les activités prévues, définir les activités de surveillance et faire état des prévisions de production. Des mises à jour devront évaluer les progrès réalisés, décrire les chemins de décision et les révisions et prévoir les activités de développement pour le rapport suivant.

Condition 30: Dépôt des données économiques

Le promoteur devra informer l'Office de tous les changements importants aux renseignements sur les coûts et aux profils de production mentionnés dans le plan de mise en valeur. Ces renseignements devront être inclus dans le rapport de production annuel. Ils devront comprendre des détails sur les dépenses d'exploitation et les

dépenses en immobilisations pour le deux années précédentes, pour l'exercice en cours et des prévisions pour les deux années suivantes ainsi qu'une révision des réserves.

PART I: BACKGROUND

1.0 Introduction

This Part describes the regulatory regime established by the Accord Acts. A description of the Project and a brief description of the Public Process which was put in place to obtain the views of the public are also included.

1.1 Regulatory Authority

The Canada-Nova Scotia Offshore Petroleum Board (Board or CNSOPB) is an independent joint agency of the governments of Canada and Nova Scotia. It was established in 1990 following proclamation of the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, S.C. 1988, c.28 by the federal government and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*, S.N.S. 1987, c.3 by the provincial government (Accord Acts). The Board's mandate is to regulate petroleum activities in the Nova Scotia offshore area in an efficient, fair and competent manner. The Board's responsibilities include:

- the enhancement of safe working conditions for offshore operations;
- protection of the environment during offshore petroleum activities;
- management and conservation of offshore petroleum resources;
- ensuring compliance with the provisions of the Accord Acts that deal with Canada-Nova Scotia employment and industrial benefits;
- rights issuance and management;
- resource evaluation, and
- data collection, curation and distribution.

In addition to the Board's authority under the Accord Acts, the Board also has a responsibility under the Canadian Environmental Assessment Act (CEA Act) to ensure that an environmental assessment of any proposed project is conducted. This is explained in more detail in Part III.

The membership of the Board, its staff organization and other information concerning the CNSOPB can be accessed on the Board's website at www.cnsopb.ns.ca.

1.2 Regulatory Framework

The Accord Acts, the regulations which have been promulgated pursuant to them, and Board guidelines and policies, make up the regulatory framework which governs

petroleum operations in the Nova Scotia offshore area. Based upon federal legislative models and regulations developed in consultation with other petroleum regulators in Canada and abroad, the Nova Scotia offshore regulatory regime is very similar to that which exists in the Newfoundland and Labrador offshore area.

Before carrying out any work or activity in the offshore area, an operator must obtain an authorization from the Board. The Board cannot issue such an authorization without first assessing the operator's Canada-Nova Scotia benefits plan (the Board may waive this requirement if both ministers consent). Canada-Nova Scotia benefits plan approval applies to all activity authorizations regardless of whether they relate to exploration, development or production.

The Accord Acts define a Canada-Nova Scotia benefits plan as a plan for the employment of Canadians and, in particular, members of the labour force of Nova Scotia and providing manufacturers, consultants, contractors and service companies in the Province and other parts of Canada, with a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in any proposed work or activity. The plan must ensure that first consideration is given to services provided within Nova Scotia and to goods manufactured in the Province, where these services and goods are competitive in terms of fair market price, quality and delivery. The Accord Acts also require that the Canada-Nova Scotia benefits plan provide that the operator establish an office in the Province with appropriate levels of decision-making, give individuals resident in the Province first consideration for training and employment, and promote education, training and research and development in the Province. The Board may also require that the Canada-Nova Scotia benefits plan include affirmative action programs for the training and employment of disadvantaged individuals or groups. Information on the Board's requirements respecting Canada-Nova Scotia benefits plans is contained in *Industrial Benefits and Employment Plan Guidelines - Nova Scotia Offshore Area,* available on the Board's website.

Where an operator seeks a prescribed authorization relating to developing a pool or field, an additional approval is required. Except with the consent of both ministers, such an authorization cannot be issued unless the Board has approved a development plan relating to the pool or field. The development plan must be submitted in two parts. In Part I, the operator sets out the general approach to developing the pool or field, including information related to:

- the scope, purpose, location, timing, and nature of the proposed development;
- the production rate, evaluations of the pool or field, estimated amounts of petroleum proposed to be recovered, reserves, recovery methods, production monitoring procedures, costs and environmental factors in connection with the proposed development, and
- the production system and any alternative production systems that could be used for the development of the pool or field.

Part II sets out all the technical or other information and proposals necessary for a comprehensive review and evaluation of the proposed development. More information on filing requirements for development plans is contained in *Guidelines on Plans and*

Authorizations Required for Development Projects which is available on the Board website.

The purpose of a development plan is to provide an overview of the proposed development and provide sufficient information so that the plan can be assessed by the Board to satisfy itself that the development can be undertaken safely, while protecting the environment and maximizing resource recovery. Approval of a development plan by the CNSOPB does not grant a proponent authority to undertake any work in the offshore area. Each activity will require a separate authorization. Therefore, the details of these activities are not included in the development plan but they must be submitted when the application for approval of the actual activity is submitted.

1.3 Activity Authorizations

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 such activities as conducting geophysical programs, drilling exploration or production wells, installing production facilities, commencing production operations or undertaking diving operations. Prior to issuing any such authorizations, the Board requires that the following be submitted in a satisfactory form:

- Canada-Nova Scotia Benefits Plan;
- Development Plan (for development related activities);
- Safety Plan;
- Environmental Impact Statement;
- Environmental Protection Plan;
- Financial Security;
- Summary of Proposed Operations;
- Certificate of Fitness (if applicable), and
- Declaration of Operator.

The Board must be satisfied with the information provided before it will issue an activity authorization.

A certificate of fitness is required for certain equipment and installations, including drilling, production, diving, and accommodation installations. A certificate of fitness is issued by a Certifying Authority (CA) that has met the criteria established by regulation and is named in the *Nova Scotia Offshore Certificate of Fitness Regulations*. These CAs are required to review the design, construction, installation and operating manuals for the installation and certify to the Board that the installation is fit for its intended purpose, that it is in compliance with the regulations and that it can be operated safely without polluting the environment. The Board cannot issue an authorization unless there is a certificate in place for the installation.

A Declaration of Operator is required for all activities. This declaration is signed by a senior officer of the operator and states that this person has undertaken, or caused to be

undertaken, sufficient work to satisfy the officer that the equipment is fit for purpose, and the personnel are properly trained so that the activity can be undertaken safely.

1.4 Development Plan Decision-Making Process

The decision-making process which governs petroleum operations in the offshore area is set out in Part I of the Accord Acts. Most decisions that the Board makes are not reviewable by the governments. However, the Accord Acts do provide that certain significant decisions, known as "fundamental decisions", are subject to ministerial directives and suspension rights or may be set aside by the ministers. In the case of Part I of a development plan, the Provincial minister alone has this veto power.

The Board is required to give written notice to the federal and provincial ministers responsible for the Accord Acts immediately after making a decision respecting a development plan. The Board's decision cannot be implemented for a period of 30 days unless the Ministers inform the Board in writing earlier that they approve the decision. Alternatively, either minister may, during the 30 day period, suspend the implementation of the decision for a further period of up to 30 days. The provincial minister has the power to set aside the Board's decision respecting Part I of a development plan during the initial 30 day notice period or any further period when the implementation of the decision is suspended. (The federal minister has certain additional powers if Canadian security of supply is in issue.)

1.5 History of Deep Panuke

The Deep Panuke natural gas field was discovered in 1998 by PanCanadian Petroleum Limited, now EnCana Corporation (the Proponent). The Proponent holds a majority working interest in and is the operator of the field, which is located approximately 250 km southeast of Halifax, Nova Scotia, on the Scotian Shelf. Deep Panuke underlies the Cohasset and Panuke oil fields which produced a total of 7.1 million cubic meters (44 million barrels) of oil between 1992 and 1999.

Based upon further delineation drilling, which confirmed the existence of a large gas discovery, the Proponent filed a development plan and Canada-Nova Scotia benefits plan with the Board in March 2002. An environmental assessment under the Canadian Environmental Assessment Act (CEA Act) was carried out by way of a comprehensive study. The Comprehensive Study Report (CSR) was accepted by the Minister of the Environment in December 2002. In February 2003, the Proponent requested a "regulatory timeout" from the coordinated regulatory review process which had been established by the CNSOPB and NEB to review the Proponent's applications to the two Boards. In December 2003 the Development Plan and Canada-Nova Scotia Benefits Plan (as well as the NEB application) were formally withdrawn.

On December 20, 2005 the Proponent submitted an application for a Declaration of Significant Discovery for Deep Panuke pursuant to the Accord Acts. This application

was reviewed by the Board in accordance with its established procedure and criteria applicable to such applications. On November 7, 2006 the Board made *Declaration of Significant Discovery Panuke PP-3C.*

1.6 Project Description

The Project involves production and processing of natural gas offshore and the transportation, via subsea pipeline, of market ready gas to Goldboro, Nova Scotia. From there the gas will be shipped to markets in Canada and the United States (Figure 1.0).

The Project design consists of a jack-up MOPU in a water depth of approximately 44 m. The MOPU will likely be newly built and will be leased by the Proponent from the unit owner. It is expected that there will normally be thirty persons on board, although the design will allow for more. The Project will initially involve completing four previously drilled wells and drilling two new wells, one production well and one acid gas injection well. Up to three additional subsea production wells could be drilled; such wells would be drilled after production start-up and at least one full year of production. All wells will have horizontal trees and will be tied back individually to the MOPU with subsea flowlines and control umbilicals.

Sales gas will be transported via subsea pipeline to one of two delivery points:

- Goldboro, Nova Scotia, to an interconnection with Maritimes and Northeast Pipeline (M&NP), or
- SOEP 660 mm (26 inch) subsea pipeline at a close point on the pipeline route to Goldboro.

The gas processing system will include inlet compression, separation, sweetening, dehydration, export compression and measurement. Deep Panuke is considered a sour gas reservoir with raw gas containing approximately 0.18% hydrogen sulphide (H_2S); therefore, gas sweetening equipment is required. Acid gas processing will be performed offshore through application of an amine unit to remove H_2S and some of the carbon dioxide (CO_2), also known as acid gas. Subsequent to its removal from the raw gas stream, the acid gas will be disposed of by injection into a suitable reservoir. The production design sales gas throughput for the Project is 8.5 X 10^6 m^3/d (300 MMscf/d).

Recoverable sales gas resources are estimated to be within a range of 11.0 x E9M3 (390 Bcf) to 25.1 x E9M3 (892 Bcf) with a mean of 17.8 x E9M3 (632 Bcf). The mean production life of the Project is anticipated to be approximately 13 years; however, the resource forecasts show a probable field life ranging from 8 years to 17.5 years. The actual field life will be predicted with greater certainty after production commences. The topsides will be designed for a life of 20 years and structures will be designed for a life of 25 years.

With respect to abandonment, the Development Plan states the following:

"It is anticipated that decommissioning of the MOPU will essentially be a reverse of the installation process. The processing equipment will be systematically shutdown, flushed, and cleaned. The MOPU will then be disconnected from the subsea infrastructure, jacked down, and removed from the site. It is expected that the MOPU will be reused following decommissioning but this will be evaluated on an economic basis at the time of decommissioning.

Wells will be abandoned in compliance with applicable drilling regulations and according to standard industry practices. Subsea equipment, such as wellhead trees and manifolds, will be purged, rendered safe, and recovered. Trenched flowlines and umbilicals will be flushed and left in situ below the seafloor. All other subsea facilities above the seafloor, including protection structures, will be purged and decommissioned in accordance with applicable regulations at the time. The offshore export pipeline will be abandoned "in place" after it is flushed and filled with seawater."

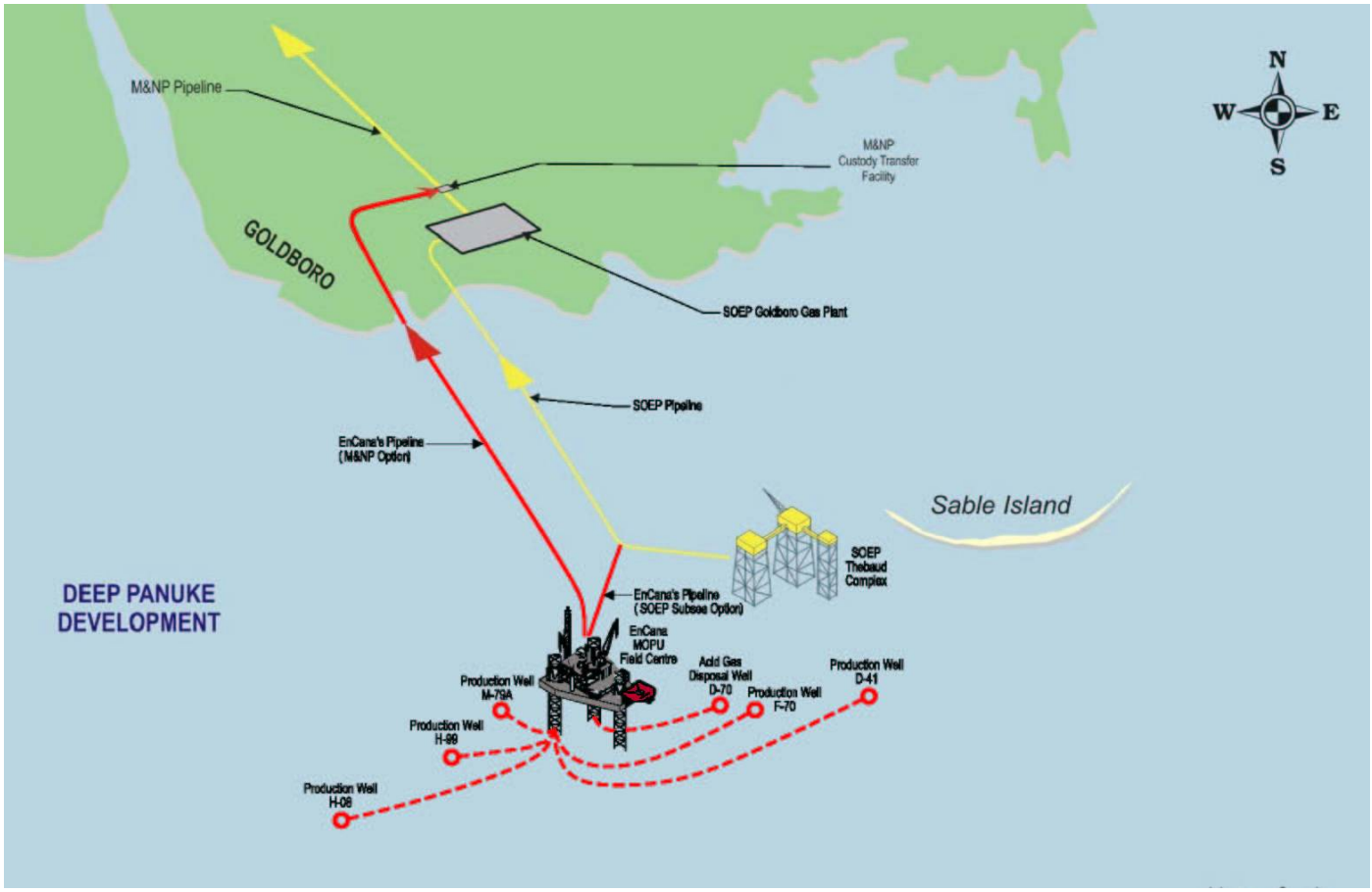

Figure 1.0: Proponent's Proposed Field Layout (EnCana)

1.7 The Public Process

1.7.1 CNSOPB / NEB Coordination

Following the Proponent's November 9, 2006 filings, the CNSOPB appointed a Commissioner, pursuant to section 44 of the Accord Acts, to conduct a public review of the Project and to make a report and recommendations to the CNSOPB. Similarly, pursuant to section 15 of the NEB Act, the NEB authorized one of its members to take evidence and acquire the necessary information for the purpose of making a report and recommendations to the NEB.

Pursuant to the 2005 Concurrency MOU, and in order to avoid duplication and provide a single forum for the receipt of public comments and evidence respecting the proposed Project, the CNSOPB and the NEB signed a further MOU setting out the framework for a single coordinated public regulatory review process (the Public Process). This included the establishment of the Deep Panuke Coordinated Public Review Secretariat.

On November 14, 2006 the Commissioner and NEB Member released the JDOP that described in greater detail the Public Process to hear and consider the views of the public. The Public Process included initial public consultation sessions, a written process for the exchange of evidence and information requests and responses, and an oral hearing.

The Commissioner and the NEB Member functioned jointly where possible and appropriate, to facilitate and coordinate the Public Process. The Commissioner and the NEB Member, however, did not constitute a "joint panel" under the CEA Act but rather maintained their separate assigned and independent regulatory roles.

1.7.2 CEA Act Comprehensive Study Assessment: Public Comment

In August 2006 the Proponent submitted a Project Description to the CNSOPB which formally initiated the federal Environmental Assessment (EA) coordination process under the CEA Act. Based on this process, Fisheries and Oceans Canada (DFO), Industry Canada (IC), Transport Canada (TC), the CNSOPB and the NEB identified themselves as Responsible Authorities (RAs) under the CEA Act. Natural Resources Canada (NRCan) and Environment Canada (EC) identified themselves as expert Federal Authorities (FAs) and the CEA Agency assumed the role of Federal EA Coordinator (FEAC).

Based on the proposed Project Description and the differences between the original 2002 Project and the revised proposal, it was determined that the Project would trigger a further Comprehensive Study level of assessment under the CEA Act. The above RAs were responsible for completing the 2007 CSR.

Pursuant to the Concurrency MOU, the CEA Act EA was carried out concurrently with and to the extent possible coordinated with the Public Process. To reduce duplication and encourage the receipt of public comments and evidence though a single forum, RAs

used the Public Process to request information and clarification from the Proponent and as a means of collecting the views of the public to assist in the preparation of the 2007 CSR. To facilitate this, the CNSOPB Commissioner and NEB Member prepared a Joint Environmental Report (JER) which was considered by the RAs in preparing the 2007 CSR.

1.7.3 The Coordinated Public Hearing and Review

The Public Process included:

- initial public consultation sessions;
- a written process for the exchange of evidence and information requests;
- intervenors' information sessions, and
- an oral hearing held in Halifax between March 5 and 9, 2007.

The initial public consultation sessions were held in Halifax and Guysborough on November 27 and 29, 2006 respectively. These consultation sessions provided an opportunity to:

- hear submissions on a list of issues;
- receive oral comments on the proposed Project, and
- provide information on the Public Process and on how the public could participate in the hearing.

In addition, to assist intervenors in better understanding the hearing process and participating more effectively, further information sessions for intervenors and other members of the public were held in Halifax and Guysborough on January 16 and 17, 2007 respectively.

The Public Process provided for a number of different ways by which members of the public could have input. These included filing a letter of comment, providing an oral statement at the oral hearing, or participating as an intervenor.

The letter of comment option was intended to allow interested persons who did not wish to appear at the oral hearing an opportunity to provide their views and opinions on the proposed Project in writing prior to the oral portion of the hearing. Letters of comment were not sworn or tested by cross-examination.

The oral statement option was intended to allow interested persons who did not wish to intervene an opportunity to address the Commissioner and NEB Member at the oral hearing. Oral statements were made under oath or affirmation and the Commissioner, the NEB Member, the Proponent, and any other party with leave, were allowed to ask questions of the person making the statement.

The option to intervene was for those interested persons who wished to participate fully in the entire public hearing. Intervenors were afforded the most rights and responsibilities. Intervenors and their evidence were sworn in and subject to cross-examination by any other party.

A Government Participant option was also provided to allow those FAs and provincial agencies with an environmental assessment responsibility, the opportunity to participate and carry out their responsibilities without becoming full intervenors.

On April 11, 2007 the Commissioner and the NEB member submitted a JER to the CNSOPB and the NEB. The CNSOPB provided the other RAs with a copy of this report for use in finalizing the CSR. The Commissioner filed her report on the other aspects of the Project with the CNSOPB on May 8, 2007.

1.8 Other Information Considered by the Board

In addition to the documentation filed with the Board by the Proponent on November 9, 2006, the Board considered the following:

- the 2002 CSR and the 2007 CSR;
- the Public Record of the Deep Panuke Coordinated Public Review;
- the Joint Environmental Report submitted to the Board by the Commissioner on April 11, 2007, and
- the Report of the Commissioner to the CNSOPB on the Deep Panuke Offshore Gas Development Project Public Review submitted to the Board by the Commissioner on May 8, 2007.

PART II: CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Deep Panuke Offshore Gas Development Canada-Nova Scotia Benefits Plan is approved subject to the conditions specified in this Decision Report:

2.0 Introduction

As explained in Part I, the Accord Acts require that prior to approval of any development plan or authorization of any work or activity the Board shall receive and approve a Canada-Nova Scotia benefits plan. In accordance with the provisions of the Accord Acts, the requirement for a Canada-Nova Scotia benefits plan may be waived by the Board if both the federal and provincial ministers concur. The Deep Panuke Canada-Nova Scotia Benefits Plan was submitted by the Proponent on November 9, 2006.

All Canada-Nova Scotia benefits plans must provide manufacturers, consultants, contractors and service companies in Nova Scotia and in other parts of Canada, with a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in any proposed work or activity referred to in the benefits plan. In addition, a Canada-Nova Scotia benefits plan must address such subjects as establishment of an office in the Province, the promotion of education and training and research and development in the Province, and employment in the work program for which the plan is being submitted.

In accordance with the Accord Acts, and consistent with the Canadian Charter of Rights and Freedoms, individuals resident in Nova Scotia are to be given first consideration for training and employment. Services provided from within the Province and goods manufactured in the Province, must also be given first consideration where those services and goods are competitive in terms of fair market price, quality and delivery.

2.1 Board Consultations with Governments

The Accord Acts require that as a part of its review process, the Board consult with the federal and provincial ministers responsible for the Accord Acts on the extent to which a Canada-Nova Scotia benefits plan meets the legislated requirements. In 1995 the Board established the Canada-Nova Scotia Benefits Review Committee. It is composed of representatives from the CNSOPB, NRCan, the Nova Scotia Department of Energy and other government agencies and departments as may be appropriate, depending on the circumstances of the benefits review. The Committee confers regularly to review benefits matters. The Canada-Nova Scotia Benefits Review Committee makes a significant contribution to the Board's industrial benefits decision-making process.

2.2 Offshore Strategic Energy Agreement

The Proponent filed, as part of its Benefits Plan, a copy of an Offshore Strategic Energy Agreement (OSEA) entered into with the Province of Nova Scotia. The OSEA represents commitments made by the Proponent to the Province with respect to the Project.

The Board recognizes that the OSEA will provide significant benefits to the Province of Nova Scotia particularly since, as the Commissioner noted, some of the work commitments contained within the OSEA "will provide skills which are transferable to the offshore".

The Board, however, represents the interests of two governments and has a duty to consult with both Ministers regarding benefits plans. It is the Board's opinion, and also the opinion of the Commissioner, that the OSEA does not satisfy the obligation of the Proponent to meet the benefits provisions of the Accord Acts, in particular, subsection 45(5).

For the reasons stated above, the Board considers the OSEA an agreement between the Province of Nova Scotia and the Proponent but it remains outside the scope of the benefits plan requirements.

2.3 Board Guidelines

Board Guidelines with respect to Industrial Benefits were developed in 1994, and updated in 1999, 2001 and 2002. The Guidelines can be found on the Board's website.

In February 2006, the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) issued updated Industrial Benefits Plan Guidelines. The CNSOPB is in the process of revising its Industrial Benefits Guidelines. To satisfy the recommendation of the Atlantic Energy Roundtable that joint Benefits Guidelines be developed, to the extent possible, the Board will mirror the C-NLOPB guidelines. The conditions contained in this Decision Report are consistent with the impending revised Industrial Benefits Guidelines.

2.4 Project Schedule

Section 2.4.1 of the Benefits Plan outlines the schedule for the development phase of the Project and indicates that the first phase of the Project will take approximately thirty-four months. Figure 2.2 of the Benefits Plan, provides a detailed schedule of the production operations phase of the Project, with first gas production forecast for late 2010. The Proponent, however, states that "*EnCana will not consider full sanction to the Project until the conclusion of the bid competition phase and after regulatory approvals are received".*

Condition 1: Project Sanction

Immediately upon making its Project Sanction decision, the Proponent shall advise the Board, in writing, of its decision and the date of that decision.

2.5 Office in the Province

Paragraph 45(3)(a) of the Accord Acts state that a Canada-Nova Scotia benefits plan shall contain provisions intended to ensure that:

"…before carrying out any work or activity in the offshore area, the corporation or other body submitting the plan shall establish in the Province an office where appropriate levels of decision-making are to take place."

The Benefits Plan confirms that the Proponent has operated its East Coast operations from its Halifax office since 1996. The Benefits Plan also goes on to say that the Project Management Team will continue to be based in Halifax for the duration of the development phase of the Project, with an operations team located in Nova Scotia during the production operations phase.

Although it is clear that there is a commitment to have the appropriate level of decision-making resident in Nova Scotia for the development phase, it is not quite as clear that the Proponent will maintain appropriate level of decision-making in Nova Scotia for the production operations phase. In order to meet the commitments made in the Benefits Plan throughout the life cycle of the Project, it is important to have decision-making and key management functions located in the local office.

The Proponent states in the Development Plan that its execution strategy includes establishing a relationship with the MOPU contractor to cover the provision of services for both the Ready for Operations (RFO) and long term logistics and operations phases of the Project. The Board considers it important that benefits opportunities are not diminished because of the long term lease and operations arrangement the Proponent has proposed.

Condition 2: Local Office

The Proponent shall maintain a local office in Nova Scotia with an appropriate number of personnel who have decision-making authority, satisfactory to the Board, in areas such as overall project management, operations, health, safety and environment, reservoir management, and Canada-Nova Scotia benefits.

The Proponent shall require its MOPU contractor to maintain a local office in Nova Scotia with an appropriate number of personnel who have decision-making authority, satisfactory to the Board, in areas such as the following:

- ***operations input to design phase;***
- ***operations organization;***

- ***onshore pre-commissioning;***
- ***installation phase logistics management;***
- ***offshore hook-up and commissioning;***
- ***facilities start-up;***
- ***long term logistics management, and***
- ***long term production management, operations and maintenance.***

2.6 Employment and First Consideration

In section 3.1 of the Benefits Plan, the Proponent commits to the statutory provisions of the Accord Acts with respect to first consideration to Nova Scotia residents.

In section 3.3 of the Benefits Plan, the Proponent states its commitment to "employing a competitive, open and fair recruitment process, with full and fair opportunity for Nova Scotians and all Canadians, with first consideration to qualified Nova Scotians." The Proponent goes on to outline its process for meeting this commitment.

The Proponent also states that "only when specialized knowledge or experience is required and when qualified Canadian workers are not available in a reasonable time frame, will foreign workers be hired."

From the Board's perspective, it is important that a reasonable length of time be allowed to hire appropriate personnel. This requires long term planning on the part of the Proponent. The Accord Acts are clear with respect to employment and first consideration in a Canada-Nova Scotia benefits plan and state as follows:

45(1) "*Canada-Nova Scotia benefits plan" means a plan for the employment of Canadians and, in particular, members of the labour force of the Province…."*

45(3)(b) "C*onsistent with the Canadian Charter of Rights and Freedoms, individuals resident in the Province shall be given first consideration for training and employment in the work program for which the plan was submitted and any collective agreement entered into by the corporation or other body submitting the plan and an organization of employees respecting terms and conditions of employment in the offshore area shall contain provisions consistent with this paragraph."*

These requirements are intended to provide Nova Scotia residents with first consideration for employment opportunities throughout the exploration, development or production phase of any petroleum activity offshore Nova Scotia.

The Commissioner expressed concern that the definition of a Nova Scotia person hour used by the Proponent is too broad. The Commissioner also recommended "…*that the CNSOPB satisfy itself that the proposed definition of 'Nova Scotia Person Hour' does not adversely impact the intention of s.45(3)(b) of the Accord Acts that 'individuals resident in the Province shall be given first consideration for…employment in the work program for which the plan was submitted'."*

The definition of a Nova Scotia person hour, referred to by the Commissioner, is found in the OSEA and is not considered part of the Benefits Plan by the Board.

For the purpose of administering the requirement for first consideration to individuals resident in Nova Scotia, the Board requires definitions consistent with existing legislation and conditions applied to other projects. The Board's Industrial Benefits Information Bulletin of December 1999, which can be found on the Board's website, clearly defines a Canadian resident and a Nova Scotia resident as follows:

"A Canadian citizen is a person who was born in Canada and has not relinquished his or her Canadian citizenship; or, a person who has been granted Canadian citizenship; or, a person who has been granted landed immigrant status.

Nova Scotia Resident is a Canadian citizen or landed immigrant who meets the residency requirements for voting in a provincial election, as defined in The Election Act of Nova Scotia, which states "Canadian citizen or landed immigrant who has resided in the Province for the immediately preceding six-month period."

The Bulletin also states that Nova Scotia person hours represent the number of Canadian citizens or landed immigrants who were residents of Nova Scotia times the number of hours in a normal work week, times the number of weeks the person has been employed on the project.

When reporting person hours, "who" is performing the work is the consideration used, not "where" the work is done. Canadians who have resided in Nova Scotia should be reported for the first six months of the Project as "Other Canadian" and after six months on the Project, should be reported as Nova Scotian. Non-Canadians should always be reported as "Foreign" regardless of the length of time on the project.

Condition 3: Employment and First Consideration

The Proponent shall submit to the Board, for approval, a comprehensive Human Resource Plan for the development phase of the Project within 60 days of Project Sanction, and for the production operations phase, within one year of Project Sanction. These plans shall include:

- ***an organizational chart providing the titles of all positions within the Nova Scotia office assigned to the Project, the percentage of time that personnel filling those positions are to work on the Project, and the residency of those filling the positions;***
- ***the time frame associated with employment opportunities for each phase;***
- ***identification of any special training requirements which might be needed to maximize the Canadian and Nova Scotian labour force participation and estimates of expenditures associated with such training requirements;***
- ***any anticipated requirements for foreign workers, including job titles, descriptions of responsibilities and the duration of the proposed employment in Canada, and***
- ***number of new employees to be hired throughout the year.***

The Proponent shall provide the Board with an update to these plans on an annual basis for the life of the Project, or upon the request of the Board.

2.7 Education and Training / Research and Development

Paragraph 45(3)(c) of the Accord Acts require that a Canada-Nova Scotia benefits plan provide that:

"*a program shall be carried out and expenditures shall be made for the promotion of education and training and of research and development in the Province in relation to petroleum resource activities in the offshore area*."

The Proponent states:

"To advance these objectives of R&D, education, and training, access for disadvantaged individuals and groups, and such other related expenditures, EnCana has committed an amount equal to 0.5% of the Gross Revenue from the Deep Panuke Project, over the life of the Deep Panuke Project, to establish funds for these purposes administered by the Province of Nova Scotia."

The Nova Scotia Department of Energy estimates this will amount to between fourteen and forty-seven million dollars.

The Proponent also provides a history, going back to 1996, of the initiatives it has supported, some of which fulfill statutory obligations, such as contributions to the Environmental Studies Research Fund.

In Table 3.1 of the Benefits Plan, Project Management Principles, the Proponent further states:

"EnCana is committed to initiating and supporting applied research and development, in Nova Scotia and other Canadian provinces, associated with East Coast offshore petroleum activities."

The Accord Acts are quite clear, however, that expenditures for Research and Development must be made *in the Province.*

The Commissioner expressed concern that the proposed funding arrangement between the Proponent and the Province "*does not meet the requirements of a benefits plan under s.45 of the Accord Acts with respect to education and training, research and development, and access for disadvantaged individuals and groups".*

The Board agrees with the Commissioner's comments that the arrangement proposed by the Proponent does not meet the requirements of section 45 of the Accord Acts.

Condition 4: Education and Training / Research and Development

Within 90 days of Project Sanction, the Proponent shall submit a plan, for the Board's approval, to address the obligation in the Accord Acts that expenditures shall be made in the Province to advance both education and training and research and development in relation to petroleum resource activities in the offshore area. Expenditures shall not be less than 0.5% of the Gross Revenue from the Project, over the life of the Project, calculated using the methodology set out in Appendix C of the Proponent's Benefits Plan. The funds will be administered by the Proponent as directed by the Board, or in accordance with any new guidelines issued by the Board. The Plan will be monitored by the Board in consultation with the Benefits Review Committee.

The first part of the plan must include provisions for education and training such as:

- the hiring and training needs of the Proponent and its major contractors;
- anticipated skill shortages in the Nova Scotia and Canadian labour forces;
- provisions for providing first consideration to Nova Scotia residents for training and educational opportunities;
- training programs provided, or participated in, by the Proponent and its contractors, and
- anticipated expenditures specifically targeted for education and training.

The second part of the plan must include:

- identification of Research and Development priorities within the Province of Nova Scotia, utilizing Canada Revenue Agency criteria as a guide to eligible expenditures, and
- anticipated expenditures specifically targeted for research and development.

2.8 Disadvantaged Individuals or Groups

The Accord Acts state that:

"45(4) *The Board may require that any Canada-Nova Scotia benefits plan include provisions to ensure that disadvantaged individuals or groups have access to training and employment opportunities and to enable such individuals or groups or corporations owned or cooperatives operated by them to participate in the supply of goods and services used in any proposed work or activity referred to in the benefits plan."*

The Proponent states in its Benefits Plan that:

"EnCana is committed to working with disadvantaged individuals and groups to the mutual benefit of all parties to develop their capacity to participate and benefit from business and employment opportunities associated with the Project."

While the Board recognizes the Proponent's statement of commitment, the Benefits Plan lacks specific initiatives for ensuring access to training and employment opportunities for disadvantaged individuals and details on how the Proponent will ensure these obligations will be integrated and addressed by its contractors. The Proponent is expected to be proactive in this regard. In the context of its Benefits Plan, and consistent with the Nova Scotia *Human Rights Act*, disadvantaged individuals and groups are considered to include: women, aboriginal groups, persons with disabilities and members of visible minorities.

The Commissioner recommended that the Proponent report to the Board regularly on its continued communication with the aboriginal community. The Board agrees with this recommendation but notes that it is equally important that efforts continue with all disadvantaged individuals and groups.

Condition 5: Disadvantaged Individuals or Groups

Within 60 days of Project Sanction, the Proponent shall submit a plan, satisfactory to the Board, describing the specific initiatives planned with respect to disadvantaged individuals or groups. The Proponent shall provide an update on the results of these initiatives to the Board on an annual basis.

2.9 Procurement Practices

The statutory requirements related to the provision of goods and services are found in the following excerpts from the Accord Acts:

45(1) "Canada Nova Scotia benefits plan" means a plan….for providing manufacturers, consultants, contractors and service companies in the Province and other parts of Canada, with a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in any proposed work or activity referred to in the benefits plan."

45(3)(d) "first consideration shall be given to services provided from within the Province and to goods manufactured in the Province, where those services and goods are competitive in terms of fair market price, quality and delivery."

2.10 Full and Fair Opportunity

The Board does not have the authority to establish benefits targets, or to require the Proponent to establish targets. However, the Board does place particular emphasis on *"full and fair opportunity to participate on a competitive basis"***,** recognizing that the Accord Acts do not specify any particular outcome.

The Board encourages the Proponent to continue with the supplier information sessions that have been conducted over the previous months. Conducting these sessions early in the contracting stage is an important component of providing suppliers with a full and fair opportunity to compete.

2.11 Procurement

In section 3.4.1 of its Benefits Plan the Proponent outlines some key principles of its Procurement Process as follows:

- making the bidding procedures transparent, open and fair;
- requesting, as part of the bid solicitation process, Canada-Nova Scotia benefits information in sufficient detail to adequately assess the benefits to be derived from individual bids;
- ensuring that bidders are aware of contractual obligations to Canada-Nova Scotia Benefits requirements;
- communicating requirements for goods and services to all stakeholders in a timely fashion by utilizing electronic bulletin boards such as BIDS Nova Scotia and other websites;
- communicating with appropriate stakeholders that form a support network for the vendor community;
- communicating with unsuccessful bidders, when requested and where appropriate, to help them bid more competitively in the future;
- providing formal notice of bid lists and contract awards to the CNSOPB for major contracts of particular interest to the CNSOPB, and
- providing procurement status updates to the CNSOPB to provide notice of upcoming procurement opportunities as well as status updates on contracts and procurement activities.

It is the Board's opinion that these principles are consistent with the statutory requirements to provide full and fair opportunity to participate on a competitive basis.

2.12 Contracting Strategy

In section 3.4.2 of the Benefits Plan the Proponent outlines its contracting strategy of tendering five major contracts as shown in Figure 2.0.

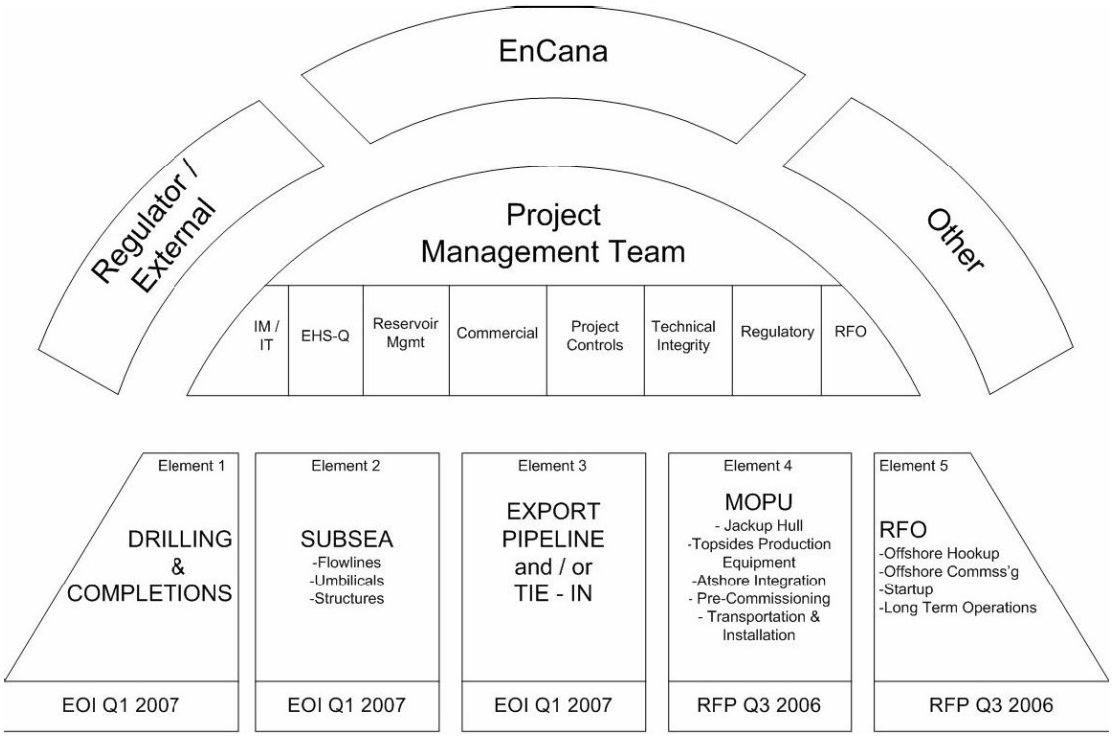

Figure 2.0: Deep Panuke Project Elements (EnCana)

This strategy consists of utilizing traditional contract and commercial arrangements for three elements of its contracting strategy:

- drilling and completions;
- subsea infrastructure, and
- export pipeline and/or tie-in.

The Proponent will select a principal contractor to deliver the remaining two elements; that is, a MOPU and Ready for Operations (RFO) services. The Proponent intends to lease the MOPU, including RFO services, "for the economic life of the field".

As noted in the Benefits Plan, the principal contractor will also:

- provide RFO and operations personnel throughout the development phase to provide operations input into detailed design;
- establish the operations organization;
- support onshore pre-commissioning, provide installation phase logistics management, and manage offshore hook-up and commissioning;
- coordinate facilities start-up, and
- provide long term production facilities management, day to day operations, maintenance, and logistics management services over the producing life of the field.

2.13 Contractors' Obligations

It is important in managing major contracts that the contractors understand and commit to the benefits obligations contained in the Proponent's Benefits Plan and the Board's Decision Report. The Board will hold the Proponent responsible for the performance of its contractors. Failure on the part of a major contractor to report Canada-Nova Scotia benefits information requested by the Board or to allow the Board to perform an audit shall be deemed to be noncompliance by the Proponent with a condition of the Canada-Nova Scotia Benefits Plan approval.

Condition 6: Benefits Reference Manual

Within 30 days of Project Sanction, the Proponent shall provide the Board with a copy of a Benefits Reference Manual to be used by the Proponent's contractors and subcontractors to reinforce the Proponent's benefits obligations. This manual shall be reviewed by the Proponent on an annual basis and the Board shall be notified of the results of the review and of any changes.

2.14 Pre-Approval Activities

The Board notes that the Proponent has conducted pre-approval activities not covered by an approved benefits plan. All contracting activity associated with the Project, including pre-approval activities, must comply with the conditions of this Decision Report.

Condition 7: Pre-Approval Activities

Within 60 days of the implementation of this Decision Report, the Proponent shall submit to the Board a comprehensive report on its pre-approval contracting activity. The report shall contain sufficient detail to allow the Board to assess the extent to which the provisions of the Accord Acts and this Decision Report have been met.

2.15 Bid Evaluation

The Proponent identified the concept of "best value" as the most important criterion for contract award, indicating that best value is a blend of total cost, quality, technical suitability, reliability, delivery and assurance of supply, while at the same time meeting or exceeding safety and environmental standards.

The Board notes that the Proponent's definition of the best value concept does not specifically include Canada-Nova Scotia content. The Board believes that the definition of best value must clearly indicate a consideration of Canada-Nova Scotia content.

Section 3.4 of the Benefits Plan addresses the first consideration provision of the Accord Acts for bid evaluation with the following principles:

- *at the bid development stage, every reasonable effort will be made to ensure qualified Nova Scotia suppliers are included on all bid lists and enquiry documents, and*
- *at the bid evaluation stage, if it is determined that two or more bids are essentially equal on a best value basis, the bid with the highest Nova Scotia content will be selected.*

It is important that the Proponent is able to demonstrate to the Board's satisfaction, upon request, that every effort has been made to include qualified Canadian and Nova Scotian suppliers on bid lists.

Condition 8: Procurement Process

The Proponent shall provide the Board with a procurement forecast a minimum of 30 days prior to commencing its contracting process for each quarter. The forecast shall include a listing of all contracts, subcontracts and purchase orders greater than $250,000 in value. The list should include the following information:

- ***a description of the service or item to be contracted;***
- ***the estimated value for direct contracts and purchase orders;***
- ***the estimated value for subcontracts (+/- 20%), and***
- ***the anticipated Request For Proposal (RFP) issuance date, RFP closing date and contract award date.***

The Board will advise the Proponent by the first business day of each quarter, which contracts, subcontracts and purchase orders have been designated by the Board for review.

Condition 9: Bidding Process

For those contracts designated by the Board for review, the Proponent shall provide notifications to the Board as follows:

- ***Prequalification Stage – a copy of the Expression of Interest, a copy of the prequalification questionnaire, a list of companies to whom questionnaires will be issued, and anticipated dates for closure of prequalification and issuance of a Request for Proposals (RFP) or a Request for Quotations (RFQ). The Board will respond to this notification within three Board working days;***
- ***Bidders List Stage – list of bidders, including location of office, estimated value of contract and anticipated dates for closure of bids and award of contract. The Board will respond to this notification within two Board working days, and***
- ***Award Stage – name of selected contractor/vendor, a listing of designated or proposed subcontractors/subvendors, estimated Canadian and Nova Scotian***

labour content, estimated expenditure content, calculated in accordance with the Canadian General Standards Board definitions, for contracts, subcontracts and purchase orders designated by the Board. The Board will respond to this notification within one Board working day.

2.16 Monitoring and Audit

The Board considers monitoring and audit of a proponent's commitments stated in a benefits plan and the associated decision of the Board, an important aspect of the Board's role as a regulator. The Board also believes it has a duty to ensure that the Board, governments and the public know and understand the level of economic activity associated with any project occurring in the Nova Scotia offshore area.

The Benefits Plan is silent on the reporting of expenditure content and audits to be conducted by the Board.

Condition 10: Monitoring, Reporting and Auditing

The Proponent shall submit semi-annual reports to the Board during the development phase of the Project, and annual reports during the production operations phase. The reports shall describe the Proponent's Canada-Nova Scotia Benefits initiatives and the results of those initiatives. The reports shall also include employment content by Canadian and Nova Scotian categories. In reporting, the Proponent shall comply with the Board's Industrial Benefits Information Bulletin of December 1999, as amended from time to time.

For contracts, subcontracts and purchase orders designated by the Board for review, the Proponent shall report expenditures in accordance with the Canadian General Standards Board definitions. The expenditures shall be reported to the Board on an annual basis and shall include actual, cumulative Canadian and Nova Scotian expenditure content in addition to employment content by Canadian and Nova Scotian categories. The Proponent may have the expenditure calculations done by an independent accounting firm.

The Proponent must include the results of any industrial benefits internal audits in its benefits reports. The Deep Panuke Benefits reports will be subject to regular monitoring and such audits as may be determined appropriate by the Board. The Proponent shall insure that its contractors:

- understand and accept their responsibilities respecting the Benefits requirements of the Accord Acts and the approved Canada-Nova Scotia Benefits Plan;
- are contractually bound to report Canada-Nova Scotia Benefits information to the Proponent and, if so requested by the Board, directly to the Board, and
- agree to allow the Board or its designated agents access to their records for the purpose of auditing Canada-Nova Scotia Benefits information reported to the Proponent or the Board.

The cost of all audits conducted by the Board or its agents shall be to the account of the Proponent.

2.17 Supplier Development

The Proponent commits, in its Benefits Plan, to "*conducting a significant portion of the engineering, procurement, and project management work in Nova Scotia."* The Benefits Plan also states the Proponent's commitment "*to increase the capabilities and capacity of the Nova Scotia supply community as it develops Deep Panuke."* The Proponent's Corporate Responsibility Policy requires the Proponent to assist in local capacity building and develop mutually beneficial relationships.

The Benefits Plan does not contain an assessment of local capabilities for the Project, but provides for the use of electronic bulletin boards and websites to communicate opportunities to Nova Scotian and Canadian suppliers.

The Board believes it is important that the supply community know and understand the opportunities and how they can develop to be successful when bidding. Through the experience of this Project, the supply community can prepare for other opportunities.

Condition 11: Supplier and Infrastructure Assessment

During the development phase of the Project, and one year after first gas production, the Proponent shall submit to the Board, on an annual basis, a Canada-Nova Scotia Supplier and Infrastructure Assessment. The report shall include an assessment of local capability and shall identify areas where the local supply community may improve to provide for greater participation in the Project.

PART III: DEVELOPMENT PLAN DECISION REPORT

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Deep Panuke Offshore Gas Development, Development Plan is approved subject to the conditions specified in this Decision Report:

3.0 General Considerations

3.0.1 Canada-Nova Scotia Benefits

Section 45 of the Accord Acts provide that before the Board may approve a development plan, it must first have approved a Canada-Nova Scotia benefits plan, unless that requirement has been waived in accordance with the Accord Acts. As set out in Part II, the Board has conditionally approved the Deep Panuke Benefits Plan.

The Board regards the Deep Panuke Canada-Nova Scotia Benefits Plan and the Development Plan as essential elements of a single Project which must be implemented concurrently. Therefore the Board believes that there needs to be a formal linkage between the two documents.

Condition 12: Benefits Plan Compliance

Compliance with the Deep Panuke Offshore Gas Development Canada-Nova Scotia Benefits Plan, and the Board's conditions of approval, is a condition of this Development Plan approval.

3.0.2 Sunset Provision

The Proponent has stated that its board of directors will make a decision regarding Project Sanction in the last quarter of 2007. However, should Project Sanction or implementation be delayed significantly, new issues may arise or the basis on which the Project was conditionally approved may be materially affected. The Board believes that the Proponent should be given a reasonable period of time to make its decision regarding Project Sanction and to carry out the necessary preparatory steps. However, development plan approval should not be open ended.

Condition 13: Validity of Development Plan Approval

This Development Plan approval shall be valid for an initial period of five years commencing on the date the Board notifies the Proponent that its decision has

been implemented. It shall remain valid following the initial five year period unless the Board revokes its approval on the grounds that the Proponent has not commenced and diligently pursued development of the Deep Panuke field. Before considering revocation of Development Plan approval, the Board will give notice to the Proponent and provide it with an opportunity to be heard.

3.0.3 Management System

As described in Part I, the Board's principal responsibilities in regulating an offshore development project include:

- health and safety of offshore workers;
- protection of the environment;
- management and conservation of offshore petroleum resources, and
- compliance with the provisions of the Accord Acts that deal with Canada-Nova Scotia employment and industrial benefits.

To achieve these objectives, it is essential that an operator have in place an effective and integrated management system that governs how it does its work.

The Development Plan contains the Proponent's Environment, Health & Safety Statement of Principles, and describes the Proponents Environment, Health & Safety Best Practice Management System. However, given that the Proponent also has responsibilities with respect to resource conservation and compliance with employment and industrial benefits requirements, the overall management system must be broader than Environment, Health and Safety (EH&S). Criteria for the establishment of the overall management system also need to be defined.

Condition 14: Management System

The Proponent shall have in place an effective management system that integrates operations and technical systems with the management of financial and human resources to ensure compliance with the Accord Acts and applicable regulations.

The management system shall include:

- the policies on which the system is based;
- processes for setting goals for the improvement of safety, protection of the environment and prevention of waste, and for measuring the attainment of those goals;
- processes for identifying hazards and for evaluating and managing the associated risks;
- processes for ensuring that personnel are trained and competent to perform their duties;
- processes for ensuring and maintaining the integrity of all facilities, structures, installations, support craft and equipment necessary to ensure safety, the protection of the natural environment and the prevention of waste;

- processes for the internal reporting and analyzing of hazards, incidents and accidents and for taking corrective actions to prevent their recurrence;
- documents containing all management system processes and processes for making personnel aware of their responsibilities with respect to them;
- processes for ensuring that all documents associated with the management system are current, valid and have been approved by the appropriate level of authority;
- processes for conducting periodic reviews or audits of the management system and for taking corrective actions where reviews or audits identify areas of non-conformance with the management system and opportunities for improvement, and
- arrangements for the coordination of management and operations among owners of installations, contractors, the operator and others, as applicable.

3.0.4 Third Party Access to Project Facilities

The Nova Scotia offshore area presents challenges to development which have been clearly identified. One of the most critical elements which must be considered when assessing the economic viability of exploring and developing any emerging petroleum basin is access to infrastructure. Discoveries that would not otherwise meet the economic threshold of industry can be profitable if existing infrastructure can be accessed on reasonable terms. Depending upon the circumstances, utilizing existing facilities may also often be preferable from a safety, environmental and macro-economic perspective. Of course, the requirements of the owner of the facilities and other users need to be addressed and the owner must be compensated on a reasonable basis.

Condition 15: Third Party Access

The Proponent shall permit third party access to its offshore facilities on reasonable terms and conditions. By commencing production the Proponent shall be deemed to have agreed that, in the event of a dispute, and on application to the Board, the Board may:

- ***determine if third party access is to be provided to pipelines or process facilities;***
- ***specify the proportion of production to be taken by the Proponent, and***
- ***set pipeline tariffs and processing fees and fix the delivery location.***

3.0.5 Financial Responsibility

As explained in Part I, the Proponent must obtain an authorization for each proposed work or activity notwithstanding that a development plan has been approved. The Accord Acts require that an applicant for an authorization provide the Board with proof of financial responsibility in a form and amount satisfactory to the Board. The Board and the C-NLOPB have established joint *Guidelines Respecting Financial Responsibility Requirements for Work and Activity in the Newfoundland and Labrador and Nova Scotia Offshore Areas.* These Guidelines are available on the Board's website.

When addressing a long term development project such as this, the Board must also consider the future decommissioning and abandonment of the Project. The use of a MOPU, (as opposed to fixed structures) and the decision to abandon pipeline and flowlines in place means that abandonment of the Project should be manageable with no significant technical concerns. However, unexpected events, such as a major offshore incident, could arise and must be considered. Funds must also be available to ensure that site remediation and any outstanding third party liability issues are satisfactorily addressed. Therefore, as with other projects approved to date, the Board will require that the Proponent submit an acceptable plan to provide for financial responsibility respecting abandonment of the Project.

Condition 16: Financial Responsibility for Abandonment

Prior to the commencement of production, the Proponent shall provide the Board with a Plan evidencing, in a form and amount satisfactory to the Board, financial responsibility sufficient to provide for the abandonment of offshore Project facilities in accordance with the Board's requirements.

3.0.6 Flaring and Venting

Pursuant to subsection 32(1) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations*, no operator shall flare or vent gas during a production operation except: during a production test over a period not exceeding 24 hours; to relieve abnormal pressure or; if necessary, because of an emergency situation. Additionally, the Chief Safety Officer and the Chief Conservation Officer (the Chiefs) may approve the flaring or venting of gas during a production operation at a rate and volume and for a prescribed period of time where the flaring or venting does not constitute waste or an undue safety hazard.

The Proponent has stated in the Development Plan that it will have the capability to flare the acid gas stream to provide "operational flexibility" during maintenance or when operational issues arise. The Chiefs will require that such "operational flexibility" be better defined. The Proponent will be required to make application to the Chiefs for approval of both the flaring of process gas, and the flaring of the concentrated acid gas stream (if required), prior to applying for a production operations authorization. In both cases, the Proponent must clearly demonstrate that such flaring will not constitute waste or an undue safety (or health) hazard. Additionally, the Chief Conservation Officer will ensure that such flaring or venting has been properly addressed in the Environmental Protection Plan (EPP).

3.1 HEALTH AND SAFETY

3.1.0 Introduction

The Board has reviewed the Proponent's planned approach to managing safety and has determined that, subject to the provision of certain additional documentation, it presents a prudent regime for achieving safety during the various phases of the Project. In this regard, the Board interprets safety to include the occupational health of personnel.

As explained in Part I, the approval of a development plan does not provide authorization for the Proponent to actually carry out any physical work or activity in the Nova Scotia offshore area related to the proposed Project. Any such work or activity must first receive the express authorization of the Board pursuant to the Accord Acts. Prior to granting any such authorization, the Board is required, by the Accord Acts, to consider the safety of each work or activity proposed by reviewing, in consultation with the Board's Chief Safety Officer, the system as a whole and its components, including its structures, facilities, equipment, operating procedures and personnel.

For the execution of the Project, the Proponent will need to apply to, and receive an authorization from, the Board to undertake the following planned work or activities:

- drilling (including drilling of the acid gas injection well);
- well operations;
- establishment of production operations components (e.g. MOPU, pipelines, subsea equipment), including:

    - transportation of equipment or materials to site,
    - site surveys and preparation,
    - installation,
    - commissioning and hook-up,
    - testing;

- production operations;
- diving programs;
- decommissioning and abandonment, and
- any other related work or activity that may be required, such as significant installation modifications, geological or geotechnical work, etc.

The Board has in place systematic procedures for reviewing work or activity authorization applications. From a safety perspective, the focus is on assuring that the Proponent has properly identified hazards, has evaluated the associated risk of such hazards, and is appropriately managing those risks. The Board's review in this respect centers on the Proponent's Safety Plans and the Concept Safety Analysis (CSA), which are addressed in more detail below. The Board will ensure that pre-authorization audits and inspections of installations and vessels are carried out. Additionally, audits and inspections will often be performed by Board staff. These audits and inspections are conducted to ensure that installations and vessels are in regulatory compliance before they are put into service offshore.

Furthermore, as explained in Part I, for any installation (e.g. drilling units, the MOPU, and diving installations) the Board ensures that, prior to granting an authorization, a valid certificate of fitness is in place. This certificate, issued by a recognized Certifying Authority (CA), confirms regulatory compliance, and attests that the installation is fit for its intended purpose and that it can be operated safely without polluting the environment. Prior to issuing the certificate, the CA must also determine that the installation will continue to meet the requirements for the period of validity that is endorsed on the certificate of fitness if the installation is maintained in accordance with the inspection, maintenance and weight control programs submitted to and approved by the CA.

In accordance with subsection 6(1) of the *Nova Scotia Offshore Certificate of Fitness Regulations*, for the purposes of issuing a certificate of fitness, the CA is required to submit a scope of work to the Board's Chief Safety Officer for approval. This scope of work is to provide the details of what the CA will do during the design and installation phases of the Project so that a certificate of fitness may be issued prior to the start of operations. Likewise, the CA must also submit a scope of work detailing what the CA will do during the operations phase and, to some extent, the abandonment and decommissioning phase of the Project to ensure the ongoing validity of the certificate of fitness.

The scope of work for the design and installation phases of the Project has been submitted by the CA, and was approved by the Board's Chief Safety Officer on January 18, 2007.

The provincial and federal governments continue to develop proposed amendments to the Accord Acts regarding offshore occupational health and safety. While this process continues, the Board's Occupational Health & Safety (OHS) Requirements will remain in place to provide protection for offshore petroleum workers and direction to operators. Until such time as the Accord Acts are amended, the Board's OHS Requirements will be a condition of approval for any work or activity authorized by the Board in respect of the Project.

Once an authorization has been granted, the Board will implement a monitoring program to assess ongoing operator compliance with legislative and regulatory requirements, and with any conditions that are attached to the authorizations issued by the Board. This will include audits and inspections in field and office locations, Board investigation of significant accidents and incidents, along with the review of operator daily operating reports, joint occupational health and safety meeting minutes, and incident / accident reports. The Board has in place a program for compliance motivation and enforcement that is followed in cases where non-compliances are noted.

3.1.1 Responsibility and Authority for Safety

As described in Part I, no authorization may be granted by the Board to allow any physical work or activity to be performed in the Nova Scotia offshore area related to the Project unless it is in receipt of a Declaration of Operator attesting that:

- the equipment and installations that are to be used in the work or activity to be authorized are fit for the purposes for which they are to be used, the operating procedures relating to them are appropriate for those uses, and the personnel who are to be employed in connection with them are qualified and competent for their employment, and
- the applicant shall ensure, so long as the work or activity that is authorized continues, that the equipment and installations continue to be fit for the purposes for which they are used, the operating procedures continue to be appropriate for those uses, and the personnel continue to be so qualified and competent.

The Proponent proposes to contract out the design, fabrication, installation, operation and abandonment and decommissioning of the various Project components. Pursuant to the Accord Acts, and in keeping with the Declaration of Operator discussed above, the Proponent is ultimately accountable for EH&S protection through all phases of the Project. Therefore, the contractual arrangements that the Proponent is to enter into must necessarily incorporate certain authority in this regard so as to allow the Proponent to take whatever actions may be required to ensure that stated EH&S objectives are met.

In response to an Information Request (IR DPA-HSO-008) raised by the Board during the Public Process, the Proponent stated that the identification, evaluation and control of EH&S hazards throughout all phases of the Project are key elements of the Deep Panuke EH&S management strategy and a compulsory requirement of the Proponent's corporate EH&S Best Practice Management System. Mandatory compliance with the EH&S management system, qualitative and quantitative risk criteria stipulated in the Proponent's risk matrix and target levels of safety, will be a contractual requirement for principal contractors.

The principal contractors will also be required to implement formal risk management systems as part of the contractual agreement and submit to the Proponent the status of implementation of recommendations.

The Proponent has stated that an EH&S Concerns Register (i.e. Hazard Register) has been established and will be used to track the status of corrective actions and recommendations from risk assessment and other forums until the concern has been addressed and formally closed out. EH&S concerns will be prioritized for action based on risk severity and ranking. The satisfactory closure of outstanding EH&S concerns will be an EH&S "key performance indicator" and a Project deliverable under the contract terms of agreement.

EH&S performance management is addressed by the Proponent's EH&S Best Practice Management System, compliance with which will be a contractual requirement. The Proponent states that EH&S performance monitoring activities for the Project will encompass a program of inspections and audits, safety reviews, risk assessments, and accident/incident prevention and follow-up.

The Proponent has stated that the contractor prequalification and selection process includes an audit of the contractor's EH&S policy and procedures to ensure consistency with the Proponent's EH&S policy and procedures. A key selection criterion is the

compatibility of the contractor's EH&S culture with the standard established by the Proponent for offshore operations.

The Proponent has committed that an EH&S audit plan will be implemented in accordance with the Project Safety Plan, to verify conformance with Project deliverables and contractual requirements. The audits will include contractor initiated internal inspections and audits, and external audits initiated by the Proponent. The audits will address elements, such as the implementation of an EH&S management system and Project Safety Plan, orientation and training, emergency preparedness, safe systems of work, maintenance, documentation and certification, pollution prevention, food safety, and industrial hygiene. EH&S surveys of contracted vessels, rigs and other installations will be conducted prior to their entering the Nova Scotia offshore area. The right to audit, as a means of verifying compliance with Project objectives, will be contained in every contract.

The Board will ensure that the Proponent meets these commitments when reviewing safety plans (which require the Board's Chief Safety Officer's approval), work and activity authorization applications, and by way of its compliance monitoring program for authorized work and activities.

3.1.2 Safety Planning and Analysis

3.1.2.1 Safety Plans

Subsection 51(1) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* requires an operator to submit a safety plan that provides for all matters related to the safety and health of personnel and the integrity of an installation. Subsection 51(4) of the regulation states that the Board's Chief Safety Officer shall approve the safety plan, including any amendments thereto, where adherence to the plan will ensure the safety, health and training of persons on board the installation and preservation of the integrity of the installation. The Board requires that safety plans be submitted and approved as a prerequisite to the granting of authorizations to undertake any work or activity in the Nova Scotia offshore area.

The Board has issued a Guideline detailing its expectations of operators in developing a safety plan (Guideline No. 3150.002, Operator's Safety Plan, dated February 20, 1995). This Guideline outlines the principles of how a safety plan is to be established and documented by operators so as to achieve a safe operation. This Guideline demonstrates one way of achieving the desired goal. Alternative means may be used so long as the goal of the operator having in place a prudent regime for safety is achieved.

The development of a safety plan commences early in the design phase of a project, and is normally updated or added to as a project progresses. In this context, the Proponent has committed to the preparation of a sequential set of safety plans as follows:

- a Project Safety Plan that will cover activities during the design and construction phases of the Project. A Construction Safety Plan and a Hook-up and Commissioning Safety Plan will be subsets of this;
- an Operations Safety Plan that will cover the operational phase of the Project (including drilling), and
- an Abandonment and Decommissioning Safety Plan.

The Proponent confirmed in a response to a Board Information Request (IR-DPA-HSO-003) that the Project Safety Plan, the Operations Safety Plan, and the Abandonment and Decommissioning Safety Plan will meet the Proponent's requirements with regard to compliance with their corporate policies, EH&S Principles, EH&S Management System, and CNSOPB regulations and guidelines.

The Proponent states in the Development Plan that during the design and construction phase of the Project, major contractors will be required to develop safety plans covering their installations and operations; these will be incorporated by reference into the Project Safety Plan. The Proponent has indicated that during the operations phase of the Project, contractors employed to perform such activities as drilling, diving and construction will be required to have site specific safety plans that meet the Proponent's requirements and are subject to the Proponent's approval.

In the execution of this Project, the Proponent has committed itself to a statement of principles (eleven in total) to achieve high EH&S performance and states that these principles are part of the accountability of all its employees. The Proponent states that it has in place an EH&S Best Practice Management System that provides for a structured approach with respect to the identification, evaluation and management of hazardous conditions or practices that could potentially harm people or result in environmental damage.

The Proponent has committed that major contractors (production, marine, drilling, aviation and diving) will be required to have and implement formal EH&S management systems that address site/operations specific risks, while conforming to the Proponent's overall requirements. In cases where significant gaps are identified between the Proponent's and contractor's systems, they will be addressed through a bridging process to ensure that health and safety expectations are properly communicated and understood and the implementation of EH&S management systems and programs are coordinated.

The Board's Chief Safety Officer's review and approval of the safety plans submitted in accordance with subsection 51(1) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* will ensure that all necessary subset and site-specific safety plans are in place, along with any necessary bridging documentation between the EH&S Management Systems of the Proponent and that of its major contractors.

The first in the sequence of safety plans is the Project Safety Plan. By regulation, the safety plan must address such things as the safety studies undertaken to identify hazards and to assess risks to the installation. Given that certain safety studies are to be completed to provide input to facilities design, the Project Safety Plan must

necessarily be developed at the front end of the design phase of the Project. The Board's Chief Safety Officer's review and approval of the initial Project Safety Plan should be sought at that time, and not when design is complete and the operator submits its first application for authorization to undertake installation activities in the offshore. The Board's approval of the Deep Panuke Development Plan is subject to the following condition.

Condition 17: Project Safety Plan

The Proponent shall submit a Project Safety Plan, acceptable to the Board's Chief Safety Officer, within 90 days of Project Sanction. At that time, the Project Safety Plan shall, as a minimum, identify the safety studies to be undertaken to identify hazards and to assess risks to the installation, and the schedule for completing the same.

Project Safety Plan approval by the Chief Safety Officer will require that the plan be updated and submitted for approval on an ongoing basis, as the design and construction phase of the Project unfolds, and as additional information becomes available.

3.1.2.2 Security Plans

It is recognized that there is the potential for security threats and incidents to occur during the life of the Project and that such threats or incidents could impact the safety of personnel or the integrity of the installation. The Board requires that the potential of such threats and incidents be considered a hazard and that this hazard be addressed as part of the Project Safety Plan required by subsection 51(1) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations*.

In the Development Plan, the Proponent states that security threats and incidents will be managed under the Deep Panuke Emergency Management Plan. The Development Plan does provide some detail as to how the Proponent will address security with respect to the MOPU, drilling rigs, vessels, and the shore base. However, the Board's Chief Safety Officer will review the planned security arrangements once they are more fully described within the Project Safety Plan, when it is submitted for approval.

3.1.2.3 Concept Safety Analysis

Subsection 43(1) of the *Nova Scotia Offshore Petroleum Installations Regulations* requires an operator, at the time of application for a development plan approval in respect of a production installation, to submit to the Board's Chief Safety Officer a CSA of the installation. This CSA considers all components and activities associated with each phase in the life of the production installation, including the construction, installation, operation and removal phases. The Proponent has identified that this document will be the key starting point for risk management for the Project.

Also at the time of application for a development plan approval, by regulation, the operator is required to submit the Target Levels of Safety (TLS) for the risk to life and the risk of damage to the environment associated with all activities within each phase of the life of the production installation.

The Proponent did not submit the CSA and TLS at the time the Development Plan was submitted. The Proponent wrote to the Board on November 20, 2006 indicating a CSA would be submitted in the fall of 2007, as the CSA is being conducted during the competition phase of the Project. Portions of the CSA were submitted on September 7, 2007 and review by the Chief Safety Officer has commenced. The Proponent is targeting to submit the remaining portions by September 21, 2007. The TLS was the subject of a Board Information Request (IR-DPA-HSO-007) requesting that the TLS be submitted in accordance with the regulations. The TLS submitted by the Proponent in response to this Information Request have been reviewed and are consistent with offshore oil and gas norms in Atlantic Canada and the North Sea.

Consistent with the Commissioner's recommendation that the Board follow-up with the Proponent to ensure that the proposed MOPU will be designed and operated in a manner which will ensure the safety of the workers, the following condition applies to the Development Plan approval.

Condition 18: Concept Safety Analysis

A minimum of 30 days prior to contract award for the MOPU, the Proponent shall submit to the Chief Safety Officer, a Concept Safety Analysis (CSA) that meets the requirements set out in the regulations. The CSA shall be planned and conducted with due consideration of the safety and occupational health concerns associated with the processing of sour gas on, and the subsequent handling and disposal of highly concentrated acid gas from, a single offshore production platform.

3.1.2.3 Safety Studies / Concept Safety Analysis Recommendations

It is imperative that recommendations and follow-up actions emanating from the safety studies and analyses be tracked and closed out so as to ensure that risks to the safety and occupational health of personnel are managed appropriately.

Pursuant to the scope of work approved by the Board's Chief Safety Officer, the CA will review the CSA prepared by the Proponent, along with other safety studies that underpin this analysis. Additionally, the CA will review the principles established for the Hazard and Operability Studies (HAZOP) and risk analysis programs, monitor the tracking of follow-up actions, and review the results of these programs at their conclusion. The CA is also to ensure that all issues identified in the safety studies and analyses have been appropriately addressed in the design of the Project.

In addition, the Board's Chief Safety Officer in the review of each of the sequential safety plans, and Board staff in its review of applications for authorization of work or activities and in its oversight of the Certifying Authorities work, will ensure that recommendations

and follow-up items emanating from safety studies and analyses are appropriately tracked and closed out by the Proponent. Those that cannot be adequately addressed in the design will be addressed in procedures established for the safe operation and maintenance of the offshore facilities.

3.1.3 Project Design

The Proponent has confirmed that the Project will be designed in accordance with all applicable regulations. These regulations in turn specify design codes and standards that apply. The Proponent has stated that, in some cases, it may choose to design in accordance with other internationally recognized codes and standards. In accordance with the Accord Acts, each such substitution requires the approval of the Board's Chief Safety Officer and/or Chief Conservation Officer. Where such a substitution emanates from a regulatory requirement within the scope of the CA's mandate, its concurrence would be required prior to it being considered by the Board's Chief Safety Officer and/or or Chief Conservation Officer.

Since the filing of the initial Development Plan in 2002, the Proponent has been working to optimize the Project, and has made several revisions to the design concepts. A key optimization has been achieved by reducing the planned production capacity to 8.5 X 10^6 m^3/d (300 MMscf/d). By reducing the capacity from 11.6 X 10^6 m^3/d (400 MMscf/d), the Proponent is able to reduce both platform footprint and weight. The planned 8.5 X 10^6 m^3/d (300 MMscf/d) capacity, with a turn down to 1.16 X 10^6 m^3/d (40 MMscf/d), is considered suitable for the Project and provides sufficient operational flexibility.

The original development of Deep Panuke was to have comprised three fixed platforms: a wellhead platform; a production platform, and a personnel accommodations/utilities platform. The three platform design was chosen by the Proponent in 2002 because of lifting capabilities of heavy lift vessels, proposed well locations, as well as for safety considerations. The three platform design is also more conventional.

The currently proposed single platform approach comprises a jack-up type MOPU with a capacity of 8.5 X 10^6 m^3/d (300 MMscf/d), and subsea completed wells tied back to the MOPU. The subsea wells tied back to the MOPU eliminates the requirement for a separate wellhead platform, and the smaller processing facility allows for the personnel accommodation module(s) and utilities to fit on the deck of the MOPU.

Given that the Proponent had previously stated that there was an increased safety risk associated with including the personnel accommodation module(s) on the production platform, and that the increased safety risk dictated that a separate accommodations platform was the preferred option, the Board submitted an Information Request (IR-DPA-HSO-006) requesting the Proponent to provide copies of relevant studies conducted to support the Proponent's conclusion that the Project facilities could be safely placed on one offshore installation. In response, the Proponent provided a preliminary CSA that demonstrates that target levels of safety consistent with offshore installations within the industry can be achieved, and that appropriate measures can be taken to ensure safety of offshore personnel when combining all services on one facility. The preliminary analysis does, however, recommend that specific additional studies and analyses be

carried out to provide input to the MOPU design such that safety risks are reduced to as low as reasonably practicable (ALARP). As discussed above, a final CSA for the Project is required.

A single facility comprising production and accommodations units is not a new idea to the offshore, and has been used previously offshore Nova Scotia. The first Nova Scotia offshore oil production project was carried out at the Cohasset and Panuke fields using a jack-up drilling unit with both accommodations and processing modules on the deck. This unit was operated successfully and safely for seven years. Similar MOPUs are in service around the world in areas such as the North Sea: some are purpose built jack-up MOPUs while others are converted jack-up Mobile Offshore Drilling Units with process modules added.

During operation of the single platform, and in circumstances that necessitate an escape, evacuation and rescue response, personnel must have a reasonable expectation of avoiding harm given the environmental conditions that can reasonably be expected. By regulation, the safety plan must address such things as the safety studies undertaken to identify hazards and to assess risks to the installation. An escape, evacuation and rescue study must be identified in the Project Safety Plan and submitted for review by the Board.

Condition 19: Escape, Evacuation and Rescue Study

The Proponent shall ensure that an Escape, Evacuation and Rescue Study is included in the Project Safety Plan. A copy of this study shall be provided to the Board early in the design phase of the MOPU and it shall demonstrate, to the satisfaction of the Board, that in circumstances that necessitate an escape, evacuation and rescue response, the risk of harm to personnel has been reduced to as low as reasonably practicable taking into account the environmental conditions that can reasonably be expected.

The Proponent has proposed two pipeline options for the Project to allow for design flexibility. Option 1 is the M&NP Option which is a 560 mm (22 inch) single phase pipeline approximately 176 km in length running from the MOPU to shore and tying into the Maritimes and Northeast Pipeline (M&NP). The M&NP pipeline ships gas from the Goldboro area to markets in Nova Scotia, New Brunswick and the United States. Option 2 has two configurations, (i) a 510 mm (20 inch) multiphase pipeline, and (ii) twin 305 mm (12 inch) multiphase pipelines, each approximately 15 km in length and tying into the existing SOEP pipeline. The Proponent submitted an addendum to the Development Plan to include the twinned 305 mm (12 inch) pipeline alternative for option 2, to allow for more flexibility in installation methods and to take advantage of possible project synergies. All pipeline configurations proposed provide sufficient capacity to ship Deep Panuke gas and all are acceptable to the Board from a safety perspective.

The Proponent has assessed alternatives for acid gas disposal in the Development Plan and has selected acid gas injection. It is noted in the Development Plan that there is an increased safety risk over the alternative of acid gas flaring due to handling of the high pressure gas. The Board believes that this increased risk can be mitigated through design and procedural safety, and Condition 18 ensures that this will be addressed in

the CSA such that the safety of personnel and the facility can be maintained while minimizing the environmental impact of acid gas. This is consistent with the Commissioner's recommendation that the Board accept the Proponent's choice of acid gas disposal.

The location of the injection well does not significantly increase risk from a safety perspective. The subsea flowline running from the MOPU to the injection well will be designed to a stringent standard. It will be buried within the Project safety zone where marine activities will be restricted and it will be inspected regularly. Furthermore, the pipeline and flowline design code specified in the regulations requires that a leak detection system be installed, and the Board shall ensure compliance with this requirement.

3.1.3.1 Physical Environmental Design Criteria

The *Nova Scotia Offshore Certificate of Fitness Regulations* require that the CA determine if the environmental criteria for the region or site and the loads assumed for the installation are correct as part of the certificate of fitness process. The Proponent has submitted preliminary environmental design data for the Deep Panuke site as well as for the export pipeline route. This data appears to be consistent with environmental data that is being used in the offshore area; however the CA will make the final determination based on data developed during the detailed Project design and the code requirements for the structural design. The CA will be expected to ensure that snow and ice loading are properly considered; the preliminary environmental data included in the Development Plan does not address these factors.

The Proponent included preliminary geotechnical data in the Development Plan. The Proponent states that geotechnical surveys will be performed to obtain more site specific geotechnical design data as required by the MOPU contractor. Site specific geotechnical requirements are included in the design code referenced in the regulations.

The Project facilities, including the MOPU, must have clearly defined operating limits. These will be detailed in the Operations Manual, which is subject to review by the CA prior to issuing a certificate of fitness.

3.1.4 Quality Management

The *Nova Scotia Offshore Petroleum Installations Regulations* state that every new installation shall be designed, constructed, installed and commissioned in accordance with a quality assurance program published by the Canadian Standards Association. The Proponent has committed to implementing a quality assurance program for the Project meeting the requirements of ISO 9000, which is the standard that has been adopted by the Canadian Standards Association. Quality plans and procedures will be developed and auditing and surveillance will ensure that appropriate levels of quality assurance will be present throughout the Project and that all requirements will be met.

As part of its approved scope of work, the CA is required to satisfy itself that the Proponent's quality program and those of its contractors are appropriate for all aspects of the work, are fully implemented and meet the requirements of the regulations.

Quality surveillance, audit and review activities carried out by the Proponent will be monitored by the CA to ensure compliance with Project specifications, procedures, drawings, standards and regulatory requirements. The CA will review documentation, carry out surveillance visits to design offices, supplier and fabrication facilities and at offshore locations. The CA will attend selected internal and external audits conducted by the Proponent as an observer and carry out their own audits where required.

3.1.5 Drilling, Completions and Workovers

The Proponent proposes to re-enter the four suspended Deep Panuke wells, drill two new wells, including one production well and one acid gas injection well, and complete all wells as subsea tiebacks. Up to three additional production wells may be drilled in order to optimize recovery. These wells will be drilled and completed with a water based drilling fluid using a cantilever jack-up drilling rig. All of these wells will be completed with subsea production trees and tied back to the MOPU with individual flowlines and umbilicals.

The current schedule is to begin well construction activities in early 2009, but the Proponent has noted that this is subject to change based on rig availability.

Regulations require that an operator obtain both a Drilling Program Authorization, and individual Approvals to Drill a Well for each new well. The Board's review of these applications will address both the technical and safety aspects of the proposed wells. The Board's evaluation of these applications will include:

- drilling schedule;
- equipment selection;
- drilling fluid;
- drilling hazards;
- tubular design;
- completion design;
- well control;
- sour service, and
- emergency response.

Similarly, any completions and workovers are also subject to specific Board authorizations and approvals, as detailed in the Accord Acts and regulations.

It should be noted that the Preliminary Casing and Tubing Design included in Part II of the Development Plan does not adequately cover sour gas service. The duration of actual well tests has not been sufficient to quantify potential H_2S levels with a high degree of certainty. In addition, the tubulars in the existing wells are not rated for long term sour service exposure. The Proponent has indicated that a new corrosion study will be conducted in 2007 to ultimately determine suitable well construction materials. The

results of this study will be assessed by the Board as part of the previously described application review process.

Condition 20: Well Design

The Proponent shall demonstrate to the satisfaction of the Board that the existing and proposed wells will be designed, or altered if necessary, to ensure that they are constructed to an appropriate level of sour gas service to maintain safety, protection of the environment, and optimum recovery of the resource.

Additionally, the Proponent will need to consider the results of the new corrosion study in the process design. It will be the responsibility of the CA to ensure that this is done as part of the certificate of fitness process.

3.1.6 Installation, Hook-Up and Commissioning

The Proponent proposes that the MOPU will be mechanically complete and, as much as possible, commissioned prior to installation at the Deep Panuke location. This will involve fabrication of the MOPU hull, legs and topsides modules at onshore facilities with final integration and commissioning at a near shore location. The unit will then be towed to location and installed in the same manner as a typical jack-up drilling unit. This element of the Project will be covered by a work and activity authorization issued by the Board. As part of its review of the authorization application, the Board will conduct surveys of the unit, and evaluate the proposed installation procedures.

Pipeline routes will be subject to pre-lay surveys and, on completion of the installation of the pipeline, a survey vessel will complete an as-layed survey. The Proponent plans to install the M&NP Option export pipeline and 510 mm (20 inch) tie-in to the SOEP pipeline using the 'S-Lay' method. The export pipeline will be weighted with a concrete coating and will typically be trenched and buried where the water depth is less than 85 m. Three installation methods are being considered for the interfield flowlines and the twin 305 mm (12 inch) tie-in pipelines to the SOEP export pipeline as follows:

- rigid pipe laid from a pipelay barge;
- flexible pipe, and
- rigid reeled pipe.

All options have a number of similarities, yet some unique differences, and will be the subject of a Board work and activity authorization which will allow for a detailed review of the chosen alternative from a safety perspective, prior to the installation of the flowlines and pipelines.

Pipeline and flowline tie-ins, and the possible hot tap (SOEP Option), will be conducted from a dive vessel under a separate work and activity authorization. The final hook-up and commissioning will be conducted in accordance with a detailed plan submitted as part of the work and activity authorization application.

All vessels associated with the pipeline and flowline installation, hook-up and commissioning will be subject to pre-authorization audit and inspection surveys to ensure regulatory compliance prior to commencing work. Board staff will often conduct such surveys jointly with Transport Canada who are required to issue ship safety certificates under the *Canada Shipping Act*.

The Board is satisfied that these installation, hook-up and commissioning activities can be effectively regulated under its existing practices and procedures. It should be noted that they will be the subject of CA and Board monitoring while work is being conducted.

3.1.7 Operations, Maintenance and Procedures

Section 51 of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* requires an operator to establish procedures and manuals for the safe operation and maintenance of the installation. A description of these is to be included in the operator's Safety Plan which is subject to the approval of the Board's Chief Safety Officer. Furthermore, the CA is responsible for reviewing and approving an operator's inspection and monitoring program, maintenance program, and weight control program as part of the scope of work in issuing a certificate of fitness.

The Proponent has stated in the Development Plan that the Project facilities will have a design life of 25 years, with the exception of the topsides, which will have a design life of 20 years. Given that the projected field life is less than this, an Information Request (IR-DPA-HSO-005) was submitted to the Proponent asking for confirmation that a planned preventative maintenance program will be implemented such that the facilities may safely operate for their full design life, regardless of potential field life. The Proponent responded in the affirmative. It is recognized that it will be in the MOPU contractor's best interest to implement a planned preventative maintenance program based on design life so that the MOPU could be demobilized at the end of the Project and reused or retrofitted as stated in the Development Plan.

3.1.8 Training and Competency

Subsection 62(1) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* states that no operator shall conduct a production operation for which the personnel require special skills until the operator has received the approval of the Board's Chief Safety Officer of the training that the operator proposes to require of the persons employed for that operation.

The Proponent states that the development of the Project team's competence, including contractors' competence, will be one of the priorities in managing workplace hazards. The Proponent indicates that it will implement a comprehensive training program for its Project team to comply with internally defined training requirements, and additionally to comply with the *Canadian East Coast Offshore Petroleum Industry: Standard Practice for the Training and Qualification of Personnel*. This practice is developed and maintained by the Canadian Association of Petroleum Producers, in conjunction with the CNSOPB, C-NLOPB, the Canadian Association of Oilwell Drilling Contractors and local

training institutes. It contains a description of the minimum qualifications and certified safety training required of individuals working in Canada's East Coast offshore petroleum industry.

The description of training and competency requirements contained in the Development Plan is generally consistent with Board expectations, the details of which will be subject to the review and approval of the Board's Chief Safety Officer prior to the Board granting any authorization to conduct offshore work or activities related to the Project.

3.1.9 Safety Zone

The *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* define the "safety zone" as the greater of:

- the area within 500 m of a production installation; or
- the area within 50 m of an anchor pattern of a production installation.

The definition of a production installation includes all platforms, wellheads and flowlines, but does not include pipelines. The purpose of a safety zone is to restrict access to facilities, and to reduce the risk of collision and of dropped objects thus providing prudent measures to safeguard the safety of the offshore workers and protect critical infrastructure.

The Proponent has identified a proposed safety zone for the Project which meets these regulations. In order to comply with Rule 43 of the *Collision Regulations,* under the *Canada Shipping Act,* the Proponent will be required to have this safety zone approved by Transport Canada and published on the relevant navigational charts and in notices to mariners.

3.1.10 Decommissioning / Abandonment: Safety Considerations

The Proponent has proposed to decommission and abandon the Project facilities in a manner that will minimize safety risk. Depending upon the scope of the decommissioning and abandonment program, this can necessitate the use of extensive dive programs, as well as significant heavy lifting and demolition activities. Diving programs are recognized worldwide as one of the highest risk activities associated with offshore oil and gas operations, and therefore, it is prudent to minimize diving operations to the extent possible. During dive operations, the recovery of subsea equipment can pose significant safety risks primarily due to the potential of dropped objects. Therefore, minimizing decommissioning and abandonment activities as proposed by the Proponent, to those required to remove any potential of interference with other commercial users of the sea is preferred from a safety perspective.

3.2 PROTECTION OF THE ENVIRONMENT

3.2.0 Introduction

The Board, in conjunction with other RAs for this Project, is responsible for the assessment of the potential effects of the Project on the environment. The Proponent is required to prevent or minimize any potential adverse effects on the environment that could result from the Project, through adherence to regulatory requirements, commitments, mitigation measures and follow-up activities.

Since July 2003, all offshore petroleum exploration and production activities have been subject to environmental assessment under the CEA Act. The Project was previously assessed by a comprehensive study in 2002, at which time the Minister of the Environment determined that the Project was not likely to cause significant adverse environmental effects.

Since the *2002 Deep Panuke Offshore Gas Development Comprehensive Study Report* (2002 CSR) was completed, the Proponent has changed the manner in which the Project is to be carried out. Additionally, there have been legislative changes that may affect significance thresholds for various potential effects, such as the coming into force of the Species at Risk Act (SARA) in June 2003. The Proponent was therefore required to prepare an environmental assessment report that addressed the variances in the Project from the 2002 proposed project, and the changes in legislation.

The Project as now proposed, in comparison to that assessed in the 2002 CSR, reduces the potential adverse environmental effects in certain respects. For example, the use of a single MOPU instead of three fixed platforms, and the use of water based drilling mud instead of synthetic based mud, are improvements from an environmental perspective. On the other hand, it is recognized that the Project, as now proposed, has an increased rate of produced water discharge. The 2002 CSR was based on a produced water rate of 1080 to 1560 m^3/d (45 to 65 m^3/hour). The Project now has a proposed produced water rate of a maximum of 6400 m^3/d (265 m^3/hour). A thorough analysis of the potential effects of this increase in produced water discharge was carried out in the 2007 CSR. The Proponent committed to additional mitigative measures to offset the potential effects of this increase in the amount of produced water, including:

- using a dedicated full time polishing unit (organophillic clay type) and stripping tower to reduce dissolved hydrocarbons (and potentially other chemicals) and H2S in produced water prior to discharge, in addition to using a hydrocyclone to achieve a dispersed oil concentration target of 25 mg/L;
- reviewing the results of the Environmental Studies Research Fund (ESRF) study on the effects of oiling of birds, when published, and incorporating any relevant findings into the Environmental Protection Plan (see below), and
- cooperating with the Centre for Offshore Oil and Gas Environmental Research (COOGER) on investigating the fate and effects of produced water.

The 2007 CSR also requires the Proponent to utilize a platform based laboratory facility, or an acceptable equivalent, to ensure timely and effective compliance monitoring. This will reduce the possibility of oil in produced water discharges exceeding regulatory limits.

In addition to the environmental assessment requirements, an operator is required, by regulation, to submit an Environmental Protection Plan (EPP). This plan provides for the protection of the natural environment and must be approved by the Board's Chief Conservation Officer, as discussed below. The Board will therefore require that an EPP be submitted and approved as a prerequisite to the granting of authorizations to undertake any work or activity in the Nova Scotia offshore area by the Proponent.

Once an authorization has been granted, the Board will implement a monitoring program to assess ongoing operator compliance with legislative and regulatory requirements, and with any conditions that are attached to authorizations. This will include audits and inspections in the field and office locations, review of operator daily reports and produced water monitoring reports, review of annual EEM report results, spill incident reports, and Board investigation of significant spills. The Board has in place a program for compliance motivation and enforcement that is followed in cases where non-compliances are noted.

The Proponent is required to implement an EEM Program for the life cycle of the Project. The EEM Program will be reviewed and revised annually to monitor the effects of particular aspects of the Project on the environment.

3.2.1 The Environmental Assessment Process

Pursuant to the Federal Coordination Regulations under the CEA Act, the Proponent submitted a Project Description in August of 2006. The following organizations identified themselves as RAs:

- Canada – Nova Scotia Offshore Petroleum Board;
- National Energy Board;
- Fisheries and Oceans Canada;
- Industry Canada, and
- Transport Canada.

In addition, expert advice on the CSR was provided by Environment Canada (EC) and Natural Resources Canada (NRCan).

Following their review of the Project Description, the RAs prepared a scoping document, titled *Scope of the Environmental Assessment for the Proposed EnCana Corporation Deep Panuke Offshore Gas Development Project*. Public comment on the scoping document was obtained and considered. The RAs recommended to the Minister of the Environment that the Project be assessed as a comprehensive study. The recommendation was accepted.

The RAs delegated the preparation of a technical environmental assessment to the Proponent. This was submitted in November, 2006. Public comment on the EA was sought throughout the Public Process (described in Part I).

Following completion of the public hearings, a JER was prepared by the CNSOPB Commissioner and the NEB Member, and provided to the RAs on April 11, 2007. The RAs completed the 2007 CSR, taking into account input from the Public Process and the JER, and submitted it to the CEA Agency on June 4, 2007. The CEA Agency then released the CSR for public review from June 11, 2007 to July 10, 2007. The Minister of the Environment considered the public comments and issued the environmental assessment decision statement accepting the conclusions of the CSR on September 5, 2007.

3.2.2 Environmental Effects Assessment and Mitigation

The 2002 CSR evaluated the potential for adverse environmental effects, including effects on: air quality, fish, marine water quality, marine benthos, marine mammals, marine related birds, Sable Island, and the onshore environment. The 2002 CSR also addressed cumulative effects, socio-economic impacts, and the effects of the environment on the Project.

Commitments, mitigation, and follow-up measures within the 2002 CSR are related to: pipeline routing and construction, safety measures, vessel and helicopter traffic, decommissioning, engineering design, chemical selection and use, environmental protection planning and environmental performance, waste management, atmospheric emissions, interactions with fisheries, socioeconomic commitments, stakeholder consultations, and emergency response /contingency planning.

The Proponent must continue to honour all relevant commitments, mitigation and follow-up measures contained within the 2002 CSR, including the document *Additions and Errata for the Deep Panuke Offshore Gas Development Comprehensive Study Report* dated October 2002. It should be noted that some of the environmental commitments made by the Proponent in 2002 have been slightly modified when listed in the 2007 CSR, to reflect the revised Project.

The 2007 CSR specifies new commitments, mitigation and follow-up measures that must be implemented in order to ensure that there are no significant adverse effects as a result of Project changes. The effects evaluated in the 2007 CSR included: effects of accidental releases, increased produced water discharge, air emissions, presence of new subsea infrastructure, construction work for subsea infrastructure, drill waste discharges, near shore and onshore contaminants, the effects of the Project on wildlife and habitat, navigation and other ocean users, and species at risk, as well as cumulative effects, effects of the environment on the Project, the capacity of renewable resources, socioeconomic effects of the Project, and effects on aboriginal communities or resources.

In accordance with paragraph 16(1)(b) of the CEA Act, the Board and the other RAs considered the significance of the environmental effects of the Project and determined that, taking into account the implementation of the commitments, mitigation, and follow-up measures identified in the 2002 CSR and the 2007 CSR, the Project (including both the SOEP Option and M&NP Options) is not likely to cause significant adverse environmental effects.

Given that the Board's determination in this regard is contingent upon adherence to the commitments, mitigation and follow-up measures discussed above, the Board's approval of the Development Plan will require that the Proponent comply with the CSR requirements. However, it is acknowledged that both the 2002 CSR and 2007 CSR address aspects of the Project that are not within the Board's jurisdiction or mandate, and therefore the condition is limited to the portion of the Project that is within the Nova Scotia offshore area, as defined by the Accord Acts.

Condition 21: Comprehensive Study Report Requirements

The Proponent shall comply with all commitments, mitigation and follow-up measures related to the portion of the Project within the Nova Scotia offshore area that are identified in the 2007 Comprehensive Study Report for the Deep Panuke Offshore Gas Development Project, including those adopted from the 2002 Comprehensive Study Report.

3.2.3 Additional Environmental Assessment Considerations

3.2.3.1 Marine Mammals, Marine Birds and Sea Turtles

The Proponent has committed to having a wildlife observer present during certain phases of the Project. The Board is of the opinion that an observer should be required during certain construction activities (e.g. installation of major subsea equipment) to monitor interaction with marine mammals, turtles and seabird species at risk. Specific to pile driving activities, ramp-up is required and pile driving shall not commence if a marine mammal or turtle species at risk is within 500 m of the pile driving activity zone. This distance was established by environmental assessment work done as part of the 2002 CSR based on acoustic monitoring and visual observations during pile driving activity for SOEP installation activities. Pile driving start-up must be delayed until the marine mammal or sea turtle has not been observed for at least 30 minutes within the 500 m zone. The Board will ensure that such requirements are in place when an application for authorization to install offshore facilities is reviewed for approval.

The Proponent is required to comply with the SARA throughout the life of the Project, including implementing protection measures for any species listed in the future.

3.2.3.2 Pipeline Pre-Construction Survey

The Proponent has committed to conducting a pre-construction survey of the pipeline route. In part, this survey will be to confirm the prediction that no rare deep sea coral colonies, sensitive habitats, or munitions exist along the unsurveyed sections of the export pipeline and flowline routes. The Board will require that the results of this survey be submitted as part of an application for authorization to install the subject pipeline and flowlines. If rare deep sea coral colonies, sensitive habitats, or munitions are found, the Board's Chief Conservation Officer will ensure that the modified EPP reflects this new information.

Furthermore, in the unlikely event that the pipeline route is to deviate significantly in any area from what is currently planned, the Board will ensure that the Proponent consults with stakeholders (including fisheries representatives) pursuant to Condition 22 below.

3.2.3.3 Environmental Risk Assessment

In the 2002 CSR, the Proponent stated that it would be undertaking environmental risk assessments as part of the safety plan, during the design of the Project, so as to develop the best design to minimize environmental impact. In both the 2002 CSR and the Development Plan, the Proponent makes reference to its Hazard and Effects Management Process (HEMP) and has stated that it, or equivalent risk assessment methodologies, will be implemented for the identification, assessment, control and mitigation of hazards throughout the life of the Project. The Proponent indicates that its risk assessment process addresses health, safety and environmental hazards and risks collectively.

It is important to note that the CSA must, by regulation, consider all components and activities associated with each phase in the life of the production installation, including the construction, installation, operation and removal phases. The CSA is to include, for each potential accident, appropriate measures designed to minimize the risk of damage to the environment. The Proponent has identified that the CSA will be the key starting point for risk management for the Project.

In the review of the CSA and the safety plans, the Board's Chief Safety Officer will ensure that the Proponent has properly included environmental risk assessments as part of its integrated health, safety and environmental risk assessment processes. This review shall be done in consultation with Board environmental staff and the Chief Conservation Officer.

3.2.4 Commissioner's Recommendations

Many of the recommendations contained in the two reports submitted to the Board by the Commissioner relate to environmental issues. Those included in the JER were taken

into consideration in the 2007 CSR. Recommendations that are focused on environmental issues contained in the two reports are discussed below.

3.2.4.1 Eastern Scotian Shelf Integrated Management (ESSIM)

The Commissioner recommended that the Proponent continue active participation in ESSIM.

The Board agrees with this recommendation. The Board is satisfied that this has been adequately addressed in the 2007 CSR.

3.2.4.2 Environmental Monitoring

The Commissioner recommended that the Proponent make the results of its environmental monitoring available to the public on a timely basis and that the presentation of these results pay particular attention to the effects on marine life in the vicinity of the Project and the direct and indirect effects of the Project on the resources of Sable Island.

The Board agrees with this recommendation. The Board is satisfied that this has been adequately addressed in the 2007 CSR through follow-up requirements. Also, in accordance with the CEA Act, the results of the EEM programs and other follow-up programs are made public.

3.2.4.3 Consultation

The Commissioner recommended that approval of the Project be contingent upon effective consultation.

The Board acknowledges the public consultation already conducted, and the Proponent's future public consultation commitments, which are outlined in section 6.2 and Appendix B of the 2007 CSR. The Board believes that such consultation will be especially important during the pre-construction and construction phases of the Project, and therefore attaches the following condition to the approval of the Development Plan:

Condition 22: Stakeholder Consultation

The Proponent shall continue its consultation with stakeholders, at a minimum until construction of the Project is complete and shall report to the Board on a quarterly basis on the results of such consultation.

3.2.4.4 Roseate Tern

The Commissioner recommended that the Proponent include measures in its EPP and Spill Response Plan to protect the Roseate Tern from possible impacts of development and production activities.

The Board agrees with this recommendation. The Board is satisfied that this has been adequately addressed in the 2007 CSR.

3.2.4.5 Compensation

The Commissioner recommended that the Proponent's compensation commitments be made a condition of approval.

Specifically related to compensation, the Board requires the Proponent to adhere to the CNSOPB *Compensation Guidelines Respecting Damages Relating to Offshore Petroleum Activity*. During the Public Process, the Proponent committed to compensate and indemnify licensed fishery participants to the extent that the Project may cause them damage or loss including consequential damages during normal fishing operations.

For identified fishery participants and sea urchin harvesters in the nearshore area, the Proponent has committed that, if construction of the M&NP export pipeline option proceeds, the Proponent will compensate them for losses, including potential loss of income, which they may suffer during construction and thereafter until the area recovers to its pre-construction state. The likelihood of the Project causing loss or damage to licensed fishery participants is low. However, the Proponent is nevertheless prepared to provide compensation and indemnify them in the event that its activities cause such losses.

During the Public Process, the Proponent specifically committed to:

- meet the Board's compensation guidelines;
- compensate licensed fishery participants for any damage to fishing vessels or gear or any loss, including consequential damages, caused by interactions with its pipeline during normal fishing operations;
- indemnify any licensed fishery participants from third party claims arising out of loss or damage caused by interactions between fishing gear and a pipeline during normal fishing operations, and
- compensate for "actual loss or damage" that leads to loss of hunting, fishing, or gathering opportunities for aboriginal peoples of Canada.

Condition 23: Compensation Commitments

During the execution of the Project, the Proponent shall honour the compensation commitments it made during the Public Process.

3.2.4.6 End Product Greenhouse Gas Emissions

The Commissioner recommended that the Board give consideration to conducting a study of the issue of requiring the Proponent to include an assessment of the potential impact of greenhouse gas emissions by end users of the product.

While the Board appreciates the concern raised by the Commissioner, this is outside the mandate and jurisdiction of the Board.

3.2.4.7 Munitions

The Commissioner recommended that the Proponent consult with the Department of National Defense with respect to the possible presence of legacy munitions or unexploded ordnance, biological or chemical warfare agents and radioactive materials within the proposed Project area.

The Board agrees with this recommendation. The Board is satisfied that this has been adequately addressed in the 2007 CSR.

Should additional information become available prior to the commencement of construction which indicates an increased risk of encountering sites containing conventional and/or chemical munitions (UXO) and/or radioactive materials, the Board's Chief Conservation Officer will ensure that the Deep Panuke Emergency Response Plan reflects this new information. Under the *Nova Scotia Offshore Area Production and Conservation Regulations*, such plans form part of the EPP.

3.2.4.8 Fisheries Liaison Program

The Commissioner was not convinced that it is necessary for the Proponent to commit to a full time Fisheries Liaison (Observer) Program as a condition of approval.

The Board agrees with the Commissioner's recommendation. However, the Proponent has committed to having a fisheries liaison person on site during certain phases of the Project. The Board will ensure that the Proponent meets this commitment during its review and approval of work and activity authorization applications. The Board will also ensure that the Proponent utilizes a fisheries liaison person on site during appropriate activities, such as the installation of major subsea equipment and materials.

Condition 24: Fisheries Liaison Program

During the construction phase of the Project, the Proponent shall implement a Fisheries Liaison Program, acceptable to the Board, when major construction or

installation activities are being carried out offshore or when otherwise directed to do so by the Board.

3.2.4.9 Inshore Fishery Agreements

The Commissioner recommended that the Board consider the request of the Guysborough County Regional Development Authority to make any agreements between the Proponent and inshore fishery participants public.

The Board has considered the Commissioner's recommendation; however, the Board does not believe that it should make such agreements public. Agreements such as this between the Proponent and third parties are a confidential matter between those parties.

3.2.5 Decommissioning / Abandonment: Environment Considerations

The Proponent has stated that, although technology, regulations, and accepted industry best practices could potentially change prior to the time of decommissioning and abandonment, their current intention is to degas, degrease and clean the offshore facilities to applicable standards, with the MOPU then being removed, and the wells abandoned and conductors cut below the seafloor. Furthermore, the Proponent's stated intention is that the offshore pipeline(s), flowlines and umbilicals will be flushed, cleaned, and abandoned in place. This practice is consistent with what was accepted for the Cohasset Project, with international practice, and what is intended at the conclusion of the Sable Offshore Energy Project.

The 2002 CSR and the 2007 CSR analyzed the environmental effects of the presence of new subsea infrastructure. It was determined that significant residual adverse environmental effects as a result of the presence of new subsea infrastructure are unlikely, provided that the mitigation proposed by the Proponent and the mitigation described in the CSRs are implemented.

The Proponent will be required to submit an application to the Board, pursuant to the Accord Acts, to decommission and abandon the facilities prior to executing such work. At that time, the environmental effects of the then detailed decommissioning and abandonment work program will be considered. A specific focus of the Board during the assessment of the Proponent's application will be to ensure that the materials to be left on the sea floor will not be a hazard to conventional fishing gear, and to ensure that any such hazards will be removed or mitigated by the Proponent.

When abandonment has been completed, a request to the Canadian Hydrographic Service will be required to remove all features associated with the Project, from navigational charts except for the abandoned pipeline flowlines and umbilicals.

Based on the plan discussed above and the 2002 CSR and 2007 CSR, the Board is of the opinion that any impact to fisheries that would result from the decommissioning and abandonment of the Project would not be significant.

3.2.6 Responsibility and Authority for Environmental Protection

As discussed above, the Proponent proposes to contract out the design, fabrication, installation, operation, abandonment and decommissioning of the various Project components. However, regardless of the contracting strategy it chooses the Proponent remains ultimately accountable for EH&S protection through all phases of the Project pursuant to the Accord Acts.

This matter was the subject of an Information Request raised by the Board (IR DPA-HSO-008). The Proponent's response confirmed that its contracting strategy will be executed in a manner that does not undermine its responsibility and authority for ensuring that its environmental protection obligations are met. This is explained in detail in Section 3.1.1.

The Board will ensure that the Proponent meets its stated commitments in this regard when reviewing the EPP (which requires the Board's Chief Conservation Officer approval), work and activity authorization applications, and by way of its compliance monitoring program for authorized work and activities.

3.2.7 Environmental Protection Plan

Subsection 51(2) of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* states that operators are required to develop and submit to the Chief Conservation Officer for approval, an EPP that provides for the protection of the natural environment. Subsection 51(3) states that the EPP is required to address abnormal conditions and emergencies that can reasonably be anticipated, including loss of well control, forecast or actual physical environmental conditions that may result in loads or load effects on the production installation in excess of those for which it was designed, and oil spills.

In the Development Plan, the Proponent confirms that it will develop an EPP as part of its Environmental Management Framework for the Project. The Proponent states that it will implement environmental protection measures, which will be documented in the EPP, to mitigate potential environmental effects from its activities. This will include the commitments contained in the 2002 CSR, the 2007 CSR, the Development Plan, other regulatory requirements, and the conditions of approval set out in this Decision Report.

The EPP will further define the Proponent's environmental compliance monitoring procedures to ensure compliance with all regulatory requirements and self imposed environmental commitments, including monitoring for compliance within the discharge limits identified in the Offshore Waste Treatment Guidelines (OWTG). Environmental performance will be reviewed by the Proponent throughout the life of the Project.

The Proponent states that the EPP will be developed during the detailed engineering phase of the Project, in consultation with key stakeholders, and will be finalized once the Project design is complete.

In the Development Plan, the Proponent also refers to the Deep Panuke Emergency Management Plan, and a subset document called the Deep Panuke Spill Response Plan. The Spill Response Plan will address response to spills that may result during offshore activities. It will include planning considerations, response, and spill development effects monitoring. Both of these documents must be submitted to the Board's Chief Conservation Officer and, in whole or in part, will constitute part of the EPP, as defined by regulation.

To ensure that the Chief Conservation Officer has sufficient time to review the EPP prior to the commencement of installation activities, the following condition will apply:

Condition 25: Environmental Protection Plan

A minimum of 45 days prior to the commencement of either the installation of Project components, or the drilling of new wells, the Proponent shall submit an Environmental Protection Plan, acceptable to the Board's Chief Conservation Officer.

3.2.8 Environmental Effects Monitoring

The purpose of an EEM Program is to monitor the effects of a project on the environment on a regular basis, throughout the life of the project. The Board requires an EEM Program that spans the life of the Project. EEM Programs will be reviewed in accordance with the *CNSOPB/DFO/EC Environmental Effects Monitoring Coordination Framework.* This document, which outlines the expected interactions and roles of regulators, government departments and industry in EEM Programs, is available on the Board's website.

The Commissioner has recommended that the Proponent make the results of its monitoring programs available to the public, on a timely basis, and that the presentation of these results pay particular attention to the effects on marine life in the vicinity of the proposed Project and the direct and indirect effects of the proposed Project on the resources of Sable Island. The Board agrees. The EEM Programs and findings will be publicly available as will the subsequent follow-up/monitoring required by the CEA Act.

Condition 26: Environmental Effects Monitoring

The Proponent shall implement an Environmental Effects Monitoring (EEM) Program for the life cycle of the Project. The EEM Program shall be submitted a minimum of 45 days prior to commencement of either the drilling of new wells or the installation of Project components. Once production has begun, no later than March 31 of each year, the Proponent shall submit its EEM results for the previous year, and shall update its EEM Program taking into account both the EEM results of the previous year and the environmental effects predictions contained in the 2002 CSR and 2007 CSR.

3.3 RESOURCE CONSERVATION

3.3.0 Introduction

The management and conservation of offshore petroleum resources is a primary responsibility of the Board. The statutes and regulations administered by the Board require that oil and gas resources be produced in accordance with good oil field practices, having proper regard for the efficient recovery of the resource and the prevention of waste. The Accord Acts define waste as follows:

"In this Part, 'waste', in addition to its ordinary meaning, means waste as understood in the petroleum industry and in particular, but without limiting the generality of the foregoing, includes:

- *the inefficient or excessive use or dissipation of reservoir energy;*
- *the locating, spacing or drilling of a well within a field or pool or within part of a field or pool or the operating of any well that, having regard to sound engineering and economic principles, results or tends to result in a reduction in the quantity of petroleum ultimately recoverable from a pool;*
- *the drilling, equipping, completing, operating or producing of any well in a manner that causes or is likely to cause the unnecessary or excessive loss or destruction of petroleum after removal from the reservoir;*
- *the inefficient storage of petroleum above ground or underground;*
- *the production of petroleum in excess of available storage, transportation or marketing facilities;*
- *the escape or flaring of gas that could be economically recovered and processed or economically injected into an underground reservoir, or*
- *the failure to use suitable artificial, secondary or supplementary recovery methods in a pool when it appears that such methods would result in increasing the quantity of petroleum ultimately recoverable under sound engineering and economic principles."*

The Development Plan describes the Proponent's development strategy and includes details on subsurface interpretation, drilling, processing, facilities and environmental and safety management of the Project. In section 2 of the Development Plan entitled Subsurface, the Proponent describes the various components used in its "Subsurface Integrated Development Planning Workflow". This integration of all available subsurface information helps determine the options for developing the field and minimizing uncertainty. As more information is obtained it should be incorporated into this workflow and the development reassessed. All of this information was reviewed taking into account the Board's mandate of resource management as well as evaluating for compliance with the requirements in the legislation, regulations and guidelines. The following sections represent the findings from this review.

3.3.1 Geoscience

The Proponent presented a brief geological overview of the evolution of the Sable Basin and the importance of basement features in their influence on later siliciclastic and

carbonate deposition and their petroleum systems. The Development Plan provides a detailed review of the field's exploration drilling phase, the results of these wells, and the creation of a significant well and seismic database. From these data, the Abenaki formation's depositional history, stratigraphy, sedimentology and facies distribution were interpreted. Most important was the determination of the formation's complex diagenetic history that has a profound impact on the formation, distribution and preservation of the Deep Panuke gas reservoir.

Seismic visualization and mapping of this complex field's reservoir zone using geophysical attributes presented a challenge to the Proponent. Similarly, petrophysical analysis of the carbonate reservoir, required to interpret the complex diagenetic history and porosity distribution, is limited to the near wellbore region. Definitive parameters defining the field extent are beyond the resolution of the available dataset and current technologies. Therefore, with the available data and interpretations the Proponent determined a range of realistic values for individual reservoir and field parameters. Based on the balance of probabilities, a range of estimates for the in place and recoverable gas resource was calculated. These values were in turn incorporated into the reservoir model.

3.3.1.1 Geophysical Interpretation

The seismic interpretation conducted by the Proponent in the Deep Panuke area included five 3D surveys as shown in Figure 2.47 of the Development Plan. The detailed reservoir interpretation of the Deep Panuke Field was conducted only on the Abenaki 3D which covers 450 km^2 and was acquired by Western Geco in 2002.

The Abenaki 5 is the main reservoir zone in the field. The key seismic horizons picked in order to define the reservoir were:

- Top Porosity geophysical horizon;
- Abenaki 5 geophysical horizon, and
- Abenaki 4 geophysical horizon.

A map on the Top of Porosity is shown in Figure 2.50 of the Development Plan. Various other seismic horizons were picked for use in depth conversion and helping to define the structure away from the reservoir. Velocity information from 13 wells was used to convert these seismic time horizons to depth.

To assist in defining the spatial extent of the reservoir, a neural net method was employed to combine the analysis of the seismic 3D cube, the petrophysical data, well test data, and depositional patterns. This information was used to help define the edge of the High Permeability Reef Front (HPRF), the Back Reef (BR) boundary, Vuggy Limestone (VL) extent, dolostone volumes, and porosity distributions (Figure 2.21 of the Development Plan). The results are a series of three dimensional porosity distribution volumes resulting from the statistical ranges of the input parameters. Interpretation completed by the Board was consistent with results submitted by the Proponent.

3.3.1.2 Geology

The Proponent provides a brief overview of the Scotian Basin regional geology that emphasizes the basin's structural components. However, the focus of this part of the Development Plan is on understanding the evolution of the Deep Panuke reservoir, its characteristics, distribution, and extent of the field.

The Deep Panuke reservoir is located near the top of the Late Jurassic Abenaki formation. The Abenaki is dominated by limestones of various depositional environments recording an ancient and long lived reef margin much like the modern Great Barrier Reef complex offshore eastern Australia (see Figure 3.0). The reservoir lithologies are leached and fractured limestones and dolostones that have various types and ranges of porosities and permeabilities. The Proponent recognizes that reefal carbonate reservoirs can be exceedingly complex, and has expended considerable effort to interpret and model the Deep Panuke Abenaki formation. This was accomplished utilizing well logs, cores (conventional and sidewall), cuttings, previous studies of the Abenaki and comparison with global analogues.

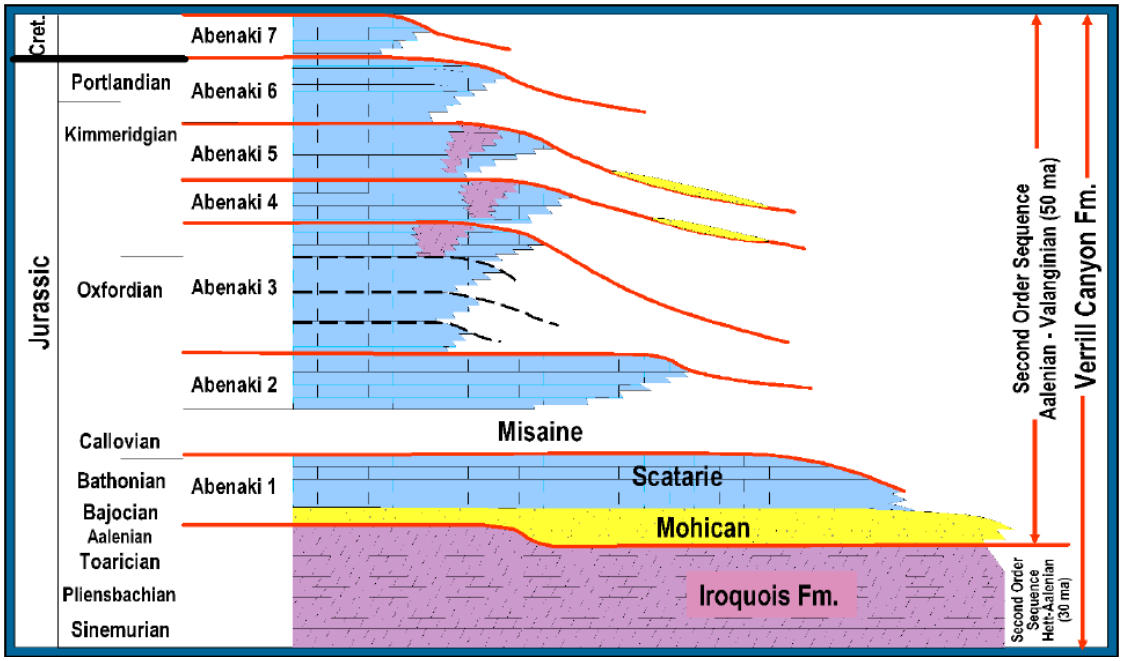

Figure 3.0: Abenaki formation stratigraphic framework. The Deep Panuke reservoir is located in the violet-coloured part of the Abenaki 5 pool (EnCana)

Based on the drilling results and dataset, the Proponent created an *Integrated Depositional Facies and Diagenetic Model* to explain the evolution of the Abenaki margin and creation of the gas reservoir. The initial study of the Abenaki's carbonate sedimentology identified various facies and facies associations and interpreted the different sedimentary environments. These were then combined to create an integrated depositional and facies model for the Abenaki formation (see Figure 3.1).

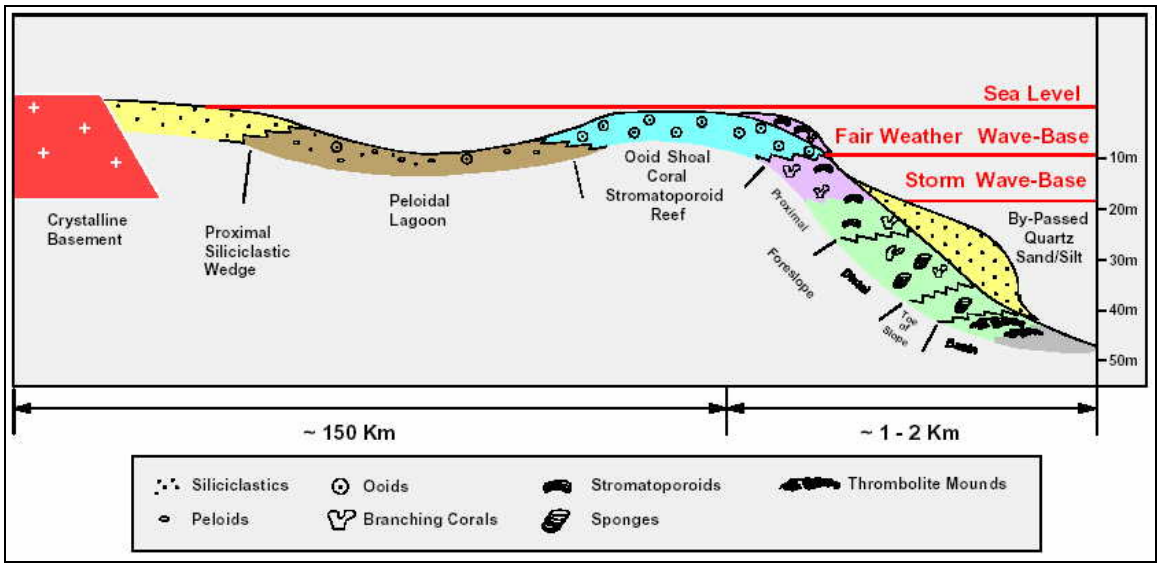

Figure 3.1: Simplified Deep Panuke Abenaki formation facies model and associations (EnCana)

The structural history of the Abenaki in this portion of the Sable Subbasin was interpreted and integrated with the very comprehensive research on the formation's diagenetic history and its effects on the various depositional facies and on the creation of porosity. Abenaki reservoir regions were then mapped and integrated with the established depositional facies and diagenetic models to determine the possible area extent of the reservoir and relationship to the various facies. The field was classified into four so called Reservoir Regions, each having two or more facies associations and lithotypes reflecting distinctive reservoir characteristics. Of these, the HPRF and VL regions referenced above are interpreted to contain most of the economic quantities of recoverable gas. This integrated model was then the basis for the Deep Panuke Reservoir Model.

While accepting that there are limitations on the ability to model the Abenaki due to well density, sampling parameters, lithology types, and safety issues, the Board is of the view that the Proponent has, to the best of its abilities, created a reasonably accurate interpretation of the Abenaki depositional and reservoir system. The Board recognizes the difficulty of predicting reservoir distribution in a complex carbonate depositional system and believes that the Proponent has been thorough in the scope of its research and modeling.

The sections of the Development Plan pertaining to the geological aspects of the Project are satisfactory to the Board.

3.3.2 Reservoir Characteristics

3.3.2.1 Formation Flow Tests

The Proponent tested six of the eight wells in the Deep Panuke field, with five testing at rates greater than 1.4 X 10^6 m^3/d (50 MMscf/d). The results of these tests were tabulated and summarized in the Development Plan. Based on these data the Proponent recognized and described the complexity in analyzing the test results and the uncertainties caused by operational problems that occurred in some of the wells.

The Board has reviewed the Proponent's well tests analyses and recognizes the interpretation challenges associated with these test results. Pursuant to the regulations, prior to placing the pool on production the Proponent will be required to conduct a production test to determine the key reservoir parameters and establish baseline measurements for subsequent production and monitoring programs. Additional testing to determine deliverability and/or assessing reservoir extent may also be required. Production testing must occur in a manner that permits the assessment of initial inflow parameters for the pool.

3.3.2.2 Petrophysics

The Proponent conducted a comprehensive Logging While Drilling (LWD) and wireline logging program while drilling the Deep Panuke exploration and delineation wells. In some Deep Panuke wells, the acquisition of conventional and rotary sidewall core (SWC) was difficult due to operational/drilling issues caused by the presence of very high porosity zones (i.e. large vugs to cavernous porosity). In these zones, obtaining conventional core and SWC was complicated by the partial to total loss of circulation and/or vugs that were larger than the sidewall core. In the Development Plan, the Proponent acknowledges that most conventional core and SWC were acquired in the lower porosity (i.e. matrix porosity) intervals creating an unavoidable sampling bias that limits the ability to fully characterize the complexities of the Deep Panuke reservoir.

The Proponent used all available log, core (i.e. conventional and special core analyses) and pressure data to conduct a comprehensive petrophysical evaluation of the Deep Panuke reservoir. The Proponent characterized Deep Panuke as a single gas pool with a field wide free water level (FWL) defined by well log data and wireline formation pressure measurements. In the Development Plan, the Proponent describes the development of the petrophysical model, including the interpretation parameters and methodology. The Proponent also discusses how the petrophysical data was integrated into the Deep Panuke geological and reservoir models. The results of the Proponent's petrophysical evaluation are summarized in the Development Plan.

The Board conducted its own petrophysical evaluation, using the available log, core and pressure data, and is satisfied that the Proponent's interpretation is reasonable.

3.3.2.3 Fluid Characteristics

The Proponent has analyzed the reservoir fluid and water compositions from the samples obtained during exploration and delineation drilling. These analyses are necessary to define the fluid characteristics and properties used in engineering studies for the Project. The results of these analyses detailed their compositions and are presented in tabular form in the Development Plan. The gas to be produced is very lean with a best estimate condensate gas ratio of 0.0185 $m^3/10^3$ (3.28 bbl/MMscf). There may be some condensate dropout occurring prior to separation and processing.

The Board recognizes the uncertainty in the formation water analysis and the resulting difficulty in predicting scale formation. The Board will require additional testing during development to ensure the composition of the gas and formation water are correctly understood. As well, the Board agrees with the Proponent that it will be necessary to monitor the production system closely for evidence of scale and to take remedial action.

The Deep Panuke reservoir gas is considered to be acidic with hydrogen sulphide (H_2S) concentrations of 0.18% and carbon dioxide (CO_2) concentrations of 3.44%. When natural gas contains significant amounts of H_2S, CO_2 or other similar contaminants it is referred to as acid gas. Gas production decreases pool pressure which results in the reservoir further souring as both the H_2S and CO_2 are evolved from the formation water. The acid gas concentration is expected to increase from 3.62% to 4.30% over the field's production life.

This acid gas will be removed from the raw gas through an amine sweetening system process to meet sales gas specifications. This acid gas will then be disposed of in an injection well, as discussed below.

3.3.3 Resource Estimates

3.3.3.1 Original Gas-in-Place

In the Development Plan, the Proponent presents two reservoir characterization methods for determining original gas-in-place (OGIP) for the Deep Panuke pool: one method for the HPRF region and one for the VL region. In the HPRF region, gas volume is mainly a function of total porosity and the volume of dolostone. In the VL region, gas volume is primarily determined by rock volume and total porosity. In the HPRF and VL regions, neural networks were trained using 3D seismic and well data to predict volume of dolostone, lithotype (i.e. HPRF, VL, etc.) and total porosity. The Proponent's maps display the range of lateral extent for the HPRF and VL regions (Figure 2.51 of the Development Plan), best estimate of average dolostone content for the HPRF region, and best estimates of the HPRF and VL region average porosities.

The next phase in the development of the Deep Panuke reservoir model was the creation of static reservoir models for the field. The key seismic surfaces, interpreted extent of the HPRF and VL regions, gas water contact (GWC) uncertainties and neural network models were utilized in the development of the static reservoir models. The

Proponent indicated that areal extent, effective porosity and the elevation of the GWC were the static modelling inputs that were responsible for most of the uncertainty in the Deep Panuke OGIP. Twenty-seven deterministic estimates were calculated for each of the HPRF and VL regions. From these static models, "Small", "Mid" and "Large" models were selected to represent the full range of OGIP estimates. These three models were modified using well test data prior to being used as inputs to the reservoir simulation models. The probabilistic ranges for OGIP are presented in Table 3.0.

Reservoir Region	Probabilistic OGIP (E9M3)			
	P90	**P50**	**P10**	**MEAN**
HPRF	16.5	23.7	32.2	24.0
VL	3.1	4.7	7.1	4.9
TOTAL	21.3	28.6	37.4	28.9
Reservoir Region	**Probabilistic OGIP (Bcf)**			
	P90	**P50**	**P10**	**MEAN**
HPRF	585	841	1143	853
VL	110	166	252	174
TOTAL	755	1,016	1,327	1,027

Table 3.0: Proponent's probabilistic ranges for Original Gas-In-Place (OGIP) in metric and imperial units

The Board conducted an assessment of the OGIP for the Deep Panuke reservoir. It reviewed the available geophysical, geological, petrophysical and engineering data and conducted deterministic and probabilistic assessments of the Deep Panuke OGIP. The Board's mean OGIP estimate is within the Proponent's probabilistic OGIP range (P90 – P10), therefore the OGIP values calculated by the Proponent are considered reasonable.

3.3.3.2 Reserve Estimates

Field reserves, or Recoverable Gas-in-Place (RGIP) in this reservoir, are dependant on several factors. The recovery factor of the field relies on the efficiency of the depletion plan, the degree of reservoir connectivity (i.e. extent of fracture and matrix connectivity), the size of the aquifer underlying the gas, and the transmissibility of that aquifer into the gas zone. The size and transmissibility of the aquifer are largely unknown due to the lack of well penetration in the lower Abenaki and the inability to accurately image the extent of the fracture system in and below the reservoir.

The Proponent addresses these uncertainties by applying a large probabilistic range to both the aquifer size and transmissibility. The aquifer size ranges from 2.0 to 30.0 times the size of the OGIP, with a mean of 9.8 times the size. The Proponent considers an aquifer as weak if it is less than 5 times the size of the gas pool OGIP, moderate from 5-10 times the OGIP, and strong if greater than 10 times the OGIP. The aquifer connectivity (J index) ranges from 10 to 3,000.

Simulation results based on these parameters yield a recovery factor range for the HPRF between 0.40 and 0.79. The Proponent considers this range too narrow, and has expanded the recovery factor range to include values from 0.2 to 0.87, with a mean of 0.672. The Board is satisfied with this approach and considers the range and distribution of probable recovery factors to be reasonable. The resulting probabilistic ranges for RGIP are shown in Table 3.1.

Reservoir Region	Probabilistic RGIP (E9M3)			
	P90	**P50**	**P10**	**Mean**
HPRF	9.7	16.0	23.9	16.5
VL	1.4	2.0	3.0	2.1
TOTAL	11.5	18.2	26.2	18.6
Reservoir Region	**Probabilistic RGIP (Bcf)**			
	P90	**P50**	**P10**	**Mean**
HPRF	345	568	849	584
VL	48	72	106	75
TOTAL	407	645	931	659

Table 3.1: Proponent's probabilistic range for Recoverable Gas-In-Place (RGIP) in metric and imperial units

3.3.4 Reservoir Exploitation

3.3.4.1 Exploitation Scheme

The Proponent is proposing to produce the gas reserves from the Abenaki 5 pool. The Board has reviewed the Proponent's static and dynamic Abenaki Reservoir Models developed to determine the full range of estimates for the OGIP, to assess depletion options for the field, and to calculate estimates for the range of RGIP. For both of these models, the Proponent provided a summary of the assumptions and results.

The static model focused on the HPRF and VL to generate a range of potential OGIP. The Board agrees with the uncertainty associated with inputs for the static model, which were areal extent, porosity and the elevation of the GWC. Three static models were chosen to cover the range of OGIP to develop the dynamic model.

The dynamic model focused on the HPRF and VL to generate reservoir performance parameters to create a range of potential RGIP. The Board also agrees with the uncertainty associated with inputs for the dynamic model, which were aquifer size, aquifer connectivity to the HPRF and connectivity within the VL. To audit the performance of the models, the Proponent history matched the well test results. The well test results were difficult to analyze due to testing issues thus using these as a history match for the model introduced further uncertainty.

The Board requires that the Proponent maintain and update a system that can provide forecasts and depletion scenario evaluations. Systems to optimize the development and production options should be available and current at all stages of the production life.

Condition 27: System Deliverability

The Proponent shall monitor and evaluate system deliverability on an ongoing basis. The Proponent shall report forecasts of system deliverability as well as pressures, temperature and rate relationships for the production facilities and pipeline, as part of the Annual Production Report, or more frequently if requested by the Board.

3.3.4.2 Development Well Requirements

The Proponent states that the well count required to fully develop the resources at Deep Panuke remains unconfirmed due to uncertainties associated with the OGIP, aquifer size and aquifer connectivity. The Proponent has therefore proposed a phased development approach. Initially, the four existing wells that are currently suspended (H-08, M-79A, F-70 and D-41) will be used along with a new production well, Panuke H-99. The second phase of development will include up to three new production wells. The Proponent suggests possible locations, but states that actual numbers and specific locations for these new production wells will be determined after start-up using well and reservoir performance information. All development wells will be tied back to the MOPU with subsea flowlines.

The Board reviewed the planned locations and believes that the number and location of gas production wells as proposed by the Proponent is reasonable from a resource management perspective. The Board recognizes that the second phase of development will be finalized after analysis of the first five wells and reservoir performance. The Proponent is required to inform the Board of updates to this review of initial drilling and reservoir performance prior to finalizing the second phase of development and submitting required plans and procedures for these operations.

3.3.4.3 Acid Gas Disposal

The Proponent states in the Development Plan that the Deep Panuke gas reserves are approximately 0.18% H_2S and 3.44% CO_2. This “acid gas” must be extracted from the raw gas before it can be shipped to market. The Proponent evaluated several methods for removing the acid gas:

- waste acid gas injection into a stable geological formation;
- acid gas flaring and discharge to atmosphere;
- high temperature conversion of acid gas via seawater scrubbing and marine discharge;
- offshore recovery of sulphur from the acid gas, and
- acid gas processing onshore.

Although it is one of the more costly options, acid gas injection into a subsurface geological formation was selected as the preferred disposal method as it has minimal impact on the environment. The Proponent estimates that over the life of the Project the volumes of injected acid gas will be from 149 E6m3 to 465 E6m3 (5.3 to 16.5 Bcf). Produced condensate will be used as the main source of fuel for the platform for the MN&P option or will be combined with the gas and shipped to shore for further processing in the SOEP option. Any excess condensate that cannot be used in the MN&P option will be injected into the subsurface disposal zone along with the acid gas.

Once the acid gas disposal method was selected, the Proponent had to determine which subsurface zone was best suited for injection. The following geological zones were evaluated (youngest to oldest):

- late Cretaceous fluvial-marine sandstones (Dawson Canyon and Upper Logan Canyon formations);
- late Cretaceous Cohasset "C" reservoir sandstones (Lower Logan Canyon formation);
- early Cretaceous Panuke "P" reservoir sandstones (Upper Missisauga formation);
- early Cretaceous tidal-fluvial sandstones (Upper Missisauga formation);
- early Cretaceous fluvial-marine sandstones (Lower Missisauga formation, and
- late Jurassic reefal carbonates (Abenaki formation).

The Proponent evaluated the above zones and selected the tidal-fluvial sandstones of the Upper Missisauga as the best formation for acid gas disposal for the following reasons: tidal-fluvial sandstones of the Upper Missisauga are thick, areally extensive and have excellent reservoir properties and the zone is located approximately 50 m below the Panuke "P" sands.

Once the disposal zone was determined, the Proponent evaluated possible locations for the acid gas disposal well. Three options were evaluated and are summarized below:

- A preliminary disposal well location was selected which involved injection into the "Panuke Sandstones" up-dip of the abandoned Panuke oil pool to avoid the possibility of contaminating any remaining oil in the pool. This well, located northwest of the planned production facility was rejected by the Proponent due to its up-wind position which raised safety concerns;

- The H-82 well is a non-sequestered acid gas disposal location where acid gas could be injected into the tidal-fluvial sandstones of the Upper Missisauga formation. Acid gas injected at this location would migrate up-dip, due to buoyancy effects, approximately 3 km to the northwest before the residual gas saturation drops to a point where the gas is no longer mobile, and

- The D-70 well location was also designed so that acid gas could be injected into the tidal-fluvial sandstones of the Upper Missisauga formation. Acid gas injected at the D-70 location would migrate up-dip, approximately 2 km in a west/southwesterly direction, before the residual gas saturation drops to a point where the gas is no longer mobile. The proposed D-70 well is located down-dip on the Panuke structure, and the acid gas is expected to migrate up-dip towards the abandoned Panuke oil pool. However, the Proponent states that it is "very unlikely" the acid gas will reach

the abandoned Panuke oil sands due to the limited horizontal migration of the injected acid gas. The Proponent indicates that if acid gas were to be injected into the Upper Missisauga tidal-fluvial sandstones at the D-70 location, any impact on future Deep Panuke drilling would be mitigated by applying common industry standard drilling practices.

The Proponent reviewed the above acid gas disposal options and selected the D-70 well location due to its relative proximity to the production platform that allows for a shorter and thus less expensive pipeline while providing a safe option with minimal environmental impact. The Proponent states that acid gas injected at the D-70 location is expected to remain near the D-70 well and will eventually dissolve in the aquifer and is very unlikely to have an impact on any remaining oil in Panuke.

The Board has reviewed the proposed acid gas disposal well locations, including the potential risks to any remaining technically recoverable oil in the abandoned Panuke oil field and a review of the Proponent's acid gas simulation models. The Board noted during its review that the lateral migration distance of the acid gas plume was reduced when only the lower half of the tidal-fluvial sandstones (Upper Missisauga formation) were completed as opposed to the entire interval.

Consistent with the Commissioner's recommendation, the Board is satisfied that the D-70 acid gas disposal well location is reasonable, provided that completion is restricted to the lower half of the Missisauga formation. This should reduce the lateral migration distance of the acid gas plume and increase the vertical separation between the injection zone and the overlying Panuke oil sands, thereby minimizing any potential impact on the remaining technically recoverable Panuke oil.

Condition 28: Completion Restrictions on the Acid Gas Disposal Well

The Board approves the D-70 well location for acid gas disposal on the condition that the well is only completed in the lower half of the tidal-fluvial sandstones of the Upper Missisauga formation.

3.3.4.4 Production Forecast

The Proponent's sales gas production forecasts for its deterministic and probabilistic cases were provided in Figure 2.88 of the Development Plan. October 2010 is the predicted production start-up period with peak gas production of 8.5 X 10^6 m^3/d (300 MMscf/d). This rate is predicted to be maintained from one to three years depending on the case over a life of 7.8 to 17.5 years. According to the Proponent, the forecast is based on an operating efficiency of 95 percent with a gas shrinkage factor of 0.9585.

Water breakthrough is difficult to predict thus affecting prediction of individual well performance. The Proponent is required to closely monitor the water production. The Proponent should bring the wells on production slowly and produce them at rates that will not encourage premature water breakthrough, which would adversely affect gas production.

Section 34 of the *Nova Scotia Offshore Area Petroleum Production and Conservation Regulations* requires that:

"An operator shall produce petroleum from a pool or field in accordance with good production practices to achieve maximum recovery of petroleum from the pool or field and at the applicable rate specified in the approved development plan for that pool or field."

The Proponent has stated a planned sales gas rate of 8.5 X 10^6 m^3/d (300 MMcf/d). The Board considers the Proponent's forecast to be reasonable. This rate will be considered the approved production rate for the Project. The Proponent cannot produce the wells at a rate greater than this unless an amendment to the Development Plan is approved by the Board.

3.3.5 Reservoir Management

The Proponent envisions establishing a relationship with the MOPU contractor for many operational activities such as "long-term production management, operation and maintenance." However, as stated above, the Proponent, as operator, is responsible for reservoir management and as such the Proponent must ensure that the MOPU contractor's operational activities allow for maximum recovery of petroleum in accordance with good oil field practices. In response to an Information Request raised by Offshore/Onshore Technologies Association of Nova Scotia during the Public Process (OTANS-ECA-6), the Proponent states that during the development phase, the Proponent's Project Management Team will include a Reservoir Engineer. During the production operations phase, the Proponent's Operations Team in Halifax will include a Reservoir Lead, Geologist and Reservoir Technician.

In the Development Plan, the Proponent identified that there are many subsurface risks that exist for the life of the Project. Proper reservoir management is essential to help mitigate some of these risks. The Proponent's Reservoir Management Philosophy is described in the Development Plan. The Proponent also states that a reservoir surveillance plan will be developed to monitor the key uncertainties of the production profile to understand them and their impact better. The Board agrees that this is necessary and will require that it be updated regularly on the progress and findings of the reservoir surveillance plan.

It is current practice for the Board to require the Proponent to develop and maintain a Reservoir Management Plan. This plan must be updated annually and submitted to the Board. It must be part of the Management System and document the resource conservation policy and procedures. The initial Reservoir Management Plan must be submitted prior to the commencement of development drilling activities. Reservoir management and prevention of waste will be addressed on a pool by pool basis, through production analysis, fluid sampling programs, and routine and non-routine surveillance activity.

Condition 29: Reservoir Management Plan

The Proponent shall provide the Board with a Reservoir Management Plan as part of the Management System. This Plan must be updated annually or more frequently if requested by the Board. The initial Reservoir Management Plan must be approved by the Board prior to the commencement of development drilling activities. Annual updates shall be submitted to the Board by December 31 of each year.

The Reservoir Management Plan shall document depletion plans for the Project pool(s). Documentation must also be provided to demonstrate that the Plan is optimized for the economic conservation of the resource. This Plan must set out a summary of pool(s) reservoir properties, original gas-in-place, recoverable gas-in-place, depletion strategy, number of wells and bottom hole targets, well operating philosophy and parameters, well evaluation plans, completion plans, proposed completion and production control equipment, fluid sampling and analysis, gathering system impacts and constraints, and anticipated routine and non-routine surveillance activity. It should ensure prudent management of the pool(s), the near wellbore regions, completions, tubing, and production facilities.

The Reservoir Management Plan shall specify goals, plan activities, define surveillance activity, and forecast production. Annual updates shall evaluate the progress, document decision paths and revisions, and forecast development activity for the next reporting period and provide updates on the Proponent's reservoir surveillance plan.

3.3.6 Economics

The Proponent submitted development economics as part of the Development Plan. The Board agrees that these production profiles and cost estimates will continue to be refined and revised as more information is obtained. Continual monitoring of the economic parameters for the Project is necessary to ensure waste does not occur and to provide for maximum recovery of the gas reserves.

Condition 30: Submission of Economic Data

The Proponent shall inform the Board of any material changes to the cost information and production profiles that were submitted with the Development Plan. This information shall be included with the Annual Production Report. This should include details of the operating and capital expenditures for the previous two years, the current year and projections for the next two years as well as reserve revisions.

3.3.7 Measurement, Metering and Allocation

The accuracy of the measurement system and production allocation procedures are very important to the Board for conservation of the resource and prevention of waste. The Proponent states that it will adhere to the *CNSOPB / C-NLOPB Joint Measurement Guidelines*. The Board notes that the equipment and procedures associated with production measurement and allocation must be documented and approved prior to the Board issuing a Production Operations Authorization. Since the equipment used can have a major effect on these measurements and procedures, the Board will require the Proponent to submit an outline of their plans in this regard. The Proponent is encouraged to start this process soon. This system will be subject to a third party independent audit.

Appendix A: Commissioner's Recommendations

Summary of the Commissioner's Findings and Recommendations:

The Commissioner recommends that the CNSOPB follow-up with EnCana to ensure that the proposed MOPU will be designed and operated in a manner which will ensure the safety of the workers.

The Commissioner recommends that the CNSOPB accept EnCana's choice of acid gas disposal.

In the Commissioner's opinion, EnCana's public consultation was appropriate.

The Commissioner finds that EnCana's Aboriginal consultation was appropriate and recommends that the CNSOPB not delay its approval of the proposed Project.

The Commissioner further recommends that the CNSOPB make it a condition of approval that EnCana report regularly on its continued communication with the various Aboriginal organizations.

The Commissioner is not convinced that it is necessary that EnCana commit to the Fisheries Observers Program as a condition of approval.

The Commissioner recommends that the CNSOPB consider the request of the Guysborough County RDA to make the agreement between EnCana and the inshore fishermen public.

The Commissioner recommends, subject to the other recommendations, that the CNSOPB approve the Development Plan for the proposed Deep Panuke Project.

The Commissioner recommends that the CNSOPB satisfy itself that the proposed definition of "Nova Scotia Person Hour" does not adversely impact the intention of s.45(3)(b) of the Accord Acts that "individuals resident in the Province shall be given first consideration for … employment in the work program for which the plan was submitted".

The Commissioner finds that the proposed funding arrangement with the Province set out in the OSEA does not meet the requirements of a benefits plan under s. 45 of the Accord Acts with respect to education and training, research and development, and access for disadvantaged individuals and groups.

The Commissioner recommends that the CNSOPB require as a condition of approval that EnCana file a Canada–Nova Scotia Benefits Plan which includes provisions to satisfy sections 5.4 and 5.5 of the CNSOPB's Industrial Benefits and Employment Plan Guidelines Nova Scotia Offshore Area and meets the requirements of a benefits plan under s. 45 of the Accord Acts.

The Commissioner recommends that the CNSOPB accept EnCana's proposed benefits reporting system.

The Commissioner recommends that for future reviews, there should be a Notice published closer in time to the scheduled hearing, advising the public of their right to participate by filing a Letter of Comment or by making an Oral Statement.

The Commissioner recommends that for future reviews, consideration should be given to using other media, in addition to the print media, to notify the public of the review, and that measures are taken to ensure that people living in rural areas are given a full opportunity to participate.

The Commissioner recommends that EnCana continue active participation in ESSIM.

The Commissioner recommends that EnCana make the results of its monitoring available to the public on a timely basis and that the presentation of these results pay particular attention to the effects on marine life in the vicinity of the proposed Project and the direct and indirect effects of the proposed Project on the resources of Sable Island.

The Commissioner recommends that approval of the proposed Project be contingent upon effective consultation.

The Commissioner recommends that EnCana include measures in its EPP and Spill Response Plan to protect the Roseate Tern from possible impacts of development and production activities.

The Commissioner recommends that EnCana's compensation commitments be made a condition of the approval of the proposed Project.

The Commissioner recommends that the CNSOPB give consideration to conducting a study of the issue of requiring a proponent to include an assessment of the potential impact of greenhouse gas emissions by end-users of the product.

The Commissioner recommends that EnCana consult fully with the Department of National Defence with respect to the possible presence of legacy munitions or unexploded ordnance, biological or chemical warfare agents and radioactive materials within the proposed Project Area.

The Commissioner recommends that EnCana continue to work with the Aboriginal organizations to develop the Aboriginal Liaison position and complete the Mi'kmaq Ecological Knowledge (MEK) Study.

Appendix B: CNSOPB Commissioner's Terms of Reference

For The Proposed

Deep Panuke Offshore Gas Development Project Public Review

1. Definitions

In these Terms of Reference,

"Accord Acts" means *the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*;

"Canada-Nova Scotia Benefits Plan" has the meaning set out in section 45 of the Accord Acts;

"CEA Act" means the *Canadian Environmental Assessment Act*;

"Commissioner" means the individual appointed pursuant to paragraph 44(2)(b) of the Accord Acts;

"Concurrency MOU" means the Memorandum of Understanding on Effective, Coordinated and Concurrent Environmental Assessment and Regulatory Processes for Offshore Petroleum Development Projects in the Nova Scotia Offshore Area, effective February 19, 2005;

"CNSOPB" means the Canada-Nova Scotia Offshore Petroleum Board;

"CSR" means the comprehensive study report for the environmental assessment of the Project pursuant to the CEA Act;

"Deep Panuke Communications Protocol" means the protocol governing communications between CNSOPB staff and representatives of the Proponent and includes documentation filed in the public register established by the CNSOPB pursuant to the protocol, except for information provided by the Proponent to the CNSOPB which is privileged under the Accord Acts or otherwise determined to be confidential;

"Development Application" means all documentation, excluding documents which are privileged under the Accord Acts or otherwise determined to be confidential, provided to the Board by the Proponent for the purpose of paragraph 44(2)(d) of the Accord Acts, to seek approval of the Project and shall include but not be limited to, an environmental impact statement, a socio-economic impact statement, a Development Plan and Canada-Nova Scotia Benefits Plan;

"Development Plan" has the meaning set out in section 2 of the Accord Acts;

“Environmental Factors” means the environmental factors described in the CEA Act Scope of the Environmental Assessment for the proposed EnCana Corporation Deep Panuke Offshore Gas Development Project, attached as Schedule I.

“Joint Directions on Procedure” means procedures issued by the CNSOPB and the NEB, substantially in the form attached as Schedule II;

“List of Issues” means list of issues attached as Appendix I to the Joint Directions on Procedure;

“MOU” means the Memorandum of Understanding between the Canada-Nova Scotia Offshore Petroleum Board and the National Energy Board Concerning the Public Process for the Deep Panuke Project, substantially in the form attached as Schedule III;

“NEB” means the National Energy Board;

“NEB Act” means the *National Energy Board Act*;

“NEB Member” means the single NEB Board Member authorized by the NEB pursuant to section 15 of the NEB Act to conduct the Public Process and report to the NEB on the Pipeline Application;

“Nova Scotia Offshore Area" means the lands and submarine areas within the limits described in Schedule I of the Accord Acts;

“Pipeline Application” means the application made by the Proponent for a Certificate of Public Convenience and Necessity and an Order Respecting Tolls and Tariffs filed with the NEB pursuant to the NEB Act;

“Project” means the proposed development by the Proponent of natural gas resources from the Deep Panuke gas field in the Nova Scotia Offshore Area which development includes drilling, production, installation, fabrication, processing, operating, decommissioning and transportation of natural gas;

“Proponent” means EnCana Corporation;

“Public Process” means the public process established to coordinate the CNSOPB Deep Panuke Public Review conducted by the Commissioner under the Accord Acts, the NEB public proceeding under the NEB Act conducted by the NEB Member, and the environmental assessment under the CEA Act, as described in the Joint Directions on Procedure;

“Responsible Authorities” means Responsible Authorities as defined in the CEA Act;

“Secretariat” means the secretariat referred in section 9 of these Terms of Reference.

2. Background

2.1 On November 9, 2006 the Proponent filed the Development Application with the CNSOPB and the Pipeline Application with the NEB. Pursuant to section 44 of the Accord Acts, the CNSOPB has determined that it is in the public interest to conduct a public review of the Development Application. Pursuant to section 24 of the NEB Act a public hearing is required respecting the Pipeline Application.

2.2 The CNSOPB and the NEB have determined that it would be appropriate to coordinate one Public Process respecting the Project, while ensuring that the independent responsibilities and requirements of the CNSOPB and the NEB are met. To conduct the Public Process, the CNSOPB appointed the Commissioner pursuant to section 44 of the Accords Acts and the NEB authorized the NEB Member pursuant to section 15 of the NEB Act.

2.3 In accordance with the MOU, the CNSOPB and the NEB have established a coordinated Public Process to provide a single forum for the receipt and consideration of public comments, information, evidence and submissions respecting the Development Application and the Pipeline Application for use in subsequent deliberations and recommendations by the Commissioner to the CNSOPB and for use in the preparation of a report and recommendations by the NEB Member to the NEB.

2.4 On November 8, 2006 the Minister of Environment decided to continue the environmental assessment of the Project under the CEA Act as a Comprehensive Study. The Public Process will be used by the Responsible Authorities to assist in the preparation of the CSR. The Responsible Authorities will utilize the Public Process to obtain further information and to hear comments. The oral hearing will provide an opportunity for interveners, government participants, those making oral statements and persons who choose to participate by way of letter of comment to comment on the Environmental Factors;

2.5 The Commissioner/NEB Member will prepare a joint Environmental Report. This report will be forwarded to the other Responsible Authorities by the CNSOPB. The Responsible Authorities will consider the Environmental Report in the preparation of the CSR. Further details respecting the coordination of the CEAA process are outlined in the Joint Directions on Procedure.

3. Purpose

The purpose of these Terms of Reference is to delineate the process and scope of the public review to be conducted by the Commissioner as part of the Public Process.

4. Scope of Review

4.1 Subject to section 6, the Commissioner will conduct a public review of all aspects of the Development Application and the potential environmental and socio-economic effects of the Project, including the Environmental Factors.

4.2 Along with the NEB Member, the Commissioner will consider, but not necessarily be limited by, the draft List of Issues formulated by the CNSOPB and NEB as set out in the Joint Directions on Procedure.

5. Conduct of Public Review

5.1 The Commissioner will conduct the public review as part of the Public Process and in accordance with the Joint Directions on Procedure and the MOU.

5.2 The Commissioner will sit together with the NEB Member to hear comments, evidence and submissions and, in doing so, will function jointly where possible and appropriate to facilitate and coordinate the Public Process. The Commissioner and the NEB Member, however, do not constitute a “joint panel” in the sense contemplated by the CEA Act, and each will maintain their assigned separate and independent regulatory roles.

6. Limitation

The Commissioner's mandate will not include an examination of questions of energy policy or legislation, jurisdiction, the fiscal or royalty regime of governments, the division of revenues between the Government of Canada and the Government of Nova Scotia, or matters which go beyond the proposed development of the Project.

7. Documentation and Additional Information

7.1 The CNSOPB will refer the Development Application to the Commissioner. The Commissioner may request any further relevant information from the Proponent which the Commissioner considers necessary.

7.2 Pursuant to the Deep Panuke Communication Protocol the CNSOPB will establish a Deep Panuke Public Register. Any communications between the CNSOPB and the Proponent respecting the Project which is not privileged under the Accord Acts or otherwise determined to be confidential, will be recorded in the register. The public may access the register by visiting the CNSOPB offices or through the CNSOPB website.

8. Consultation by Commissioner with CNSOPB

The Commissioner, the Secretariat, or both may consult the Secretary of the CNSOPB or other designated CNSOPB staff for the purposes of clarifying any administrative matters respecting the Terms of Reference or the review process for the Development Application. In no event shall the Commissioner or Secretariat consult the CNSOPB for the purposes of discussing any substantive matter or merits respecting the Development Application or the Project.

9. Secretariat

9.1 A secretariat will be established to assist, as appropriate, the Commissioner and the NEB Member in the Public Process and the preparation of their reports. The

Secretariat will consist of NEB staff and staff assigned or contracted by the CNSOPB and/or the Commissioner to perform administrative and technical hearing support functions. The Commissioner and the NEB Member may also each select and be assisted by various professional staff.

9.2 In addition, specialists or experts may be retained by the Commissioner and/or the NEB Member and may be required to appear before the Commissioner and the NEB Member during the Public Process.

9.3 The names of any persons assigned or contracted by the CNSOPB and/or Commissioner will be made public by the Commissioner. Rates of compensation for Secretariat staff assigned or contracted by the CNSOPB and/or the Commissioner will be determined by the CNSOPB.

10. Costs

10.1 The expenses and remuneration of the Commissioner, her office and staff will be paid by the CNSOPB and costs associated with the Public Process will be shared with the NEB pursuant to the MOU.

10.2 In consultation with the Board, the Commissioner will develop a budget for conducting the public review. Any expenditures in excess of the approved budget, must receive prior CNSOPB approval.

11. Reporting

11.1 The Commissioner will prepare and submit a Report to the CNSOPB respecting the review of the Development Application. A separate Environmental Report will be prepared jointly by the Commissioner and the NEB Member.

11.2 The Commissioner will submit the Environmental Report to the CNSOPB within 30 days following the completion of the oral hearings of the Public Process. The Development Application Report shall be submitted to the CNSOPB by the Commissioner within 60 days following the completion of the oral hearings.

11.3 Upon completion of the Public Process the Commissioner shall forward all documentation related to her review to the CNSOPB where it will be retained for future reference.

12. Powers of the Commissioner

Pursuant to subsection 44(3) of the Accord Acts, the CNSOPB will request that the governments confer on the Commissioner the powers conferred on persons appointed as Commissioners under the *Public Inquiries Act* (Nova Scotia) and the *Inquiries Act* (Federal).

November 9, 2006

Diana Lee Dalton
Chair and Acting Chief Executive Officer
Canada-Nova Scotia Offshore Petroleum Board

Appendix C: Glossary of Terms & Acronyms

Accord Acts:
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. The federal and provincial "mirror" legislation implements the provisions of the 1986 Canada-Nova Scotia Offshore Petroleum Resources Accord and governs all petroleum activities that take place in the offshore area.

ALARP:
As Low as Reasonably Practicable

Bcf (Billion Cubic Feet):
A volume measurement of natural gas measured in billions of cubic feet

Board:
The Canada-Nova Scotia Offshore Petroleum Board

Bpd:
Barrels Per Day

CCO:
Chief Conservation Officer

CEA Act:
Canadian Environmental Assessment Act

CEA Agency:
Canadian Environmental Assessment Agency

Certificate of Fitness:
A certificate issued by a CA stating that a design, plan or facility complies with the relevant regulations or requirements, is fit for purpose, and can be operated safely and without posing a threat to the environment.

Certifying Authorities (CAs):
Organizations designated under the Nova Scotia Offshore Certificate of Fitness Regulations to conduct examinations of designs, plans and facilities and to issue Certificates of Fitness.

CNSOPB:
The Canada-Nova Scotia Offshore Petroleum Board

C-NLOPB:
The Canada-Newfoundland and Labrador Offshore Petroleum Board

CO_2:
Carbon Dioxide

Completion:
The activities necessary to prepare a well for the production of oil or gas.

Concurrency MOU:
The Memorandum of Understanding on Effective, Coordinated and Concurrent Environmental Assessment and Regulatory Processes for Offshore Petroleum Development Projects in the Nova Scotia Area, effective February 19, 2005.

Condensate:
The liquid resulting when a vapour is subjected to cooling or application of pressure. Also, liquid hydrocarbons condensed from gas and oil wells.

Core (Drill Core):
A cylindrical sample taken from a formation for geological analysis. Usually a conventional core barrel is substituted for the bit and procures a sample as it penetrates the formation.

CSO:
Chief Safety Officer

CSR:
Comprehensive Study Report prepared in accordance with the CEA Act.

Cuttings:
Chips and small fragments of rock produced by drilling that are circulated up from the drill bit to the surface by drilling mud.

Deep Panuke:
Deep Panuke Offshore Gas Development Project

Delineation Well:
Well drilled after a discovery well to determine the areal extent of a reservoir.

Depositional Facies:
A three dimensional body of rock that is differentiated from others by its unique physical attributes such as rock type(s), fossils, bedding structures, position in the rock layers, the manner in which it was deposited and the like.

Development Well:
A well drilled for natural gas (or crude oil) within a proven field or area for the purpose of completing the desired pattern of production.

DFO:
Department of Fisheries and Oceans

Directional Drilling:
Intentional deviation of a wellbore from the vertical to reach target areas laterally displaced from the point where the drill bit enters the earth.

Discovery Well:
The first well drilled on a geologic structure which discovers significant quantities of hydrocarbons.

DPEMP:
Deep Panuke Emergency Management Plan

Drill Pipe:
Steel pipe sections, approximately 9 m long, that are screwed together to form a continuous pipe extending from the drilling rig to the drilling bit at the bottom of the hole. Rotation of the drill pipe and bit causes the bit to bore through the rock.

Drilling Fluid:
Fluids continuously circulated down the wellbore, to cool and lubricate the drill bit, lubricate the drill pipe, carry rock cuttings to the surface and control down hole pressure.

Drilling Mud:
A common term for drilling fluids

EA:
Environmental Assessment

EC:
Environment Canada

ECM:
Environmental Compliance Monitoring

EEM:
Environmental Effects Monitoring

EH&S:
Environment, Health & Safety

EIS:
Environmental Impact Statement

EnCana:
EnCana Corporation

EPP:
Environmental Protection Plan

E6M3:
Million cubic metres

E9M3:
Billion cubic metres

ESSIM:
Eastern Scotian Shelf Integrated Management

Exploratory Well:
A well in an area where petroleum has not been previously found or one targeted for formations above or below known reservoirs.

FA:
Federal Authority under the CEA Act

Fault:
In a geological sense, a break or fracture zone along which there has been movement that results in the displacement of one side relative to the other.

Flowline:
Subsea pipeline connecting satellite wells and/or platforms to a central production platform.

Formation:
The term for the primary unit in stratigraphy consisting of a succession of strata useful for mapping or description which possesses certain distinctive lithologic and other features, e.g. the Mississauga Formation.

FWL:
Free Water Level

Gas Reservoir:
A rock stratum that forms a trap for the accumulation of crude oil and natural gas.

Geophysical Survey:
Searching and mapping the subsurface structure of the earth's crust using geophysical methods (e.g. seismic) to locate probable reservoir structures capable of producing commercial quantities of natural gas and/or crude oil.

Gully, the:
A major submarine canyon indenting the seaward edge of the Scotian Shelf, which separates Banquereau and Sable Island Banks.

H_2S:
Hydrogen Sulphide

HADD:
Habitat, Alteration, Disruption or Destruction

Hydrocarbon:
An organic compound containing only carbon and hydrogen. Hydrocarbons often occur in petroleum products, natural gas, and coals.

Hydropressure:
The pressure on any rock at a given depth based on a hydrostatic head.

Lithologic, lithology:
The physical character of a rock.

Logging:
The systematic recording of data obtained from the driller's log and mud log at the surface, and electrical and radioactive logs obtained from instrumentation lowered into and retrieved from the drill hole after drilling.

Manifold:
A piping arrangement containing valves to combine several flows, or re-route a flow to one of several possible destinations.

MMscf:
One million standard cubic feet

MN&P:
Maritimes Northeast Pipeline

Mud:
see "Drilling Fluid"

NEB:
National Energy Board

Offshore Area:
The area offshore Nova Scotia under the Board's jurisdiction as defined in Schedule 1 of the Accord Acts.

OGIP:
Original Gas-In-Place. The total quantity of trapped gas believed to exist in a geologic feature or structure, based on the analysis of well information, geological, geophysical and petrophysical data.

Operator:
The holder of an authorization to conduct petroleum activities in the offshore area.

Permeability:
The measure of a formation's ability to transmit fluids and/or gases.

Petroleum:
A naturally occurring mixture of hydrocarbons in gaseous, liquid or solid form.

Petrophysics:
Study of reservoir properties based on the data obtained from various logging tools and methods, and from drill cores.

Pool:
A natural underground reservoir containing, or appearing to contain, an accumulation of petroleum.

Porosity:
The volume of the pore space expressed as a percent of the total volume of the rock mass.

Produced Water:
Water associated with oil and gas reservoirs that is produced along with the oil and gas.

Producing/Production:
Flowing oil and/or gas from a well to the production systems.

Production Platform:
An offshore structure equipped to produce and process oil and gas.

Production Tree:
An arrangement of heavy duty valves and fittings installed on the wellhead to control flow from the well and/or to facilitate injection operations.

Production Well:
A well drilled and completed for the purpose of producing crude oil or natural gas.

Proponent:
EnCana Corporation

RA:
Responsible Authority under the CEA Act

Recoverable Reserves:
That part of the hydrocarbon volumes in a reservoir that can be economically produced.

Recovery Factor:
The percentage of total hydrocarbons expected to be produced from a reservoir, well or field over its entire production lifespan.

Reservoir:
A porous, permeable rock formation in which hydrocarbons have accumulated.

Reservoir Pressure:
The pressure of fluids and/or gases in a reservoir.

Sandstone:
A compacted sedimentary rock composed of detrital grains of sand, mostly quartz. If the void spaces between the grains are open and free of other minerals, it may become a reservoir for oil or gas.

SARA:
Species at Risk Act

Satellite Wells:
Subsea wells located remote from the production facility and connected to the facility by flowlines.

Sedimentary Basin:
A geographical area, such as the Scotian Basin, where much of the rock is sedimentary (as opposed to igneous or metamorphic) and therefore likely to contain hydrocarbons.

Shale:
A compacted sedimentary rock composed of detrital grains of clay and silt, finer than sandstone. Because they are tightly compacted and have virtually no permeability, shales may act as seals to prevent the migration, and permit the entrapment of, hydrocarbons.

Shut-in:
A well in which the valves in the production tree have been closed to cease production or injection operations on a well.

SOEP:
Sable Offshore Energy Project

SPANS:
Seafood Producers Association of Nova Scotia

SWC:
Sidewall Core

TC:
Transport Canada

Wellbore:
The hole drilled by the drill bit.

Wellhead:
Steel equipment installed at the surface of the well containing an assembly of heavy duty hangars and seals (the wellhead is used to support the weight of casing strings hung from it and to contain well pressure).

Workover:
Operations on a producing well to restore or increase production.