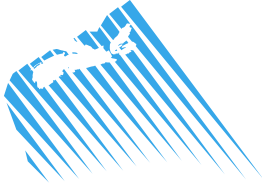


CANADA - NOVA SCOTIA
OFFSHORE PETROLEUM BOARD

SABLE OFFSHORE ENERGY PROJECT

BENEFITS PLAN
DECISION REPORT

DEVELOPMENT PLAN
DECISION REPORT



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

The Honourable Russell MacLellan, Q.C.
Premier of Nova Scotia and Minister Responsible for the Accord Implementation Act
1700 Granville Street
Halifax, Nova Scotia
B3J 2T3

December 4, 1997

The Honourable Ralph Goodale
Minister of Natural Resources
Natural Resources Canada
580 Booth Street, 21st Floor
Ottawa, Ontario
K1A 0E4

Dear Ministers:

**Re: Notice of Fundamental Decision
Sable Offshore Energy Project**

The purpose of this letter is to give you notice of a fundamental decision made by the Canada-Nova Scotia Offshore Petroleum Board ("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 Implementation Acts).

On June 14, 1996, Mobil Canada Properties, Shell Canada Limited, Imperial Oil Resources Limited and Nova Scotia Resources Limited, submitted the Sable Offshore Energy Project (SOEP) Development Plan and Canada Nova Scotia Benefits Plan to the Board. Earlier this year, the SOEP underwent an extensive public review carried out by a Joint Public Review Panel, including a Commissioner appointed by the Board. The reports of the Panel and the Commissioner were both released on October 27, 1997.

At a Board meeting held on December 3, 1997, the Board approved the SOEP Canada-Nova Scotia Benefits Plan and Part I & Part II of the SOEP Development Plan. Both approvals are subject to conditions. Copies of the Board's Decision Reports are enclosed.

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

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

Sincerely,

Glenn R. Yungblut
Acting Chairman

Dr. Edgar Gold, Q.C.
Board Member

Peter J. Kinley
Board Member

John Currie
Board Member

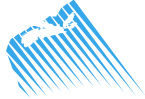
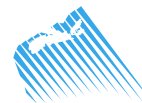


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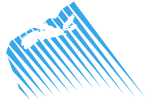


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The Sable Offshore Energy Project (“SOEP” or “Project”) involves the development of six natural gas fields near Sable Island, containing an estimated 85 billion cubic metres (3 TCF) of recoverable natural gas reserves. Production is scheduled to begin in 1999 and extend over the 25 year life of the Project. The gas will be transported to a processing plant near Country Harbour, Nova Scotia, via a subsea pipeline.

The Proponents of the Project, Mobil Oil Canada Properties, lead operator, Shell Canada Limited, joint operator, Imperial Oil Resources Limited and Nova Scotia Resources Limited, submitted a Development Plan and a Canada-Nova Scotia Benefits Plan to the Board on June 14, 1996. The Board appointed a Commissioner to carry out a public review of these plans and of the environmental and socio-economic implications of the Project. The Commissioner conducted his review as part of the Sable Gas Projects Joint Public Review Panel.

The Commissioner and the Panel released their reports on October 27, 1997. The Panel concluded that SOEP was not likely to cause significant adverse environmental effects, provided that appropriate mitigation is applied and the Panel’s recommendations are followed and implemented. Similarly, the Commissioner found that SOEP could proceed without significant adverse environmental, social or economic effects if the recommendations put forward in the Joint Public Review Panel Report and the Commissioner’s Report are addressed. The Commissioner also concluded that the Project will have a positive effect on the business and labour sectors of the economy. The Board’s response to the recommendations of the Panel and the Commissioner which relate to matters under the Board’s jurisdiction, is set out in the Decision Reports.

The Board has approved the SOEP Canada-Nova Scotia Benefits Plan subject to certain conditions.

While the Board found the Proponents’ Project Principles and Management Philosophy acceptable, it concluded that certain conditions were necessary to ensure that the Proponents, Alliance Partners and contractors comply with the “full and fair opportunity to participate” and “first consideration” provisions of the *Accord Implementation Acts*. These conditions include requirements that the Proponents adhere to their stated procurement process, establish a local office staffed with appropriate personnel, including persons responsible for certain key areas, and provide the Board with an Employment and Training Plan.

For significant contracts, the Proponents will be required to follow a bidding process that requires notification to the Board and Board approval of bidders lists and contract awards. Canada-Nova Scotia content shall be considered when evaluating bids. Where bids are otherwise equal, the bid containing the highest level of Canada-Nova Scotia content shall be selected.

The Board has also imposed several conditions intended to enhance the long term benefits of the Project. These include the requirement that the Proponents prepare a Research and Development Plan, and Supplier and Infrastructure Assessments. Conditions related to Technology Transfers, Long Term Contracts for other projects, and Training have also been included to better prepare Nova Scotians and other Canadians for this and future projects.

While the Board does not regard them as commitments, the Board will use the estimates of Canada-Nova Scotia industrial and employment benefits contained in the SOEP Canada-Nova Scotia Benefits Plan as benchmarks. If the Proponents do not achieve these levels of participation,

EXECUTIVE SUMMARY

the Board will require that the Proponents justify the shortfall. The Board will monitor and audit the Proponents, Alliance Partners and major contractors to ensure that the Project Principles, Management Philosophy and the procedures and processes specified in the Decision Report are implemented. The Proponents are required to ensure that the Alliance Partners and contractors are contractually bound to provide full access to the Board to monitor and audit their performance.

The Board has also approved the SOEP Development Plan subject to certain conditions.

The Board is satisfied that the Project can be undertaken safely. The Board will require that a Total Quality Management System integrating safety, environmental protection, resource conservation, Canada-Nova Scotia Benefits and other project activities be put in place.

The Board accepts the Proponents' reserve estimates and production forecasts. To ensure maximum economic recovery of the resource, the Board has made approval of the Development Plan conditional upon the Proponents considering the development of all pools underlying the six SOEP fields in an integrated fashion.

Based upon the information available to the Board, the Board believes that the Project can proceed without significant adverse environmental impacts. The Proponents will be required to prepare an Environmental Effects Monitoring program with respect to discharges, tainting and noise. Over the next two years, the Board's restrictions on the discharge of drill cuttings containing residue of Low Toxicity Mineral Oil based drilling mud will be strictly enforced. By December 31, 1999 such discharges will be virtually eliminated. As recommended by the Joint Public Review Panel, the Proponents will be required to prepare a Code of Practice to protect Sable Island and the Gully.

Prior to commencing production, the Proponents shall provide the Board with a plan which addresses financial responsibility for abandonment of Project facilities. This plan must be satisfactory to the Board. Evidence of financial responsibility for each work or activity will also be required before the Board will issue authorizations.

Third Party Access to the Proponents' offshore facilities has also been addressed by the Board. The Board will require that such access be provided on reasonable terms and conditions. In the event of a dispute, the Board will decide whether access will be granted and the terms and conditions that will apply.

Overall, the Board is satisfied that, subject to the conditions specified in the Development Plan Decision Report, the Project can be undertaken safely while protecting the environment and maximizing resource recovery. The Board also has concluded that the Proponents have adequately addressed the provisions of the *Accord Implementation Acts* dealing with Canada-Nova Scotia Industrial and Employment Benefits, subject only to the conditions set out in the Canada-Nova Scotia Benefits Plan Decision Report.

EXECUTIVE SUMMARY

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Sable Offshore Energy Project Canada-Nova Scotia Benefits Plan is approved subject to the conditions specified in this Decision Report:

CONDITION 1: PROCUREMENT PROCESS

The Proponents shall adhere to the procurement process described in Section 6.1 of the SOEP Canada-Nova Scotia Benefits Plan.

CONDITION 2: LOCAL OFFICE

Within 60 days of the implementation of this Decision Report, or such further period as the Board may allow, the Proponents shall locate within a Nova Scotia office, personnel with decision making authority, satisfactory to the Board, including personnel in such areas as overall project management, operations, reservoir management, Canada-Nova Scotia benefits, training and education, research and development, financial responsibility, health, safety and environment.

In addition, appropriate personnel from the engineering design and procurement groups shall be located in Nova Scotia within 90 days of the implementation of this Decision Report.

CONDITION 3: EMPLOYMENT AND TRAINING PLAN

Within 90 days of the implementation of this Decision Report, the Proponents shall submit an Employment and Training Plan (E&T Plan) to the Board for approval. The E&T Plan shall include:

- an outline of the hiring and training needs of the Proponents, Alliance Partners and the major contractors with a breakdown of the skills needed, anticipated skill shortages in the Nova Scotian and Canadian labour forces, project specific training requirements, and the anticipated expenditures that will be made directly by the Proponents in implementing the E&T Plan as a percentage of forecasted and actual project expenditures,
- a time frame for employment opportunities for each phase of project development and operations, to enable members of the work force to prepare themselves for such opportunities, and
- the Proponents' undertakings in the SOEP Canada-Nova Scotia Benefits Plan Section 7.1 regarding the holding of Employment Forums and utilizing electronic bulletin boards and labour exchanges to post available job positions.

In addition, the Proponents shall report to the Board quarterly on Employment and Training activities for the reporting period and compare this to the E&T Plan. The quarterly report shall include the number of new employees hired during the year and their place of residence at the time of hiring (i.e., Nova Scotian, other Canadian or foreign).

The Proponents, Alliance Partners and major contractors shall notify the Board at least three months prior to bringing foreign workers into Canada. The notice must be detailed and must include job titles, descriptions of responsibilities and the duration of proposed employment in Canada.

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CONDITION 4: RESEARCH AND DEVELOPMENT PLAN

Within 90 days of the implementation of this Decision Report, the Proponents shall submit a Research and Development Plan (R&D Plan) to the Board for approval. The R&D Plan shall outline a revolving three to five year plan for offshore petroleum related research and development initiatives to be undertaken in Nova Scotia, together with a breakdown of the expected expenditures that will be made in implementing the R&D Plan. The R&D Plan shall provide for public calls for proposals for research and development initiatives associated with SOEP activities.

The Proponents shall report to the Board, on a quarterly basis, with respect to R&D activities and shall compare these activities to the approved R&D Plan.

CONDITION 5: FIRST CONSIDERATION FOR GOODS AND SERVICES

Within 30 days of the implementation of this Decision Report, or such further period as the Board may allow, the Proponents shall provide a detailed plan, satisfactory to the Board, setting out how the Proponents, their Alliance Partners and contractors will give “first consideration” to Nova Scotian goods and services, including specific examples showing how “first consideration” is considered and assessed by the Proponents in their evaluation of bids for goods and services required by the Project.

CONDITION 6: DISADVANTAGED INDIVIDUAL OR GROUPS

Within 60 days of the implementation of this Decision Report, the Proponents shall provide a report, satisfactory to the Board, that describes specific initiatives planned for training and employment opportunities to be made available to disadvantaged individuals or groups.

CONDITION 7: TECHNOLOGY TRANSFER

Within 90 days of the implementation of this Decision Report, the Proponents shall provide a report, satisfactory to the Board, setting out a program of planned initiatives (including succession planning) aimed at promoting the effective transfer of technologies from the Proponents, their Alliance Partners and major contractors to Nova Scotian and other Canadian individuals and companies. The Proponents shall support technology transfer by encouraging and facilitating the formation of joint ventures and the development of licensing agreements between foreign, Nova Scotian and other Canadian firms. The Proponents shall also submit a report to the Board annually describing these initiatives and their results.

CONDITION 8: BID EVALUATION

The Proponents shall consider Canada-Nova Scotia content when evaluating bids. Where bids are otherwise equal, the bid containing the highest level of Canada-Nova Scotia content shall be selected. If Nova Scotian and other Canadian suppliers are found to be uncompetitive or should they fail to qualify initially, the Proponents shall advise the unsuccessful bidder and the Board of the deficiencies identified in their bids so that such shortcomings may be addressed for future bidding opportunities.

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CONDITION 9: LONG TERM OPPORTUNITIES

The Proponents, the Alliance Partners and their major contractors shall examine ways of providing local suppliers, contractors, and personnel, with long term contracts and employment, the scope of which includes not only the Sable Offshore Energy Project, but also other Canadian or international projects. Such initiatives shall become part of the criteria in evaluating bids. Canadian and Nova Scotian content reported to the Board for such contracts and employment will be accepted for the full term in the case of contracts, and for a maximum of five years, in the case of employment not related to the Project.

CONDITION 10: BIDDING PROCESS

For all proposed contracts, subcontracts and purchase orders, estimated by the Proponents to be in excess of \$250,000, or such other limit as the Board may determine, and for any other matters identified to be of interest to the Board, the Proponents shall provide to the Board for approval, lists of all contractors that wish to prequalify, the proposed bidders lists and notices of the proposed final contract awards. The Proponents must submit sufficient information with the notifications to enable the Board to assess the subject matter and to be satisfied that the statutory requirements for “full and fair opportunity” and “first consideration” have been addressed by the Proponents.

CONDITION 11: SUPPLIER AND INFRASTRUCTURE ASSESSMENT

During the development phase of the Project and during the first three years of the production phase, the Proponents shall submit, on an annual basis, a Canada-Nova Scotia Supplier and Infrastructure Assessment. In it the Proponents shall provide the Board with their assessment of the development of the local supply and services sector and local infrastructure. Based upon their assessment, the Proponents shall identify areas where there are inadequacies and where opportunities may exist for greater local participation.

CONDITION 12: CANADA-NOVA SCOTIA CONTENT

Should the actual Canada-Nova Scotia content of the Project fall below the estimates set out in the SOEP Canada-Nova Scotia Benefits Plan, the Proponents shall justify the shortfall to the Board, and where appropriate, the Proponents shall identify measures to enhance Canada-Nova Scotia content in the future.

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CONDITION 13: MONITORING AND AUDIT

For both monitoring and audit purposes, the Proponents, Alliance Partners and major contractors shall provide the Board, and/or its designated agents with access to all documentation and information (on a confidential basis) required to substantiate the Canada–Nova Scotia content and employment reported. SOEP Benefits Reports will be subject to regular monitoring and such audits as may be determined appropriate by the Board. This will include detailed spot audits of reported costs and employment.

The Proponents shall ensure that all Alliance Partners, and other contractors:

- understand and accept their responsibilities respecting the Benefits requirements of the Accord Implementation Acts and the approved Canada-Nova Scotia Benefits Plan,
- are contractually bound to report Canada-Nova Scotia Benefits information to the Proponents 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 Proponents or the Board.

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

EXECUTIVE SUMMARY

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Sable Offshore Energy Project Development Plan, Part I and Part II, is approved subject to the conditions specified in this Decision Report:

CONDITION 14: TOTAL QUALITY MANAGEMENT SYSTEM

The Proponents shall implement a Total Quality Management System, satisfactory to the Board, which integrates all aspects of Development Plan activities. Among other things, this Total Quality Management System must ensure:

- safety of working conditions for all offshore operations,
- protection of the environment during offshore petroleum related activities,
- conservation of offshore petroleum resources,
- adherence to the approved Canada-Nova Scotia Benefits Plan, and
- financial responsibility for all offshore operations.

This System must include documented policies, procedures and organizational responsibilities and be developed to the appropriate level of detail for the proposed activity. The Proponents shall file the appropriate documentation with the Board and the Board shall be notified immediately of any changes.

CONDITION 15: REGULATIONS, STANDARDS AND GUIDELINES

In addition to complying with all applicable promulgated regulations, the Proponents shall comply with the provisions of the following draft regulations as if they were in force with respect to the Nova Scotia offshore area:

- Petroleum Occupational Health and Safety Regulations - Nova Scotia (April 5, 1990 Draft)
- Canada Oil and Gas Operations Regulations

The Proponents shall also comply with any additional draft regulations, standards and guidelines that may be developed in the future and adopted by the Board. Such draft regulations, standards or guidelines may be revised from time to time and, if adopted by the Board, the revised version shall apply and shall supersede any earlier versions, upon notice being given to the Proponents.

CONDITION 16: COST RECOVERY

The Proponents shall pay to the Board, on an annual basis, such amounts as the Board may reasonably determine, in consultation with the Proponents, to cover the Board's anticipated incremental costs associated with the Project.

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CONDITION 17: ASSESSMENT OF ALL POOLS

To ensure maximum economic recovery of the resource, the Proponents shall consider the development of all pools underlying the six SOEP fields in an integrated fashion with the “project sands”. The following shall be included in the Reservoir Management Plan:

- additional technical documentation to support the interpretations, conclusions and recommendations on the economic viability of developing reservoirs down to the base of Sand 18 in Venture and the base of Sand 8 in South Venture including upside and downside scenarios (this shall be submitted prior to obtaining approval to drill wells at Venture and South Venture),
- a re-assessment of the Gas-In-Place for all hydrocarbon bearing sands encountered in the development wells, and
- an assessment of the optimal timing to develop all designated pools (this shall be submitted prior to completion of development wells within the field).

CONDITION 18: SYSTEM DELIVERABILITY

The Proponents shall monitor and evaluate System Deliverability on an ongoing basis. The Proponents shall report the following information to the Board, as a part of the Annual Production Report, or more frequently if requested by the Board:

- forecasts of system deliverability, and
- pressures, temperature and rate relationships for the various components of the production facilities and pipeline.

CONDITION 19: COMMINGLED PRODUCTION

The Proponents shall apply for approval of commingled production on an individual well basis, at the well completion stage. Commingled production will be considered subject to the following:

- when production testing a well that will undergo commingled production, the Proponents shall carry out the test in a manner that allows the assessment of initial inflow parameters and reservoir characteristics for each pool,
- the Proponents must document the fluid characteristics for each pool to the Board’s satisfaction,
- the Proponents shall demonstrate that sufficient information exists to allow the production from each pool in the commingled well to be allocated to the Board’s satisfaction,
- the Proponents shall report the allocated pool production monthly to the Board. Ongoing surveillance of the wells shall be maintained to ensure the accuracy of the production allocation throughout the life of the well, and,
- the Proponents’ Reservoir Management Plan must document the pool management principles set out above.

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CONDITION 20: RESERVOIR MANAGEMENT PLAN

The Proponents shall provide the Board with a Reservoir Management Plan as part of the Total Quality 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.

The Reservoir Management Plan shall document depletion plans for the Project pools. Documentation must also be provided to demonstrate that the Plan is optimized for the economic conservation of the resource. This Plan must set out the pool characteristics, depletion strategy, number of wells and bottom-hole targets, 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 pools, 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.

CONDITION 21: LOW TOXICITY MINERAL OIL (LTMO) BASED DRILLING MUD

The Proponents shall minimize the discharge into the marine environment of Low Toxicity Mineral Oil (LTMO) on cuttings by complying with the following:

- prior to December 31, 1999 discharges of LTMO on cuttings shall be in compliance with the Board's Offshore Waste Treatment Guidelines and the Proponents shall only use LTMO in well sections where it is a technical requirement,
- after December 31, 1999, discharges of LTMO on cuttings shall not exceed 1% LTMO by weight on cuttings, unless specifically authorized by the Board in exceptional circumstances, and
- prior to commencing drilling, the Proponents shall submit to the Board a plan which outlines the measures they will take to minimize the discharge of LTMO on cuttings and to comply with the 1% discharge limit by December 31, 1999. Alternative means of disposal, drilling fluids and solids control equipment are to be considered.

CONDITION 22: PRODUCTION MEASUREMENT AND ALLOCATION

The Proponents shall submit the following to the Board:

- a description of the production process including equipment schematics and standard operating procedures,
- a flow system and flow calculation procedure, and the allocation procedure which will be used to allocate production to individual wells and pools,
- metering schematics showing the location of all meters and descriptions of the type of meters, their accuracy and meter proving procedures, and
- an assessment of the accuracy of the flow and allocation calculations.

All flow measurement procedures must meet the requirements of the American Petroleum Institute Manual of Petroleum Measurement Standards.

EXECUTIVE SUMMARY

CONDITION 23: PIPELINE TO SHORE

The Proponents shall submit the information respecting the pipeline to shore referred to in Joint Public Review Panel Recommendation No. 1, to the CNSOPB within the time frames specified in the recommendation.

CONDITION 24: FLOWLINES

Within 60 days of the implementation of this Decision Report, the Proponents shall document further the interfield and export flowline constraints as functions of pressure and rate. Documentation must be provided to demonstrate to the Board that the pipelines are appropriately designed for well deliverability and resource conservation.

CONDITION 25: ABANDONMENT

Prior to the commencement of production, the Proponents 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 all offshore Project facilities.

CONDITION 26: FINANCIAL RESPONSIBILITY

Not less than 30 days prior to the issuance of any authorization for a work or activity relating to the Project, the Proponents shall provide, in a form and amount satisfactory to the Board, evidence of financial responsibility sufficient to demonstrate that they have complied with the requirements of the legislation and regulations and such further requirements respecting financial responsibility as the Board may specify.

CONDITION 27: ENVIRONMENTAL EFFECTS MONITORING

The Proponents shall prepare an environmental effects monitoring program, satisfactory to the Board, with respect to discharges, tainting and noise, and submit it to the Board prior to undertaking construction, drilling or production activities.

CONDITION 28: CODE OF PRACTICE FOR SABLE ISLAND AND THE GULLY

The Proponents shall prepare and submit to the Board a Code of Practice, satisfactory to the Board, to protect Sable Island and the Gully. This shall be submitted to the Board in sufficient time to enable a thorough review by the Board and its advisory committees.

EXECUTIVE SUMMARY

CONDITION 29: THIRD PARTY ACCESS

The Proponents shall permit third party access to their offshore facilities on reasonable terms and conditions. By commencing production the Proponents 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 Proponents, and
- set pipeline tariffs and processing fees, and fix the delivery location.

SOMMAIRE ADMINISTRATIF

Le Projet énergétique extracôtier Sable (« PÉES » ou « Projet ») comprend l'exploitation de six champs de gaz naturel au large de l'île de Sable. Les réserves de gaz naturel récupérable sont estimées à 85 milliards de mètres cubes (3 billions de pieds cubes). La production est censée démarrer en 1999 et s'étendre sur les 25 ans de la durée de vie du Projet. Le gaz sera transporté à une usine de traitement près de Country Harbour, en Nouvelle-Écosse, via un pipeline sous-marin.

Les promoteurs du Projet, Mobil Oil Canada Properties, opérateur principal, Shell Canada Limited, co-opérateur, Imperial Oil Resources Limited et Nova Scotia Resources Limited, ont soumis à l'Office un Plan d'exploitation et un Plan de retombées Canada – Nouvelle-Écosse le 14 juin 1996. L'Office a nommé un commissaire pour procéder à un examen public de ces plans et des impacts environnementaux et socio-économiques du Projet. Le commissaire a effectué cet examen dans le cadre de la Commission mixte d'examen public des projets gaziers de l'île de Sable.

Le commissaire et la commission ont communiqué leurs rapports le 27 octobre 1997. La commission a conclu que le PÉES n'était pas susceptible d'avoir des effets néfastes importants sur l'environnement, à condition que des mesures d'atténuation appropriées soient appliquées et que les recommandations de la commission soient suivies et mises en œuvre. De même, le commissaire a conclu que le PÉES pouvait procéder sans effets néfastes importants sur les plans environnemental, social ou économique si l'on tient compte des recommandations exposées dans le Rapport de la Commission mixte d'examen public et le Rapport du commissaire. Le commissaire a également conclu que le Projet aura un impact favorable sur les secteurs économiques de l'industrie et de l'emploi. La réponse de l'Office aux recommandations de la commission et du commissaire portant sur des questions qui relèvent de la compétence de l'Office, est exposée dans les rapports décisionnels.

L'Office a approuvé le Plan de retombées Canada– Nouvelle-Écosse du PÉES sous réserve de certaines conditions.

Bien que l'Office ait jugé acceptables les principes du projet et la philosophie de gestion des promoteurs, il a conclu que certaines conditions étaient nécessaires pour assurer que les promoteurs, les partenaires de l'alliance et les entrepreneurs se conforment aux clauses de « participation maximale et équitable » et de « priorité » des *Lois de mise en œuvre de l'Accord*. Ces conditions exigent que les promoteurs se conforment à leur processus annoncé d'approvisionnement, établissent un bureau provincial doté de personnel adéquat, y compris des personnes responsables de certains domaines clés, et fournissent à l'Office un Plan d'emploi et de formation.

Pour les contrats importants, les promoteurs seront dans l'obligation de respecter un processus d'adjudication qui exige la notification de l'Office et son approbation des listes de soumissionnaires et des adjudications de contrats. L'évaluation des soumissions tiendra compte du contenu canadien et néo-écossais. Lorsque les soumissions seront équivalentes à tout autre titre, la soumission ayant le taux le plus élevé de contenu canadien et néo-écossais sera retenue.

L'Office a également imposé plusieurs conditions destinées à améliorer les avantages à long terme du Projet. Celles-ci exigent que les promoteurs préparent un Plan de recherche et de développement et des évaluations de l'approvisionnement et de l'infrastructure. Nous avons également inclus des conditions relatives au transfert technologique, aux contrats à long terme pour d'autres projets et à la formation, afin de mieux préparer les Néo-Écossais et autres Canadiens en vue de ce projet et des projets futurs.

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Bien que l'Office ne les considère pas comme des engagements, il utilisera les estimations des retombées sur l'industrie et l'emploi contenues dans le Plan de retombées Canada – Nouvelle-Écosse comme points de référence. Si les promoteurs n'atteignent pas les niveaux de participation prévus, l'Office exigera qu'ils justifient les écarts. L'Office se chargera du contrôle et de la vérification des promoteurs, des partenaires de l'alliance et des principaux entrepreneurs pour assurer que les principes du projet, la philosophie de gestion et les procédures et processus stipulés dans le Rapport décisionnel sont mis en œuvre. Les promoteurs doivent s'assurer que les partenaires de l'alliance et les entrepreneurs ont l'obligation contractuelle de donner à l'Office accès complet à leurs documents pour surveiller et vérifier leur performance.

L'Office a également approuvé le Plan d'exploitation du PÉES sous réserve de certaines conditions.

L'Office est convaincu que le Projet peut être entrepris en toute sécurité. L'Office exigera qu'un Système de gestion de la qualité totale, intégrant la sécurité, la protection de l'environnement, la conservation des ressources, les retombées Canada – Nouvelle-Écosse et autres activités du projet, soit mis en place.

L'Office accepte les estimations des réserves et les prévisions de production des promoteurs. Pour assurer une récupération économique maximale de la ressource, l'Office a donné son approbation du Plan d'exploitation sous condition que les promoteurs envisagent le développement intégré de tous les gisements sous-jacents aux six champs de gaz du PÉES.

Sur la base des informations qui sont à sa disposition, l'Office est convaincu que le Projet peut se poursuivre sans effets néfastes importants sur l'environnement. Les promoteurs devront préparer un Programme de suivi des effets sur l'environnement en ce qui concerne les rejets, les altérations de la chair des poissons et le bruit. Au cours des deux prochaines années, les restrictions imposées par l'Office sur le rejet de déblais de forage contenant des résidus de boues de forage à l'huile minérale de faible toxicité seront strictement appliquées. À la date du 31 décembre 1999, ces rejets seront pratiquement éliminés. Conformément aux recommandations de la Commission mixte d'examen public, les promoteurs devront préparer un Code de pratiques pour protéger l'île de Sable et le Gully.

Avant d'entamer la production, les promoteurs fourniront à l'Office un plan traitant de la responsabilité financière en cas d'abandon des installations du Projet. Ce plan devra satisfaire aux exigences de l'Office. Une preuve de responsabilité financière sera également exigée pour chaque travail ou activité avant que l'Office ne délivre les autorisations.

L'Office a également abordé la question de l'accès de tiers aux installations extracôticières des promoteurs. L'Office exigera que cet accès soit accordé à des conditions raisonnables. En cas de conflit, l'Office décidera si l'accès sera accordé et définira les conditions applicables.

Dans l'ensemble, l'Office est convaincu que, sous réserve des conditions stipulées dans le Rapport décisionnel relatif au Plan d'exploitation, le Projet peut être entrepris en toute sécurité tout en protégeant l'environnement et en maximisant la récupération des ressources. L'Office a également conclu que les promoteurs avaient traité de manière adéquate les clauses des *Lois de mise en œuvre de l'Accord* concernant les retombées industrielles et l'emploi pour le Canada et la Nouvelle-Écosse, sous seule réserve des conditions énoncées dans le Rapport décisionnel relatif au Plan de retombées Canada – Nouvelle-Écosse.

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L'Office Canada – Nouvelle-Écosse des hydrocarbures extracôtiers a pris la décision d'approuver le Plan de retombées Canada – Nouvelle-Écosse du Projet énergétique extracôtier Sable (PÉES) sous réserve des conditions suivantes.

CONDITION 1 : PROCESSUS D'APPROVISIONNEMENT

Les promoteurs devront se conformer au processus d'approvisionnement décrit dans la partie 6.1 du Plan de retombées Canada – Nouvelle-Écosse du PÉES.

CONDITION 2 : BUREAU PROVINCIAL

Dans les 60 jours qui suivront la mise en œuvre du présent rapport décisionnel, ou dans un délai plus long autorisé par l'Office, les promoteurs devront établir en Nouvelle-Écosse un bureau doté de personnel disposant d'un pouvoir de décision, à la satisfaction de l'Office, y compris de personnel dans des domaines tels que la gestion d'ensemble du projet, les opérations, la gestion des réservoirs, les retombées Canada – Nouvelle-Écosse, la formation et l'éducation, la recherche et le développement, la responsabilité financière, la santé, la sécurité et l'environnement.

De plus, un personnel adéquat issu des divisions de la conception technique et de l'approvisionnement devra être installé en Nouvelle-Écosse dans les 90 jours qui suivront la mise en œuvre du présent rapport décisionnel.

CONDITION 3 : PLAN D'EMPLOI ET DE FORMATION

Dans les 90 jours qui suivront la mise en œuvre du présent rapport décisionnel, les promoteurs devront soumettre à l'approbation de l'Office un Plan d'emploi et de formation (Plan E&F). Le Plan E&F comportera les éléments suivants :

- Un aperçu des besoins en matière d'embauche et de formation des promoteurs, des partenaires de l'alliance et des principaux entrepreneurs, indiquant le type de compétences exigées, les pénuries prévues au sein de la main-d'œuvre néo-écossaise et canadienne, les exigences particulières du projet en matière de formation et les dépenses prévues qui seront encourues directement par les promoteurs pour mettre en œuvre le Plan E&F. Ces dépenses seront indiquées sous forme d'un pourcentage des dépenses prévues et réelles du projet.
- Un calendrier des perspectives d'emploi pour chaque phase de l'exploitation et des opérations du projet pour permettre à la main-d'œuvre de mieux se préparer pour ces emplois.
- Les engagements des promoteurs dans le cadre de la partie 7.1 du Plan de retombées Canada – Nouvelle-Écosse du PÉES concernant la tenue de forums d'emploi et l'utilisation de babillards électroniques et de bourses du travail pour annoncer les postes disponibles.

De plus, les promoteurs devront faire un rapport trimestriel à l'Office sur les activités d'emploi et de formation pour la période couverte par le rapport et le comparer au Plan E&F. Le rapport trimestriel indiquera le nombre de nouveaux employés embauchés durant l'année et leur lieu de résidence au moment de l'embauche (c.-à-d. : Néo-Écossais, autre Canadien ou étranger).

Les promoteurs, les partenaires de l'alliance et les principaux entrepreneurs devront donner à l'Office un préavis d'au moins trois mois avant d'amener des travailleurs étrangers au Canada. Ce préavis devra être détaillé et inclure les titres de poste, la description des responsabilités et la durée de l'emploi proposé au Canada.

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CONDITION 4 : PLAN DE RECHERCHE ET DE DÉVELOPPEMENT

Dans les 90 jours qui suivront la mise en œuvre du présent rapport décisionnel, les promoteurs devront soumettre à l'approbation de l'Office un Plan de recherche et de développement (Plan R&D). Le Plan R&D décrira un plan renouvelable de trois à cinq ans pour les initiatives de recherche et de développement qui seront mises en œuvre en Nouvelle-Écosse dans le domaine des hydrocarbures extracôtiers. Ce plan comportera une ventilation des dépenses prévues dans le cadre de la mise en œuvre du Plan R&D. Le Plan R&D devra prévoir des appels de soumissions publiques pour les initiatives de recherche et de développement liées aux activités du PÉES.

Les promoteurs devront faire un rapport trimestriel à l'Office au sujet des activités de R&D et le comparer au Plan R&D approuvé.

CONDITION 5 : PRIORITÉ POUR LES PRODUITS ET LES SERVICES

Dans les 30 jours qui suivront la mise en œuvre du présent rapport décisionnel, ou dans un délai plus long autorisé par l'Office, les promoteurs devront fournir un plan détaillé, recevable par l'Office, indiquant comment les promoteurs, les partenaires de l'alliance et les entrepreneurs donneront la « priorité » aux produits et aux services néo-écossais, avec des exemples spécifiques de la manière dont cette « priorité » sera envisagée et évaluée par les promoteurs lors de leur évaluation des soumissions de produits et de services nécessaires au projet.

CONDITION 6 : INDIVIDUS OU GROUPES DÉFAVORISÉS

Dans les 60 jours qui suivront la mise en œuvre du présent rapport décisionnel, les promoteurs soumettront un rapport, recevable par l'Office, décrivant les initiatives spécifiques prévues pour que les individus ou groupes défavorisés aient accès aux possibilités de formation et d'emploi.

CONDITION 7 : TRANSFERT TECHNOLOGIQUE

Dans les 90 jours qui suivront la mise en œuvre du présent rapport décisionnel, les promoteurs soumettront un rapport, recevable par l'Office, exposant les initiatives prévues (y compris la planification de la relève) en vue de promouvoir le transfert efficace de la technologie des promoteurs, des partenaires de l'alliance et des principaux entrepreneurs aux autres individus et compagnies néo-écossaises et canadiennes. Les promoteurs favoriseront le transfert technologique en encourageant et en facilitant la formation d'entreprises conjointes et l'établissement de contrats de licence entre des sociétés étrangères, des sociétés néo-écossaises et autres sociétés canadiennes. Les promoteurs devront également soumettre à l'Office un rapport annuel décrivant ces initiatives et leurs résultats.

CONDITION 8 : ÉVALUATION DES SOUMISSIONS

Lors de l'évaluation des soumissions, les promoteurs devront tenir compte du contenu canadien et néo-écossais. Lorsque les soumissions sont équivalentes à tout autre titre, c'est la soumission ayant le niveau le plus élevé de contenu canadien et néo-écossais qui sera retenue. S'il se révèle que les fournisseurs néo-écossais et autres fournisseurs canadiens ne sont pas concurrentiels ou ne réussissent pas à se qualifier initialement, les promoteurs aviseront le soumissionnaire qui n'a pas été retenu ainsi que l'Office des lacunes identifiées dans les soumissions afin que le soumissionnaire puisse combler ces lacunes en vue de soumissions futures.

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CONDITION 9 : PERSPECTIVES À LONG TERME

Les promoteurs, les partenaires de l'alliance et leurs principaux entrepreneurs devront étudier les moyens d'offrir aux fournisseurs, aux entrepreneurs et à la main-d'œuvre de la région des contrats et des emplois à long terme, qui couvriront non seulement le Projet énergétique extracôtier Sable mais également d'autres projets canadiens ou internationaux. Ces initiatives seront intégrées aux critères utilisés pour l'évaluation des soumissions. Le contenu canadien et néo-écossais communiqué à l'Office pour ces contrats et ces emplois sera approuvé, dans le cas des contrats, pour la durée totale du contrat et, dans le cas des emplois non liés au Projet, pour une période maximum de cinq ans.

CONDITION 10 : PROCESSUS D'ADJUDICATION

Pour tous les contrats, les contrats de sous-traitance et les commandes proposés, dont le montant prévu par les promoteurs dépassera 250 000 \$, ou toute autre limite éventuellement établie par l'Office, ou pour toute autre question présentant un intérêt pour l'Office, les promoteurs devront soumettre à l'approbation de l'Office la liste de tous les entrepreneurs qui souhaitent faire l'objet d'une sélection préalable, la liste des soumissionnaires proposés et les avis d'adjudications finales de contrats proposées. Les promoteurs devront soumettre suffisamment d'informations à l'appui de ces avis pour permettre à l'Office d'évaluer la question et de se convaincre que les promoteurs ont satisfait aux exigences statutaires concernant « la participation maximale et équitable » et la « priorité ».

CONDITION 11 : ÉVALUATION DE L'APPROVISIONNEMENT ET DE L'INFRASTRUCTURE

Durant la phase de développement du projet et durant les trois premières années de la phase de production, les promoteurs devront soumettre, une fois par an, une évaluation de l'approvisionnement et de l'infrastructure Canada – Nouvelle-Écosse. Dans ce document, les promoteurs fourniront à l'Office leur évaluation du développement du secteur local de l'approvisionnement et des services et de l'infrastructure locale. Sur la base de cette évaluation, les promoteurs devront identifier les domaines présentant des lacunes et les domaines offrant des possibilités de participation locale plus importante.

CONDITION 12 : CONTENU CANADIEN ET NÉO-ÉCOSSAIS

Au cas où le contenu canadien et néo-écossais réel du projet serait inférieur aux estimations données dans le Plan de retombées Canada – Nouvelle-Écosse du PÉES, les promoteurs devront justifier ces écarts auprès de l'Office et, le cas échéant, identifier des mesures susceptibles d'augmenter le contenu canadien et néo-écossais à l'avenir.

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CONDITION 13 : CONTRÔLE ET VÉRIFICATION

Aux fins du contrôle et de la vérification, les promoteurs, les partenaires de l'alliance et les principaux entrepreneurs devront permettre à l'Office et/ou à ces représentants désignés d'avoir accès (à titre confidentiel) à toute la documentation et l'information exigées pour corroborer le niveau de contenu et d'emploi canadien et néo-écossais déclaré. Les rapports de retombées du PÉES seront soumis à un contrôle régulier et aux vérifications qui seront jugées appropriées par l'Office. Cela comprendra des vérifications ponctuelles détaillées des dépenses et de l'emploi déclarés.

Les promoteurs devront s'assurer que tous les partenaires de l'alliance et les autres entrepreneurs :

- comprennent et acceptent leurs responsabilités relatives aux exigences en matière de retombées des *Lois de mise en œuvre de l'Accord* et du Plan de retombées Canada – Nouvelle-Écosse,
- sont obligés par contrat de communiquer les informations relatives aux retombées Canada – Nouvelle-Écosse aux promoteurs et directement à l'Office, sur sa demande, et
- s'engagent à donner à l'Office ou à ses représentants désignés accès à leurs documents aux fins de la vérification des informations relatives aux retombées Canada – Nouvelle-Écosse communiquées aux promoteurs ou à l'Office.

Le coût de toutes les vérifications effectuées par l'Office ou ses représentants sera imputé aux promoteurs.

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L'Office Canada – Nouvelle-Écosse des hydrocarbures extracôtiers a pris la décision d'approuver le Plan d'exploitation du Projet énergétique extracôtier Sable (PÉES), parties I et II, sous réserve des conditions stipulées dans le présent rapport décisionnel.

CONDITION 14 : SYSTÈME DE GESTION DE LA QUALITÉ TOTALE

Les promoteurs devront mettre en œuvre un système de gestion de la qualité totale recevable par l'Office et qui intégrera tous les aspects des activités du Plan d'exploitation. Entre autres, ce système de gestion de la qualité totale devra assurer :

- la sécurité des conditions de travail pour toutes les opérations extracôtiers,
- la protection de l'environnement durant les activités liées aux hydrocarbures extracôtiers,
- la conservation des ressources d'hydrocarbures extracôtiers,
- le respect du Plan de retombées Canada – Nouvelle-Écosse approuvé et
- la responsabilité financière de toutes les opérations extracôtiers.

Ce système doit comprendre des politiques, des procédures et des responsabilités organisationnelles documentées et être élaboré de manière suffisamment détaillée pour l'activité proposée. Les promoteurs devront déposer la documentation appropriée auprès de l'Office et l'aviser immédiatement de tout changement.

CONDITION 15 : RÈGLEMENTS, NORMES ET DIRECTIVES

En plus de se conformer à tous les règlements promulgués en vigueur, les promoteurs devront se conformer aux clauses des projets de règlements suivants comme s'ils étaient en vigueur pour la région extracôtiers de la Nouvelle-Écosse :

- Règlement sur l'hygiène et la sécurité professionnelle pour le pétrole – Nouvelle-Écosse, 5 avril 1990, ébauche (Petroleum Occupational Health and Safety Regulations – Nova Scotia).
- Règlement sur les opérations sur le pétrole et le gaz du Canada

Les promoteurs devront également se conformer à tous les projets de règlements supplémentaires et à toutes les normes ou directives qui pourraient être établis à l'avenir et adoptés par l'Office. Ces projets de règlements, normes ou directives peuvent être périodiquement révisés et, s'ils sont adoptés par l'Office, la version révisée sera appliquée et remplacera toute version antérieure, sur avis donné aux promoteurs.

CONDITION 16 : RECOUVREMENT DES COÛTS

Les promoteurs devront verser chaque année à l'Office les montants qu'il pourra raisonnablement établir, en consultation avec les promoteurs, pour couvrir les frais supplémentaires encourus en liaison avec le projet.

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CONDITION 17 : ÉVALUATION DE TOUS LES GISEMENTS

Pour assurer une récupération économique maximale de la ressource, les promoteurs envisageront l'exploitation de tous les gisements sous-jacents aux six champs de gaz du PÉES de manière intégrée avec les « sables du projet ». Le Plan de gestion du réservoir devra inclure les points suivants :

- une documentation technique supplémentaire à l'appui des interprétations, des conclusions et des recommandations au sujet de la viabilité économique de l'exploitation des réservoirs jusqu'à la base du Sable 18 à Venture et la base du Sable 8 à South Venture, y compris les scénarios favorables et défavorables (ceci devra être soumis avant d'obtenir l'approbation de forage des puits à Venture et à South Venture);
- une réévaluation du gaz en place pour tous les sables hydrocarbonés rencontrés dans les puits de développement; et
- une évaluation du calendrier d'exploitation optimal de tous les gisements désignés (ceci devra être soumis avant la complétion des puits de développement au sein du champ).

CONDITION 18 : PRODUCTIBILITÉ DU SYSTÈME

Les promoteurs devront contrôler et évaluer régulièrement la productibilité du système. Les promoteurs devront communiquer les informations suivantes dans le cadre du Rapport annuel de production ou plus fréquemment à la demande de l'Office :

- prévision de la productibilité du système et
- rapport entre les pressions, la température et le débit pour les diverses composantes des installations de production et du gazoduc.

CONDITION 19 : CAPTAGE SIMULTANÉ DE LA PRODUCTION

Les promoteurs devront demander l'approbation du captage simultané de la production pour chaque puits individuellement, lors de la phase de complétion. Le captage simultané de la production sera envisagé sous réserve des conditions suivantes :

- Lorsqu'ils feront des tests de production sur un puits qui fera l'objet d'un captage simultané de la production, les promoteurs devront effectuer le test de manière à permettre l'évaluation des paramètres de débit initial et des caractéristiques du réservoir pour chaque gisement.
- Les promoteurs devront documenter les caractéristiques liquides de chaque gisement à la satisfaction de l'Office.
- Les promoteurs devront démontrer que les informations sont suffisantes pour permettre d'allouer la production de chaque gisement dans le puits de captage simultané à la satisfaction de l'Office.
- Les promoteurs devront communiquer chaque mois à l'Office la production allouée au gisement. Ils maintiendront une surveillance régulière des puits afin d'assurer l'exactitude de l'allocation de la production sur toute la durée de vie du puits.
- Le Plan de gestion du réservoir des promoteurs doit documenter les principes de gestion des gisements exposés ci-dessus.

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CONDITION 20 : PLAN DE GESTION DU RÉSERVOIR

Les promoteurs devront soumettre à l'Office un Plan de gestion du réservoir dans le cadre du Système de gestion de la qualité totale. Ce plan devra être mis à jour chaque année ou plus fréquemment sur demande de l'agent principal de la conservation de l'Office. Le Plan initial de gestion du réservoir devra être approuvé par l'Office avant le début des activités de forage d'exploitation.

Le Plan de gestion du réservoir devra documenter les plans d'épuisement pour les gisements du projet. Une documentation devra aussi être fournie pour démontrer l'optimisation du plan en vue de la conservation économique de la ressource. Ce plan doit décrire les caractéristiques des gisements, la stratégie d'épuisement, le nombre de puits et les cibles de fond, les plans d'évaluation des puits, les plans de complétion, l'équipement proposé pour le contrôle de la complétion et de la production, l'échantillonnage et l'analyse des liquides, les impacts et les contraintes du réseau collecteur et les activités prévues pour la surveillance routinière et ponctuelle. Cela devrait assurer une gestion raisonnable des gisements, des régions adjacentes aux puits, des complétions et des tubages de puits et des installations de production.

Le Plan de gestion du réservoir devra préciser les objectifs, planifier les activités, définir le travail de surveillance et faire des prévisions de production. Des mises à jour annuelles permettront d'évaluer les progrès, de documenter les prises de décision et les révisions, et de prévoir l'activité d'exploitation pour la prochaine période de rapport.

CONDITION 21 : BOUES DE FORAGE À L'HUILE MINÉRALE DE FAIBLE TOXICITÉ (HMFT)

Les promoteurs devront minimiser le rejet dans l'environnement marin d'huile minérale de faible toxicité (HMFT) issue des déblais de forage en se conformant aux directives suivantes :

- Jusqu'au 31 décembre 1999, les rejets d'HMFT issue des déblais de forage devront se conformer aux Directives pour le traitement des déchets extracôtiers établies par l'Office, et les promoteurs devront utiliser de l'HMFT uniquement pour les sections de puits où il s'agit d'une exigence technique.
- Après le 31 décembre 1999, les rejets d'HMFT issue des déblais de forage ne devront pas dépasser 1 % d'HMFT par poids pour les déblais de forage, à moins d'une autorisation spéciale de l'Office pour des circonstances exceptionnelles.
- Avant de démarrer le forage, les promoteurs devront soumettre à l'Office un plan décrivant les mesures qu'ils prendront pour minimiser le rejet d'HMFT issue des déblais de forage et pour se conformer à la limite de rejet de 1 % au 31 décembre 1999. Ils devront envisager des solutions de rechange en matière d'élimination et d'équipement de contrôle des liquides et des solides de forage.

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CONDITION 22 : MESURE ET ALLOCATION DE LA PRODUCTION

Les promoteurs devront soumettre à l'Office les documents suivants :

- Une description du processus de production, y compris les schémas de matériel et les procédures d'exploitation standards.
- Un système de débit et une procédure de calcul du débit ainsi que la procédure d'allocation qui sera utilisée pour allouer la production à des puits et des gisements individuels.
- Des schémas de l'appareillage de mesure indiquant l'emplacement de tous les compteurs et décrivant le type de compteurs, leur degré de précision et les procédures de vérifications des compteurs.
- Une évaluation de l'exactitude des calculs de débit et d'allocation.

Toutes les procédures de mesure du débit doivent répondre aux exigences du *American Petroleum Institute Manual of Petroleum Measurement Standards*.

CONDITION 23 : PIPELINE DE LIAISON À LA CÔTE

Les promoteurs devront soumettre à l'Office les informations relatives au pipeline de liaison à la côte, mentionné dans la Recommandation n° 1 de la Commission mixte d'examen public, dans les délais prescrits dans la recommandation.

CONDITION 24 : CONDUITES D'ÉCOULEMENT

Dans les 60 jours qui suivront la mise en œuvre de ce Rapport décisionnel, les promoteurs devront documenter davantage les contraintes relatives aux conduites d'écoulement internes au champ et externes en fonction de la pression et du débit. Cette documentation devra être fournie pour démontrer à l'Office que les pipelines sont convenablement conçus en vue de la productibilité des puits et de la conservation de la ressource.

CONDITION 25 : ABANDON

Avant d'entamer la production, les promoteurs devront fournir à l'Office un plan mettant en évidence, selon un format et un montant recevables par l'Office, une responsabilité financière suffisante pour permettre l'abandon de toutes les installations du projet extracôtier.

CONDITION 26 : RESPONSABILITÉ FINANCIÈRE

Au moins trente jours avant que ne soit délivrée toute autorisation pour un travail ou une activité en liaison avec le projet, les promoteurs devront fournir, selon un format et un montant recevables par l'Office, une preuve de responsabilité financière suffisante pour montrer qu'ils se sont conformés aux exigences législatives et réglementaires et aux autres exigences qui pourraient être imposées par l'Office en matière de responsabilité financière.

SOMMAIRE ADMINISTRATIF

CONDITION 27 : SUIVI DES EFFETS SUR L'ENVIRONNEMENT

Les promoteurs devront préparer un programme de suivi des effets sur l'environnement, recevable par l'Office, en ce qui concerne les rejets, les altérations de la chair des poissons et le bruit, et le soumettre à l'Office avant d'entreprendre les activités de construction, de forage ou de production.

CONDITION 28 : CODE DE PRATIQUES POUR L'ÎLE DE SABLE ET LE GULLY

Les promoteurs devront préparer et soumettre à l'Office un code de pratiques, recevable par l'Office, en vue de protéger l'île de Sable et le Gully. Ce code devra être soumis à l'Office en temps voulu pour permettre un examen approfondi par l'Office et ses comités consultatifs.

CONDITION 29 : ACCÈS DE TIERS

Les promoteurs devront permettre l'accès de tiers à leurs installations extracôticières à des conditions raisonnables. Lors du démarrage de la production, les promoteurs seront considérés avoir convenu que, dans le cas d'un conflit et sur demande de l'Office, ce dernier peut :

- déterminer si des tiers auront accès aux pipelines ou aux installations de traitement;
- préciser la proportion de la production qui devra être acceptée par les promoteurs et
- établir les tarifs de pipeline, les tarifs de traitement et fixer le lieu de livraison.

SECTION 1

INTRODUCTION, REGULATORY REGIME & PROJECT DESCRIPTION

1.0 INTRODUCTION

1.0

This Section describes the regulatory regime which governs offshore petroleum activities. A brief description of the public review process which was put in place for the Sable Offshore Energy Project (“SOEP” or “Project”) and a project description are also included.

1.0.1 Regulatory Authority

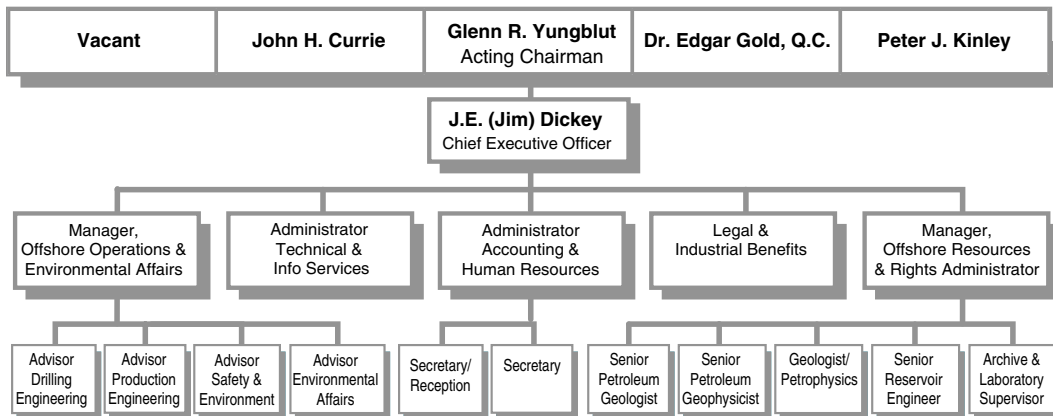
1.0.1

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 Implementation Acts*”). The Board’s mission 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 Implementation Acts* that deal with Canada-Nova Scotia employment and industrial benefits,
- rights issuance and management,
- resource evaluation, and
- data collection, curation and distribution.

The Board members are appointed by the governments in accordance with Part I of the *Accord Implementation Acts*. The current Board membership and staff organizational structure are shown in Figure 1.0.1

Figure 1.0.1 Canada-Nova Scotia Offshore Petroleum Board



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INTRODUCTION, REGULATORY REGIME & PROJECT DESCRIPTION

1.0.2

1.0.2 Regulatory Framework

The *Accord Implementation 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 offshore area. Currently, seven sets of federal and provincial “mirror” regulations have been put in place by the governments. Appendix 1 lists these as well as current Board guidelines and draft regulations on which work is ongoing.

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 Implementation 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 from 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 Implementation 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 from the Board.

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:

- (i) the scope, purpose, location, timing, and nature of the proposed development,
- (ii) 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
- (iii) 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 from the Board.

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INTRODUCTION, REGULATORY REGIME & PROJECT DESCRIPTION

The purpose of the 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 the Proponents 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.

1.0.3 Activity Authorizations

1.0.3

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)
- Declaration of Operator

The Board must be satisfied with the information provided before it will issue an activity authorization. Figure 1.0.3 illustrates the activity authorizations required for a development project.

For development projects, an environmental assessment of the development activities, from construction to abandonment, is undertaken when the Development Plan is considered. This assessment remains valid for the life of the project, provided that the activities are within the scope of the initial assessment. Therefore, activity specific Environmental Impact Statements are only required if the activity is outside the scope of that initially assessed at the time the development plan was approved.

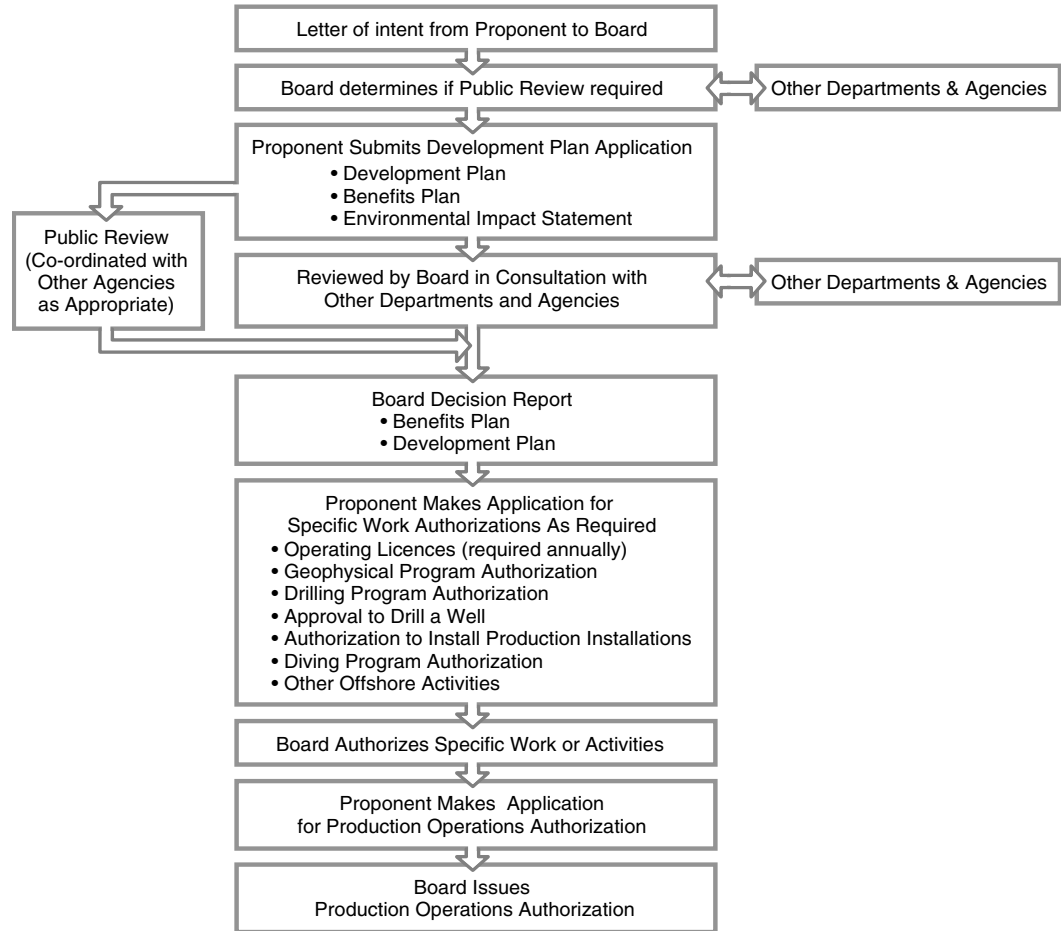
A Certificate of Fitness is required for certain equipment and installations, including drilling units, production facilities and accommodation facilities. A Certificate of Fitness is issued by a certifying authority that has met the criteria established by regulation and is named in the *Nova Scotia Offshore Certificate of Fitness Regulations*. There are currently four designated certifying authorities that an operator is permitted to use: the American Bureau of Shipping, Bureau Veritas, Det norske Veritas Classification A/S or Lloyd's Register of Shipping. These certifying authorities 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.

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INTRODUCTION, REGULATORY REGIME & PROJECT DESCRIPTION

1.0.3 CON'T

Figure 1.0.3 Development Application Process



A Declaration of Operator is required for all activities. This declaration is signed by a senior officer of the operator and states that that person has undertaken, or caused to be undertaken, sufficient work to satisfy that person that the equipment is fit for purpose and the personnel are properly trained so that the activity can be undertaken safely and without polluting the environment.

To assist the Board in reviewing proposed activities, the Board has established a number of advisory committees. When an activity is first proposed, the Board sets up a meeting of agencies with jurisdiction over certain aspects of the activity to notify them of the proposed activity and to assist the proponents in identifying all of the regulatory requirements. Additional meetings are held as more detail becomes available.

To provide advice on environmental and fisheries matters, the Board has established an Environmental Coordinating Committee and a Fisheries Advisory Committee. The Environmental Coordinating Committee is comprised of representatives of various government agencies and departments with an interest in environmental matters. Non-government agencies are also invited to participate if they have a particular interest in the proposed activity. The Fisheries Advisory Committee is comprised of representatives of the federal and provincial departments of fisheries and representatives of various fishing associations in the Province. The Board has found these two committees to be extremely useful and will be seeking their input extensively for SOEP activities.

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1.0.4 Development Plan Decision Making Process

1.0.4

The decision making process which governs petroleum operations in the offshore area is set out in Part I of the *Accord Implementation Acts*. Most decisions that the Board makes are not reviewable by the governments. However, the *Accord Implementation 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 Implementation 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 1 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.)

1.0.5 Joint Public Review Of Sable Gas Projects

1.0.5

The *Accord Implementation Acts* provide that the Board may conduct a public review in relation to the exercise of any of its duties where the Board is of the opinion that it is in the public interest to do so. Other government agencies and departments, both federal and provincial, also have public review authority and responsibilities. As a result, the possibility exists that projects could be subject to multiple reviews. Therefore, soon after the regulators and governments were advised that the Proponents intended to seek approval of the Sable Offshore Energy Project and the onshore pipeline project, they began consultations aimed at developing a single public review process that would satisfy all their respective requirements while at the same time reducing regulatory duplication and unnecessary delay. In July 1996, an *Agreement For A Joint Public Review Of The Proposed Sable Gas Projects* was concluded between Environment Canada, Natural Resources Canada, the Nova Scotia Department of Environment, the Nova Scotia Department of Natural Resources, the National Energy Board and the CNSOPB.

Pursuant to this agreement, a five member Joint Public Review Panel was established. The Panel was comprised of Dr. John T. Sears, also appointed by the Board as a Commissioner to conduct a public review under the *Accord Implementation Acts*, two permanent members and one temporary member of the National Energy Board, and one additional member. Dr. Robert Fournier, the temporary NEB member, also served as panel chairman. Further information regarding the structure and mandate of the Joint Public Review Panel is included in the Panel Report.

The Panel collected and examined evidence on the environmental effects of the Project for use in subsequent deliberations and decision making by regulatory authorities. While Dr. Sears participated in the public review as a member of the joint panel, he had the additional and separate responsibility, as the Board’s Commissioner, to review the Proponents’ Development Plan and Canada-Nova Scotia Benefits Plan, as well as those aspects of the Socio-Economic Impact Statement not addressed by the Joint Panel and to report his findings and recommendations to the Board.

The Joint Public Review Panel released its report on October 27, 1997. The Panel concluded that the Projects were “not likely to cause significant adverse environmental effects, provided that appropriate mitigation identified in the course of the review proceedings is applied to both Projects

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1.05 CON'T

and that the Panel's recommendations are followed and implemented". The Panel also concluded that the socio-economic impact of the Projects will be "favorable". The Report includes a total of 46 recommendations for the various regulatory authorities which are reproduced in Appendix 2. Those panel recommendations which relate to matters that fall within the Board's regulatory authority are discussed in the Decision Reports.

The Commissioner appointed by the Board also released a report on October 27, 1997. As stated in the report, his findings and recommendations are focused primarily on gas supply, development and production facilities, and the Canada-Nova Scotia Benefits aspects of the Project. The Commissioner concluded that "SOEP can proceed without significant adverse environmental, social or economic effects" if the recommendations put forward in the Joint Public Review Panel Report and the Commissioner's Report are addressed. The Commissioner's recommendations are presented in Appendix 3. These recommendations have been addressed by the Board in the Decision Reports. Copies of both the Joint Public Review Panel Report and the Commissioner's Report are available from the Board.

1.06

1.06 Coordination with Government Departments and Other Agencies

The Board is the lead regulatory agency for offshore petroleum operations. However, other government agencies and departments also have regulatory responsibilities. The *Accord Implementation Acts* direct the Board to enter into Memoranda of Understanding (MOUs) with these agencies to "ensure effective coordination and avoid duplication of work and activities". Since the Board was established in 1990, it has worked with other agencies to develop these MOUs. The following list shows the status of MOUs the Board has or will be putting in place.

Department or Agency	Subject	Status
Nova Scotia Department Of Labour	- Safety - Occupational Safety and Health	Finalized
Natural Resources Canada (Geological Survey of Canada)	- Geoscience Data Sharing	Finalized
Transport Canada	- Ship Safety - Pollution from Ships Transport Canada)	Finalized (Revisions Required to address restructuring of
- Oil Spill Response Canadian Transportation Safety Board	- Investigation of Marine Incidents	Finalized
Environment Canada / Fisheries & Oceans Canada	- Environment - Fisheries	Draft (currently being revised)
Natural Resources Canada / N.S. Department of Natural Resources	- Canada-Nova Scotia Benefits	Draft
National Energy Board / N.S. Energy and Mineral Resources Conservation Board	- SOEP Regulatory Matters	Draft
Human Resources Development Canada / Immigration Canada	- Foreign Workers	Initial Discussions
Revenue Canada	- Foreign Vessels	Initial Discussions

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working relationships with all of the parties. Notwithstanding this working relationship, the Board recognizes the importance of having formal arrangements in place. Formal memoranda will help to clarify each agency's role for the public and operators.

1.06 CON'T

The Commissioner discussed cooperation and coordination among agencies in his report. The Commissioner expressed concern over the lack of MOUs and recommended the Board conclude all outstanding MOUs prior to the implementation of SOEP. The Board accepts this recommendation and will place a high priority on finalizing these MOUs. Although this cannot be done unilaterally, the Board anticipates that the other parties will also accept the Commissioner's recommendation and that work on these MOUs will be given priority by others as well.

The Commissioner made an additional recommendation that the CNSOPB, the NEB and the Province of Nova Scotia execute a MOU identifying jurisdiction over the various SOEP facilities and the regulatory arrangement between the parties. In fact the Board, the NEB and the Province of Nova Scotia have developed a regulatory framework for SOEP. The Board accepts the Commissioner's recommendation and will endeavor to have a formal MOU that outlines the regulatory arrangement for SOEP in place as soon as possible.

1.1 SABLE OFFSHORE ENERGY PROJECT DESCRIPTION

1.1

The Project involves the development of six natural gas fields near Sable Island which is located approximately 225 kilometres off the east coast of Nova Scotia. The six fields are: Venture, South Venture, Thebaud, North Triumph, Glenelg and Alma (Figure 1.1.1). Together, these fields contain an estimated 85 billion cubic metres (3 TCF) of recoverable gas reserves. First production is expected in the fourth quarter of 1999 with a total project life of about 25 years. New discoveries could extend the project life. The Project design rate is 14.4 million cubic metres per day of raw gas (510 mmscf/d) production yielding 13 million cubic metres per day of sales gas. Approximately 3300 cubic metres of natural gas liquids will also be produced. This production rate can be expanded if market conditions and gas supplies warrant.

The gas fields are to be developed in two phases. Three of the fields, Venture, North Triumph and Thebaud, will to be brought into production at the beginning of the Project in 1999. About six years later, the remaining three fields will come on stream. This would enable the Project to maintain a production rate of about 14.4 million cubic metres of raw gas per day (510 mmscf/d) for 13 years, with the rate then declining over the final 12 years. The sequence of field development depends upon the results of a planned three dimensional (3D) seismic program, ongoing engineering studies, initial drilling results and production performance.

A total of 28 development wells are currently proposed for the six fields. These will be drilled using jack-up rigs. A sufficient number of wells will be pre-drilled to permit the Project to come onstream at the design rate. The number and sequence of wells will be subject to adjustment throughout the Project depending on drilling results, production performance and market conditions.

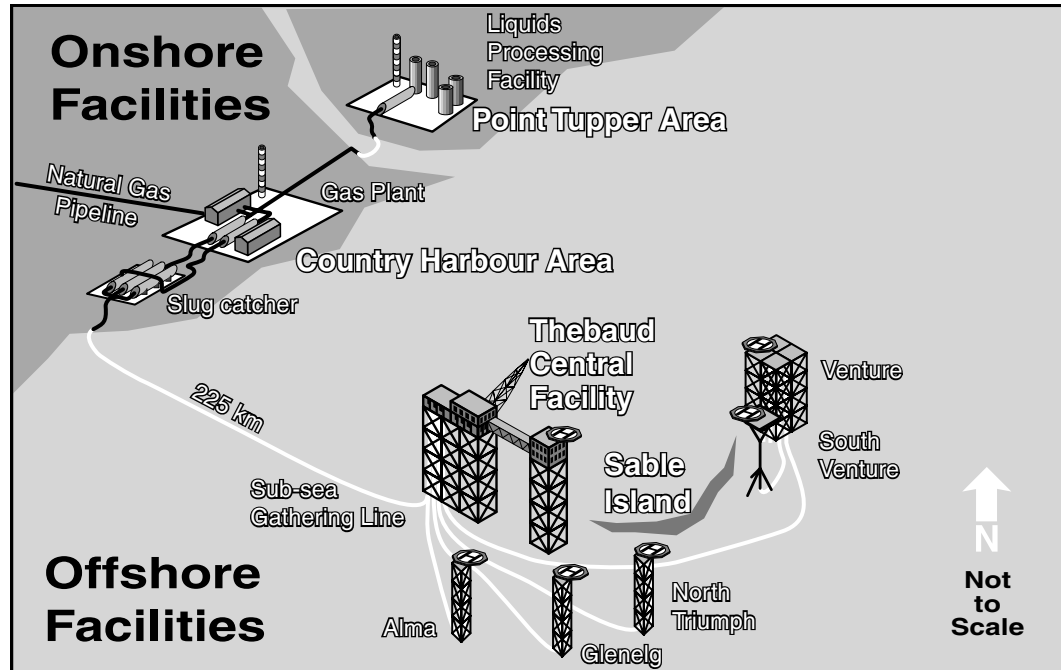
The Development Plan proposes the installation of central facilities at Thebaud for production, utilities and accommodation. Satellite platforms will be located at each of the other fields. The Thebaud platform will have systems for remote monitoring and control of the other field platforms. The Development Plan states that the living quarters structure will be adjacent to the Thebaud platform and linked to it by a bridge, although a combined platform for production, utilities, and accommodation is also being considered.

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1.1 CON'T

Figure 1.1.1 Sable Offshore Energy Project



SOEP Development Plan Section 1.2

The platforms at Venture, North Triumph, Glenelg and Alma will be unmanned wellhead and production platforms. Each will be equipped with small emergency quarters and a helideck. Hydrocarbons produced at these platforms will be transported through a system of subsea flowlines to the Thebaud platform. The South Venture field will be developed using a minimal wellhead support structure and tied-back to the nearby Venture platform with a subsea flowline. It is also possible that South Venture could be developed using extended reach wells drilled from the Venture platform. The decision on the preferred development option will be made prior to the time South Venture production is required to sustain Project production rates.

Unprocessed gas from all the fields will be separated and dehydrated at the Thebaud platform. The separated gas and hydrocarbon liquids and condensates will then be recombined and transported through a subsea production gathering pipeline to landfall in the Country Harbour area of Guysborough County, Nova Scotia and then to a gas processing plant to be constructed nearby. There, the gas will be conditioned by removing natural gas liquids, condensates and remaining water. The sales gas will then be available to markets in eastern Canada and the northeastern United States. Natural gas liquids and condensate will be transported by an onshore pipeline to the Point Tupper area for further processing before being sold.

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Sable Offshore Energy Project Canada-Nova Scotia Benefits Plan is approved subject to the conditions specified in this Decision Report:

2.0 INTRODUCTION AND GENERAL CONSIDERATIONS

2.0

As explained in Section 1, the *Accord Implementation 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 Implementation 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 SOEP Canada-Nova Scotia Benefits Plan was submitted to the Board on June 14, 1996 by Mobil Oil Canada Properties, Lead Operator, Shell Canada Limited, Joint Operator, Imperial Oil Resources Limited, Nova Scotia Resources Limited (“Proponents”) and Petro-Canada. Petro-Canada no longer has an interest in the Project.

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, research and development in the Province and employment in the work program for which the plan is being submitted.

In accordance with the legislation, and consistent with the Canadian Charter of Rights and Freedoms, individuals resident in the Province are to be given first consideration for training and employment. Services provided 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.

The Board has established *Industrial Benefits and Employment Plan Guidelines - Nova Scotia Offshore Area* to assist in the preparation of Canada-Nova Scotia Benefits Plans. These guidelines have formed part of the criteria for the review of the SOEP Canada-Nova Scotia Benefits Plan. In preparing this Decision Report, the Board has also given careful consideration to the recommendations of the Sable Offshore Energy Project Joint Public Review Panel, and the Commissioner appointed by the Board.

2.1.0 Board Consultations with Governments

2.1

The *Accord Implementation Acts* require that as part of its review process, the Board consult with the federal and provincial ministers of Natural Resources 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, Natural Resources Canada, the Nova Scotia Offshore Energy Office 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.

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

2.1.1 2.1.1 Legislative Philosophy

The Commissioner and the Joint Public Review Panel both noted in their reports that many intervenors in the public review appeared to misunderstand the requirements of the *Accord Implementation Acts* and the Board's approach to Canada-Nova Scotia Benefits. Both heard arguments that suggested that the Proponents' projections of Nova Scotian and Canadian content specified in the Canada-Nova Scotia Benefits Plan should be considered "minimum employment and procurement targets". Others argued that Nova Scotians and Canadians should be guaranteed jobs or that quotas should be established.

It is important that those with an interest in this matter understand, as the Panel and the Commissioner did, that the *Accord Implementation Acts* do not require targets or quotas for Nova Scotian or Canadian participation in offshore projects. As the Panel stated, the legislation "is not based on an interventionist philosophy of mandatory requirements or rigid commitments". Rather, the *Accord Implementation Acts* put in place requirements that the Proponents give Nova Scotians and other Canadians a full and fair opportunity to participate on a competitive basis as well as providing first consideration to Nova Scotians. These legislative requirements are discussed in more detail in this Decision Report.

2.1.2 2.1.2 Fundamental Principles

The Board, in consultation with the Canada-Nova Scotia Benefits Review Committee, has considered a number of regulatory alternatives for ensuring that the Canada-Nova Scotia benefits provisions of the *Accord Implementation Acts* are met. The Board concluded that the most effective way to enhance Canada-Nova Scotia benefits is to secure the Proponents' commitment to certain basic principles and then to closely monitor performance to ensure that the principles are applied in practice.

In the SOEP Canada-Nova Scotia Benefits Plan, the Proponents emphasized their commitment to the following Canada-Nova Scotia Benefits objectives and principles:

"Consistent with the Benefits provisions of the Accord Acts, the Proponents of the Sable Offshore Energy Project will strive to maximize the natural flow of opportunities for Canada-Nova Scotia Benefits from the Project within the context of an internationally competitive environment. The Project Proponents intend to work together with Project stakeholders (the public, suppliers of goods and services, the workforce, regulators and governments) to promote Benefits opportunities in Nova Scotia and Canada, while maintaining the economic viability of the Project in the international marketplace through access to "best value" in the acquisition of goods and services. Best value can only be achieved in a competitive international marketplace. Within this framework, the Proponents intend to:

- a) "promote the employment of Canadians, and in particular, members of the labour force in Nova Scotia;
- b) provide manufacturers, consultants, contractors and service companies in Nova Scotia and other parts of Canada will a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in the project;
- c) establish an office in Nova Scotia where appropriate levels of decision-making are to take place;

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

- d) provide, consistent with the Canadian Charter of Rights and Freedoms, individuals resident in Nova Scotia with first consideration for training and employment with respect to the Project;
- e) carry out a program to promote, as necessary, education, training, research and development with respect to the Project, in Nova Scotia; and
- f) provide first consideration to services provided and goods manufactured in Nova Scotia where those services and goods are competitive in terms of fair market price, quality and delivery.”

2.1.2 CON’T

The Proponents also espoused a Project Management Philosophy to which they are committed and which will guide them and their Alliance Partners during the construction and operation of the Project:

“The Sable Offshore Energy Project management philosophy is based on the belief that a successful outcome can best be achieved by harnessing the skills and experience of the employees of the Proponents and participating contractors to create a close team with common goals. The Proponents and the selected engineering contractor(s), an alliance, will combine their expertise to capitalize on engineering innovations and procurement efficiencies. Alliance participants will create opportunities for traditional contractors to compete within this context of an international marketplace. The objective is to establish a management structure and Project execution plan where “risk and reward” is shared between the Proponents and the contractor(s), and the common goals are a quality product and efficiency.

“The success of the Project depends upon the shared commitment of all participants. The Proponents’ commitment to continuous improvement, high standards of compliance with regulatory requirements and to the Canada-Nova Scotia Benefits Plan will be shared by the alliance participant(s) and other contractors. Technical excellence in design, construction and drilling, and compliance with regulatory and appropriate industry codes are to be assured.”

The Board believes that the Proponents’ principles and management philosophy demonstrate that they subscribe to the spirit and intent of the *Accord Implementation Acts*. The Proponents appear to regard Canada-Nova Scotia Benefits as an important element of their overall strategy for executing the Project. The ultimate test of the Proponents’ commitment to their stated principles and philosophy lies in the extent to which they are applied in practice by the Proponents, their Alliance Partners and subcontractors. Through this Decision Report, including the conditions of approval, ongoing consultations, and monitoring, the Board will ensure that the Proponents’ commitment remains intact.

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2.1.3

2.1.3 SOEP Canada-Nova Scotia Benefits Plan Overview

The SOEP Canada-Nova Scotia Benefits Plan sets out processes and procedures by which the Proponents will strive to maximize the natural flow of opportunities for Canada-Nova Scotia Benefits. The Proponents asserted that no firm assessments can be made, at this time, regarding the response of the local community to benefits opportunities that may be generated by the Project. Definitive information on employment and procurement opportunities will become available as the project progresses.

The Proponents' focused the processes and procedures on:

- 1) providing suppliers of goods and services in Nova Scotia and other parts of Canada with a full and fair opportunity to participate in the supply and services for the project on an internationally competitive basis;
- 2) ensuring that first consideration is given to individuals resident in Nova Scotia for Project training and employment, consistent with the Canadian Charter of Rights and Freedoms, and to services provided and goods manufactured in Nova Scotia where those services and goods are competitive in terms of fair market price, quality and delivery; and
- 3) ensuring the long term economic viability and international competitiveness of the Project for all stakeholders, by obtaining "best value" in the design and implementation of the Project. Best value represents 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.

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

2.2 STATUTORY REQUIREMENTS

2.2

2.2.1 Full and Fair Opportunity to Participate

2.2.1

The core requirement for a Canada-Nova Scotia benefits plan is set out in subsection 45(1) of the *Accord Implementation Acts* which state that:

“...’a Canada-Nova Scotia benefits plan’ means a plan for the employment of Canadians and, in particular, members of the labour force of the Province and, subject to paragraph (3)(d), 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 Canada-Nova Scotia Benefits Plan.”

Paragraph (3)(d) states that:

“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.”

In the SOEP Canada-Nova Scotia Benefits Plan, the Proponents state that they will honor the full and fair opportunity to participate requirements set out in the *Accord Implementation Acts*. To this end, the Proponents have created a procurement process by which the requirements for goods and services, will be communicated to all stakeholders. This process includes:

- a) becoming more familiar with Nova Scotia and Canadian supply capabilities;
- b) communicating with Nova Scotia and Canadian suppliers and manufacturers;
- c) holding “Supplier Meetings” and pre-bid meetings, where practical and appropriate, to inform prospective suppliers of the timing and specifications for goods and services required in upcoming segments of the Project;
- d) making available to potential suppliers the bidding procedures, names and locations of key procurement personnel (including that of contractors), where appropriate;
- e) requesting, as part of the bid solicitation process, Nova Scotia and Canada Benefits information, in sufficient detail to adequately assess the benefits to be derived from individual bids;
- f) where economically justified, removing barriers in the bidding process that may tend to hinder the participation of Nova Scotia and other Canadian bidders;
- g) communicating with unsuccessful bidders, when requested and where appropriate, to help them bid more competitively in the future;
- h) endeavoring to develop long term local support for the Project by transferring technology and knowledge into Nova Scotia and Canada, and to share technology on normal commercial terms;

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2.2.1 CON'T

- i) making available at the earliest opportunity information packages which list requirements for goods and services, including general specifications and timing for services, equipment and materials required;
- j) utilizing electronic bulletin boards, with access by potential suppliers, to regularly post upcoming requirements for goods and services and issue bid invitations;
- k) providing a system to allow prospective contractors to register available goods and services to the Project;
- l) communicating with community advisory committees, town councils, appropriate government agencies, business organizations, trade associations and others that form a support network for the vendor community; and
- m) responding to requests from the communities, business organizations, government and public and for speakers and information.”

The Board accepts the Proponents’ commitment to full and fair opportunity to participate and believes that the specific measures set out above, if carried out in a consistent and meaningful way, will promote Nova Scotian and Canadian participation in the Project. However, as discussed below, the Board will monitor the implementation of these measures through the bidding process set out in Condition 10 and through the Benefits Review Committee process which has been established.

CONDITION 1: PROCUREMENT PROCESS

The Proponents shall adhere to the procurement process described in Section 6.1 of the SOEP Canada-Nova Scotia Benefits Plan.

2.2.2

2.2.2 Establishment of Local Office

Paragraph 45(3)(a) of the *Accord Implementation 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 SOEP Canada-Nova Scotia Benefits Plan confirms that the Proponents will establish an office in Nova Scotia “... to aid in the implementation of the Project and to make decisions in that regard. This office would be staffed by qualified personnel both from the Proponents’ organization and independent contractors.”

The Proponents’ plan for offices in Nova Scotia came under scrutiny during the public review process. Based upon the evidence presented, the Commissioner concluded that the Proponents’ plans would satisfy the legislative requirements. However, he also stressed the importance of having management level positions with “strong mandates to define procurement arrangements” in the local office. The Board agrees with the Commissioner that this is crucial to providing Nova Scotians and Canadians with a full and fair opportunity to participate in the Project and other activities that the Proponents may undertake in the future.

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The Commissioner also recognized that training and education and research and development should be managed locally. He made the following recommendation:

2.2.2 CON'T

“The Commissioner recommends that, during both the development and production phases of SOEP, the Proponents include among the management staff in the Halifax office, personnel with the authority and responsibility to develop and implement a training and education plan and a research and development plan which will be effective in preparing Nova Scotians and other Canadians to participate fully in the benefits of offshore gas developments.”

The Commissioner also noted that the potential benefits to the community from project activities would be greatest in the Guysborough area and that a regional office there would “represent an important impetus for enhancing benefits in Guysborough County”.

The Board agrees with the Commissioner’s finding that the Proponents’ plan addresses the requirements in the *Accord Implementation Acts*, however, specific details are lacking which must be presented and accepted by the CNSOPB. The Board also accepts the Commissioner’s recommendation.

CONDITION 2: LOCAL OFFICE

Within 60 days of the implementation of this Decision Report, or such further period as the Board may allow, the Proponents shall locate within a Nova Scotia office, personnel with decision making authority, satisfactory to the Board, including personnel in such areas as overall project management, operations, reservoir management, Canada-Nova Scotia benefits, training and education, research and development, financial responsibility, health, safety and environment.

In addition, appropriate personnel from the engineering design and procurement groups shall be located in Nova Scotia within 90 days of the implementation of this Decision Report.

The Board expects that the following personnel, or those whose positions perform the equivalent functions, will be present in the Nova Scotia Office:

Venture Manager	Research and Development
Manager	
Co-Venture Manager	Business Manager
Project Advisor	Construction Manager
Public Affairs Manager	Project Services Manager
Drilling & Completions Manager	Lead Project Facilities Engineer
Project Manager	Deputy Project Manager
Sub-Surface Manager	Technical Support Manager
Commercial Manager	HS&E Manager
Risk & Performance Manager	Engineering Manager
Operations Manager	Training and Education Manager
Regulatory Manager	Human Resources Manager

The Board encourages the Proponents to maintain offices in communities where they have significant operations. Such offices provide “grass roots” level opportunities for the Proponents to implement their benefits principles and to communicate with the local community.

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2.2.3

2.2.3 First Consideration for Training and Employment

An important component of a Canada-Nova Scotia Benefits Plan is set out in paragraph 45(3)(b) of the *Accord Implementation Acts*:

“...consistent 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.”

As one of their Principles the Proponents indicate that they will:

“...provide, consistent with the Canadian Charter of Rights and Freedoms, individuals resident in Nova Scotia with first consideration for training and employment with respect to the Project.”

In the SOEP Canada-Nova Scotia Benefits Plan, the Proponents provide details of their Employment Process and the anticipated direct and indirect employment opportunities from the Project. An estimated 156 long term direct positions will be created. Indirect opportunities are expected to generate most of the employment and will be provided by local contractors and labour pools with hiring practices consistent with Canada-Nova Scotia Benefits principles.

The Proponents have developed a communication process to achieve first consideration for training and employment pursuant to the principles of the Canada-Nova Scotia Benefits Plan and the *Accord Implementation Acts*. This process, which the Proponents will communicate widely and advertise through the local media, includes:

- a) “making available at the earliest opportunity information packages which list employment opportunities and skill requirements;
- b) holding and participating in “Employment Forums”, where practical and appropriate, to inform prospective workers of job opportunities and hiring schedules;
- c) utilizing electronic bulletin boards and labour exchanges, with access to potential workers, to post available job positions;
- d) communicating on employment opportunities and skills requirements with community advisory committees, town councils, appropriate government agencies, business organizations and others that form the support network to the work force; and
- e) responding to requests for information from communities, business organizations, government and the public.”

The Board considers first consideration for training and employment to be a crucial element of a Canada-Nova Scotia Benefits Plan. It means that the Proponents must fairly evaluate all aspects of training and development related to the Project with the understanding that Nova Scotia residents will be given first consideration. No details are provided by the Proponents in the Canada-Nova Scotia Benefits Plan concerning the identification of potential training requirements, training resources to be made available in Nova Scotia, specific initiatives on proposed training programs, technological transfers or succession plans.

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CONDITION 3: EMPLOYMENT AND TRAINING PLAN

2.2.3 CON'T

Within 90 days of the implementation of this Decision Report, the Proponents shall submit an Employment and Training Plan (E&T Plan) to the Board for approval. The E&T Plan shall include:

- *an outline of the hiring and training needs of the Proponents, Alliance Partners and the major contractors with a breakdown of the skills needed, anticipated skill shortages in the Nova Scotian and Canadian labour forces, project specific training requirements, and the anticipated expenditures that will be made directly by the Proponents in implementing the E&T Plan as a percentage of forecasted and actual project expenditures,*
- *a time frame for employment opportunities for each phase of project development and operations, to enable members of the work force to prepare themselves for such opportunities, and*
- *the Proponents' undertakings in the SOEP Canada-Nova Scotia Benefits Plan Section 7.1 regarding the holding of Employment Forums and utilizing electronic bulletin boards and labour exchanges to post available job positions.*

In addition, the Proponents shall report to the Board quarterly on Employment and Training activities for the reporting period and compare this to the E&T Plan. The quarterly report shall include the number of new employees hired during the year and their place of residence at the time of hiring (i.e., Nova Scotia, other Canadian or foreign).

The Proponents, Alliance Partners and major contractors shall notify the Board at least three months prior to bringing foreign workers into Canada. The notice must be detailed and must include job titles, descriptions of responsibilities and the duration of proposed employment in Canada.

2.2.4 Education and Training and Research and Development

2.2.4

With respect to the education and training and research and development Paragraph 45(3)(c) of the *Accord Implementation 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.”

As one of their guiding Principles, the Proponents indicate that they shall:

“...carry out a program to promote, as necessary, education, training, research and development with respect to the Project, in Nova Scotia.”

In the SOEP Canada-Nova Scotia Benefits Plan, the Proponents provide a broad overview of their historic consultations “...with industry associations, educational institutions and government agencies to identify employment opportunities and develop training programs for offshore projects in Canada.” The Proponents indicate that they will “...assess the need for training in a timely manner as the Project proceeds and requirements become known.” To that end, they will “...consult with the Regulator, educational institutions and other stakeholders to enable them to develop training programs. A desired objective would be the continued development of a qualified in-demand workforce.”

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2.2.4 CON'T

The Commissioner's report addressed several concerns related to training and education. With respect to the Development Phase, timing is a concern. As is the case with procurement and employment, the Alliance contracting approach gives rise to questions regarding the Proponents' ability to ensure that Alliance contractors honor training and education commitments. In addition, the Commissioner noted that the Proponents' proposed allocation of \$3 to \$4 million for a simulator from its funds earmarked for training could "leave as little as \$1 million available for other forms of training for a \$4 billion Project."

The Joint Public Review Panel focused on a "forward looking approach to training". As with research and development, training was identified as crucial to developing local capabilities for future projects. The Panel made the following recommendation:

"The Panel recommends that the CNSOPB place a condition on SOEP, requiring the development and implementation of a specific training plan for gas development and production workers."

The Board shares these concerns. Condition No. 3 of this Decision Report requires that the Proponents submit an Employment and Training Plan to the Board for approval within 90 days of the implementation of this Decision Report. No extension of this deadline will be considered. It should be noted that the E&T Plan shall cover the training programs not only of the Proponents, but also their Alliance Partners and major subcontractors.

In preparing their E&T Plan, the Proponents should note that the Board concurs with the Commissioner and does not consider the Proponents' allocation of funds for training to be acceptable. The Proponents should therefore revisit their training strategy with a view to increasing overall expenditures significantly. The Proponents should also be aware that the Board intends to closely monitor situations where Nova Scotians and other Canadians are not employed by the Proponents or their contractors because they lack adequate training. The Proponents shall ensure that every reasonable effort is made to supply such training locally or elsewhere.

In respect of Research and Development, the Proponents noted that they "...have conducted numerous research and development studies of offshore projects in this country." They indicate that they plan to continue their "...support of local research institutions and will promote ongoing research and development of the marine environment in Canada. Furthermore they will support the encouragement of joint ventures initiatives and the development of licensing agreements between Nova Scotian, other Canadian and foreign firms.

The Proponents believe that the Project's needs can be accommodated with existing technologies and products. Research and development is expected to be limited to extending existing knowledge and technologies which will likely be directed towards "...improving the effectiveness and acceptability of the existing technology rather than high risk 'concept' or 'prototype' studies."

The Commissioner and the Joint Public Review Panel both stressed the importance of research and development in promoting long term benefits from this Project and possible future projects that were spoken of during the public review. The Commissioner noted that the Proponents have an opportunity to be proactive and to take the lead. The Panel and the Commissioner identified the Benefits Advisory Committee established by SOEP as having a role to play in this regard. Obviously, the governments and other stakeholders must be involved from the outset. The Board agrees that research and development programs are a key element in optimizing long term and project specific benefits. Therefore, the Board encourages the Proponents to work with governments and others, utilizing its Benefits Advisory Committee, to facilitate research and development initiatives and programs. The Board expects the level of research and development

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expenditures, funded by the Proponents in Nova Scotia, to be proportionate and relative to the expenditures being made in the Sable Offshore Energy Project and to the Proponents' (and that of their parent companies) collective worldwide research and development budgets. For its part, the Board requires the following:

2.2.4 CON'T

CONDITION 4: RESEARCH AND DEVELOPMENT PLAN

Within 90 days of the implementation of this Decision Report, the Proponents shall submit a Research and Development Plan (R&D Plan) to the Board for approval. The R&D Plan shall outline a revolving three to five year plan for offshore petroleum related research and development initiatives to be undertaken in Nova Scotia, together with a breakdown of the expected expenditures that will be made in implementing the R&D Plan. The R&D Plan shall provide for public calls for proposals for research and development initiatives associated with SOEP activities.

The Proponents shall report to the Board, on a quarterly basis, with respect to R&D activities and shall compare these activities to the approved R&D Plan.

2.2.5 First Consideration for Goods and Services

2.2.5

As set forth in the *Accord Implementation Acts*, a Canada-Nova Scotia Benefits Plan shall contain provisions for first consideration for goods and services which are intended to ensure that:

“...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.”

As one of their Canada-Nova Scotia Benefits Plan Principles, the Proponents state that they will:

“...provide first consideration to services provided and to goods manufactured in Nova Scotia where those services and goods are competitive in terms of fair market price, quality and delivery.”

CONDITION 5: FIRST CONSIDERATION FOR GOODS AND SERVICES

Within 30 days of the implementation of this Decision Report, or such further period as the Board may allow, the Proponents shall provide a detailed plan, satisfactory to the Board, setting out how the Proponents, their Alliance Partners and contractors will give “first consideration” to Nova Scotian goods and services, including specific examples showing how “first consideration” is considered and assessed by the Proponents in their evaluation of bids for goods and services required by the Project.

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2.2.6

2.2.6 Disadvantaged Individuals and Groups

The *Accord Implementation Acts* state that:

“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 Canada-Nova Scotia Benefits Plan.”

In addressing opportunities for the disadvantaged in the SOEP Canada-Nova Scotia Benefits Plan, the Proponents indicate that they:

“...will extend full and fair opportunity for all stakeholders to share in the economic benefits flowing from the Project. The Project team will ensure that, with due regard to safety considerations, disadvantaged individuals or groups have access to training and employment opportunities for the Project. The team will also ensure that such individuals or groups are appropriately represented, both on the Project Team and among its suppliers and contractors.”

The Proponents will not intentionally discriminate against, or place any barriers in the way of, disadvantaged individuals or groups.”

While the Board does not question the Proponents’ commitment to providing opportunities for the disadvantaged, the statements lack specificity regarding the identification of those areas of the Project where such efforts will be made, the targeted groups and individuals, and the process as to how disadvantaged individuals or groups will have access to training and employment opportunities for the Project. The Board believes that Project planning should now be sufficiently advanced to allow the Proponents to supply this information.

Furthermore, no mention is made regarding the participation of such individuals and groups in the supply of goods and services to the Project. Again, specifics are lacking in identifying targeted groups and individuals, the defining of “appropriate representation”, and details on how the Proponents’ will ensure these obligations will be integrated and addressed by suppliers and contractors to the Project.

CONDITION 6: DISADVANTAGED INDIVIDUALS OR GROUPS

Within 60 days of the implementation of this Decision Report, the Proponents shall provide a report, satisfactory to the Board, that describes specific initiatives planned for training and employment opportunities to be made available to disadvantaged individuals or groups.

2.2.7

2.2.7 Technology Transfer and Succession Plans

One of the fundamental features of the SOEP Canada-Nova Scotia Benefits Plan is the Proponents’ commitment to “maximizing the natural flow of opportunities for Canada-Nova Scotia benefits within the context of an internationally competitive environment.”

While recognizing the need for international competitiveness, the Board is concerned that Canadian and local suppliers, although technically and commercially competitive, may be at a disadvantage due to their lack of experience. The Board is also aware of the additional risk

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built into “first time” contract awards, particularly when associated with technically challenging or delivery sensitive matters. The Board believes that in these circumstances enhanced levels of Canada-Nova Scotian content can best be achieved through the use of strategically targeted technology transfers. Technology is most effectively transferred when technically qualified individuals and firms are integrated into a team that involves them in technology applications that enhance their expertise.

2.2.7 CON’T

CONDITION 7: TECHNOLOGY TRANSFER

Within 90 days of the implementation of this Decision Report, the Proponents shall provide a report, satisfactory to the Board, setting out a program of planned initiatives (including succession planning) aimed at promoting the effective transfer of technologies from the Proponents, their Alliance Partners and major contractors to Nova Scotian and other Canadian individuals and companies. The Proponents shall support technology transfer by encouraging and facilitating the formation of joint ventures and the development of licensing agreements between foreign, Nova Scotian and other Canadian firms. The Proponents shall also submit a report to the Board annually describing these initiatives and their results.

2.3 POLICIES AND PROCEDURES

2.3

2.3.1 Objectives and Principles

2.3.1

The Proponents have established a set of “Project Principles” which address four major areas:

1. Business Principles;
2. Responsible Development Principles;
3. Compensation and Benefits; and
4. Project Ethics.

Details on the “Guiding Principles” and “Guidelines” for each of these four areas are provided in the SOEP Canada-Nova Scotia Benefits Plan. The Board believes that these “Project Principles” reflect the Proponents’ commitment to sound and ethical business practices. However the Board notes that the “best value” concept does not appear to 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.

CONDITION 8: BID EVALUATION

The Proponents shall consider Canada-Nova Scotia content when evaluating bids. Where bids are otherwise equal, the bid containing the highest level of Canada-Nova Scotia content shall be selected. If Nova Scotian and other Canadian suppliers are found to be uncompetitive or should they fail to qualify initially, the Proponents shall advise the unsuccessful bidder and the Board of the deficiencies identified in their bids so that such shortcomings may be addressed for future bidding opportunities.

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2.3.2

2.3.2 Project Management Philosophy

As referenced above, the Proponents' management philosophy for the Project is stated as follows:

“The Sable Offshore Energy Project management philosophy is based on the belief that a successful outcome can best be achieved by harnessing the skills and experience of the employees of the Proponents and participating contractors to create a close team with common goals. The Proponents and the selected engineering contractor(s), an alliance, will combine their expertise to capitalize on engineering innovations and procurement efficiencies. Alliance participants will create opportunities for traditional contractors to compete within the context of an international marketplace. The objective is to establish a management structure and Project execution plan where “risk and reward” is shared between the Proponents and contractor(s), and the common goals are a quality product and efficiency.

“The success of the Project depends upon the shared commitment of all participants. The Proponents' commitment to continuous improvement, high standards of compliance with regulatory requirements and to the SOEP Canada-Nova Scotia Benefits Plan will be shared by the alliance participant(s) and other contractors. Technical excellence in design construction and drilling, and compliance with regulatory and appropriate industry codes are to be assured.”

The Board believes that the Alliance Partnering approach presents significant challenges as well as opportunities for ensuring full and fair opportunities for Canadian firms and first consideration for Nova Scotian companies. Experience gained from the SOEP will enhance the capabilities of Nova Scotian and other Canadian firms to compete on future projects in Canada and elsewhere. Typically, however, Alliance Partners are large multinationals with world wide experience and financial resources sufficient to accept a share of the risk and defer their return on investment in the Project.

While the strategy of alliance partnering makes it difficult for suppliers located in a new development basin to participate at this level in a significant way, it provides an opportunity for all the partners to focus their combined knowledge and expertise on maximizing the use of local capabilities on a competitive basis. The Proponents have recognized this in requesting imaginative and innovative business arrangements with regard to benefits from their suppliers, contractors, and Alliance Partners.

The Proponents have acknowledged that a key factor in the development of the project is the presence of a strong, viable domestic supply and service sector capable of meeting the long term requirements of offshore exploration and production. The Board believes that forging alliances between local and non-local suppliers would expedite the development of such domestic capability.

CONDITION 9: LONG TERM OPPORTUNITIES

The Proponents, the Alliance Partners and their major contractors shall examine ways of providing local suppliers, contractors, and personnel, with long term contracts and employment, the scope of which includes not only the Sable Offshore Energy Project, but also other Canadian or international projects. Such initiatives shall become part of the criteria in evaluating bids. Canadian and Nova Scotian content reported to the Board for such contracts and employment will be accepted for the full term in the case of contracts, and for a maximum of five years, in the case of employment not related to the Project.

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2.4 PROCUREMENT REQUIREMENTS

2.4

As discussed in Section 2.2.1 of this Decision Report, “Full and Fair Opportunity to Participate”, the Proponents have created a “Procurement Process”, to secure goods and services for the Project. The Proponents also indicate that this process will be communicated to all stakeholders in a “timely fashion”. Details are presented on the three components of this process (Contracting and Purchasing Strategy, Bidding Procedures and Supplier Development), for both the development and production phases of the Project.

2.4.1 Contracting and Purchasing Strategy

2.4.1

The Proponents’ Contracting and Purchasing Strategy is based on, and will be driven by, the concept of “best value”. “Best value” is defined by the Proponents as being:

“...a blend of total cost, quality, technical suitability, delivery, and continuity of supply and service. The Project would do business with suppliers who are reputable, in good financial standing and who practice quality management and continuous improvement as a way to meet or exceed their customers’ needs.”

During the Project’s construction phase, the proposed strategy for the Front End Engineering Design (FEED) stage is to enter into a contract with an experienced managing contractor, whose services may be continued into the first few years of the Project’s production phase. For those successful bidders of construction and installation activities, they would be invited to enter into an “alliance” with the Proponents in order to improve the Project engineering, execution plan and establish a “target cost” which will become one of the main factors in determining the Proponents’ decision to proceed with the Project. Other contractors for such areas as supply, fabrication, installation and drilling during the Project’s development phase will be offered for tender on the basis of “free, open and international competition.” (SOEP Canada-Nova Scotia Benefits Plan, Section 6.2)

The Board’s comments regarding best value and Canada-Nova Scotia benefits in Section 2.3.1 of this Decision Report apply equally to the Proponents’ contracting and purchasing strategy.

2.4.2 Bidding Procedures

2.4.2

The Proponents have outlined a Bidding Process whereby they will “maintain and improve the fairness of the process” for acquiring goods and services. Their needs will be communicated to suppliers in a “timely fashion”. The traditional method of bidding may be supplemented by an Electronic Bid System as a pilot project for goods and services bids over \$50,000 in value. Bid invitations will be issued to potential suppliers based upon “internal vendor data files, government-provided vendor listings, vendor listings provided by industry associations and organizations and other industry data sources”, and will be awarded on the basis of best value.

Project opportunities will be made available to vendors on the electronic bulletin board (via third party access at a nominal fee). The opportunity to register their specific goods and services and receive additional data will also be available through this medium. The Proponents expect that “the Vendor community itself would be relied upon to help screen their own bids to the specifications requested.”

The Proponents stress that all bids will be evaluated for best value. From the short list, bidders will be requested to provide additional information for financial clearance and Canada-Nova Scotia

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2.4.2 CON'T

Benefits analyses. Following this review a qualified bidders list will be established and invitations to bid extended. For those contracts over \$250,000 and for any contracts deemed to be of special interest by the Board, advance notice of the prequalification process, final list and proposed contract award shall be provided to the Board.

CONDITION 10: BIDDING PROCESS

For all proposed contracts, subcontracts and purchase orders, estimated by the Proponents to be in excess of \$250,000, or such other limit as the Board may determine, and for any other matters identified to be of interest to the Board, the Proponents shall provide to the Board for approval, lists of all contractors that wish to prequalify, the proposed bidders lists and notices of the proposed final contract awards. The Proponents must submit sufficient information with the notifications to enable the Board to assess the subject matter and to be satisfied that the statutory requirements for “full and fair opportunity” and “first consideration” have been addressed by the Proponents.

The Board will respond to the prequalification notices and the final bidders lists within three working days and to the notices of proposed contract awards within one working day unless the Proponents are advised by the Board that it requires additional time for its review.

2.4.3

2.4.3 Supplier Development

The Proponents have identified the presence of a strong, viable domestic supply and service sector as a key factor in the development of the Sable Offshore Energy Project. The Proponents have also proposed that supplier development should be a common goal of potential suppliers, governments and themselves in order to meet the long-term requirements of offshore exploration and production.

The Proponents believe that the development of this sector will be facilitated through industry, supplier and government information sessions. The Proponents have committed to communicate the importance of international competitiveness and their purchasing procedures through the Canada-Nova Scotia Benefits Advisory Committee. Discussions with Nova Scotian and other Canadian supplier groups will also be held. Throughout this process, the Proponents will gather information on individual contractor capabilities. As the Project progresses and requirements become better defined the Proponents have indicated that they will offer, where appropriate, advice to unsuccessful bidders to improve their chances in future bids.

The Proponents also suggest that it may be beneficial for local contractors and suppliers to consider alignment with other firms and where appropriate the Proponents would encourage the forging of such alliances.

The Board agrees with the Proponents that the development of a domestic supply and service sector will be beneficial to all parties, including the Proponents and other offshore operators. This sector will develop more quickly if the Proponents take a proactive approach. It is noted that the Proponents forecast much higher Canada-Nova Scotia content in Tier 2 of the Project. Supplier development efforts should be directed toward significantly enhancing the ability of local suppliers to realize this opportunity.

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The Proponents are referred to Condition 3 (Employment and Training Plan), Condition 4 (Research and Development Plan) and Condition 7 (Technology Transfer). All of these measures will enhance supplier development. The Proponents are also referred to Recommendation 23 of the Joint Public Review Panel. The Board agrees with the Panel that stakeholders, including the Proponents, should work together to examine ways and means to enhance local skills and business opportunities for the future. Through their experience with this Project and others, the Proponents are in a unique position to assist government and other stakeholders in this regard.

2.4.3 CON'T

CONDITION 11: SUPPLIER AND INFRASTRUCTURE ASSESSMENT

During the development phase of the Project and during the first three years of the production phase, the Proponents shall submit, on an annual basis, a Canada-Nova Scotia Supplier and Infrastructure Assessment. In it the Proponents shall provide the Board with their assessment of the development of the local supply and services sector and local infrastructure. Based upon their assessment, the Proponents shall identify areas where there are inadequacies and where opportunities may exist for greater local participation.

2.4.4 Service and Supply Bases

2.4.4

Recommendation 26 of the Joint Public Review Panel recommends that the Province of Nova Scotia take the lead to ensure that the selection process for service and supply bases is reviewed by the Benefits Advisory Committee. It also recommends that the Benefits Advisory Committee issue a public report on the rationale for all its recommendations.

The Board notes that the subject of shore bases and their selection, being ancillary to and in support of offshore activities, is a matter that falls within the normal benefits review process of the Board. The Benefits Advisory Committee is a group voluntarily organized by the Proponents to facilitate exchanges of information regarding potential bidding opportunities and supplier capabilities. With respect to the supply and services bases, the Benefits Advisory Committee can be helpful in identifying potential suppliers and in assessing their respective capabilities. The normal regulatory review process established by the Board would then apply. As part of this process, consultations are undertaken with appropriate representatives from the federal and provincial governments (Canada-Nova Scotia Benefits Review Committee).

The Board agrees with the Panel that the selection of supply and services bases is important to Nova Scotia communities and that bidders should be advised, before contract awards, of the criteria to be used in evaluating bids. Subsequent to contract awards, the Proponents shall debrief unsuccessful bidders regarding the strengths and weaknesses of their bids. The Proponents shall not be required to disclose confidential and sensitive commercial information.

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2.5 LABOUR REQUIREMENTS

2.5.1 Development Phase

The Proponents have provided estimates that the development phase of the SOEP Project will require approximately 5,570 person-years of direct employment (+25 percent). One person-year is the equivalent of one person working a full year, or 2080 hours.

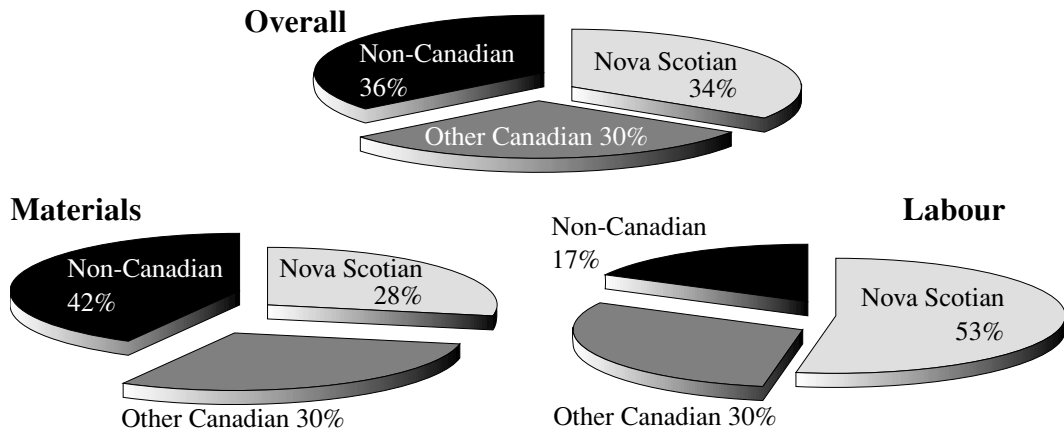
Person-years are not jobs. To translate person-years into jobs, the number of person-years is multiplied by a factor in the range of 1.10 to 1.35 based on the types of activities and the average duration of jobs required to carry them out.

Estimated Development Phase Employment

Project Activity	Projected Peak Employment
Development drilling	320 persons, when both rigs are operating
Support base for Development Drilling	150 persons, including supply boat crews
Offshore Production Platform	500 persons, for 3 to 4 months
Temporary Production site for Platform Jackets	180 persons
Construction of Subsea Pipelines	220 persons
Temporary Pipeline Supply Base, if necessary	60 persons
Construction of Slugcatcher, Gas Plant and NGL Facilities	500 persons
Construction of Natural Gas Liquids Pipeline	40 persons

The Proponents summarize Canada-Nova Scotia content for the Development Phase as follows:

“Nova Scotia content is projected to be \$547 million or 34 percent of the \$1.6 billion Development Phase expenditure for materials and labour. Nova Scotia businesses are estimated to supply \$341 million in materials, and Nova Scotian labour is estimated to supply approximately 2,900 person-years of labour (or roughly 3,900 jobs) worth approximately \$206 million in wages and salaries. Canadian (including Nova Scotian) content is estimated at \$1,020 million or 64 percent of the total, composed of \$696 million in materials purchases and \$324 million in wages and salaries (for approximately 4,605 person-years of labour). About 36 percent, or \$580 million is estimated to be spent on imported materials and labour. These content estimates are shown below.



(SOEP Canada-Nova Scotia Benefits Plan, Sections 3.2 and 3.3)

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2.5.2 Production Phase

2.5.2

Proponents estimate that, during the Production Phase, 156 full time and 84 annual contract person-years would be required (as with the Development Phase employment, the number of persons employed would be greater than the number of “person-years”). Operations and maintenance personnel will be required at the slugcatcher and gas plant. Platform operations, maintenance and repair will be the focus of offshore activity. Personnel would be needed for well maintenance and workovers, and pipeline maintenance and inspection. Twenty-five to thirty operations and maintenance, and six to ten catering and housekeeping staff would be required at Thebaud at all times. The offshore facilities also require personnel for helicopter flights between platforms and standby workboat service at Thebaud.

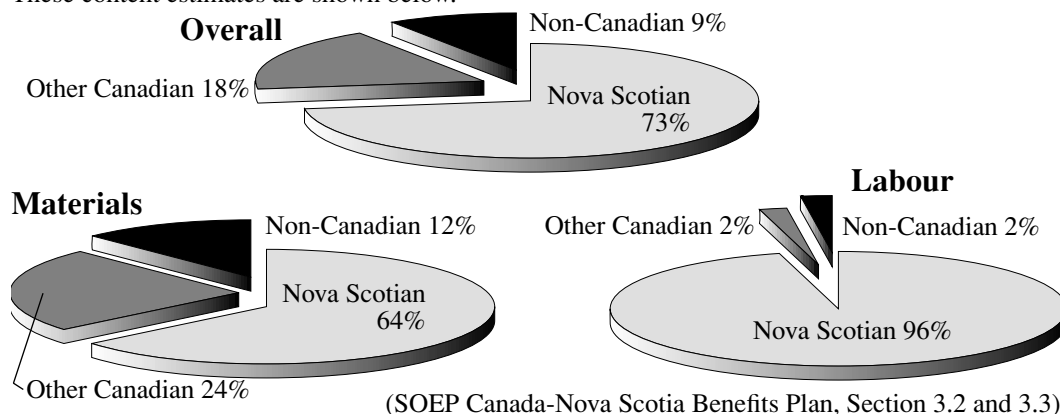
Estimated Production Phase Employment

	Full-Time Jobs	Contract Jobs / Person-Years	Total Jobs
Platforms	60	15	75
Workover Crews	16	10	17
Onshore Plant	15	15	40
Warehouse/Office	16	16	32
Logistical Support	49	28	77
Total	156	84	240

Production activities will be evenly distributed over the life of the Project. The Proponents state that they will refine their employment projections when detailed engineering studies are carried out.

The Proponents summarize Canada-Nova Scotia content for the Production Phase as follows:

Nova Scotian and other Canadian benefits are estimated to be even higher during the 25 year Production period. On an annual basis, Nova Scotia content is estimated at \$47 million or 73 percent of the \$64 million Production Phase expenditure, which consists of an estimated \$28 million in materials purchase plus \$19 million in wages and salaries. Canadian (including Nova Scotian) content is estimated at \$58.5 million or 91 percent of the total representing \$39 million in materials purchases plus \$19.5 million in wages and salaries. About 9 percent, or \$5.5 million of project Production Phase expenditures is estimated to be spent on imported materials and labour. These content estimates are shown below.



“Nova Scotia labour content is estimated at 96 percent of the Production Phase \$20 million labour requirement. Nova Scotia residents are estimated to earn just over \$19 million in wages and salaries and to supply 230 person-years of employment (or roughly 264 jobs).”

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

2.5 CON'T

Both the Proponents' Socio-Economic Impact Statement (Volume 4) and the Canada-Nova Scotia Benefits Plan (Volume 5) contain several estimates of the level of Canada-Nova Scotia industrial and employment benefits anticipated to be derived from the Project. The Board will use these estimates as benchmarks in judging the success of the Proponents' efforts to maximize achievements flowing from the full and fair opportunity for Canadians and first consideration for Nova Scotians to participate in the supply of goods and services and to undertake employment associated with the Project. In evaluating content levels, the Board will take into account any offsetting content achieved pursuant to Condition 9 (Long Term Opportunities).

CONDITION 12: CANADA-NOVA SCOTIA CONTENT

Should the actual Canada-Nova Scotia content of the Project fall below the estimates set out in the SOEP Canada-Nova Scotia Benefits Plan, the Proponents shall justify the shortfall to the Board, and where appropriate, the Proponents shall identify measures to enhance Canada-Nova Scotia content in the future.

2.6

2.6 CONSULTATION, MONITORING AND REPORTING

The Board requires that the Proponents submit quarterly and annual Benefits Reports for the Development Phase and annual reports for the Production Phase of the Project. The Benefits Reports shall specify by category of expenditure the Nova Scotian, other Canadian and Foreign content on both a current and cumulative cost basis and shall set out employment achievement in terms of hours or days worked by Nova Scotian, Other Canadian and Foreign workers. The Board has adopted the Canadian General Standards Board (CGSB) definition of Canadian content which can be modified to calculate Nova Scotia content by substituting the words "Nova Scotia" and "Nova Scotian" for the words "Canada" and "Canadian" respectively. Calculations may be done using the Selling Price Method (selling price less foreign costs) or the Cost Incurred Method (domestic costs incurred plus domestic profit). The Board will conduct workshops for the benefit of the Proponents, the Alliance Partners and the major contractors to ensure proper reporting.

The Board will require that the Proponents' establish a contract information and notification process to facilitate monitoring of contract packages from Quarterly Forecast through Expression of Interest, Prequalification, and Bid List to Contract Award stages. Information at each stage shall include consistent reference numbers and BIDS Categories providing the names and locations of companies being considered, and at the award stage, the Canada-Nova Scotia content and employment associated with the selected company relative to that of other bidders.

2.6.1

2.6.1 Alliance Partners and Subcontractors

Offshore development projects cannot be carried out by the operator alone. Even relatively small projects require the skills and hard work of many contractors and subcontractors, both large and small, to bring them from the drawing board into reality. If these contractors and subcontractors do not subscribe to the fundamental benefits principles and meet the requirements of the approved Canada-Nova Scotia Benefits Plan, the best intentions of the operator will not prevent local firms and individuals from missing opportunities. Where, as with SOEP, an alliance contracting approach is embraced, the commitment of the Alliance Partners to Canada-Nova Scotia Benefits requirements and principles becomes even more crucial.

Both the Commissioner and the Joint Public Review Panel identified this issue in their reports. Indeed, the Commissioner noted that the Proponents themselves recognized the potential difficulties of alliance contracting, particularly the "linkage between adopting this approach

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CANADA-NOVA SCOTIA BENEFITS PLAN DECISION REPORT

2.6.1 CON'T

and the level of non Canadian employment”. The Commissioner also was concerned about the Proponents’ ability to “effectively communicate policies and procedures” to contractors and subcontractors and then to monitor and enforce compliance, especially in the Development Phase. He was not convinced that the Proponents had adequately addressed the issue of their accountability for the employment and procurement practices of their alliance contractors. As a result, he made the following recommendation:

“The Commissioner recommends that the CNSOPB make approval of the Canada-Nova Scotia Benefits Plan conditional upon the ability of the Proponents to demonstrate clearly that they are capable of ensuring that alliance members will adhere to their benefits principles and the policies and procedures for implementing them.” (Commissioner’s Report)

Similarly, Recommendation 24 of the Joint Public Review Panel states:

“The Panel recommends that prior to any construction, SOEP provide the CNSOPB with a plan that details the employment and training review process and the specific mitigative measures to respond to unsatisfactory performance on the part of its contractors.” (Joint Public Review Panel Report)

The Board shares the concerns of the Joint Public Review Panel and the Commissioner and accepts their recommendations. The Proponents will therefore be required to comply with the following condition.

CONDITION 13: MONITORING AND AUDIT

For both monitoring and audit purposes, the Proponents, Alliance Partners and major contractors shall provide the Board, and/or its designated agents, with access to all documentation and information (on a confidential basis) required to substantiate the Canada–Nova Scotia content and employment reported. SOEP Benefits Reports will be subject to regular monitoring and such audits as may be determined appropriate by the Board. This will include detailed spot audits of reported costs and employment.

The Proponents shall ensure that all Alliance Partners, and other contractors:

- understand and accept their responsibilities respecting the Benefits requirements of the Accord Implementation Acts and the approved Canada-Nova Scotia Benefits Plan,***
- are contractually bound to report Canada-Nova Scotia Benefits information to the Proponents 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 Proponents or the Board.***

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

The Board will hold the Proponents responsible for the performance of its Alliance Partners. Failure on the part of an Alliance Partner or 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 Proponents with a condition of the Canada-Nova Scotia Benefits Plan approval.

SECTION 3 DEVELOPMENT PLAN DECISION REPORT

It is the decision of the Canada-Nova Scotia Offshore Petroleum Board that the Sable Offshore Energy Project Development Plan, Part I and Part II, is approved, subject to the conditions specified in this Decision Report.

3.0

3.0 INTRODUCTION AND GENERAL PROVISIONS

The Sable Offshore Energy Project Development Plan was submitted to the Board on June 14, 1996. In it, Mobil Oil Canada Properties, as lead operator, Shell Canada Limited, as joint operator, Imperial Oil Resources Limited, Nova Scotia Resources Limited, (“Proponents”) and Petro-Canada set out their plan to develop six natural gas fields located near Sable Island (see project description in Section 1). Petro-Canada no longer has an interest in the Project.

The *Accord Implementation Acts* require that a Development Plan be set out in two Parts:

- (a) In Part I, a description of the general approach of developing the pool or field, and in particular, information, in such detail as may be prescribed, with respect to:
 - (i) the scope, purpose, location, timing and nature of the proposed development,
 - (ii) 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
 - (iii) the production system and alternate production systems that could be used for the development of the pool or field; and
- (b) In Part II, all technical or other information and proposals, as may be prescribed necessary for a comprehensive review and evaluation of the proposed development.

The Board has reviewed the Development Plan, and the prescribed application form, and is satisfied that they meet the filing requirements set out in the legislation as well as those specified in the Board’s 1995 *Guidelines on Plans and Authorizations Required for Development Projects*.

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3.0.1

3.0.1 Safety

The Board is satisfied that the Project can be undertaken safely. The Board has come to this conclusion after carefully reviewing the information provided by the Proponents in the Development Plan, taking into account the Board's requirements related to safety.

The *Accord Implementation Acts* and regulations establish a comprehensive regulatory regime to achieve safety. In 1994 amendments were made to the *Accord Implementation Acts* specifically to enhance safety. These amendments included the following provisions:

- the requirement that the operator obtain a Certificate of Fitness from a certifying authority stating that the installations are fit for purpose and in compliance with the regulations,
- the requirement that a Declaration of Operator be submitted stating that the equipment is fit for purpose and the personnel are properly trained, and
- the establishment of Safety Officers and a Chief Safety Officer within the Board to ensure operations are reviewed from a safety perspective. The regulations set out safety requirements for offshore facilities and operations. However, to achieve a flexible system, the Chief Safety Officer may grant exemptions from the regulations. Such exemptions are only granted if it can be demonstrated that the proposed alternate approach will provide an adequate level of safety.

The Development Plan indicates that the Proponents intend to use steel jacket platforms for the wellheads, production facilities and accommodation facilities. These are commonly used in other parts of the world, including the southern North Sea where environmental conditions are similar to the Scotian Shelf. In addition, steel jacket platforms have been used without incident since 1992 for the Cohasset project which is located in the same area as the proposed SOEP facilities. The Board is confident that the SOEP facilities can be designed to withstand the environmental loads and provide a safe platform for the facilities.

Offshore facilities must have appropriate safety provisions incorporated in the design to provide refuge and evacuation from accidental events such as fire and explosion. Although the SOEP detailed design had not been completed at the Development Plan stage, the Board believes that the proposed development system can accommodate the required safety features.

It is a regulatory requirement that a Conceptual Safety Evaluation be undertaken at the early design stages of a development project to identify risks and compare those against targeted levels of safety. This enables high risk aspects of the design to be modified to reduce risk.

Some of the SOEP wells are high pressure - high temperature wells. These are difficult to drill and constitute a higher risk than conventional wells. Jackup drilling units will be used to drill the wells. These drilling units are among the largest in the world and are capable of withstanding severe environmental loads. They are equipped with high pressure well control equipment. The Board is satisfied that the SOEP wells can be drilled safely with this equipment.

In addition to having the proper facilities and equipment, the management of the operations is critical from a safety perspective. In the Development Plan, the Proponents have indicated that they will be developing a safety plan prior to undertaking design, construction, installation or operations. The safety plan will have sufficient detail to address the particular level of activity. A part of this safety plan will be a management system to ensure that proper resources are utilized to

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DEVELOPMENT PLAN DECISION REPORT

identify safety issues and take the appropriate action to minimize risk. The Board is satisfied with the Proponents' approach to safety as outlined in the Development Plan.

3.0.1 CON'T

After activities are authorized, the Board monitors the activities by requiring the operator to report daily details of drilling and production operations and to report any incidents or non-functioning of safety equipment. In addition, the Board will undertake audits of the operations against the plans and procedures that the operator submitted in the application for the activity authorization. If the Board identifies any safety infractions, it will address these with the operator to identify corrective measures. If the Board is not satisfied that the operator is taking the appropriate action, it may withdraw or withhold authorizations until the noncompliance is addressed to the Board's satisfaction. In addition, Board Safety Officers have the authority to stop all work activities if, in the opinion of that officer, the continuation of the activity is unsafe.

3.0.2 Total Quality Management System

3.0.2

The Board considers the establishment of a total quality management system to be an essential element of any offshore development project. This has been part of the CNSOPB's approach to regulating safety since its inception and the Board believes that it has worked well.

The Board recognizes the merits of this approach for all aspects of petroleum activities under its jurisdiction and intends to implement a policy that requires operators of development projects to have a Total Quality Management System in place. This system, documented and subject to audit by the Board, must address safety, environmental protection, resource conservation, financial responsibility, and Canada-Nova Scotia Benefits.

CONDITION 14: TOTAL QUALITY MANAGEMENT SYSTEM

The Proponents shall implement a Total Quality Management System, satisfactory to the Board, which integrates all aspects of Development Plan activities. Among other things, this Total Quality Management System must ensure:

- *safety of working conditions for all offshore operations,*
- *protection of the environment during offshore petroleum related activities,*
- *conservation of offshore petroleum resources,*
- *adherence to the approved Canada-Nova Scotia Benefits Plan, and*
- *financial responsibility for all offshore operations.*

This System must include documented policies, procedures and organizational responsibilities and be developed to the appropriate level of detail for the proposed activity. The Proponents shall file the appropriate documentation with the Board and the Board shall be notified immediately of any changes.

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3.0.3 3.0.3 Regulations, Standards and Guidelines

The regulatory regime for offshore petroleum activities is continually evolving. An operator must comply with legislation and regulations promulgated by the governments unless an exemption from the regulations is granted by the Board. As noted in Section 1.0.2, certain regulations used by the CNSOPB are currently in draft form and other regulations are being developed. In addition, the Board, from time to time, establishes new guidelines for the effective regulation of offshore activities

It is the policy of the Board that existing projects not be “grandfathered” when regulations or standards are amended. The Board will require that future activities be assessed against regulations or draft regulations, standards and guidelines in place when the activity occurs.

CONDITION 15: REGULATIONS, STANDARDS AND GUIDELINES

In addition to complying with all applicable promulgated regulations, the Proponents shall comply with the provisions of the following draft regulations as if they were in force with respect to the Nova Scotia offshore area:

- *Petroleum Occupational Health and Safety Regulations - Nova Scotia (April 5, 1990 Draft)*
- *Canada Oil and Gas Operations Regulations*

The Proponents shall also comply with any additional draft regulations, standards and guidelines that may be developed in the future and adopted by the Board. Such draft regulations, standards or guidelines may be revised from time to time and, if adopted by the Board, the revised version shall apply and shall supersede any earlier versions, upon notice being given to the Proponents.

3.0.4 3.0.4 Cost Recovery By the Board

The regulatory process for work authorizations described in Section 1 is extensive. To maintain this high level of regulatory review for a project as large as SOEP, the Board will require additional financial resources. While the Board’s core funding will continue to be provided by the governments, the Board believes that those who undertake offshore activities that generate additional regulatory costs should be responsible for such costs.

The *Accord Implementation Acts* provide that the Board may approve a development plan subject to such requirements as the Board deems appropriate. Further, the Board may issue an authorization with respect to each work or activity proposed to be carried on subject to such requirements as the Board determines. The Board could require that the Proponents pay the Board’s incremental costs for each specific activity when that activity is authorized. However, the Board believes that a single annual levy would be more efficient for both the Proponents and the Board.

CONDITION 16: COST RECOVERY

The Proponents shall pay to the Board, on an annual basis, such amounts as the Board may reasonably determine, in consultation with the Proponents, to cover the Board’s anticipated incremental costs associated with the Project.

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3.1 GEOLOGY, GEOPHYSICS, PETROPHYSICS & HYDROCARBONS-IN-PLACE

3.1

The Board has reviewed the geology, geophysics and petrophysics section of the Development Plan and evaluated it against the filing requirements set out in the CNSOPB's *Guidelines on Plans and Authorizations Required for Development Projects*.

The Proponents presented a regional overview that included a general introduction to the geological history of the Sable Island area. It described the methodology used to define the size and characteristics of the gas reservoirs. This section also included a field-by-field description of the gas accumulations currently included in the Project.

The Proponents recognize that the six Project fields contain over forty hydrocarbon bearing sands. Throughout this part of the Development Plan, there is a distinction between project and non-project sands. This distinction is clarified later in the Development Plan where it is stated that projects sands have been identified as "...having sufficient volume and producibility to form the basis of the production forecast." Reservoir parameters and resource assessments of the currently identified non-project sands are not adequately documented in the Development Plan. The Board will require that the Proponents submit additional information on this subject. The assessment and potential development of the non-project sands is discussed further in Section 3.2.1 of this Decision Report.

3.1.1 Geological Overview

3.1.1

In their evaluation of the geological aspects of the SOEP fields, the Proponents drew upon a significant amount of public and proprietary data. This dataset varies in quantity and quality. This is primarily due to the different number of wells drilled on the individual structures, ranging from five at Venture to a single well at South Venture. Certain drilling and evaluation technologies utilized on more recent wells such as Measurement-While-Drilling (MWD) tools and enhanced Repeat Formation Testing (RFT) tools were not available when early wells were drilled. Nevertheless, the dataset available to the Proponents was sufficient for their geological evaluation of the six SOEP fields.

The Board is of the view that the Proponents' interpretation of the depositional systems and environments for the reservoir intervals and individual sands, and their spatial and paleogeographic distribution is sound. Although major sands sequences can be correlated between the gas fields, individual reservoir sands within each field are unique and cannot be directly correlated with similar sands in immediately adjacent fields.

The southwestward progradation of the Sable Delta complex through time resulted in the early formation of growth fault structures in the sand-dominated proximal region of the basin (Venture, South Venture and Thebaud fields) and later age faulting in the shale-dominated distal regions (North Triumph, Glenelg and Alma fields) as the delta extended seaward. This relationship between depositional processes and concurrent faulting is well understood by the Proponents.

In the North Triumph, Glenelg and Alma fields, the gas exists under hydrostatic pressure conditions (i.e. the normal pressure induced by a continuous column of water from sea level), and in the Venture, South Venture and Thebaud fields most gas reservoirs are overpressured (i.e. higher than normal pressure gradient). The mechanism for the generation of overpressure is uncertain but the Proponents have recognized the importance of this phenomena and its impact on gas reserves and production.

The geology sections of the Development Plan are satisfactory to the Board.

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3.1.2

3.1.2 Geophysical Overview

The Development Plan contains a comprehensive overview of the geophysical aspects of the Project. Each field description includes a schematic structure map, a representative net pay map, a line segment map showing the seismic coverage of the fields, and a representative seismic line displaying the relevant seismic picks. Tables for each field list summaries of the seismic data sets and describe the seismic correlations at each well. There is also a discussion of the depth conversion method used for each field.

In addition to Part I of the Development Plan, the Board has studied 18 technical references submitted by the Proponents relating to geophysical aspects of the Project. These references provide more technical detail than the Development Plan including supporting maps and time-depth conversion methods.

At the time of writing, the Proponents are in the process of acquiring 3D seismic surveys over all of the structures slated for development. This data will be used to optimize the depletion strategy for the reserves.

After studying the Development Plan, and reviewing the references, the Board is satisfied that the Proponents have provided adequate information to demonstrate that sufficient work has been done to obtain an acceptable understanding of the structural configurations of the Project fields.

3.1.3

3.1.3 Petrophysical Overview

The Proponents were required to submit to the Board, a comprehensive petrophysical evaluation of each zone proposed for development using all available log, core (conventional/special) and pressure data. This evaluation would include all petrophysical interpretation parameters (i.e. R_w , R_t , etc.) and the specific methodology used to assess each reservoir. In addition, the evaluation requires a tabulation of the calculated reservoir properties of each zone, including but not limited to the following: gross thickness, net pay, porosity, water saturation and permeability.

The result of the Proponents' petrophysical evaluations for each field were summarized in the Development Plan. Petrophysical Reports were also submitted for each field which detailed the Proponents' selection of petrophysical interpretation parameters and methodology. Where available, special and conventional core analyses were used to refine the petrophysical interpretation for the subject field. In areas of limited well data, the Proponents used petrophysical data from adjacent analogous fields or wells to aid in their assessment of the field. The CNSOPB is satisfied that, overall, the Proponents' petrophysical evaluations and interpretation are reasonable and sound, and therefore, satisfy the requirements of the Board's *Guidelines on Plans and Authorizations Required for Development Projects*.

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3.1.4 Hydrocarbons-In-Place

3.1.4

The Proponents performed probabilistic and deterministic estimates of the Gas-In-Place for each of the Project fields. Probabilistic estimates were considered to be the most representative because they were generated using probabilistic distributions for geological and petrophysical parameters. These included the range of uncertainty for the parameters of area, net pay development, porosity, water saturation, and expansion factor.

Probabilistic Gas-In-Place volumes were reported at the mean, or most likely occurrence, and at the P90, P50 and P10 confidence levels. Each confidence level represents a value that has that percentage chance of being equaled or exceeded. The Proponents tabulated the probabilistic Gas-In-Place for each project sand within each field and the field's project sand total.

In the Board's opinion, non-project sand volumes were not adequately addressed in the Development Plan. It is evident that a number of hydrocarbon bearing and tested sand horizons were not included in the tabulation. To ensure conservation of the resource, all hydrocarbon bearing zones must be analysed pursuant to Condition 17 of this Decision Report. This is to ensure that the resource potential of these horizons is fully understood over the life of the Project.

The Board has reviewed the Gas-In-Place volumes reported by the Proponents and has evaluated this against its own analysis. This analysis is published in the Board's *Technical Summaries of Scotian Shelf Significant and Commercial Discoveries*. The Proponents' and CNSOPB's total probabilistic volumes associated with the project and minor sands for all six fields are tabulated below (E9M3 = 10⁹ cubic meters, or, billion cubic meters). In the following subsections, the probabilistic volumes for each sand will be presented for each of the Project fields. To maintain consistency with the Proponents' approach, the Board's volume totals will be arithmetically summed.

Table 3.1.4 Project Total Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
Project	57.1	115.4	217.0	129.3	104.4	146.9	194.9	148.6
Non-Proj.	1.9	6.7	18.0	8.9	15.8	22.0	30.2	22.5
Total	59.0	122.1	235.0	138.2	120.2	168.9	225.1	171.1

Table 3.1.4 demonstrates that there is reasonable agreement between the Proponents' Project sand total and that of the Board, although the latter is more constrained. Further refinement of the Gas-In-Place, particularly for the Project's second phase fields (South Venture, Glenelg and Alma) will be carried out when the results of future 3D seismic programs and development drilling can be included in the analysis.

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3.1.5 **3.1.5 Review of Specific Fields**

Comments respecting the geology, geophysics, petrophysics, and Gas-in-Place for each of the Project fields are presented below.

3.1.5.1 **3.1.5.1 Thebaud**

The Board does not concur with the Proponents' correlation of the deep overpressured H1 and H2 reservoir sands between the Thebaud C-74 and I-93 wells. The Board concluded that the C-74 well had drilled through a fault which manifested its presence through removal of a section of the strata above the H1 sand. This was not recognized by the Proponents and the thinned section resulted in an incorrect correlation of the H1 sand in the C-74 well to a thin poor quality sand in the I-93 well to the west. The significance of this was that the H1 sand was interpreted to deteriorate to the west and a very good gas test from this sand in the C-74 well was therefore discounted. The ultimate result was the under-estimation of the gas-in-place for the H1 sand over the entire field and its elimination as a project sand.

The Board will require a re-evaluation of the H1 sand prior to the commencement of production of the Thebaud field.

The Thebaud structure was detailed by good quality 2D seismic data. This data was interpreted and mapped by the Board. The Board's results supported the Proponents' assessment of this structure. Complicated faulting near the crest of this structure will be better delineated by new 3D data, but the four existing exploration wells which penetrated each of the major fault blocks allowed for a high confidence in the structural interpretation. The bulk of the field's hydrocarbons exist at the A sand level which appeared well imaged by the seismic data. Data quality diminished with depth resulting in poorer imaging of the deeper events. Five horizons were picked from seismic to produce the final sand maps.

The Board reviewed the Proponents' petrophysical evaluation of the four wells in the Thebaud field and considered the parameters and methodology applied to be reasonable. The net pay cutoffs, used by the Proponents to evaluate the Thebaud reservoirs, also appeared reasonable. Furthermore, the Board's own petrophysical evaluation of the Thebaud field generally supports the Proponents' findings.

The Board concurs with the Proponents' conclusion that the elevated water saturation values observed in some zones are due to water-saturated microporosity associated with authigenic chlorite grain coatings. In these zones, artificially low formation resistivities were recorded by downhole well logs resulting in overly pessimistic assessments of the zones' hydrocarbon content. These results contrast with high gas readings recorded by mud-gas logs when the zone was first penetrated. Subsequent flow testing of gas and condensates from these zones and other research supported the interpretation that chlorite microporosity was the likely cause of this unique situation.

Table 3.1.5.1 shows the Gas-In-Place for each sand in the Thebaud field. Reasonable agreement with the Board's volumes is apparent for the project sands. It is estimated that 14% of this field's resource is contained in the non-project sands. These sands will be penetrated by the development wells and therefore will remain potential completion targets throughout the Project.

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Table 3.1.5.1 Thebaud Gas-in-Place

3.1.5.1 CON'T

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
1u	—	—	—	—	0.197	0.290	0.420	0.229
2	—	—	—	—	0.324	0.429	0.571	0.440
4	—	—	—	—	0.171	0.303	0.478	0.317
5B	—	—	—	—	0.005	0.010	0.018	0.011
5C	—	—	—	—	0.028	0.052	0.087	0.055
5D	—	—	—	—	0.068	0.132	0.223	0.140
5E	—	—	—	—	0.175	0.285	0.428	0.295
5F	—	—	—	—	0.197	0.263	0.355	0.271
5G	—	—	—	—	0.261	0.341	0.450	0.349
5H	—	—	—	—	0.151	0.268	0.428	0.280
'A' Mkr.	—	—	—	—	0.109	0.177	0.269	0.184
A	6.400	11.900	20.600	12.800	8.204	10.902	13.642	10.937
B	0.700	1.700	3.300	1.800	1.856	2.661	3.640	2.706
F1	0.300	0.900	2.200	1.100	0.749	1.548	2.651	1.644
F3	1.100	2.700	6.000	3.200	2.393	4.904	8.018	5.078
G2	0.500	1.200	2.800	1.500	1.717	3.535	5.392	3.589
G3	1.000	2.300	5.400	2.900	1.189	2.543	4.280	2.652
H1	—	—	—	—	1.005	1.852	3.084	1.964
H2	0.800	2.300	4.800	2.700	0.991	1.857	2.969	1.922
Project	10.800	23.000	45.100	26.000	17.099	27.950	40.592	28.528
Non-Proj.	—	—	—	—	2.691	4.402	6.811	4.535
Total	10.800	23.000	45.100	26.000	19.790	32.352	47.403	33.063

3.1.5.2 Venture

3.1.5.2

The Venture field is the largest known gas field on the Scotian Shelf with the greatest number of gas reservoirs. It has the most well control (five wells) of any field and the largest available dataset for research and evaluation studies. In short, Venture is the most studied and best understood field. Nevertheless, the Board requires additional information on the degradation of reservoir quality in the deep sands. Significant gas potential may exist in these sands. Results of future drilling and seismic data may help to clarify this matter.

A large amount of good quality 2D seismic data was gathered over the Venture structure during the 1970s and 1980s. This seismic data, along with five existing exploration wells, permitted a high level of confidence in the field's structural interpretation. Five markers in the reservoir zones were picked from the seismic data and used to create the final depth structure maps. There are twelve major reservoir sands but not all could be identified on the seismic.

The Proponents conducted a petrophysical evaluation of the five wells in the Venture field using available log, core and pressure data. The Board has reviewed this evaluation and accepts the interpretation parameters, methodology, and net pay cutoffs used by the Proponents to evaluate the field.

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3.1.5.2 CON'T

Many reservoir zones in the Venture field were excessively invaded by mud filtrate prior to logging. In these highly invaded zones, standard water saturation equations which rely on accurate log resistivity readings are unreliable. Therefore, the Proponents' use of capillary pressure data to determine the water saturation of the excessively invaded zones is sound. The Board agrees that the elevated irreducible water saturations observed in some zones was caused by water saturated microporosity associated with authigenic chlorite grain coatings.

Table 3.1.5.2 shows the Gas-In-Place for each sand in the Venture field. For the P90 and P50 confidence levels, the CNSOPB's gas volumes are significantly larger than those determined by the Proponents for their project sands. However, the Board's total volumes are fully within the probabilistic ranges defined by the Proponents. It is estimated that 5% of this field's resource is contained within the deeper over pressured sands that are currently excluded from the Project. The timing of possible development of these non-project sands is discussed in Section 3.2.1.

Table 3.1.5.2 Venture Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
2	2.500	6.200	12.200	7.000	8.707	13.258	18.095	13.355
2A	0.200	0.800	2.100	1.000	2.313	2.649	3.069	2.676
2B	0.500	1.400	3.300	1.700	2.886	4.097	5.467	4.144
2C	—	—	—	—	0.320	0.463	0.604	0.462
3	2.900	5.800	11.100	6.600	11.420	12.599	13.970	12.652
4A/B	0.400	1.000	3.000	1.400	3.100	4.038	5.562	4.182
4C	0.500	1.400	3.700	1.900	0.394	0.585	0.896	0.617
4D	0.300	1.000	3.500	1.600	1.852	2.283	2.759	2.300
5	1.800	5.000	12.200	6.200	5.291	7.557	10.548	7.729
6	4.700	9.100	16.800	10.100	8.867	11.251	13.379	11.172
6m	2.200	4.800	10.100	5.600	—	—	—	—
7	1.000	2.400	5.500	2.900	1.740	2.784	4.335	2.929
8	1.200	2.900	6.200	3.400	0.295	0.442	0.679	0.467
11	—	—	—	—	0.994	1.836	3.414	2.035
13	—	—	—	—	0.985	1.013	1.041	1.013
17	—	—	—	—	0.298	0.306	0.315	0.306
18	—	—	—	—	0.236	0.243	0.250	0.243
Project	18.200	41.800	89.700	49.400	46.865	61.543	78.759	62.223
Non-Proj.	—	—	—	—	2.833	3.861	5.624	4.059
Total	18.200	41.800	89.700	49.400	49.698	65.404	84.383	66.282

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3.1.5.3 North Triumph

3.1.5.3

The North Triumph field occupies a distal position on the Sable Delta Complex and as a result the number of reservoir sands are low, with gas accumulated in a single interval consisting of stacked sands. Geological and stratigraphic analysis suggest that a linear shaped east-west depression illustrated in the Proponents' seismic structure map represents a south-dipping intrafield fault that could divide the field into two segments. Such an interpretation has significant implications for reservoir modelling (compartmentalization) and production scenarios. Future drilling and seismic programs should clarify the structural picture of this field.

North Triumph has only one reservoir zone which required mapping. A reconnaissance 3D seismic survey covering a portion of the structure along with 2D data was used to produce the final map. The depth conversion method for North Triumph is not documented as completely as it is for the other fields, but the method is similar. It is expected that the extent of faults running through the centre of the structure will be better defined by new seismic.

The Proponents conducted a petrophysical evaluation of the two wells in the North Triumph field. The Board reviewed the evaluation and considered the parameters, methodology and net pay cutoffs applied to be valid.

Table 3.1.5.3 shows the Gas-In-Place for each sand in the North Triumph field. Currently all the hydrocarbon accumulation in North Triumph is contained in a single interval. The Gas-In-Place estimates provided by the Proponents are comparable to those of the Board.

Table 3.1.5.3 North Triumph Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
A	6.200	14.200	25.200	15.200	9.660	15.820	24.410	16.540
Project	6.200	14.200	25.200	15.200	9.660	15.820	24.410	16.540
Non-Proj.	—	—	—	—	—	—	—	—
Total	6.200	14.200	25.200	15.200	9.660	15.820	24.410	16.540

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3.1.5.4

3.1.5.4 South Venture

The South Venture field is the only SOEP field penetrated by a single well. The limited data affects the resolution and confidence of interpretations.

The Board requires additional information to understand why the deeper overpressured Sands 7 and 8 should be excluded from development. No cores or RFT data were successfully obtained from this well. It is possible that the high pressure drawdown observed on DST of these zones is due to extensive formation or completion damage as suggested by analysis of the well flow tests. The Board requires a reevaluation of these sands based on the results of future drilling and seismic programs.

The South Venture field has detailed coverage by good quality, 1983 vintage, 2D seismic similar to the Venture data set. Two horizons in the reservoir zone were mapped directly, one in the hydropressure section and one in the overpressure section.

The Proponents conducted a petrophysical evaluation of the South Venture O-59 well using available log and pressure data. The data available to evaluate the field is limited. This prevents the precise determination of several log analysis parameters and somewhat limits the overall petrophysical assessment. In order to properly assess the South Venture reservoirs, the Proponents were forced to rely on log analysis parameters generated from core recovered from similar reservoirs in the immediately adjacent Venture field.

The Board reviewed the Proponents' overall petrophysical evaluation and considers the parameters, methodology and net pay cutoffs applied to be reasonable.

Table 3.1.5.4 shows the Gas-In-Place for each sand in the South Venture field. In sands where the Proponents have provided an analysis, there is reasonable agreement with the Board's volumes. The CNSOPB's P90 case has reported significantly more gas volume than the Proponents'. The volumes tabulated below are based largely on properties obtained from the one discovery well on the structure. It is estimated that 17% of this field's resource is contained within the deepest sands that are currently excluded from the Project. The timing for possible development of these non-project sands is discussed in Section 3.2.1.

Table 3.1.5.4 South Venture Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
2	1.300	4.800	7.900	4.800	3.544	5.407	7.306	5.426
3	0.500	1.500	3.100	1.600	1.678	2.575	3.463	2.573
4a	0.600	1.600	3.700	1.900	1.584	2.428	3.272	2.427
5	0.300	0.800	2.000	1.000	0.962	1.475	1.995	1.480
6	0.600	1.700	3.800	2.000	2.140	3.267	4.410	3.272
7	—	—	—	—	1.161	1.767	2.395	1.775
8	—	—	—	—	0.921	1.407	1.900	1.409
Project	3.300	10.400	20.500	11.300	9.908	15.152	20.446	15.178
Non-Proj.	—	—	—	—	2.082	3.174	4.295	3.184
Total	3.300	10.400	20.500	11.300	11.990	18.326	24.741	18.362

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3.1.5.5 Glenelg

3.1.5.5

Although the Glenelg field was penetrated by four wells, the depositional environments of its reservoir sands are not as well understood as those encountered in the Venture and Thebaud fields. A better understanding of this subject is important as specific facies have certain spatial characteristics which affects reservoir sand volume and distribution.

Glenelg is detailed by a good quality, 1984 3D seismic survey. The structure is complexly-faulted and divided into a number of compartments. The Top Mississauga Event was mapped from the seismic over the entire structure. Individual reservoir sand maps were created from this horizon for each compartment.

The Proponents conducted a petrophysical evaluation of the four wells in the Glenelg field using available log, core and pressure data. The Board accepts the results of this study and considers the methodology and cutoffs applied to be valid.

The Board requires additional information to support the exclusion from development of stratigraphically higher sands which encountered significant gas pays. These reservoirs are currently classified as non-project sands. It is estimated that 47% of this field's resource is contained in the non-project sands. These sands will be penetrated by the development wells and will remain potential targets throughout the development. The assessment and potential development of these sands is discussed in Section 3.2.1 of this Decision Report.

Table 3.1.5.5 shows the Gas-In-Place for each sand in the Glenelg field. Reasonable agreement on volumes is apparent for the C1 and C2 sands. The Proponents report higher volumes in the B and F sands than does the Board.

Table 3.1.5.5 Glenelg Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
"L.L.C."	—	—	—	—	1.494	2.008	2.733	2.071
B	2.800	6.400	10.800	6.700	3.297	4.949	6.144	4.827
C1	3.000	3.900	4.900	3.900	2.902	4.338	5.382	4.237
C2	0.300	0.500	0.500	0.500	0.305	0.314	0.322	0.314
C3	—	—	—	—	0.307	0.377	0.487	0.388
D	—	—	—	—	1.891	2.856	3.646	2.819
E	—	—	—	—	0.790	0.812	0.835	0.812
F	1.000	1.300	1.600	1.300	0.566	0.695	0.900	0.716
G	—	—	—	—	1.120	1.412	1.847	1.453
"Miss."	—	—	—	—	1.238	1.389	1.506	1.381
Project	7.100	12.100	17.800	12.400	7.070	10.296	12.748	10.094
Non-Proj.	—	—	—	—	6.840	8.854	11.054	8.924
Total	7.100	12.100	17.800	12.400	13.910	19.150	23.802	19.018

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3.1.5.6

3.1.5.6 Alma

Alma is the most distal Project field on the ancient Sable Delta Complex. All reservoirs are located at the top of the Mississauga Formation which exists here as a thin sand interval within a dominantly marine shale sequence.

The seismic mapping procedure for Alma was well documented in the references. The maps were created from a grid of 2D data collected between 1981 and 1984. The Top Mississauga Event was used to create all of the reservoir structure maps. There is a series of faults at the crest of the structure although their throws are minimal.

The petrophysical evaluation of the Alma field was based on the two wells drilled on this structure. The Board reviewed this evaluation and believes the Proponents' interpretation parameters, methodology and net pay cutoffs were reasonable.

Table 3.1.5.6 shows the Gas-In-Place for each sand in the Alma field. The Board's distribution of gas volumes associated with the A sand are within the range of possibilities defined by the Proponents. However, the Board considers the volumes in the B and C sands to be considerably larger than currently assessed by the Proponents. There is reasonable agreement for the total of the project sands within the field. The sands not currently slated for development are believed to hold only 10% of this field's resource. The Board is of the opinion that the results of future seismic and drilling should lead to a reevaluation of these sands for possible development at a later date. These sands will also be penetrated by the development wells and will remain potential targets throughout the development.

Table 3.1.5.6 Alma Gas-in-Place

Sand	SOEP (E9M3)				CNSOPB (E9M3)			
	P90	P50	P10	Mean	P90	P50	P10	Mean
A	8.600	11.500	14.400	11.400	7.150	8.840	10.000	8.690
B	2.500	3.100	3.900	3.100	5.640	6.090	6.570	6.100
C	0.400	0.300	0.400	0.500	1.020	1.190	1.380	1.200
D1	—	—	—	—	0.380	0.460	0.600	0.480
D2	—	—	—	—	0.276	0.421	0.630	0.440
D3	—	—	—	—	0.718	0.895	1.148	0.922
Project	11.500	14.900	18.700	15.000	13.810	16.120	17.950	15.990
Non-Proj.	—	—	—	—	1.374	1.776	2.378	1.842
Total	11.500	14.900	18.700	15.000	15.184	17.896	20.328	17.832

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3.2 RESERVOIR ENGINEERING

3.2

The Board reviewed the reservoir engineering section of the Development Plan and assessed the reasonableness of the conceptual development and depletion of the hydrocarbon resources within the six Project fields. The data provided was evaluated against the filing requirements of the Board's *Guidelines on Plans and Authorizations Required for Development Projects*.

In preparing the Development Plan, the Proponents reviewed all previously collected geological, geophysical, and petrophysical reports, and well data including RFTs, DSTs, and fluid composition data. These data were accumulated, rationalized, and ultimately employed in the construction of reservoir simulation models. The models were first executed on a stand-alone basis to investigate inflow, deliverability, and depletion issues. Modelling of the gathering system and related facilities was also undertaken and coupled with reservoir simulations to define the combined interactions of the production practice on gas deliverability and resource potential.

Integrated production modelling and forecasting were presented by the Proponents. Where required, clarifications on the conceptual Development Plan were provided by a documented technical description of a number of specific development scenarios that may unfold. The models presented are flexible enough to allow integration of new data, project scope changes, and technological advances. They will be maintained throughout the development of the Project and serve as a basis for design and development scheduling activities.

3.2.1 Project and Non-project Sand Development

3.2.1

The Proponents have indicated a need to develop and maintain excess gas capacity during the initial production period. To achieve this they have stated that wells will have to be pre-drilled and completed in Venture, Thebaud, and North Triumph in a limited time frame. The Board is concerned that this requirement may result in the initial development of the most productive sands without a full understanding of the resource potential in each well. The Board requires that the development of all sands be considered on an ongoing basis to allow maximum resource recovery. Timing of the development of non-project sands shall be considered in an integrated sense with the development of the project sands prior to commencing development drilling in that field. This matter must be revisited following the evaluation of development wells and prior to completing wells within the field.

The Proponents state that "The deeper horizons, Sands 11 and 13 in Venture, and Sands 7 and 8 in South Venture are not included in this development plan because the small volumes and associated high drilling and production costs render them currently uneconomic". Insufficient evidence has been provided to the CNSOPB for it to concur with this position. Simulation studies and economic risk assessment undertaken by the Board suggests that development may be justified, and excluding them could therefore amount to waste as defined in the *Accord Implementation Acts*. Furthermore, safety considerations suggest that these zones should be penetrated prior to placing shallower zones on production to avoid further extenuation of the pressure differences between the reservoir horizons. Initial production from these deep zones may be required in order to decrease their pressure to that of the shallower zones prior to commingling them.

The Commissioner expressed concern about this matter in his report. His first recommendation suggested that approval of the Development Plan be conditional upon the Proponents submitting "a strategy for the depletion of the deep, over-pressured sands in the Venture and South Venture fields". The Board shares the Commissioner's concerns and will therefore require that the Proponents demonstrate to the satisfaction of the Board whether the development of these deeper horizons is justified prior to the Board granting approval to drill the initial wells in these fields.

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3.2.1 CON'T

CONDITION 17: ASSESSMENT OF ALL POOLS

To ensure maximum economic recovery of the resource, the Proponents shall consider the development of all pools underlying the six SOEP fields in an integrated fashion with the “project sands”. The following shall be included in the Reservoir Management Plan:

- *additional technical documentation to support the interpretations, conclusions and recommendations on the economic viability of developing reservoirs down to the base of Sand 18 in Venture and the base of Sand 8 in South Venture including upside and downside scenarios. (this shall be submitted prior to obtaining approval to drill wells at Venture and South Venture),*
- *a re-assessment of the Gas-In-Place for all hydrocarbon bearing sands encountered in the development wells, and*
- *an assessment of the optimal timing to develop all designated pools (this shall be submitted prior to completion of development wells within the field).*

The Board will not process applications to complete development wells until all significant and separate accumulations of natural gas within a field have been formally designated as pools and their boundaries established.

3.2.2

3.2.2 Well Test Data

All drillstem test (DST) and repeat formation test (RFT) data originally collected from the SOEP fields are organized, tabulated, summarized in the Development Plan. These data permit qualitative analysis of pressure and temperature trends across the fields, and a quantitative analysis of inflow parameters for a number of sands. However, due to the low success rate for the collection of the RFT data, (10-60% on a well by well basis), a large amount of data is still required to conclusively demonstrate pool delineation.

Pursuant to the regulations, the Proponents will be required to obtain additional data on all porous and permeable zones within the development horizons until pools are delineated to the satisfaction of the Board. Prior to placing any pool on production, a production test must be executed to determine effective permeability and the initial pool pressure. 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 each pool.

3.2.3

3.2.3 Coring and Special Core Analysis

Conventional cores have been recovered from various reservoir intervals from exploration and delineation wells drilled in each of the six Project fields. In addition to geological information, the core has been subjected to varying degrees of analysis and tests to determine reservoir and petrophysical parameters. A summary of the core coverage is presented in the Development Plan. The Board requires that a Coring Philosophy for the proposed development wells be included in the Proponents' Reservoir Management Plan.

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3.2.4 Reservoir Fluid Properties

3.2.4

Gas samples obtained from exploration wells have been analysed for each project sand, with the respective fluid properties tabulated and presented in the Development Plan. Where necessary, additional testing will be required during development to ensure that the composition and compressibility of gas in individual pools and the corrosiveness of the gas stream are correctly understood.

The six SOEP fields are classified as lean gas-condensate accumulations. Significant liquid drop out in the reservoirs is not expected until pressures are close to abandonment conditions. By that time most of the gas and condensate will have been recovered. During the initial production of the reservoirs, bottom hole pressures should be maintained in excess of the dew point. The Board will require prudent management of the near well-bore region by balancing the Project's offtake requirements, commingling production requirements, and optimum sand depletion.

3.2.5 Reservoir Simulation

3.2.5

Integrated surface and subsurface simulation is necessary to effectively develop this Project. This procedure is presented in the Development Plan and serves as the basis for field and well development sequences and compression timing. The Board finds the information provided for the interfield and export flow lines to be inadequate. This information is integral in the selection of flow line sizes, well flowing and abandonment pressures, and ultimately, resource conservation. This is further addressed in Section 3.4.2.4.

The Board requires that the Proponents 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 18: SYSTEM DELIVERABILITY

The Proponents shall monitor and evaluate System Deliverability on an ongoing basis. The Proponents shall report the following information, as a part of the Annual Production Report, or more frequently if requested by the Board:

- *forecasts of system deliverability, and*
- *pressures, temperature and rate relationships for the various components of the production facilities and pipeline.*

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3.2.6

3.2.6 Commingled Production

The Proponents have concluded that commingled production is necessary in order to produce minor reservoir sands economically. To investigate the benefit of commingled production, the Board reviewed the information contained in the Development Plan, performed its own simulation studies, and reviewed the *Alberta Energy Utilities Board Information Letter IL80-1*. The *Nova Scotia Offshore Petroleum Production and Conservation Regulations* state that the commingling of pools can only be permitted if it does not decrease the total hydrocarbon recovery from the individual pools. The Board accepts that commingling of zones will enhance recovery of the hydrocarbon resource if prudent reservoir management is maintained throughout the production life of the field. Proper reservoir management is required to ensure that sufficient data will be available to understand reservoir drainage and justify future development decisions.

CONDITION 19: COMMINGLED PRODUCTION

The Proponents shall apply for approval of commingled production on an individual well basis, at the well completion stage. Commingled production will be considered subject to the following:

- *when production testing a well that will undergo commingled production, the Proponents shall carry out the test in a manner that allows the assessment of initial inflow parameters and reservoir characteristics for each pool,*
- *the Proponents must document the fluid characteristics for each pool to the Board's satisfaction,*
- *the Proponents shall demonstrate that sufficient information exists to allow the production from each pool in the commingled well to be allocated to the Board's satisfaction,*
- *the Proponents shall report the allocated pool production monthly to the Board. Ongoing surveillance of the wells shall be maintained to ensure the accuracy of the production allocation throughout the life of the well, and,*
- *the Proponents' Reservoir Management Plan must document the pool management principles set out above.*

The commingled production approval for a well or pool may be revoked if, in the opinion of the Board, the operator is not able to reasonably estimate and document the zonal allocation of flow.

3.2.7

3.2.7 Production Tubing

The use of production tubing of 127mm and 178mm diameter is currently incorporated in the production forecasting models. Tubing size has a significant influence on the well's maximum flow rate, minimum stable flow rate, and liquid handling capacity. These tubing sizes have been incorporated in the Board's simulation models, and found to be reasonable. The Board will require that prior to placing a well on production, an optimum tubing size for the well shall be determined and documented.

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3.2.8 Compression Timing

3.2.8

The Development Plan includes primary depletion of the six fields followed by a centralized staged compression. Compression is a fundamental requirement to develop these fields for optimum recovery. Thus the timing and sizing of compression facilities shall be assessed continuously by the Proponents throughout the primary production stage to ensure maximum recovery is obtained.

3.2.9 Reserves

3.2.9

The Commissioner's Report indicated that some intervenors at the public review were concerned about the Proponents' estimate of deliverability and reserves and sought assurances that the Proponents had a "high level of confidence in their estimate of natural gas reserves and in their production forecasts". The Commissioner concluded that the Proponents' "reserve estimates are credible". However, he recommended that the Board identify in this Decision Report the basis for its acceptance of the Proponents' reserve and deliverability analysis.

Reserve estimates for a gas development project are subject to a number of factors including initial Gas-In-Place, the formations' ability to flow, initial and abandonment pressures, facility constraints, and fiscal conditions. To gain confidence in deliverability and reserve forecasting, the influence of these factors, and others, must be investigated.

The Board is confident that the estimates of Gas-In-Place are reasonable. As previously documented in this Section, the Board conducted an extensive review of the Gas-In-Place volumes reported by the Proponents and evaluated this against the Board's own detailed analysis.

Probabilistic hydrocarbon reserves have been assessed in the Development Plan by mathematically applying recovery factors to Gas-In-Place calculations. These recovery factors were based on the results from the integrated surface and subsurface simulation models, and individual sand and field simulation studies.

The Board gained further insight into the Project's deliverability and ultimate recovery by conducting integrated surface/subsurface simulation studies. Through these studies the impact of various sensitivities of reservoir parameters including accumulation size, permeability variations, compression timing, and production offtake rates were analysed. The deliverability and production forecast obtained from these models using the most likely Gas-In-Place scenario demonstrated close agreement with the deliverability and production forecasts provided in the Development Plan. This one scenario is representative of approximately 70% of all the possible scenarios predicted through the probabilistic analysis of Gas-In-Place discussed in Section 3.1.4. The Board is confident that the Proponents' reserve estimates and deliverability analyses are reasonable.

In addition, based upon its analysis of the Development Plan and its own studies, the Board is satisfied that the current project plan contains sufficient flexibility to allow for optimal and prudent development under most foreseeable scenarios. The Board also finds that the Proponents' production and reserve forecasts for the expected reservoir model and conceptual development plan are technically sound. The Proponents estimate that the mean recoverable condensate, a recoverable product associated with the gas production, from SOEP is 11.9 million cubic meters. The Board's assessment supports this estimate.

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3.2.10

3.2.10 Reservoir Management Philosophy

The Commissioner's Report identified the importance of the reservoir management strategy and recommended that the Board clearly state its rationale for accepting the Proponents reservoir management procedures.

The Board has concluded that the Proponents' Reservoir Management Philosophy outlines an acceptable approach to reservoir management. However, to clearly define the specific reservoir management aspects of the Project, the Board will require that this philosophy be incorporated into an annually updated Reservoir Management Plan. This plan must be part of the Total Quality 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. Reservoir management will be addressed on a pool by pool basis, with production analysis, fluid sampling programs, and routine and non-routine surveillance activity focused on this scale.

CONDITION 20: RESERVOIR MANAGEMENT PLAN

The Proponents shall provide the Board with a Reservoir Management Plan as part of the Total Quality 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.

The Reservoir Management Plan shall document depletion plans for the Project pools. Documentation must also be provided to demonstrate that the Plan is optimized for the economic conservation of the resource. This Plan must set out the pool characteristics, depletion strategy, number of wells and bottom-hole targets, 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 pools, 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.

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3.3 DRILLING, COMPLETIONS AND WORKOVERS 3.3

3.3.1 Strategy 3.3.1

The Board finds that the Proponents' strategy for Drilling, Completions and Workovers is adequate. Plans are to utilize two cantilever type jack-up drilling units certified to operate with working pressures up to 103 Mpa (15,000 psi). Any aspect of a completion or workover not performed by the drilling units will be carried out utilizing equipment that has been certified by a certifying authority in accordance with the regulations. The wells to be drilled in the Venture and Thebaud fields could be some of the most difficult wells to be drilled anywhere in the world. The wells are deep, contain highly overpressured zones and encounter high temperatures. The Board is satisfied that the Proponents and their drilling contractors will be capable of drilling these wells safely.

Final equipment and procedures will be submitted to the Board for approval as part of the *Drilling Program Authorization*. A Certifying Authority will verify that the rig(s) and related equipment are fit for purpose. Standard operating procedures will be submitted with the *Drilling Program Authorization* application and these will be referenced in the individual well approval applications. Detailed individual well programs must be submitted for approval on a well by well basis in accordance with approval requirements for drilling, completions, testing and well alterations. The requirements for an *Approval to Drill A Well* and an *Approval to Alter the Condition of a Well* are set out in the *Nova Scotia Offshore Area Petroleum Drilling Regulations*.

3.3.2 Projected Drilling Schedule 3.3.2

The Board recognizes that the drilling schedule in the Development Plan is tentative and subject to change. This is the case with any development project. However, with the information available at this time the CNSOPB finds the schedule adequate to give an indication of the number of wells planned at each location and the appropriate time frame.

The Board also recognizes that plans may change depending on whether or not wells are pre-drilled using templates or platform jackets only. The CNSOPB believes that the wells can be drilled safely either way as these type of operations have been performed routinely at other offshore locations in other parts of the world. However, the Proponents must ensure that the plans and procedures for these operations are documented and submitted to the Board prior to the initiation of any proposed activities.

3.3.3 Equipment Selection 3.3.3

The Board believes that the Proponents are aware of the requirements equipment must meet before the Board will issue drilling, workover and completion approvals. The Board will require specific documentation from the Proponents regarding "Directional Surveys", major drilling and completion work. This will become part of the *Drilling Program Authorization* and will be monitored and updated throughout the life of the Project.

3.3.4 Low Toxicity Oil Based Muds 3.3.4

The Proponents have indicated that Low Toxicity Mineral Oil (LTMO) drilling muds will be used due to the depth and angle of many of the wells. While the Board accepts that this may be a technical requirement, the discharge into the ocean of drill cuttings and solids that contain residues of LTMO is a significant environmental concern of the Board. The current *Offshore Waste*

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3.3.4 CON'T

Treatment Guidelines provide that levels of LTMO discharged with cuttings should be minimized to the extent possible with current technology. This is consistent with Recommendation 4(b) of the Joint Public Review Panel, which the Board accepts. With current levels of conventional solids control technology it has been demonstrated that if all solids discharge points are accurately monitored and measured the average result will be a discharge of slightly less than 15% mineral oil by weight of drill solids. The Joint Public Review Panel Report indicated that the Proponents expect to achieve a limit of 8% LTMO on cuttings. The Board has not been presented with data from any offshore drilling operations that demonstrate that discharge significantly less than 15% can be achieved through conventional solids control technology.

Research is ongoing to find other drilling fluids and to develop alternative methods to treat and dispose of contaminated drill cuttings. In some jurisdictions such as the United Kingdom, the discharge of LTMO contaminated drill solids into the ocean has been virtually eliminated by imposing an allowable discharge limit of 1% oil by weight. Oily cuttings are either transported to approved onshore disposal sites or injected in offshore disposal wells. This 1% tolerance allows for small amounts of oil taken into water base drilling fluids in exceptional circumstances, for example, when LTMO is needed to free a stuck drill pipe.

The North Sea is a mature oil and gas area compared to Canada's east coast and their lower regulated limits have been successfully phased in over a number of years. The Board intends to take a similar approach. The Board's current *Offshore Waste Treatment Guidelines* will be strictly applied over the next two years to minimize LTMO cuttings discharge into the ocean to the greatest extent possible. This will be balanced against the technical necessity for the use of LTMO base fluid and solids treatment technology. In addition, the Proponents will be required to submit a plan showing how they will eliminate the dumping of LTMO cuttings into the ocean. This policy will give operators time to experiment with alternative fluids and alternative methods of disposal or other treatment. After December 31, 1999, a discharge limit of 1% LTMO by weight on cutting will be imposed.

CONDITION 21: LOW TOXICITY MINERAL OIL (LTMO) BASED DRILLING MUD

The Proponents shall minimize the discharge into the marine environment of Low Toxicity Mineral Oil on cuttings by complying with the following:

- *prior to December 31, 1999 discharges of LTMO on cuttings shall be in compliance with the Board's Offshore Waste Treatment Guidelines and the Proponents shall only use LTMO in well sections where it is a technical requirement,*
- *after December 31, 1999, discharges of LTMO on cuttings shall not exceed 1% LTMO by weight on cuttings, unless specifically authorized by the Board in exceptional circumstances, and*
- *prior to commencing drilling, the Proponents shall submit to the Board a plan which outlines the measures they will take to minimize the discharge of LTMO on cuttings and to comply with the 1% discharge limit by December 31, 1999. Alternative means of disposal, drilling fluids and solids control equipment are to be considered.*

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3.3.5 Well Casing and Completion Plans

3.3.5

The Proponents plan to utilize Mobil Oil Canada's Load and Resistance Factor Design (LRFD) method of casing design. The CNSOPB has reviewed this approach and finds the design method acceptable and in many cases more detailed than current design methods. However, the Board will require details on the derivation of load and resistance factors utilized for specific well designs. All wells must be fitted with sub-surface safety valves (SSSV's) as required by regulation.

The deep high pressured sands at Venture have not been included in the overall well design, as the viability of producing them is still being evaluated. If a decision is made to proceed with the development of these deeper sands, additional information regarding design considerations for these wells shall be provided to the Board for approval.

The Board finds the overall design philosophy generally acceptable, but will require additional details prior to individual well authorizations.

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3.4 3.4 PRODUCTION FACILITIES

3.4.1 3.4.1 Development Alternatives

The Board has evaluated the Development Plan against other development alternatives. The Board accepts that this plan is currently the most effective alternative for resource development. This Plan presents a reasonable approach to the integrated development of several major hydrocarbon fields located in relatively close proximity to each other. This integrated Development Plan also reduces the environmental impact and optimizes the economic and socio-economic aspects of the project over potential separate and independent field development.

3.4.2 3.4.2 Platform Structures

The Development Plan indicates that the production platform structures will be of the fixed steel jacket type. The rationale given for the selection of this platform type includes the economics of construction and the established performance record in environments similar to the Sable Island area. The Board finds the selection of this type of platform structure acceptable. There are approximately 2000 such platforms in the world including installations in the Gulf of Mexico, Southeast Asia, and the volatile environment of the North Sea. Most of these jacket structures are operated in water depths of less than 100 meters. The water depths where the SOEP platforms will be installed ranges from 20 to 80 meters.

It is worth noting that two steel jacket structures have been installed in the Sable Island area since 1992. Experience with these to date, further supports the Proponents' selection of the steel jacket type platform for structures at the proposed sites.

3.4.2.1 3.4.2.1 Satellite Facilities

The Development Plan presents an overview of the proposed facilities for the satellite platforms. The Proponents state that these platforms will be designed as normally unmanned and will have minimal processing equipment. Basic information is provided for the following systems and equipment for the satellite platforms:

- electrical power
- service water supply
- produced water treatment
- closed and open drain effluent collection
- relief and blowdown systems
- compressed air for instrument use
- fire protection and safety systems
- helicopter deck
- potable water
- sewage systems

The information presented is only preliminary. The final detailed design of the platforms and systems will be subject to review by the Certifying Authority and approval by the Board.

It must be noted that the waste treatment and disposal guidelines referred to by the Proponents have been recently superseded by the *Offshore Waste Treatment Guidelines*, September 1996. The facilities and systems shall conform to these guidelines.

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3.4.2.2 Thebaud Production and Processing Platform Facilities

3.4.2.2

Although the production operations outlined in the Development Plan are generally adequate, the Board requires some clarification on particular aspects. The accuracy of measurement and production allocation procedures are particularly important to the Board. The equipment and procedures associated with production measurement and allocation must be documented and approved prior to the CNSOPB issuing a Production Operations Authorization. Since the equipment used can have a major effect on these measurements and procedures, the Board will require the Proponents to submit an outline of their plans in this regard.

CONDITION 22: PRODUCTION MEASUREMENT AND ALLOCATION

The Proponents shall submit the following to the Board:

- *a description of the production process including equipment schematics and standard operating procedures,*
- *a flow system and flow calculation procedure, and the allocation procedure which will be used to allocate production to individual wells and pools,*
- *metering schematics showing the location of all meters and descriptions of the type of meters, their accuracy and meter proving procedures, and*
- *an assessment of the accuracy of the flow and allocation calculations.*

All flow measurement procedures must meet the requirements of the American Petroleum Institute Manual of Petroleum Measurement Standards.

3.4.2.3 Thebaud Accommodation Facilities

3.4.2.3

The Development Plan provides for separate accommodation facilities connected to the production and processing platform at Thebaud by a steel truss bridge. However, the Proponents state that this is under review. It is possible that a combined process/utilities/accommodation platform will be installed at the Thebaud location, connected to the wellhead platform by an enclosed bridge. The design chosen will be assessed under the *Concept Safety Evaluation* to confirm that it complies with the Proponents' safety targets. Although either option may meet an acceptable safety level, there are significant differences between them from a safety perspective. A combined platform design will be subject to extensive scrutiny from both the Certifying Authority and the Board before an authorization to install is issued.

The accommodation support systems set out in the Development Plan are appropriate for this level of detail. The final configuration of these facilities will also be subject to extensive review.

3.4.2.4 Offshore Pipelines

3.4.2.4

The *Accord Implementation Acts* give the Board jurisdiction over all pipelines that transport petroleum in the offshore area, including the proposed pipeline from the outlet of Thebaud to shore. The NEB also has jurisdiction over this pipeline. In accordance with the regulatory framework developed for SOEP, the CNSOPB did not consider the pipeline to shore in its review of the Development Plan but monitored the NEB process and will review the NEB decision. The regulatory framework also provided that applications for construction and installation of the pipeline to shore be made to the CNSOPB.

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3.4.2.4 CON'T

The Joint Public Review Panel has recommended (Recommendation 1) that a condition be put on the approval of the pipeline to shore that requires the Proponents to submit details in relation to the design, construction and operation of that pipeline to the NEB. Although the Board agrees that this information should be filed with the appropriate regulatory authority, it does not believe that, given the regulatory framework, the recommendation should apply only to the NEB. The Board will therefore require similar information to be filed prior to granting an Authorization To Install and a Production Operations Authorization. The Board will work with the NEB to develop a Memorandum of Understanding specific to SOEP that will provide clarification to the Proponents and others with respect to filing requirements for the design, construction, installation and operation of the pipeline to shore.

CONDITION 23: PIPELINE TO SHORE

The Proponents shall submit the information respecting the pipeline to shore referred to in Joint Public Review Panel Recommendation No. 1, to the CNSOPB within the time frames specified in the recommendation.

Since the Board did not consider the pipeline to shore in this decision report, the following discussion is limited to the interfield flowlines, over which the Board has sole jurisdiction.

The Development Plan envisages the installation of the following subsea interfield flowlines.

Venture to Thebaud	54 kilometers
North Triumph to Thebaud	35 kilometers
South Venture to Venture	5 kilometers
Glenelg to Thebaud	32 kilometers
Alma to Thebaud	50 kilometers

Further technical information to support the interfield and export line sizes and properties must be presented.

CONDITION 24: FLOWLINES

Within 60 days of the implementation of this Decision Report, the Proponents shall document further the interfield and export flowline constraints as functions of pressure and rate. Documentation must be provided to demonstrate to the Board that the pipelines are appropriately designed for well deliverability and resource conservation.

The final design, installation and operation of the pipelines will be subject to Board approval.

The Board is satisfied that the information presented in the Development Plan regarding pipeline corrosion control is adequate for this stage of the Project.

The Proponents address the issues of leak detection and emergency shutdown and blowdown equipment and state that the systems will be installed on each interfield line in accordance with applicable codes and standards.

The Development Plan presents the preliminary design basis of the pipelines for pressure and liquid holdup. The final design must address all pertinent design conditions including assessment of accidental loads (e.g. dropped objects, anchors, fishing gear).

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3.4.2.4 con't

Since there are no regulated exclusion zones along the pipeline corridors, the potential for accidental loads on the pipeline is of concern to the Board. The Proponents indicated in the Development Plan that they will request a prohibition against anchoring within 200m of any flow line. The CNSOPB understands that the Proponents and the fishing associations have agreed that fishing will be permitted along the pipelines. The interaction of fishing gear with pipelines poses a potential threat to the integrity of the pipelines, the fishing gear and fishing vessels. The CNSOPB will work closely with the Proponents and the fishing industry to ensure fishing activities can be undertaken safely in the vicinity of pipelines.

The Proponents' assumptions on trenching and self-burial of the pipeline will be subject to further investigation as indicated in the Development Plan.

The Proponents propose to use methyl-ethylene-glycol (MEG) injection in the pipelines for hydrate inhibition and state that each interfield pipeline will be installed with a line strapped to it for MEG delivery from Thebaud. The MEG line is susceptible to damage if not properly installed. The CNSOPB will require the potential for damage to be addressed by the Proponents. The method of the MEG line installation will be subject to approval by the Board with emphasis being placed on protection against damage.

Regulations dealing with Offshore Pipelines are currently being drafted. Until the regulations are promulgated, the Proponents will require the CNSOPB's approval of the selection and implementation of pipeline regulations, codes and standards used to develop all aspects of the subject pipelines.

The Development Plan indicates that the subsea interfield pipelines and pipeline to shore will be subject to certification by the Certifying Authority. The Certifying Authority will assess design, construction methods, transportation and installation, and provide material and construction inspections to ensure that the pipelines are designed and constructed in accordance with the requirements of the CNSOPB. The Proponents' decision to include these pipelines within the Certifying Authority's scope of responsibility will further enhance overall project safety.

3.4.3 Design Criteria

3.4.3

The Development Plan presents preliminary design criteria for the following Project facilities: Thebaud platform, satellite platforms, interfield pipelines, production gathering pipelines, slugcatcher, gas conditioning plant, liquids pipeline and liquids handling facilities. It states that the Project design will meet applicable Canadian and Nova Scotian regulations and standards. Where standards do not exist the Project design will meet accepted international standards (i.e. American Petroleum Institute (API), Deutsches Industries Normen (DIN), British Standards (BS)). The Proponents will comply with their own corporate standards where no specific standard(s) exist. Any and all deviations from the *Accord Implementation Acts* and regulations require the CNSOPB's approval prior to implementation. The Certifying Authority must also certify such deviations.

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3.4.4 Environmental Design Criteria

The environmental design criteria presented in the Development Plan includes data on meteorology, tides, extreme wave conditions, operational wave conditions, normal wave conditions, wind speeds, currents, ice and icebergs, tsunamis, and marine fouling.

The Board has reviewed the Proponents' preliminary environmental design criteria and has concluded that it represents reasonable data for the Sable Island area. However, further studies and analysis are necessary to develop data of a higher confidence level for final design purposes. Several of these studies and analyses are identified in the Development Plan. Specific studies proposed by the Proponents include: a comprehensive wind and wave historical analysis to produce wind and wave design criteria; a current model study; and development of design criteria for sea ice. The Board agrees that these studies are appropriate.

Snow is not specifically considered within the environmental design criteria. The Board requires that snow effects be considered and included in the Project's development and design.

3.4.5 Geotechnical Criteria

The Development Plan presents preliminary geotechnical design criteria including global sediment transport, scour, basic soil characteristics, and seismic data.

A localized boring program was performed on and around the Venture field and the Proponents consider this data to be indicative of the area for preliminary design purposes. The Proponents state that a soil boring and analysis program will be performed for all sites for which the site specific data is not available. This site specific data will be required to design jacket piles and ensure jacket stability. The Proponents further state that the regional seismic data will be reviewed to incorporate any recent advances in characterization. The Proponents' proposed approach to the development of geotechnical data is acceptable to the Board.

With respect to sediment transport and scour, experience as well as the study cited by the Proponents indicates that scour conditions in the Sable Island area can be significant. The Proponents indicate that their current scour design information will be reviewed against the more recent experience of the Cohasset-Panuke structures and the scour design data may be revised appropriately. The Board accepts the incorporation of Cohasset-Panuke data in principle, however, additional scour studies may be required to assess the specific conditions applicable for this Project.

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3.5 CONSTRUCTION AND INSTALLATION

3.5

The Development Plan calls for the early construction of three jackets for Thebaud, Venture and North Triumph with installation in 1998 and 1999. Drilling will commence with one rig in the spring of 1998 drilling through wellhead jackets, followed by a second rig in the fall of the same year. A heavy lift vessel will be utilized for the jacket and topsides installations, and a pipelay barge will install the pipeline and the interfield lines. These vessels will be foreign flagged since no Canadian flagged vessels are capable of these activities.

The Board will require that all foreign vessels utilized on the Project obtain a *Non-Canadian Ship Safety Order* (SIC 10) from Transport Canada and receive a thorough inspection and evaluation from both the Proponents and the CNSOPB. These vessels must also meet the requirements of the *Nova Scotia Petroleum Occupational Safety and Health Regulations*, as well as the standards identified in the Proponents' Safety Plan.

The construction and installation phase, as set out in the Development Plan, is acceptable for this stage of the Project. Equipment and procedures identified are in keeping with accepted industry methods and standards.

3.6 OPERATIONS AND MAINTENANCE

3.6

The Proponents intend to develop detailed operating and maintenance procedures during the engineering design and construction phase of the Project. These procedures will be documented and form part of the Total Quality Management System and, as such, will be subject to review and approval by the Board.

The Development Plan identifies monitoring and maintenance systems for the following:

- process monitoring and control
- fire and gas detection and protection
- rotating equipment bearing monitoring systems
- structural and foundation monitoring systems
- essential services monitoring systems
- compliance monitoring systems
- corrosion monitoring systems

All helicopter operations as well as supply and standby vessels will meet Transport Canada requirements for Canadian operations.

The Proponents state that pipeline leak detection will meet the requirements of *CSA Standard Z662-94 Oil and Gas Pipeline Systems*. An acceptable method to meet this standard will be selected by the Proponents during the design phase of the Project. The proposed method of leak detection will be subject to CNSOPB review and approval prior to the issuance of a Production Operations Authorization.

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3.7

3.7 DECOMMISSIONING AND ABANDONMENT

The Development Plan indicates that all Project facilities will be decommissioned and abandoned in accordance with regulatory requirements applicable at the time of such activities. The current Plan states that all structures and facilities, with the exception of the offshore pipelines, will be removed at the time of project abandonment. Pipelines will be flushed and plugged and free of any potential to interfere with the environment or with other commercial offshore activities. All wells will be abandoned according to regulatory requirements in place at the time of abandonment. This approach and level of commitment for decommissioning and abandonment is acceptable to the Board.

Although abandonment of the SOEP facilities should be many years in the future, the operator should have a plan in place to provide adequate funds for abandonment.

CONDITION 25: ABANDONMENT

Prior to the commencement of production, the Proponents 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 all offshore Project facilities.

3.8

3.8 PROJECT ECONOMICS

The Board ran its own economics in order to evaluate the economics of the Project. Operating and capital costs provided by the Proponents were used in these evaluations. The Capital Expenditures and Operating Costs supplied by the Proponents were used and in addition to the most likely estimated costs, worst and best case values were provided.

The Board utilized its own price forecast for gas and liquids based on information obtained from Canadian oil industry publications, Canadian banking and the United States Mineral Management Service forecasts. This was understood to be a conservative approach as no price escalation over the life of the Project was utilized.

Taxes and royalties were included in the evaluation based on information provided by the Nova Scotia Department of Natural Resources. Recoverable reserves and deliverability of these reserves were reviewed and modeled by CNSOPB staff. The Proponents' estimates were found to be acceptable for the review of the twenty-five year Project. Economic evaluation parameters included present worth, payout, rate of return and cash flows, both gross and net.

Based upon its review, the Board is satisfied that the Project is economically viable under the most representative scenarios.

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3.9 LIABILITY AND COMPENSATION

3.9

3.9.1 Legislative and Regulatory Requirements

3.9.1

Before the Board may issue an authorization for a work or activity the operator must satisfy the financial responsibility requirements of the *Accord Implementation Acts* and, where appropriate, the Regulations. The *Accord Implementation Acts* require that the operator provide, and maintain with the Board, proof of financial responsibility in a form and in an amount satisfactory to the Board.

In respect of losses or damages arising from spills or debris, the operator is liable, without proof of fault or negligence, up to the prescribed limit of \$30 million. The operator, however, is subject to unlimited liability for claims attributable to the operator's work or activity. For potential loss or damage up to thirty million dollars arising from spills or debris associated with the SOEP, the Board will require evidence of financial responsibility in a form that affords the Board direct access for the purpose of settling claims.

In respect of other potential losses or damages arising from a work or activity in relation to development and production of the fields, the Board will require evidence of financial responsibility of a type and in an amount that is sufficient to ensure that the operator completes the work or activity, leaves the site in a satisfactory condition, and is financially capable of meeting any financial liability that may occur in developing and producing the fields, including; physical damage to property, removal of debris, liabilities to third parties, well control/making wells safe, pollution clean-up, redrilling costs and evacuation/search and rescue. This amount is separate and above the \$30 million strict liability amount discussed above.

It should be noted that each work or activity requires a review of the appropriate form and amount of financial responsibility. Prior to issuing any authorization for the Project, the Board will conduct a risk assessment to determine the appropriate level and form of financial responsibility requirements.

CONDITION 26: FINANCIAL RESPONSIBILITY

Not less than 30 days prior to the issuance of any authorization for a work or activity relating to the Project, the Proponents shall provide, in a form and amount satisfactory to the Board, evidence of financial responsibility sufficient to demonstrate that they have complied with the requirements of the legislation and regulations and such further requirements respecting financial responsibility as the Board may specify.

3.9.2 Voluntary Compensation Programs

3.9.2

In addition to the mandatory regulatory requirements described above, there are two voluntary programs that have been put in place to protect the fishery. Through negotiations, the Proponents and the fishing industry have developed the SOEP Fisheries Compensation Program. It provides a simple, inexpensive and expeditious alternative to the legal system. In addition to this project specific program, the Canadian Association of Petroleum Producers also has a fishery compensation policy in place for its East Coast operators which provides compensation for non-attributable damages.

Given that the fishing industry and petroleum operators have been able to establish such programs on a voluntary basis, the Board does not believe that it is necessary to impose any further

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conditions regarding fishery compensation. However, as stated in Section 3.11.1 the Board intends to monitor these programs closely through its Fisheries Advisory Committee and other means. If it is determined that these programs are deficient, the Board will take appropriate steps to address this issue.

3.10

3.10 SAFETY PLAN

The Safety Plan, submitted in the Development Plan, describes a system of controls which will be followed through the various phases of the project. At this stage of the Project, the Safety Plan exists only as a commitment to address issues in an appropriate manner in accordance with the CNSOPB's *Guideline for an Operator's Safety Plan*. As each stage of the Project evolves, the Proponents have committed to conduct a Concept Safety Evaluation in order to assess potential risks and to define target levels of safety. This information will be used to define additional hazard analysis and to prepare contingency plans.

The *Nova Scotia Offshore Petroleum Installations Regulations* require that both the Concept Safety Evaluation and the target levels of safety be submitted to the CNSOPB at the time the Development Plan is filed. The purpose of this requirement is to ensure that the results of the Concept Safety Evaluation form part of the basis for decisions that affect the level of safety for all activities associated with each phase in the life of the production installation. In this case, the Proponents requested that the submission of these items be delayed until the details of the Project were better defined. The Board accepted this request with the clear understanding that concerns identified through the Concept Safety Evaluation process be adequately addressed as part of the detail design phase of the Project.

The Safety Plan itself will consist of the manuals, plans, policies and procedures developed to address concerns identified for each phase and activity of the project. As such the Plan will be developed over the project schedule. An acceptable Safety Plan will be required by the Board for any activity authorization.

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3.11 ENVIRONMENTAL PROTECTION AND SOCIO-ECONOMIC IMPACT

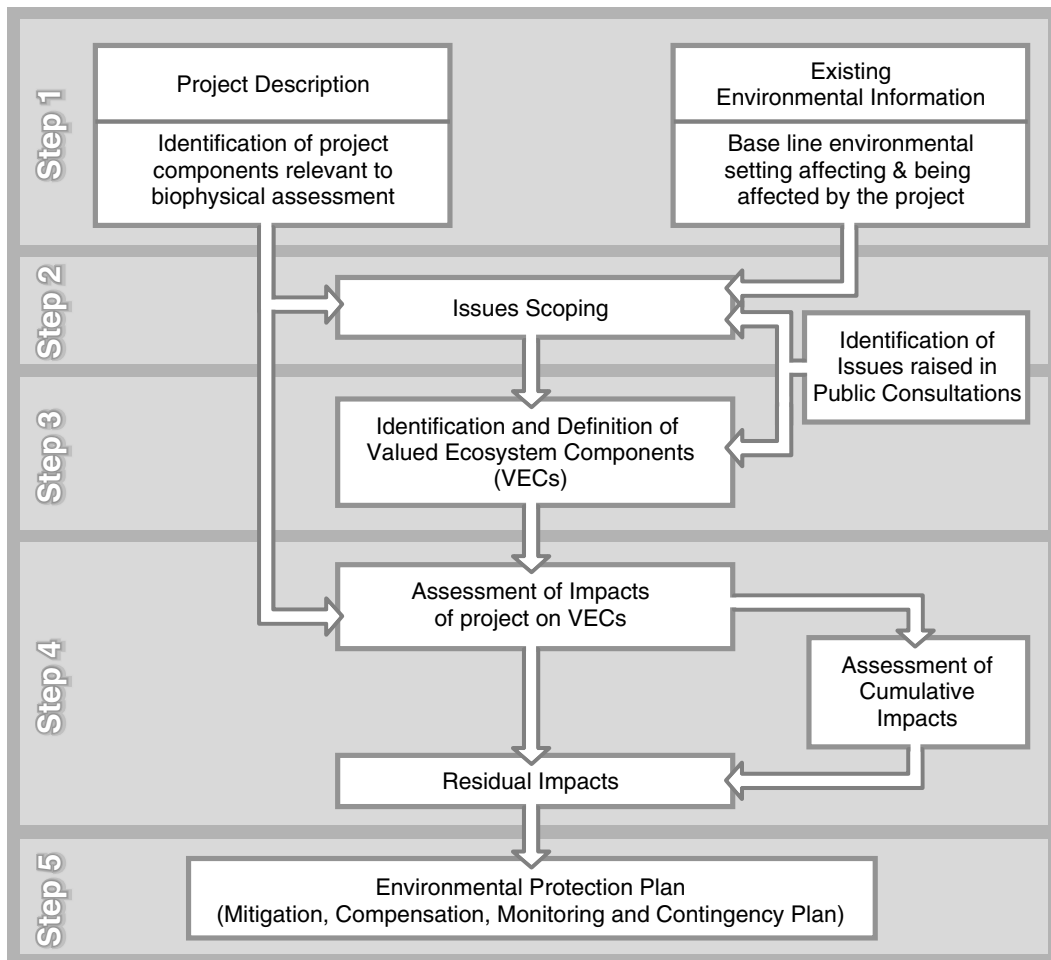
3.11

The Development Plan included an Environmental Impact Assessment. The approach used by the Proponents for the environmental impact assessment is outlined in Figure 3.11. The Proponent compiled environmental information from the 1983 formal environmental assessment of the proposed Venture gas development project. This information was updated with SOEP studies and recent data from other sources. The Project description was then reviewed to identify project components that are relevant to biophysical assessment.

Issues were then identified from the 1983 assessment, other projects, including the currently operating Cohasset project, and through consultation with the public, community groups and stakeholders, the scientific community and government. Public consultation was undertaken by the Proponents from January to December 1995. Environmental components of concern were then identified and a determination made as to whether the Project activities impacted upon these components.

The result of step two was the identification of valued ecosystem components. Each valued ecosystem component was then defined and linkages with the project identified. The list of valued environmental components for the marine environment included fish, offshore shellfish, marine mammals, birds and coastal resources such as lobster. Special areas or activities were also identified including aquaculture, fisheries, Sable Island and the Gully.

Figure 3.11. SOEP Environmental Impact Assessment, Section 2.4



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An assessment of the potential impacts of the various project phases was carried out for each valued ecosystem component after considering cumulative effects and mitigative measures. This led to the development of the Environmental Protection Plan which addresses mitigation, monitoring, contingency plans and compensation.

As noted in Section 1 of this Decision Report, a formal public review was undertaken to address, amongst other things, the environmental and socio-economic aspects of the Project. This provided for a thorough review of the methodology and findings of the environmental assessment and proposed environmental protection plan. It also provided a forum for the public, government agencies and fishing industry to express their views about the Project. The Board is satisfied that the public review process provided for a detailed review of the environmental assessment and environmental protection plan.

The review of the environmental aspects of the Project are addressed on pages 26 to 60 of the *Joint Panel Review Panel Report*. The principal conclusion of the report is that the Project can proceed without any significant adverse environmental, social or economic effects if the Panel's recommendations are adopted.

The recommendations of the Panel are set out in Appendix 2. The Board's response to the environmental recommendations of the Panel are as follows.

The Joint Public Review Panel recommended that a comprehensive and statistically and scientifically valid environmental effects monitoring program be established with respect to discharges of drilling waste and produced water (Recommendation 4). It also recommended that the environmental effects monitoring program include a taint test and acoustic monitoring (Recommendations 7 and 9). The Board accepts the recommendation that a comprehensive environmental effects monitoring program be established. The specific aspects proposed in the recommendation require further scrutiny and can better be addressed when details of the proposed activity are available. The Board will require the Proponents to have an environmental effects monitoring program in place for certain activities prior to the commencement of the subject activity. The specifics of the environmental effects monitoring program for each activity will be determined by the Board.

The Board notes that the Proponents have agreed to establish an environmental effects monitoring advisory group. The Board will participate in this advisory group. In addition, the Board will utilize its existing Environmental Coordinating Committee and Fisheries Advisory Committee to review and provide advise to the Board on the acceptability of the environmental effects monitoring program. The Board will require that an environmental effects monitoring program be developed prior to granting authorizations for construction, drilling or production activities.

CONDITION 27: ENVIRONMENTAL EFFECTS MONITORING

The Proponents shall prepare an environmental effects monitoring program, satisfactory to the Board, with respect to discharges, tainting and noise, and submit it to the Board prior to undertaking construction, drilling or production activities.

The Joint Public Review Panel also recommended that alternatives to the use of LTMO be explored, new waste treatment methodologies and alternatives to chlorination of liquid domestic wastes be addressed, and specific provisions related to hydrostatic test water be considered (Recommendation 4). The use of LTMO is discussed in Section 3.3.4 of this Decision Report. The Board concurs with the other aspects of the recommendation and notes that chlorination of domestic wastes is not permitted by the Board.

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The Joint Public Review Panel recommended that pipelaying activity in the vicinity of Country Harbour occur outside the mid May to mid August period (Recommendation 10). The Board will ensure that this is done to the extent practicable. The Panel also recommended that the appropriate regulatory authorities ensure that the Proponents remove Country Harbour for consideration for base sites, and that the final selections be made as expeditiously as possible (Recommendation 8). Although the Board does not have jurisdiction over onshore matters, it does have involvement in the selection of base sites through its Benefits mandate. The Board notes the sensitivity to base sites in the Country Harbour area and will include that as a consideration in discussions with the Proponents concerning base sites.

The Board accepts the Panel's recommendation that Codes of Practice for the Gully and Sable Island be developed by the Proponents (Recommendations 11 and 12). The Board will require these to be prepared prior to authorizations being granted for offshore construction, drilling or production activities. The Panel recommendation states that this should be in place six months prior to the activity commencing. The Board does not believe this is practicable. However, it will ensure that the Board and its advisory committees have sufficient time to review these Codes prior to any authorization being issued by the Board.

CONDITION 28: CODE OF PRACTICE FOR SABLE ISLAND & THE GULLY

The Proponents shall prepare and submit to the Board a Code of Practice, satisfactory to the Board, to protect Sable Island and the Gully. This shall be submitted to the Board in sufficient time to enable a thorough review by the Board and its advisory committees.

In accordance with Recommendation 13 of the Joint Public Review Panel the Proponents will be required to collect, analyze and report data pertaining to storm and extreme events. The format and scope of this reporting requirement will comply with the *Guidelines Respecting Physical Environmental Programs During Petroleum Drilling and Production on Frontier Lands* unless an alternate format is approved by the Board.

Recommendation 14 of the Panel states that Proponents should submit information relative to impacts on navigation to The Department of Fisheries and Oceans (DFO). The Board will work with DFO to ensure the Proponents provide this information and that the safety zones required under the *Accord Implementation Acts* are established.

The Board accepts the Panel's Recommendation 15 that an Environmental Protection Plan be submitted as well as the Panel's direction on specific matters that the plan should include or address. The Board notes that the principal aspects of an environmental management system are included in the recommendation. The Board fully endorses this approach and has addressed those requirements in Condition 14 which requires the Proponents to put in place a Total Quality Management System for the Project. The Board will ensure that this system includes those aspects relevant to the Environment Protection Plan as outlined in this recommendation.

The Joint Public Review Panel recommended that a final Environmental Protection Plan be in place at least six months prior to commencement of activity requiring regulatory approval. The Board believes that this aspect of the recommendation is not practicable. The Board views these management systems, including an Environmental Protection Plan to be "living" documents that will undergo continual change as the nature of the activities unfold and improvements are incorporated from operating experience or technological advances. Therefore, the Board will require aspects of the plan relevant to specific activities to be in place prior to authorizations for that activity being granted and will require revisions of the plan to be filed with the Board.

SECTION 3

DEVELOPMENT PLAN DECISION REPORT

3.11 CON'T

The Board fully supports the Panel's recommendation that a contingency plan be included as part of the Environmental Protection Plan. This is a standard regulatory requirement of the Board.

The Board accepts the Panel's Recommendation 44 that common standards and an integrated gas emission monitoring process be established. The Board will participate in the development of these.

The Joint Public Review Panel noted that the initial public consultation by the Proponents had not adequately addressed aboriginal issues. The Panel recommended that a condition be placed on the authorization to require the Proponents to submit a written protocol or agreement spelling out the Proponents and Aboriginal roles (Recommendation 45). The Board agrees that such a protocol or agreement would be appropriate. However, due to the limited impact that offshore components of the Project will have on the aboriginal community, the Board does not believe it is necessary to place a condition on the Development Plan approval. Should representatives of the aboriginal community wish to consult the Board on this or any other matter, the Board would be pleased to meet with them.

Based upon the information available to the Board, including the reports of the Joint Public Review Panel and the Commissioner, the Board is satisfied that the Project can proceed without causing significant adverse environmental or socio-economic effects, if the conditions specified in the Board's Decision Reports are followed.

3.11.1

3.11.1 Fisheries Matters

The Board is pleased that the Proponents and the fishing industry have established a Fisheries Liaison Committee to address matters common to the two industries. Through this committee a *SOEP – Fisheries Industries Agreement on Offshore Commercial Fisheries Issues* was put in place in April 1997. The fishing industry requested that the Joint Public Review Panel recommend making this agreement a condition of approval. The Panel declined to do so. The Board accepts the Panel's finding and agrees that the imposition of an outside authority is contrary to the spirit of a voluntary agreement. However, the Board will closely monitor the interaction of the two industries and the effectiveness of the agreement, and may require SOEP to undertake specific action in relation to fisheries in the future.

The Board notes that the Fisheries Advisory Committee established by the Board has been a useful forum to address offshore petroleum issues with the fishing industry. The Board will continue to utilize this committee to ensure that the fishing industry is aware of upcoming activities and to receive advice from the committee.

Fisheries compensation is addressed in Section 3.9.2 of this Decision Report.

SECTION 3

DEVELOPMENT PLAN DECISION REPORT

3.11.2 Contingency Planning

3.11.2

The Board must be satisfied that adequate Contingency Plans are in place before any work activity is authorized. However, when the Development Plan was submitted, Contingency Plans had not been completed. Material submitted in support of field activities to date has been satisfactory but many of the elements of the Project have not yet been finalized. As the Project becomes better defined, the Proponents are committed to the development of appropriate Contingency Plans to deal with emergency situations affecting the safety of personnel, the environment and property.

The regulations specify emergency incidents and events for which Contingency Plans must be developed. In addition to the regulatory requirements, the Proponents intend to comply with both the Canadian Association of Petroleum Producers and the CAN/CSA-Z731-95 guidelines for emergency response plans. The Proponents have provided an outline of topics which will be covered in their Emergency Response Plan. This outline is appropriate for the Project and meets the requirements of the regulations. Any additional concerns identified through the Conceptual Safety Evaluation or through subsequent Hazard Analysis will also be addressed in the Contingency Plans.

The Board accepts the Commissioner's recommendations regarding rig availability in the event a relief well is required. The CNSOPB, therefore, will ensure that the plans specific to possible relief well requirements referenced in Section 12.3 of the Development Plan are submitted and approved by the Board, prior to the Proponents commencing drilling operations.

3.11.3 Socio-Economic Matters

3.11.3

As part of its public review process, the Board required that the Proponents prepare a Socio-Economic Impact Statement (SEIS). This SEIS assessed the Project's impact on Nova Scotia generally, and the Halifax metropolitan area, Country Harbor and the Strait of Canso areas. The initial construction period and the operation phase were both assessed.

As part of the SEIS, the Proponents identified issues and concerns, judged the benefits or impacts and predicted the residual impacts and benefits following mitigation. The conclusions were that, with effective planning, the Project would generate significant employment and business benefits for a number of communities. Impacts on the larger centres would be minimal.

The Joint Public Review Panel reviewed the socio-economic aspects of the Project on pages 55 to 60 of its Report. The Panel concluded that socio-economic outcomes of the Project are favorable for the Maritimes and Canada. Socio-economic matters are further discussed in the Canada-Nova Scotia Benefits Plan Decision Report.

SECTION 3

DEVELOPMENT PLAN DECISION REPORT

3.12

3.12 THIRD PARTY ACCESS

The Board is pleased that the Proponents have stated they are prepared to permit third party access to their facilities based on normal regulatory practice. At present there are no provisions in the *Accord Implementation Acts* or regulations which address third party access to facilities. The pipeline that will connect the offshore to shore based facilities will be regulated by the National Energy Board under its Group 2 specification. The Joint Public Review Panel report recommends that the National Energy Board treat SOEP as a Group 2 company, but it does not address areas outside NEB jurisdiction. The remaining offshore facilities, (i.e. other than the pipeline to shore), fall exclusively under CNSOPB jurisdiction pursuant to the *Accord Implementation Acts*.

The CNSOPB did not evaluate the facilities based on requirements to accommodate additional production at this time. The SOEP includes approximately two thirds of the established gas reserves offshore Nova Scotia. The Board did not believe it was appropriate to have the Proponents design their facilities for production that remains speculative at this time. However, the Board does recognize that excess capacity is being allowed for in designing the facilities. Nonetheless, the Board believes that in the absence of regulations, it must have a mechanism to ensure fair access, both in regard to the amount of gas and liquids and also with respect to processing, and transportation fees or charges.

As the owners of infrastructure, the Proponents will be obliged to consider all requests for use of capacity, and must negotiate in good faith to reach an agreement with the party requesting capacity. In the event of a dispute either party may apply to the CNSOPB for a resolution.

CONDITION 29: THIRD PARTY ACCESS

The Proponents shall permit third party access to their offshore facilities on reasonable terms and conditions. By commencing production the Proponents 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 Proponents, and*
- *set pipeline tariffs and processing fees, and fix the delivery location.*

SECTION 3

DEVELOPMENT PLAN DECISION REPORT

3.13 ASSESSMENT OF ALTERNATIVE DEVELOPMENT OPTIONS

3.13

3.13.1 Development Alternatives Eliminated

3.13.1

Prior to the selection of the preferred development alternative, several other alternatives were considered. Five of the most promising alternative plans were screened. These were:

1. Electric Power Generation
2. Liquefied Natural Gas (LNG)
3. Liquefied Heavy Gas (LHG)
4. Natural Gas Conversion Technologies
5. Offshore Gas Plant (platform or island)

The Board has reviewed these alternatives and agrees with the Proponents conclusions set out in the Development Plan.

3.13.2 Pipeline Alternatives

3.13.2

Four alternate pipeline developments were assessed prior to the selection of the preferred development option. They were:

1. Single Subsea Dense Phase Pipeline
2. Separate Subsea Gas and Unstabilized Condensate Pipelines
3. Single Subsea Sales Gas Pipeline to Boston
4. Separate Subsea Sales Gas and Stabilized Condensate Pipelines

The Board has reviewed the documentation concerning the pipeline alternatives. The Board concurs with the conclusions of these studies, and supports the preferred development alternative as the optimum one.

3.13.3 Satellite Platform Development Alternatives

3.13.3

The Proponents' Development Plan states that the primary design focus for the satellite platforms is the minimization of the processing facilities associated with the treatment of production formation water. The Proponents cite various alternate methods for water treatment and discuss the particular concerns with each. The methods considered included: centrifuge separators, induced gas flotation cells, caisson pipe separators and plate interceptors. Hydrocyclone technology was chosen, however, the Proponents stated that plate interceptors will be reviewed during the Front End Engineering and Design to determine if this alternative is acceptable. The Board has no particular concerns with either method provided that the requirements of the Offshore Waste Treatment Guidelines are met.

3.13.4 Landfall Alternatives

3.13.4

Two alternate landfall possibilities were analysed prior to the selection of the Development Plan alternative. They were:

1. Landfall at Country Harbour/Gas Plant at Point Tupper
2. Landfall at Port Richmond/Gas Plant at Point Tupper

These alternatives were rejected due to economic and environmental considerations. The Board agrees that the preferred development option is superior to these alternatives.

APPENDIX 1

REGULATIONS, DRAFT REGULATIONS AND GUIDELINES THAT APPLY IN THE NOVA SCOTIA OFFSHORE AREA:

Promulgated Federal and Provincial “Mirror” Regulations

- Nova Scotia Offshore Petroleum Drilling Regulations
- Nova Scotia Offshore Area Petroleum Diving Regulations
- Nova Scotia Offshore Certificate of Fitness Regulations
- Nova Scotia Offshore Area Petroleum Geophysical Operations
- Nova Scotia Offshore Area Petroleum Production and Conservation
- Nova Scotia Offshore Petroleum Installations Regulations
- Canada-Nova Scotia Oil and Gas Spills and Debris Liability Regulations

Draft Regulations

- Petroleum Occupational Safety and Health Regulations - Nova Scotia
- Nova Scotia Offshore Operations Regulations
- Nova Scotia Offshore Pipeline Regulations

CNSOPB Guidelines

- Guidelines on the Issuance of Exploration Licences; October 1993
- Geophysical and Geological Programs in the Nova Scotia Offshore Area - Guidelines for Work Programs, Authorizations and Reports; February 1992
- Guidelines on Plans and Authorizations Required for Development Projects; August 1995
- Guidelines on Operator’s Safety Plans; July 1994
- Guidelines Respecting Financial Responsibility for Drilling in the Newfoundland and Nova Scotia Offshore Areas; February 1992
- Industrial Benefits and Employment Plan Guidelines - Nova Scotia Offshore Area; January 1994
- Information on Well Data, Geological Data, Geophysical Data and Land Rights with Land Division Guideline; July 1994

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JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

Recommendation 1

The Panel recommends the following conditions for any approval of the Offshore Pipeline that may be granted.

The Proponents shall submit to the National Energy Board, for review, at least one hundred and eighty (180) days prior to the commencement of installation:

- (a) the pipeline design data and the final pipeline design, including, but not limited to:
 - (i) the final Offshore Pipeline Design Basis Memorandum;
 - (ii) detailed materials specifications;
 - (iii) any relevant supporting design studies;
 - (iv) limits of unacceptable spans found during installation, testing and operation, and mitigation measures to be used if an unacceptable span was to develop; and
 - (v) construction schematics.
- (b) a list of the regulations, standards, codes and specifications used in the design, construction and operation of the pipeline from the Thebaud platform to the Goldboro gas plant, indicating the date of issue;
- (c) reports providing results and supporting data from any geotechnical field investigations for the evaluation of:
 - (i) the potential for slope instability;
 - (ii) the geotechnical and geological hazards and geothermal regimes which may be encountered during installation and operation of the facilities; and
 - (iii) the special designs and measures required to safeguard the pipeline.
- (d) the pipeline route, detailed on appropriate scale maps, indicating all seabed, geotechnical and other features to a sufficient depth and resolution.

The Proponents shall not start any pipeline installation activity until the final pipeline design has been approved by the National Energy Board.

Unless the National Energy Board otherwise directs, the Proponents shall submit, at least thirty (30) days prior to the commencement of construction, a detailed construction schedule. The Proponents shall provide the National Energy Board and all other appropriate regulatory authorities with regular updates on the progress of construction activities and with any changes in the schedule as construction progresses.

The Proponents shall submit to the National Energy Board, for review, at least thirty (30) days prior to the commencement of construction, all construction manuals, including:

- (a) a pipe laying and pipe trenching manual (including, but not limited to, other pipeline construction activities such as pipeline stabilization or anchoring);
- (b) a construction safety manual (containing appropriate procedures for the reporting of any incidents to the NEB);
- (c) a pipeline emergency response procedures manual; and

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JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

- (d) all other manuals relevant to construction, installation and operation of the subsea gathering line from the Thebaud Platform to the Goldboro Gas Plant.

Unless the National Energy Board otherwise directs, the Proponents shall, during construction, for audit purposes, maintain at each construction site a copy of the welding procedures and non destructive testing procedures used on the Project together with all supporting documentation.

The Proponents shall file with the National Energy Board, no later than one hundred and eighty (180) days after completion of the pipe laying, an as-laid pipeline survey report and maps.

The Proponents shall submit to the National Energy Board, for review, at least thirty (30) days prior to "Leave to Open", an operation and maintenance manual including, but not limited to, inspection and remedial correction procedures for seabed movements causing spanning.

If the National Energy Board determines that the pipeline design assumptions, relative to the pipeline burial, pipeline stability and seabed changes, cannot be confirmed, the Proponents shall submit to the National Energy Board, for review, at least one hundred and eighty (180) days prior to "Leave to Open", a pipeline in-place monitoring program. This program shall include all the inspection procedures and schedules, and criteria that will initiate specific inspection and remedial action procedures (such as storm conditions and limiting span lengths). This program will also identify all equipment required on-site or near-site for remedial action procedures, as well as any such equipment that has to be brought from remote locations. The program shall include the procedures for reporting incidents to the National Energy Board.

The Certificate for the subsea pipeline facilities shall be issued to and held by Mobil Oil Canada Ltd. pending the establishment of the legal operating entity for SOEP. Upon establishment of that legal entity, the Proponents shall apply for permission to transfer the Certificate so that the pipeline facilities, in respect of which the Certificate is issued, shall be held and operated by that entity.

The Panel recommends that unless the National Energy Board otherwise directs, any certificate issued should expire on 31 December 2000, unless the construction and installation of the offshore pipeline facilities has commenced by that date.

Recommendation 2

The Panel recommends the following conditions for any approval of the gas plant that may be granted.

The Proponents shall cause the gas plant facilities to be designed, manufactured, located, constructed and installed in accordance with those specifications, drawings, and other information set forth in the Development Plan, or as otherwise adduced in evidence by the Proponents before the Panel, except as varied in accordance with paragraph 1(b) hereof.

At least thirty (30) days prior to the commencement of any relevant construction activities, the Proponents shall submit to the National Energy Board, for review, an abbreviated design information package of the gas plant containing:

- (a) process flow diagrams, with temperatures, pressures, mass balances and capacity, as well as the energy requirements of compressors, heaters and turbo-expanders;
- (b) piping and instrumentation diagrams for all plant systems; and

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- (c) the codes, standards, and material specifications, to be used for all major equipment and piping;

Design and specification changes shall be tabled for review and consideration by the National Energy Board at least 30 days prior to implementation.

The Proponents shall design, fabricate and install all components of the gas plant in accordance with applicable codes and standards in the Province of Nova Scotia.

The Proponents shall, at least ninety (90) days prior to the proposed date for the commencement of construction of the gas plant authorized by any order issued, file with the National Energy Board for its review:

- (a) the procedures for project quality assurance and quality control in the design, fabrication and construction of the gas plant, including audit and corrective action procedures; and
- (b) the construction pressure piping and pressure vessel, non-destructive and pressure testing program including audit and corrective action procedures.

The Proponents shall review with regulatory authorities the results of all plant Hazard and Operability Studies (HAZOP) within thirty (30) days of the completion of the studies. The Goldboro Gas Plant HAZOP review shall occur at least thirty (30) working days before final design is completed;

The Proponents shall, at least sixty (60) days prior to the commencement of construction, file with the National Energy Board a detailed construction schedule or schedules identifying all major construction activities and shall notify the National Energy Board of any modifications to the schedule or schedules at least ten (10) days before they occur; and

The Proponents shall prepare and submit for approval to the National Energy Board a construction safety manual pursuant to section 26 of the Onshore Pipeline Regulations.

The Proponents shall, prior to applying for “Leave to Open” for any segment of the gas processing facilities authorized by any Order issued, file with the National Energy Board for its review:

- (a) a detailed explanation of the programs for monitoring internal and external conditions of the pressure retaining equipment in the gas plant, having particular regard to those parts of the gas plant with the potential to cause danger to the employees, the public and the environment; and
- (b) a detailed training program based, at least in part, on the plant’s process hazard analysis, wherein competency of the employees can be verified before assignment of the task.

The Proponents shall at least sixty (60) days prior to turn-over or commissioning of any gas plant equipment, submit for to the National Energy Board for review:

- (a) the turn-over, commissioning and start-up procedures and schedules for all plant equipment, including information regarding the number of persons on site during each of the commissioning and start-up procedures; and
- (b) the turn-over, or commissioning safety management policies and procedures, showing how

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the safety of all employees and the public will be ensured during the commissioning phases of the gas plant.

The Proponents shall submit to the National Energy Board for approval, at least sixty (60) days prior to commencing plant operations:

- (a) an Operations and Maintenance Manual pursuant to section 48 Part VII of the Onshore Pipeline Regulations which shall include all the safe work procedures required to maintain, commission, start-up, operate and shutdown all equipment in, and associated with, the gas plant;
- (b) a gas plant specific emergency response procedures manual; and
- (c) contingency plans for hydrocarbon releases to the atmosphere within the gas plant and related facilities.

Any certificate issued shall expire on 31 December 2000 unless the construction and installation of the Goldboro gas plant has commenced by that date.

The operators of the Goldboro gas plant shall ensure that the plant is operated within the environmental codes and standards approved or adopted by the Province of Nova Scotia.

The operators of the Goldboro gas plant shall at least once per quarter, with at least 24 hours notice, allow representatives of the Nova Scotia Department of the Environment, if necessary, to inspect, audit, or verify calibration of those metering measuring and sample collection devices.

The operators of the Goldboro gas plant shall ensure that all modifications, repairs and expansions regulated by the Canada Labour Code conform to the applicable codes or standards that are approved or adopted by the Province of Nova Scotia.

Recommendation 3

The Panel recommends to the National Energy Board that the SOEP operating entity be designated as a Group 2 Company for the purposes of regulation under the NEB Act. The Panel also recommends that SOEP be required to keep its book of accounts pursuant to the code of accounts prescribed in the Uniform Accounting Regulations and to file audited annual financial statements.

Recommendation 4

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents:

- a) develop a statistically and scientifically valid Environmental Effects Monitoring program to ensure that mitigative measures are effective and to confirm predicted environmental effects with respect to discharges of drilling wastes and produced water including sublethal effects of produced water, flocculation of waste and the creation of chlorinated hydrocarbons within the 500 meter radius of the drilling platforms;
- b) further explore the alternatives to the use of OBMs and commit to considering and implementing the most environmentally and geotechnically sound options when available;
- c) consider and implement new waste treatment during the lifetime of the Project which is proven to be environmentally and technically superior to the initial methodology;
- d) explore alternative techniques other than chlorination for treatment of liquid domestic wastes

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from the Project facilities, prior to their release into the marine environment; and

- e) in conjunction with compliance monitoring requirements for the disposal of hydrostatic test water for the offshore pipelines, at least 30 working days prior to the commencement of any hydrostatic testing portion of the Project, submit to the appropriate regulatory authorities for approval detailed information regarding hydrostatic testing including:
 - (i) the source selected for hydrostatic test water;
 - (ii) the location of the hydrostatic test water;
 - (iii) the type and quantity of antioxidant to be used, including a justification for selecting this particular antioxidant;
 - (iv) site-specific mitigative and restorative measures to be employed as a result of consultations with regulatory agencies; and
 - (v) evidence to demonstrate that all issues raised by regulatory agencies have been adequately addressed, including all necessary updates to the environmental assessments where deficiencies have been identified.

Recommendation 5

The Panel recommends that at least 60 working days prior to the commencement of construction of the nearshore pipeline in Betty's Cove, the Proponents submit to the appropriate regulatory authorities for approval, additional information regarding the proposed specific routes of the subsea pipeline and the specific installation method for the landfall point. The additional information shall set out:

- (a) the results of the sediment sampling program along the specific route into Betty's Cove;
- (b) an underwater habitat assessment along the specific route into Betty's Cove;
- (c) an environmental issues list identifying all relevant effects of the selected route on marine biological Valued Environmental Components;
- (d) the associated mitigation measures to render those environmental effects insignificant; and
- (e) the details on the selected installation method for the landfall point.

Recommendation 6

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents conduct a minimum of one full year of baseline water and sediment quality monitoring prior to any trenching activity in Country Harbour. Furthermore, that the results of this program and those of the sediment modelling study for Country Harbour be reviewed by both the SOEP - Fisheries Liaison Committee and the Department of Fisheries and Oceans, and any issues raised be addressed prior to commencement of trenching activity.

Recommendation 7

The Panel recommends that, to adequately assess the potential for impacts of tainting on the fishing industry, the appropriate regulatory authorities ensure that the Proponents include a taint test as part of their Environmental Effects Monitoring (EEM) program.

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Recommendation 8

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents remove Country Harbour from consideration for base sites, and that the final selections be made as expeditiously as possible.

Recommendation 9

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents undertake the following: design and implement an acoustic monitoring program to measure noise (source) levels of Project activities, transmission losses in the Project area, and received levels in key locations, such as the Gully and nearby Logan Canyon. This should be done by, or under the direction of, an experienced third party, as part of their Environmental Effects Monitoring program planned for the Project.

Recommendation 10

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents, to the extent possible, conduct pipeline laying activity at Country Harbour and Country Island outside the mid-May to mid-August nesting season, particularly until the appropriate baseline data has been collected and analyzed on roseate tern population in this area.

Recommendation 11

The Panel recommends that the appropriate regulatory authorities ensure that, at least six months prior to the commencement of any fabrication or construction activity, the Proponents submit the Code of Practice to protect the Gully, as part of their final Environmental Protection Plan. The Code should include details on proposed Environmental Effects Monitoring (EEM) programs and mitigation procedures, as they specifically relate to the Gully and be in accordance with the requirements of the appropriate regulatory authority relevant to the activity. To obtain the baseline data necessary for EEM programs, the Proponents should initiate or contribute to basic physical-biological oceanographic research in the Gully.

Recommendation 12

The Panel recommends that the appropriate regulatory authorities ensure that, at least six months prior to the commencement of any fabrication or construction, the Proponents submit the Code of Practice to protect Sable Island, as part of its final Environmental Protection Plan. The plan must include details on proposed Environmental Effects Monitoring programs and mitigation procedures, as they specifically relate to Sable Island and be in accordance with the requirements of the appropriate regulatory authority relevant to the activity.

Recommendation 13

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents collect, analyze, and report data pertaining to storm and extreme events. The Panel recommends that the Proponents comply with the Conductivity - Temperature - Depth (CTD) profile provision of the Physical Guidelines.

Recommendation 14

The Panel recommends that the Proponents submit to DFO, as expeditiously as possible, all information relevant to impacts on navigation including; drill sites, standby vessel base locations and potential traffic patterns.

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Recommendation 15

With respect to Environmental Effects Monitoring programs for offshore facilities, the Panel recommends that at least six months prior to the commencement of any fabrication or construction activity requiring regulatory approval, in accordance with the requirements of the appropriate regulatory authority relevant to the activity, the Proponents shall submit to those authorities the final Environmental Protection Plan, which shall include or address the following factors:

- (a) Environmental Policy;
- (b) Standards and codes of practice, including the Code of Practice to protect Sable Island and the Gully;
- (c) Mitigation/operating procedures (construction, drilling, production, decommissioning and abandonment);
- (d) Environmental education, training and orientation procedures/programs;
- (e) Chain of command (mechanisms for environmental decision making);
- (f) Environmental Effects Monitoring practices and reporting, including detailed information on every monitoring program included in or referred to in its Development Plan, in its Undertakings made to other government agencies, and in commitments made by the Proponents in evidence before the Joint Review Panel;
- (g) Environmental Compliance Monitoring practices and reporting;
- (h) Reference Laws, Regulations, Guidelines, Licences, Permits and Approvals;
- (i) Waste Management Plan;
- (j) Atmospheric Release Management Plan;
- (k) Effluent Release Management Plan;
- (l) Accidental Discharge Contingency Plan, including spill prevention methodology;
- (m) Relevant contractual commitments, including special environmental clauses;
- (n) Environmental inspection and audit procedures;
- (o) Special conservation plans, where appropriate; and
- (p) Environmental Management Continuous Improvement.;

The Proponents shall file with the appropriate regulatory authorities a post-construction environmental report within six months of the in-service date. The post-construction environmental report shall set out the environmental issues that have arisen and shall:

- (a) indicate the issues which are resolved and unresolved; and
- (b) describe the measures SOEP proposes to take with respect to the unresolved issues;

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The Proponents establish, with regard to waste discharges in the offshore marine environment, criteria for tolerance of contamination at the platform site, in relation to recognized Maximum Acceptable Effects Levels (MAELS), in consultation with CNSOPB, before drilling commences;

The Proponents shall, based on consultations within SEEMAG and with respect to specific VECs,:

- (a) examine the potential impacts of produced water and the potential to cause tainting in identified VECs;
- (b) monitor the accumulation and movement of drill wastes around the platforms closest to the Gully; and
- (c) monitor traffic and noise-related Project effects on marine mammals, particularly the northern bottlenose whale.

Recommendation 16

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents prepare detailed Contingency Plans (as part of the Environmental Protection Plan) which focus on spill prevention and response, and strategies for cleaning up the marine and terrestrial environments. These plans should be submitted prior to the commencement of any fabrication or construction activity requiring regulatory approval in accordance with the requirements of the appropriate regulatory authority relevant to the activity.

Recommendation 17

The Panel recommends that the Proponents commit to empowering their Environmental Inspectors with the authority to terminate any onshore pipeline construction activities which impact negatively on fish and fish habitat.

Recommendation 18

The Panel recommends the following conditions for any approval of the NGL pipeline that may be granted.

The Proponents shall submit to the appropriate regulatory authority at least six months prior to the commencement of any fabrication or construction activity, the details of the proposed specific route for the NGL pipeline, and shall include:

- (a) the results of all pre-construction surveys to identify special status species/habitat along the proposed corridor, including specific measures to be implemented;
- (b) an environmental issues list identifying all relevant effects of the selected route; and
- (c) the associated mitigation measures to render those environmental effects insignificant.

The Proponents shall, at least 30 working days prior to the commencement of construction of the NGL pipeline, submit to the appropriate regulatory authorities for approval, additional information regarding the stream crossings. The additional information shall set out:

- (a) construction designs of the crossing;
- (b) proposed duration of the crossing;
- (c) in-stream timing restrictions identified by regulatory agencies;

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- (d) erosion and sediment control plan;
- (e) site-specific mitigative and restorative measures to be employed as a result of consultations with regulatory agencies;
- (f) if a directional drilling method is used, the detailed drilling fluid plan addressing the methods of drilling fluid containment and storage, and specific methods for disposing of and/or recycling of the drilling fluids;
- (g) if blasting is required, the blasting plan, including comments from the Department of Fisheries and Oceans;
- (h) evidence to demonstrate that all issues raised by regulatory agencies have been adequately addressed, including all necessary updates to the environmental assessments where deficiencies have been identified;
- (i) evidence to demonstrate that the proposed construction method and site specific mitigative and restorative measures are in compliance with federal and provincial legislation; and
- (j) a wet-weather shut-down policy; and,
- (k) the status of approvals, including environmental conditions.

The Proponents shall also, at least 30 working days prior to the commencement of construction of the NGL pipeline, submit to the appropriate regulatory authorities for approval, additional information regarding the treatment method to deal with acid drainage and specific mitigative measures to be implemented at stream crossings. The additional information shall set out for each stream crossing to be affected:

- (a) name and location of the stream;
- (b) the selected treatment method of the runoff water;
- (c) the proposed “Canadian Water Quality Guideline” values for specific use to be adhered to;
- (d) site-specific mitigative and restorative measures to be employed as a result of consultations with regulatory agencies;
- (e) evidence to demonstrate that all issues raised by regulatory agencies and other interested parties have been adequately addressed, including all necessary updates to the environmental assessments where deficiencies have been identified; and
- (f) status of approvals, including environmental conditions.

The Proponents file with the appropriate regulatory authorities a post-construction environmental report within six months of the in-service date for the SOEP Project. The post-construction environmental report shall set out the environmental issues that have arisen and shall:

- (a) indicate the issues resolved and those unresolved; and
- (b) describe the measures SOEP proposes to take in respect of the unresolved issues.

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Recommendation 19

The Panel recommends that SOEP, at least 30 working days prior to the commencement of construction for the crossing of the Strait of Canso, submit to the appropriate regulatory authorities for approval, additional information regarding this crossing. The additional information shall set out the following:

- (a) proposed duration of the crossing;
- (b) watercourse timing restrictions identified by regulatory agencies;
- (c) site-specific mitigative and restorative measures to be employed as a result of consultations with regulatory agencies;
- (d) if blasting is required, the blasting plan, including comments from the Department of Fisheries and Oceans;
- (e) evidence to demonstrate, in the form of a risk assessment, that the proposed construction method and site-specific mitigative and restorative measures are in compliance with federal and provincial legislation;
- (f) status of approvals, including environmental conditions; and
- (g) the complete set of sediment data for all measured contaminants obtained during the 30 and 31 May 1997 sampling program for the Strait of Canso.

Recommendation 20

The Panel recommends that the Proponents, at least 30 days prior to the commencement of NGL pipeline construction, the results of the field program identifying possible locations of acid generating bedrock and the proposed methods of avoiding disturbing those areas.

Recommendation 21

The Panel recommends that SOEP revisit its use of the upper limit of the Nova Scotia Noise Guidelines as the design criteria for the Goldboro gas plant. The Panel further recommends, as part of any regulatory approval, a condition that requires the Proponents to carry out regular noise monitoring at the natural gas plant, and that SOEP add plant noise to its Environmental Issues List.

Recommendation 22

The Panel recommends that the Province of Nova Scotia examine options for an industrial strategy that would include hydrocarbon-based development. Given its stated commitment to future Nova Scotia development, SOEP should be expected to provide input to this process.

Recommendation 23

The Panel recommends a comprehensive research program that examines and designs ways and means to enhance local skills and business opportunities and to prepare Nova Scotia for further offshore development. The Panel recommends that SOEP work closely with the federal and Nova Scotia governments and other key stakeholders to examine the need for research in these respects, and set an appropriate direction for research and development programs.

APPENDIX 2

JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

Recommendation 24

The Panel recommends that prior to any construction, SOEP provide the CNSOPB with a plan that details the employment and training review process and the specific mitigative measures to respond to unsatisfactory performance on the part of its contractors.

Recommendation 25

The Panel recommends that CNSOPB place a condition on SOEP, requiring the development and implementation of a specific training plan for gas development and production workers.

Recommendation 26

The Panel recommends that the Province of Nova Scotia take the lead to ensure that the selection process for service and supply bases is reviewed by the Benefits Advisory Committee (Benefits Advisory Committee). The Benefits Advisory Committee should issue a public report on the rationale for all its recommendations.

Recommendation 27

The Panel recommends that once a decision on supply and service bases has been taken, SOEP be required to consult with pertinent government authorities on strategies for mitigating accommodation impacts, such as providing additional temporary construction camps.

Recommendation 28

The Panel recommends that SOEP be prepared to sell gas to shippers at the Goldboro gas plant whether or not the shipper has entered into a Transportation Agreement with M&NPP.

Recommendation 29

The Panel recommends that M&NPP be required to file with the NEB, prior to the commencement of construction, the executed Backstop Agreement.

Recommendation 30

The Panel recommends to the NEB that Maritimes and Northeast Pipeline Management Ltd. be designated as a Group 1 Company for the purposes of regulation under the NEB Act.

Recommendation 31

The Panel recommends to the NEB the approval of a forward test year cost of service methodology for M&NPP.

Recommendation 32

The Panel recommends to the NEB the use of a 25 percent common equity ratio by M&NPP. The Panel also recommends that the return on equity for the pipeline for the first five years of the Project be set at 13 percent.

Recommendation 33

The Panel recommends to the NEB that the provisions respecting toll design and laterals as contained in the “Joint Position on Tolling and Laterals” as set out in Appendix V of this Report, be approved.

APPENDIX 2

JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

Recommendation 34

The Panel recommends that construction plans be prepared for each watercourse crossing site in consultation with the appropriate regulatory agencies. These studies should include a consideration of all salmon rivers which will be crossed by the pipeline. The construction plans may refer to standard drawings or specifications as appropriate, but would as a minimum include consideration of erosion and sedimentation control, blasting requirements, habitat restoration and site restoration as required. The plans must be completed at least 60 days prior to construction and be provided to interested parties for comment, as well as being submitted for regulatory review.

Recommendation 35

The Panel recommends a condition requiring M&NPP at least 60 days prior to construction to prepare a report on the scheduling of water crossings in cooperation with appropriate regulatory authorities. The report must discuss back-up measures to resolve potential problems. The report must be available to all interested parties who request a copy.

Furthermore, the Panel recommend that, at least 30 working days prior to the commencement of construction of the pipeline, M&NPP submit to the appropriate regulatory authorities for approval, additional information regarding the stream crossings. The additional information shall set out:

- (a) the construction designs of the crossing;
- (b) proposed duration of the crossing;
- (c) in-stream timing restrictions identified by regulatory agencies;
- (d) an erosion and sediment control plan;
- (e) the site-specific mitigative and restorative measures to be employed as a result of consultations with regulatory agencies;
- (f) if a directional drilling method is used, the detailed drilling fluid plan addressing the methods of drilling fluid containment and storage, and specific methods for disposing of and/or recycling of the drilling fluids;
- (g) if blasting is required, the blasting plan, including comments from DFO;
- (h) the evidence to demonstrate that all issues raised by regulatory agencies have been adequately addressed, including all necessary updates to the environmental assessments where deficiencies have been identified;
- (i) the evidence to demonstrate that the proposed construction method and site specific mitigative and restorative measures are in compliance with federal and provincial legislation; and
- (j) the status of approvals, including environmental conditions.

APPENDIX 2

JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

Recommendation 36

The Panel recommends that at least 30 days prior to the commencement of construction, M&NPP file with the NEB the results of the acid generating rock studies, including any locations which would be affected by construction, the proposed mitigation measures, monitoring requirements and the results of consultation with provincial authorities.

The Panel recommends the following conditions for any approval of M&NPP that may be granted.

M&NPP shall, at least 30 working days prior to the commencement of construction of the pipeline, submit to the NEB for approval, additional information regarding the treatment method to deal with acid drainage and specific mitigative measures to be implemented at stream crossings. The additional information shall set out for each stream crossing to be affected:

- (a) the name and location of the stream;
- (b) the selected treatment method of the runoff water;
- (c) the proposed “Canadian Water Quality Guideline” values to be adhered to;
- (d) the site-specific mitigative and restorative measures to be employed as a result of consultation with regulatory agencies;
- (e) the evidence to demonstrate that all issues raised by regulatory agencies and other interested parties have been adequately addressed, including all necessary updates to the environmental assessments where deficiencies have been identified; and
- (f) the status of approvals, including environmental conditions.

Recommendation 37

To confirm that specific issues have been adequately addressed, the Panel recommends that, at least six months prior to the commencement of any construction activity requiring regulatory approval, M&NPP submit to the NEB for approval the final Environmental Protection Plan. Details of the proposed specific route for the pipeline should also be filed at that time, and shall include:

- (a) the results of all pre-construction surveys to identify special status species/habitat along the proposed corridor, including specific measures to be implemented;
- (b) an environmental issues list identifying all relevant effects of the selected route; and
- (c) the associated mitigation measures to render those environmental effects insignificant.

To ensure that post-construction environmental issues have not arisen, the Panel also recommends that the Proponents file with the NEB a post-construction environmental report within six months of the in-service date for the Project. The post-construction environmental report shall set out the environmental issues that have arisen and shall:

- (a) indicate the issues resolved as well as unresolved; and
- (b) describe the measures M&NPP proposes to take in respect of the unresolved issues.

APPENDIX 2

JOINT PUBLIC REVIEW PANEL RECOMMENDATIONS

Recommendation 38

The Panel recommends that M&NPP develop the Environmental Protection Plan in consultation with government agencies, stakeholder groups, interested parties and landowners.

The Panel also recommends that the NEB set a condition requiring M&NPP to implement an environmental compliance and monitoring program which would include the filing of post construction environmental reports to address Project-related environmental issues.

Recommendation 39

The Panel recommends that the operations, emergency response and environmental protection manuals be developed in consultation with relevant agencies, stakeholders and the public and be filed with the NEB as a condition of any approval.

Recommendation 40

The Panel recommends that the appropriate regulatory authorities ensure that M&NPP take all reasonable steps to avoid fragmenting natural and forested areas. The Panel recommends that the fragmentation of natural and forested areas be included in the M&NPP Issues List. This will require consideration and follow-up on steps to be taken at the detailed route design and construction stages.

Recommendation 41

The Panel recommends that M&NPP consult with the Provinces of New Brunswick and Nova Scotia on a monitoring approach for employment, training and procurement, and that an agreed approach be included as a condition of any Project approval .

Recommendation 42

The Panel recommends that the appropriate regulatory authorities ensure that the Proponents, at least six months prior to construction, submit a traffic study for the Goldboro area to the Province of Nova Scotia, the Municipality of the District of Guysborough and the NEB.

Recommendation 43

The Panel recommends that the governments of Canada, Nova Scotia and New Brunswick explore mechanisms for monitoring gas prices which would allow negotiations of prices in the market to occur, but which would assure parties that the results of those negotiations would not be disadvantageous to Canadian buyers. The price monitoring committee formed by the signatory governments to the October 31, 1985 Agreement on Natural Gas Prices and Markets might serve as a useful model.

Recommendation 44

The Panel recommends that the CNSOPB, Nova Scotia, New Brunswick and the NEB work together to set common standards and an integrated gas emissions monitoring process.

Recommendation 45

The Panel recommends that the appropriate regulatory authorities condition their approvals to require the Proponents to submit a written protocol or agreement spelling out Proponents Aboriginal roles and responsibilities for cooperation in studies and monitoring.

Recommendation 46

The Panel recommends that the appropriate regulatory authorities proceed with all necessary approvals for SOEP and M&NPP without further delay.

COMMISSIONER'S CONCLUSIONS AND RECOMMENDATIONS

General

The Commissioner concludes based on his findings in this report and on the findings in the report of the Panel, of which he was a member, that the Project can proceed without any significant adverse environmental, social or economic affects if the recommendations put forward in these reports are addressed. He believes that the Project will have a positive effect on the business and labor sectors of the Nova Scotia economy. Moreover, he believes that the Project presents an opportunity for both industry and government to begin planning now to enhance opportunities for Nova Scotians and other Canadians to participate more fully in future offshore gas developments.

The Development Plan

Recommendation: The Commissioner recommends that the approval of the Development Plan by CNSOPB be conditional upon the submission by the Proponents of a strategy for the depletion of the deep, over-pressured sands in the Venture and South Venture fields.

Conclusion: The Commissioner concludes that the Proponents' responses to intervenor questioning provides assurances that the reserve estimates are credible and that their proposed management philosophy will promote conservation of the natural gas resources in the project fields.

Recommendation: The Commissioner recommends that the CNSOPB clearly identify in its decision report the basis for its acceptance of the Proponents' reserve and deliverability analysis and for its acceptance of the Proponents' reservoir management strategy in order to provide all those with an interest in natural gas use with confidence about supply reliability.

Conclusion: The Commissioner concludes that the concerns related to facility reliability and expandability can be mitigated by the Proponents' proposed strategies.

Conclusion: The Commissioner concludes that the Proponents arguments that the volume of gas and its distribution among six fields were factors that made the LNG option uneconomic.

Conclusion: The Commissioner concludes that SOEP's treatment of liability issues in respect of the subsea line in the Development Plan is adequate.

Recommendation: The Commissioner recommends that the appropriate regulatory authorities ensure that SOEP prepare, prior to construction, a statement outlining the legal responsibilities of the Proponents with respect to liability and compensation for damage to property or the environment during the construction and operation of the NGL pipeline and NGL handling and shipping facilities portion of SOEP.

Recommendation: The Commissioner recommends that, if the Proponents do not have relief well drilling capability from a second rig in the Sable Island area at Project start-up, they include in their contingency plan provisions for ensuring the timely acquisition of such a capability in the event that it is required.

APPENDIX 3

COMMISSIONER'S CONCLUSIONS AND RECOMMENDATIONS

The Canada-Nova Scotia Benefits Plan

Conclusion: The Commissioner agrees with the Proponents' interpretation of the legislative intent and administrative interpretation of the Canada-Nova Scotia Benefits Plan. He notes that the absence of certain manufacturing and servicing capabilities in Nova Scotia and other regions of Canada dictate that the Proponents will be required to acquire them outside the country. He also concludes that the recent awarding of offshore pipelay and platform fabrication contracts to non-Canadian firms is consistent with the commitments made by the Proponents in their Canada-Nova Scotia Benefits Plan.

Conclusion: The Commissioner agrees with the Proponents that New Brunswick's membership on the Benefits Advisory Committee should not be a condition of project approval. However, the Commissioner notes that the SOEP Project Principles commit the Proponents to "open, proactive, and two-way" communication with the Canadian public. He views the request for participation by New Brunswick on the Benefits Advisory Committee as a logical extension of that principle.

Recommendation: The Commissioner recommends that the CNSOPB make approval of the Canada-Nova Scotia Benefits Plan conditional upon the ability of the Proponents to demonstrate clearly that they are capable of ensuring that alliance members will adhere to their benefits principles and the policies and procedures for implementing them.

Conclusion: The Commissioner concludes that the Proponents should include, as part of their Canada-Nova Scotia Benefits Plan, a detailed strategy outlining the major components of a training and education program for the development phase or, at least, the initial stages of it. Alternatively, the Proponents should identify in detail why such a strategy is not necessary. In addition they should demonstrate how, in practical terms, they will ensure that alliance members comply with the Proponents policies regarding these matters.

Recommendation: The Commissioner recommends that the CNSOPB make approval of the Canada-Nova Scotia Benefits Plan conditional upon the submission of an operational plan for an education and training program directed towards enhancing employment opportunities during the development phase or, alternatively, the submission of a detailed explanation as to why such a program is not required.

Recommendation: The Commissioner recommends that the Proponents take the lead role, as opposed to an advisory one, in supporting educational and training programs, in matters related to offshore petroleum activities, at universities, community colleges and other institutions of learning.

Recommendation: The Commissioner accepts that proposals for research related to enhancing the business and employment opportunities for Nova Scotians and other Canadians to participate more fully in the development phase of offshore projects may be outside the requirements for the SOEP Canada-Nova Scotia Benefits Plan. However, because these opportunities are likely to recur, the Commissioner recommends that the Proponents take the lead through the Benefits Advisory Committee in developing a research program which will identify ways and means to capture a larger share of development phase benefits in future projects.

Recommendation: The Commissioner recommends that, during both the development and

COMMISSIONER'S CONCLUSIONS AND RECOMMENDATIONS

production phases of SOEP, the Proponents include among the management staff in the Halifax office personnel with the authority and responsibility to develop and implement a training and education plan and a research and development plan which will be effective in preparing Nova Scotians and other Canadians to participate fully in the benefits of offshore gas developments.

Conclusion: The Commissioner concludes that the positive community benefits arising from economic activities will be potentially greater in the Guysborough area, where unemployment is chronically high, than in the Halifax Regional Municipality, where such levels are relatively low. A regional office will, therefore, represent an important impetus for enhancing benefit in Guysborough County

Natural Gas Liquids (NGL) Pipeline

Recommendation: The Commissioner recommends that the Province of Nova Scotia clarify, for potentially affected landowners along the NGL pipeline route, its existing rights acquisition process. Further, the Commissioner recommends that this process provide potentially affected landowners with a level of protection that is comparable to that offered to landowners along the M&NPP natural gas pipeline. If necessary, the Commissioner recommends that the Proponents be required to negotiate agreements with the landowners that afford the same degree of protection as do the NEB requirements.

Recommendation: The Commissioner recommends that, 90 days prior to construction of the Strait of Canso crossing, the Proponents provide a report to the responsible regulatory authorities outlining the economic, technical, and environmental feasibility of placing a gas pipeline across the Strait of Canso at the same time as the NGL line.

NGL Handling and Shipping Facilities

Conclusion: The Commissioner concludes that it is discouraging that the value added possibilities for the use of LNG received so little attention from the Proponents and intervenors.

Cooperation and Coordination

Recommendation: The Commissioner recommends that the CNSOPB attempt to complete all outstanding MOUs, as defined in the Accord Acts, prior to the implementation of SOEP. In addition, the Commissioner recommends that, because this task cannot be expedited unilaterally, the CNSOPB be given strong support by both levels of government to ensure that these documents are completed quickly and in a manner that clearly identifies responsibility and accountability. The Commissioner also recommends that the Province of Nova Scotia develop MOUs among appropriate regulatory authorities to coordinate the administration of pipeline and facility construction and operation.

Recommendation: The Commissioner recommends that, the CNSOPB, Natural Resources Canada, the NEB and the Province of Nova Scotia should execute a Memorandum of Understanding identifying the various facilities over which regulatory authorities exercise jurisdiction and any cooperative arrangements between them for expediting specific regulatory functions.

APPENDIX 4

SIGNIFICANT FILING REQUIREMENTS RELATED TO CONDITIONS

Condition N ^o .	Filing Requirement	Filing Date
3	Employment & Training Plan	Within 90 Days of Implementation of Decision Report
4	Research and Development Plan	Within 90 Days of Implementation of Decision Report
5	First Consideration Plan	Within 30 Days of Implementation of Decision Report
6	Report on Training and Employment Opportunities for Disadvantaged Individuals or Groups	Within 60 Days of Implementation of Decision Report
7	Technology Transfer Report	Within 90 Days of Implementation of Decision Report
10	Bidders Lists, Contract Awards and Related Information	Ongoing
11	Supplier and Infrastructure Assessment	Annually
14	Total Quality Management System	Ongoing
18	System Deliverability Information	Annually and As Requested by the Board
20	Reservoir Management Plan	Prior to Development Drilling and Annually Thereafter
21	Plan to Minimize Discharge of Cuttings With Low Toxicity Oil Based Mud	Prior to Drilling
22	Production Measurement and Allocation Information	Ongoing
23	Information on Pipeline to Shore	As Specified in Panel Recommendation No. 1
24	Flowline Data	Within 60 Days of Implementation of Decision Report
25	Evidence of Financial Responsibility for Abandonment	Prior to Commencing Production
26	Evidence of Financial Responsibility for Activity Authorizations	Not Less Than 30 Days Prior to Issuance of Authorization
27	Environmental Effects Monitoring Program	Prior to Activity Authorization
28	Code of Practice for Sable Island and Gully	Prior to Activity Authorization

APPENDIX 5

GLOSSARY OF TERMS

Accord Implementation 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. This 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.

authigenic

Refers to rocks/minerals which formed or were generated in place.

Board

The Canada-Nova Scotia Offshore Petroleum Board.

capillary pressure

A type of pressure data used to determine water saturation in a reservoir.

certifying authorities

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.

Certificate of Fitness

A certificate issued by a certifying authority 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.

chlorite

A commonly occurring clay mineral.

CNSOPB

The Canada-Nova Scotia Offshore Petroleum Board.

commingled production

Production of petroleum from more than one pool through a common wellbore or flowline without separate measurement of the petroleum.

completion

The activities necessary to prepare a well for the production of oil and gas.

cuttings

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

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.

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.

drill cores, cores

A cylindrical sample of rock obtained by drilling with a hollow donut-shaped bit and pipe.

drilling fluid

Fluids continuously circulated down the well bore, 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

Drill Stem Test (DST)

Drill Stem Test. A downhole test of the productive capacity of a well through drill pipe up to the surface to obtain samples of gases and fluids and determine their rate of sustained flow.

APPENDIX 5

GLOSSARY OF TERMS

E9M3

billion cubic metres

fault

In the 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, i.e. the Missisauga Formation.

Gully, the

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

helideck

A landing area for helicopters.

hydropressure

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

injection

The process of pumping gas or water into an oil-producing reservoir to provide a driving mechanism for increased oil production.

irreducible water saturation

In a sufficiently thick and homogenous hydrocarbon reservoir this represents the minimum possible water saturation.

jacket

Offshore platform consisting of a framework of tubular members with a deck (or decks) on top and piles driven through the framework to fix the structure to the sea bed.

Kh

This symbol is used in petrophysical and reserves calculations to represent the maximum permeability of a rock formation.

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.

mud - see "drilling fluid"

mud filtrate

The fluid component of drilling mud which penetrates into a formation.

MWD

Measurement While Drilling. A technique to determine the real-time position of the drill bit in a directionally drilled well during the drilling process using instrumentation placed near the bit.

NEB

National Energy Board

net pay

Refers to the sum of the productive intervals of a reservoir and is determined by the application of cutoffs.

net pay cutoffs

Specified limits of porosity, permeability, water saturation and shale volume below which a formation would be unable to achieve or sustain commercial production.

net pay map

A contour map depicting net thickness' of hydrocarbon-bearing reservoirs.

APPENDIX 5

GLOSSARY OF TERMS

offshore area

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

oil based mud

Drilling mud in which mineral oil is the continuous phase.

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.

overpressure

Formation pressure in excess of hydropressure.

permeability

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

person-years

The equivalent of one person working a full year, or 2,080 hours.

petrophysics

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

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.

production platform

An offshore structure equipped to produce and process oil and gas.

production well

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

project sands

The Proponents term for those reservoir zones that they recognize as having sufficient gas volumes and producibility to form the basis of the production forecast.

Proponents

The parties proposing to carry out SOEP; specifically, Mobil Oil Canada Properties, Lead Operator, Shell Canada Limited, Joint Operator, Imperial Oil Resources Limited and Nova Scotia Resources Limited.

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.

resistivity

The electrical resistance of a formation.

RFT

Repeat Formation Tester. A high resolution down hole logging tool which records reservoir pressures at multiple points in a well and may on occasion be configured to obtain several small samples of gas, oil and/or other fluids over a reservoir interval.

Rt

This symbol is used in petrophysical calculations to represent the true electrical resistivity of a formation.

Rw

This symbol is used in petrophysical calculations to represent the electrical resistivity of formation water.

APPENDIX 5

GLOSSARY OF TERMS

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.

satellite wells

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

scour

Erosion of the seabed caused by the action of waves and currents.

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.

SOEP

Sable Offshore Energy Project

spud

To start the drilling of a well.

toxicity

The degree to which a toxin is harmful.

toxin

Any substance which in sufficient quantity is harmful to biota.

water-based mud

A drilling mud in which the continuous phase is water.

water saturation

The percentage of pore space in a formation occupied by water.

workover

Operations on a producing well to restore or increase production.