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An Assessment of Predicted Socio-Economic Impacts of Labrador Shelf and Gas Activity on Labrador Communities and Individuals

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An Assessment of Predicted Socio-Economic Impacts of Labrador Shelf Oil and Gas Activity on Labrador Communities and Individuals

Final Report

Submitted to:
Environmental Studies Research Funds
Technical Advisory Group
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Recent offshore land sales, pursuant to the Canada-Newfoundland & Labrador Offshore Petroleum Board's (C-NLOPB) processes, have demonstrated renewed interest in offshore oil exploration along the Labrador Coast. This renewal of interest indicates to the ESRF Management Board that an up-to-date evaluation of the potential socio-economic effects of such activities on the Labrador Coast is warranted.

The approach to this evaluation included the development of a report on the most likely development scenario for the gas resources currently understood to be in place along the Labrador Coast. This report provided the basis for the remainder of the study. A review of literature directly relevant to this development scenario followed. Simultaneously, a survey methodology was developed which was implemented in the consultation phase of the project. The following paragraphs outline the content and outcome of each of these steps.

Scenarios Report: The technical report *Compilation and Analysis of Potential Exploration and Development Scenarios – Offshore Labrador* was prepared as recommended by the ESRF Technical Advisory Group. For the purposes of this study, hydrocarbon production from offshore Labrador is assumed to be on the order of 100,000 to 200,000 barrels per day of crude oil or 500 Million Standard Cubic Feet per Day (MMSCFD) of natural gas, numbers that might be considered reasonable for a project to be viable.

The potential exploration and development scenarios discussed in the report are based on analogue industry activities and for operations offshore Labrador, and some scenarios are more likely to occur than others. Factors that determine the most viable option are the development type (oil or gas), potential market for the product, construction costs, employment during construction and life of project, and the potential benefits to Newfoundland and Labrador. The field characteristics and water depth also play an important role in choosing the most feasible option for field development. The report summarizes the possible development scenarios based on the likelihood of occurrence, value (cost and employment), construction time, geographic footprint in Labrador and other potential local benefits.

Literature Review: The literature review examined the most recent social and economic studies relevant to Labrador and more particularly those relating to natural resource extraction in northern environments; the effects on people and communities; and the factors that promote satisfying and successful engagement throughout the process of mega-project resource development.

People, communities and governments engaged with development generally want to benefit from the industry with jobs, money, capacity building and investment in the future. This emphasis on social justice and social equity and the right to local benefits is reflected in the Norwegian Government oil and gas development in the North Sea and with the Government of Newfoundland and Labrador in the Atlantic Accord (1985) and with the Hebron Benefits Strategy (2010).

Communities and people who demonstrate resilience adapt to change better and are more able to moderate negative effects. The factors that contribute to resilience include the degree to which people and communities are well informed about jobs, business opportunities and processes; can pace development; are engaged in respectful decision-making; and can

maintain cultural and traditions. Strong communications and meaningful participation coupled with tools and mechanisms such as Impact and Benefits Agreements (IBAs), regulatory frameworks, and monitoring and reporting commitments help make the Environmental Assessment (EA) process and project development more inclusive. Interestingly, when women enter into discussions, dialogue, assessments and negotiations, their concerns are generally related to how development will affect families and communities as opposed to fixing on economic development factors. Clear, plain, honest and informative communications are key to satisfying engagement with people in communities and Aboriginal governments.

Community Consultation: The consultation area (coastal Labrador) is home to three aboriginal groups; Innu, Inuit and NunatuKavut (previously referred to as Labrador Metis). There are also settler families whose ancestors have lived in Labrador for many years as well as relative newcomers to Labrador, particularly in the central Labrador area.

The consultation involved three different data gathering processes; a survey questionnaire, focus group interviews and key informant interviews. 162 survey questionnaires were completed and 98 individuals participated in focus groups and key informant interviews. As a verification process, the Consultation Highlights Report was forwarded electronically to one hundred respondents. The response rate of 10% represented people from various facets of life and all respondents believed it fairly conveyed the perspectives of people throughout coastal Labrador.

Labrador people want to be “in a relationship” with companies who want to develop natural resources and believe in shared interests, shared values, commitment, and clear, consistent and transparent communication are fundamental building blocks for this relationship. The following values and guiding principles represent a strong foundation for moving forward: *Relationship, Respect, Honesty and Integrity, Inclusion, Sustainable Development and Accountability***.**

The settlement of Labrador Inuit Land Claims and the creation of Nunatsiavut brought the Inuit north coast communities together in identity, planning and leadership. While not comparable in jurisdiction, the Regional Economic Zone Boards provide a similar cohesiveness to the communities in their respective zones. Labrador people want to be engaged from the beginning and involved in decision-making. The structures and mechanisms that support these processes include, but are not limited to, the inclusion of Aboriginal governments and Regional Economic Development Boards.

Many Labrador people who are not Aboriginal believe that the opportunities and benefits from offshore exploration and development ought to be spread around all of coastal Labrador and everybody should have a fair and equal chance at prosperity. Notwithstanding the realities of the political environment in Labrador, the notion of wealth-sharing and distribution of new wealth and opportunity across coastal Labrador communities was strong.

Labradorians are generally enthusiastic about development and see themselves as people who know the environment, who are willing and capable learners and who, as a population, are becoming better educated. There is a strong belief that Labrador people are human resources who ought to meet the needs of development. While it is hoped that women will have fair and equal access to all the benefits of development, it will require intentional actions to get results for women. The survey results are consistent with the literature and demonstrate that the issues of concern to women are often different from men and therefore they must be intentionally

involved in assessment, planning and decision-making. Access to training and jobs must also be intentional with firm commitments and monitoring. Labrador people believe that it is critical to manage development so that young people will find jobs, build careers and potentially stay in coastal communities to raise their families. They anticipate infrastructure development in communities, health services and in the knowledge-based environment. Apart from training, jobs, increased incomes, business opportunities and royalties, they would also like to see concrete benefits such as lower energy costs.

Labrador people also want to make sure the natural environment is kept safe from pollution and overuse, and want community monitoring and public reporting to be written into formal agreements.

Policy: The interests and perspectives of Labrador people, as brought forward in this consultation, raise a number of issues that might be addressed through policy development. The following recommendations address the benefits of development, the mechanisms for engagement, decision-making, protection of the environment and workplace environments.

- **Sustainable Development:** Labradorians believe there ought to be a fundamental commitment to sustainable development and that development should only proceed with great care and vigilance for the protection of the natural environment and attention given to long-range planning for when the resource is depleted.

- **Meaningful Engagement:** Labrador people want to be collaborative partners. Mechanisms that can facilitate this level of engagement include creation of a Combined Councils of Coastal Labrador; Labrador/Nunatsiavut Government representation on the C-NLOPB and involvement of the Regional Economic Development Boards.

- **Communication:** Labrador people want clear, constant, transparent and face-to-face communication achieved through visits to communities, public meetings, using multimedia presentations and engaging local people. Labrador people also believe that once completed, research and consultation reports ought to be presented to the people in their communities.

- **Benefits Agreements, Capacity Building and Adjacency:** Inuit believe there ought to be a negotiated IBA with the Nunatsiavut Government because they are closest to the resource and would suffer most from adverse events. Labrador people from other zones believe there ought to be a Benefits Agreement that gives them all full and fair access to benefits with respect for adjacency in access to training, jobs and business development opportunities. Policy will need to address both common and individual interests.

- **Gender Equity and Intentional Engagement with Women:** Policy will need to direct intentional gender equity initiatives that are formalized and monitored. Additional consultation, specifically with women and women's groups, ought to be part of any further consultation or environmental assessment process.

- **Business Development:** Labrador business people want assurance that business, supply and service that can happen in Labrador, does happen there. They identify learning needs and intentional activities to nurture capacity for local businesses to

respond to procurement requests. As a result of IBAs and commitments to do business with aboriginal companies, aboriginal joint ventures have been formed, and other Labrador businesses perceive this is not a level playing field. Some believe that "Labrador" businesses ought to receive the same priority standing as aboriginal businesses. Still others believe that the capacity building efforts of the company (hiring aboriginal workers, women and Labrador people) ought to be considered when weighing decisions on contracts.

- **Infrastructure:** Development would strain existing community infrastructure, and public services infrastructure and planned development will not only address these concerns but also lead to increased infrastructure capacity.

- **Heritage Funds/Endowments:** The practice of social return on investment is generally a positive experience for companies, people and communities. Investments could include infrastructure development and support for social programs and services, as well as investment in the knowledge based infrastructure of the region in the form of endowments for positions such as Research Chairs at the Labrador Institute.

- **Worksite Environments:** Should a production/storage site be developed that is not part of an existing community, then people believe it should be supported by a Fly In Fly Out (FIFO) arrangement. Labrador people also see the benefits of an alcohol and drug-free worksite. Given the remoteness of many communities on coastal Labrador and the challenges of leaving communities for employment, and given the capacity for some jobs to be performed electronically offsite, companies ought to explore the possibility of satellite offices as one way of bringing jobs to communities.

- **Engagement with Unions and Avoidance of Protectionism:** Given the practice of negotiating special measures and collective agreements in large-scale construction projects, Labrador people are concerned that union protectionism may interfere with access to jobs and encourage dialogue and problem-solving with the unions regarding this issue.

- **Mitigation Fund:** Many Labrador people believe that a Mitigation Fund, to deal with adverse events, ought to be created prior to development and production and that there must be measures for a spill response close to the geographic area.

SOMMAIRE ÉXÉCUTIF

Des terres récemment vendues au large de la côte du Labrador, dans le cadre des processus de l'Office Canada-Terre-Neuve des hydrocarbures extracôtiers (OC-TNHE), ont suscité un intérêt renouvelé pour des activités d'exploration pétrolière extracôtière le long de cette côte. Cet intérêt renouvelé indique au Conseil de direction du FEE qu'une évaluation à jour des effets socioéconomiques potentiels de telles activités sur la côte du Labrador est requise.

La démarche de cette évaluation comportait l'élaboration d'un rapport sur le scénario de développement le plus susceptible de se produire relativement aux ressources gazières qui seraient actuellement présentes le long de la côte du Labrador. Ce rapport fournissait la base du reste de l'étude. Une analyse de la documentation directement pertinente à ce scénario de développement a suivi. Au même moment, une méthodologie de levés a été élaborée et mise en œuvre lors de l'étape de consultation du projet. Les paragraphes qui suivent soulignent le contenu et les résultats de chacune de ces étapes.

Rapport sur les scénarios : le rapport technique *Compilation et analyse des scénarios potentiels d'exploration et de développement – Région extracôtière du Labrador* a été préparé comme le recommandait le groupe de conseillers techniques du FEE. Aux fins de cette étude, l'on présume que la production d'hydrocarbures au large du Labrador serait de l'ordre de 100 000 à 200 000 barils par jour de pétrole brut ou 500 millions de pieds cubes standard par jour (MM pi^3/d (standard)) de gaz naturel, chiffres qui pourraient être considérés comme raisonnables pour qu'un projet soit viable.

Les scénarios potentiels d'exploration et de développement discutés dans le rapport sont fondés sur des activités industrielles analogues et pour des activités au large du Labrador; certains scénarios sont plus susceptibles de se produire que d'autres. Les facteurs qui déterminent les options les plus viables sont le type de développement (pétrolier ou gazier), le marché potentiel pour le produit, les coûts de construction, les emplois lors de la construction et de la vie du projet et enfin, les avantages potentiels pour Terre-Neuve-et-Labrador. Les caractéristiques terrestres et la profondeur des eaux jouent également un rôle important dans la sélection de l'option la plus plausible pour le développement des terres. Le rapport résume les scénarios de développement possibles selon la susceptibilité d'occurrence, la valeur (coût et emplois), la durée de construction, l'empreinte géographique au Labrador et selon d'autres avantages locaux potentiels.

Analyse de la documentation : L'analyse de la documentation s'est concentrée sur les études sociales et économiques les plus récentes en lien avec le Labrador et plus particulièrement sur celles qui avaient un lien avec l'extraction de ressources naturelles dans les environnements nordiques, les effets sur les peuples et les communautés et les facteurs qui contribuent à promouvoir l'engagement satisfaisant et réussi tout au long des processus de développement des ressources des mégaprojets.

Les peuples, les communautés et les gouvernements qui participent au développement veulent généralement profiter de l'industrie grâce à des emplois et des contributions financières, au renforcement des capacités et aux investissements en vue de l'avenir. L'accent qui est mis sur la justice sociale et l'équité sociale et le droit aux bénéfices locaux se reflète dans le développement pétrolier et gazier du gouvernement norvégien dans la mer du Nord et avec le

gouvernement de Terre-Neuve-et-Labrador dans l'Accord de l'Atlantique (1985) et la Stratégie sur les avantages du projet Hebron (2010).

Les communautés et les peuples qui démontrent une certaine résilience s'adaptent mieux aux changements et sont plus aptes à modérer les effets négatifs. Les facteurs qui contribuent à la résilience comprennent notamment le degré auquel les peuples et les communautés sont bien informés à propos des emplois, des occasions d'affaires et des processus commerciaux, le degré auquel ils peuvent suivre les développements, le degré auquel ils sont engagés dans la prise de décision respectueuse et le degré auquel ils peuvent conserver les cultures et les traditions. De bonnes communications et une participation significative, jumelées à des outils et à des mécanismes tels que les Ententes sur les répercussions et les avantages (ERA), les cadres réglementaires et les engagements en matière de surveillance et de production de rapports contribuent à rendre le processus d'évaluation environnementale (EE) et le développement de projets plus inclusifs. Fait intéressant, lorsque les femmes participent aux discussions, au dialogue, aux évaluations et aux négociations, leurs préoccupations concernent généralement la façon dont le développement affectera les familles et les communautés plutôt que les facteurs de développement économique. Des communications claires, simples, honnêtes et instructives sont essentielles à l'engagement des peuples dans les communautés et des gouvernements autochtones.

Consultation auprès de la communauté : Trois groupes autochtones habitent la région de consultation (côte du Labrador) : les Innus, les Inuits et les NunatuKavut (auparavant appelés les métis du Labrador). Il y a également des familles de pionniers dont les ancêtres ont vécu au Labrador pendant un grand nombre d'années ainsi que des relativement nouveaux-venus au Labrador, particulièrement dans la région centrale du Labrador.

La consultation comprenait trois processus de collecte de données différents : un questionnaire d'enquête, des entrevues de groupes de travail et des entrevues avec des répondants clés. 162 questionnaires d'enquête ont été remplis et 98 personnes ont participé aux groupes de travail et aux entrevues avec des répondants clés. Dans le cadre d'un processus de vérification, une centaine de répondants ont reçu une copie électronique du Rapport sur les faits saillants de la consultation. Le taux de réponse de 10 % représentait des gens de toutes les couches de la société et tous les répondants ont convenu qu'il indiquait avec justesse les opinions des gens à travers la région côtière du Labrador.

Les habitants du Labrador veulent être « en relation » avec les compagnies qui désirent développer des ressources naturelles et ils croient que des valeurs et des intérêts partagés, un engagement et des communications claires, cohérentes et transparentes sont les éléments de base fondamentaux de cette relation. Les valeurs et principes directeurs suivants représentent une base solide sur laquelle s'appuyer pour aller de l'avant : *Relation, Respect, Honnêteté et Intégrité, Inclusion, Développement durable et Responsabilisation***.**

Le règlement des Revendications territoriales des Inuits du Labrador et la création du Nunatsiavut ont rassemblé les communautés inuites de la côte Nord en termes d'identité, de planification et de leadership. Bien que non comparables sur le plan du territoire, les Comités de développement économique régionaux offrent une cohésion semblable aux communautés dans leurs zones respectives. Les habitants du Labrador veulent être mobilisés dès le début et participer aux décisions. Les structures et mécanismes qui appuient ces processus

comprennent entre autres l'inclusion des gouvernements autochtones et des Comités de développement économique régionaux, sans toutefois s'y limiter.

Bon nombre d'habitants du Labrador qui ne sont pas Autochtones croient que les occasions et les avantages découlant de l'exploration et du développement des régions extracôtières devraient être partagés dans l'ensemble de la côte du Labrador et que tous devraient avoir une chance juste et équitable d'accéder à la prospérité. Nonobstant les réalités de l'environnement politique au Labrador, la notion de partage de la richesse et de distribution de la nouvelle richesse et des nouvelles occasions à travers les communautés de la côte du Labrador était très forte.

Les habitants du Labrador sont généralement enthousiastes à propos du développement et ils se considèrent comme des personnes qui connaissent l'environnement, qui sont prêtes à apprendre et capables de le faire et qui, en tant que population, améliorent leur niveau d'éducation. On croit fortement que les habitants du Labrador sont des ressources humaines qui devraient répondre aux besoins de développement. Bien que l'on espère que les femmes auront un accès juste et équitable à tous les bienfaits du développement, des mesures intentionnelles seront requises afin d'atteindre ces résultats pour les femmes. Les résultats du sondage sont en ligne avec la documentation et ils démontrent que les enjeux qui préoccupent les femmes sont souvent différents de ceux qui préoccupent les hommes et qu'elles doivent donc participer intentionnellement à l'évaluation, à la planification et à la prise de décision. L'accès à la formation et aux emplois doit aussi être intentionnel avec des engagements fermes et une surveillance. Les habitants du Labrador croient qu'il est essentiel de gérer le développement de sorte que les jeunes réussissent à dénicher des emplois, se bâtir une carrière et demeurer potentiellement dans les communautés côtières afin d'y élever leurs familles. Ils anticipent le développement d'infrastructures dans les communautés, les services de santé et l'environnement fondé sur les connaissances. Mis à part la formation, les emplois, les revenus croissants, les occasions d'affaires et les redevances, ils aimeraient également voir des avantages concrets comme une diminution des coûts de l'énergie.

Les habitants du Labrador veulent également s'assurer que l'environnement naturel sera préservé de la pollution et de la surutilisation; ils veulent de plus que la surveillance communautaire et la production de rapports publics soient l'objet d'accords officiels.

Politiques : Les intérêts et les perspectives des habitants du Labrador, tels qu'énoncés dans le cadre de cette consultation, soulèvent diverses préoccupations qui pourraient être abordées par le biais de l'élaboration de politiques. Les recommandations suivantes traitent des avantages du développement, de mécanismes d'engagement, de la prise de décision, de la protection de l'environnement et des environnements de travail.

- **Développement durable :** Les habitants du Labrador croient qu'il devrait y avoir un engagement fondamental envers le développement durable et que le développement ne devrait se faire qu'avec grand soin et vigilance en vue de protéger l'environnement naturel, et en accordant une attention particulière à la planification à long terme, lorsque la ressource sera épuisée.

- **Engagement significatif :** Les habitants du Labrador veulent être des partenaires collaboratifs. Parmi les mécanismes qui peuvent faciliter ce niveau d'engagement, notons la création de Conseils combinés de la côte du Labrador, une représentation du

gouvernement du Labrador/Nunatsiavut à l'OC-TNHE et une participation aux Conseils de développement économique régionaux.

- **Communication :** Les habitants du Labrador veulent une communication claire, transparente et directe qui se fera grâce à des visites dans les communautés, des réunions publiques, l'utilisation de présentations multimédias et l'engagement des habitants locaux. Les habitants du Labrador croient également qu'une fois achevés, les rapports de recherche et de consultation devraient être présentés aux habitants dans leurs communautés.

- **Ententes sur les avantages, renforcement des capacités et contigüité :** Les Inuits croient qu'il devrait y avoir une ERA négociée avec le gouvernement du Nunatsiavut car ce sont eux qui sont les plus près de la ressource et qui souffriraient le plus d'événements défavorables. Les habitants des autres régions du Labrador croient qu'il devrait y avoir une entente sur les avantages qui leur procure à tous un accès total et équitable aux avantages en respectant la contigüité dans le cadre de l'accès à la formation, aux emplois et aux occasions de développement des affaires. La politique devra couvrir tant les intérêts communs que les intérêts individuels.

- **Équité entre les sexes et engagement intentionnel avec les femmes :** La politique devra diriger des initiatives intentionnelles en matière d'équité entre les sexes qui sont officialisées et surveillées. Des consultations additionnelles, spécifiquement auprès des femmes et des groupes de femmes, devraient faire partie des futures consultations ou processus d'évaluation environnementale.

- **Développement des affaires :** Les gens d'affaires du Labrador veulent l'assurance que les activités commerciales, l'approvisionnement et les services qui peuvent se faire au Labrador demeurent au Labrador. Ils identifient des besoins en apprentissage et des activités intentionnelles visant à favoriser la capacité des entreprises locales à répondre aux demandes d'approvisionnement. En réaction aux ERA et aux engagements à réaliser des activités commerciales avec des entreprises autochtones, des coentreprises ont été créées et d'autres entreprises du Labrador trouvent que les règles du jeu ne sont pas équitables. Certains croient que les entreprises du Labrador devraient recevoir le même niveau de priorité que les entreprises autochtones. D'autres croient que les efforts de renforcement de la capacité des entreprises (comme l'embauche de travailleurs autochtones, de femmes et d'habitants du Labrador) devraient être considérés lors de la prise de décisions pour l'octroi de contrats.

- **Infrastructure :** Le développement abimerait l'infrastructure existante de la communauté et l'infrastructure des services publics et le développement prévu ne s'attaqueraient pas seulement à ces préoccupations mais permettraient également d'augmenter la capacité de l'infrastructure.

- **Fonds/Fondations du patrimoine :** La pratique de rendement social du capital investi constitue généralement une expérience positive pour les entreprises, les peuples et les communautés. Les investissements peuvent comprendre le développement de l'infrastructure, un appui aux programmes et services sociaux ainsi qu'un investissement

dans l'infrastructure fondée sur les connaissances de la région sous la forme de fondations pour des postes tels que des chaires de recherche à l'Institut du Labrador.

- **Environnements de chantiers :** Dans l'éventualité du développement d'un chantier de production/d'entreposage qui ne ferait pas partie d'une communauté existante, les gens croient alors qu'il devrait être soutenu par une entente de *Fly In Fly Out* (FIFO). Les habitants du Labrador voient également les avantages d'un chantier où l'alcool et les drogues sont interdits. Compte tenu du fait que bon nombre de communautés sont situées dans des régions éloignées sur la côte du Labrador, des défis liés à la nécessité de quitter ces communautés pour obtenir un emploi et de la possibilité que certaines tâches soient accomplies électroniquement à l'extérieur du chantier, les entreprises devraient explorer la possibilité d'ouvrir des bureaux satellites pour ainsi déplacer certains emplois dans les communautés.

- **Engagement auprès des syndicats en évitant le protectionnisme :** Compte tenu de la pratique qui consiste à négocier des mesures particulières et des conventions collectives pour les grands projets de construction, les gens du Labrador sont préoccupés par le fait que le protectionnisme des syndicats puisse empêcher l'accès aux emplois et ils encouragent le dialogue et la résolution des problèmes liés à cet enjeu avec les syndicats.

- **Fonds d'atténuation :** Un grand nombre d'habitants du Labrador croient qu'il serait bon de créer un Fonds d'atténuation des effets et des événements néfastes avant d'entreprendre les activités de développement et de production et qu'il devrait y avoir des mesures d'intervention en cas de déversement près de la région géographique.

Ume Kaushitakanut ute Kauitutakanut ute Napuatua Stassinats eukun ne Pimi put kie Uastenipimakan Pimi Kauintshiakant nete Napuatua utenamuats mak nte Epapeikusinanuts

Euauitakant Atusseuna

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Euauitakant ume atusseun

Shash kautinakant ne assin kauiatauatshenanuts, ume Canada Nfld mak Napuatua kaiatussenanut nete tauts kanutshikuakant pimi, shash miste mistetshitshipinitauts tshetshi etu uapatinuets ute Napuatua assits. Ume katshi uskassishipinits uapatinuets nenu eshinakutats ne ESRF Kaiatusseshuts nete board katshitapatats mak shash tsheeshinakunits ute Napuatua assits uanishinakutats.
Shash peshanakutauts essi kamiste mishinanikanastets tshekuan nenu kauauitakants tshekat uatapuenanut nash tshenepants ne pimi tshenantussenimakant etat ute Napuatua. Eukun shash miste mishinanikanipan nenu essi miste ntussenitakant. Mak eiapits shash, miste tshitapatakanu ne kauauitapant uipats mak mamupitakanu nenu essi ntussenitakant. Tapisku tsheishinakuats, ume kaatusseskatatau umenu atusseunu. Eku ume eshukum euauitakant tshekuan tshika mishinanikanu.

Kamiste uauitakant tshentussetakant: Ume tshentussentakant tshkuan mishiue tshika mishinanikanu nenu essi meskakant mak essi skutamashunanuts. Ume pimi katat ute Napuatua mak shash uiushitapants tshenissishuentshi nenua ESRF Kaiatusseshintshi. Eukun ume uets uamiste skutamashunanuts, ume kamiste shutshimakuats pimi eshimakushets shash ntussenitakanipan ute Napuatua eukun espishats ume 100,000 espish 200,000 espishipeiats peik tshishikaua ume pimi put kie 500 tsheshipinu muku epeikutshishikat muku eutuinakant pimi, ume emiste tshistashustets eukun tshe ueuetenitakuau tsheishinakutats umenu atusseunu tshetshi minupanits.
Ume kauimiste atuskatekant mak peteshanants nenu kamiste uanashanakutakant mak tshika uauitakanu nenu eshinakutakant ne etutakant ute pimi kanutshikuakant Napuatua mak passe uanashanakutakant mak kutakuts tshetshi tsheishi uapatakuanu auentshi. Auentshi kashuka ueuetenitakuau nenu miste menuats eshinakunits eukun etantshi nenu (pimi mak uastenipimakan pimi) mak tshetshi animishintshi atusseun tshemiste ani mak tshepimpinitakant shuneau mak tsheishinakuats atusseun mak tsheishinispantshi atusseuna ute Nfld mak Napuatua. Ne auetshi utinakuau assinu mak apatshitakuau espishitimints nipinu eukun eiapits animentakunu ne tsheispish ishinakunits uautinakuau. Ume kamishinatakuau eukun miste tshetshi uauitakants tan espishat nete uanutshiakant mak (tshentitshitakan mak tsheishipimpinitakant), tipanikea tsheatussenanuts mak tsheishimishinanikanastakant nete Napuatua mak kutakua tshekuan tshetutakan tsheishiminupantshi.

Mishinanikana Tsheishintistetshi: Nenua mishinanikana essi uauitakant tan tshenispitikuts ne kaatusseshuts ute katats Napuatua mak tshetshi etu mishats tan tshetuats nenu katutakanits ume atusseuan etshishipintakanits mak ume auentshi katats utassiuats mak shash uimiste mitshemunanuts nenu kaishitapatats eshitshitapatakuau kauishitshipintakuau nenu essi miste mishats.
Auentshi mak utassiuaua mak tsheutshimau uin tshemiste atuskatak tshetshi minupanits nenu atusseuna, shuneanu, atusseun mistshuapa mak tshetshi minuapatshitak nenu ushunemuau eskuntshe. Ume kaissishuananuts nte kaueueshintunanuts mak kauitapuetau essishueutau nenu kauikaniuets eukun eshinispinipants ne Norwegian Tsheutshimau pimi mak uastenipimakan pimi kauauinakanipant nenu nte mamit nipits mak tsheutshimau ute Nfld mak Napuatua katutakant uipats nta (1985) mak nete Nebron Kanutshikuakanits ekaminupatikuts nta (2010)
Auentshi nete utassiuats uinuau kauinekamakets nenu etutakanits mak tshetshi ettu minupinitakau mak tsheminupininukuts eka miskutinikanits. Ument kauitutakuau tshika

itishueuts tshetshi ettuish mishants nete etantshi auenua utassinits tshetshi euauitishuets nenua atusseuna, tsheishinakutats atusseuna, mak tshenispishitats mak eiapits tan tshenispishitats, mak eminu kanauenitakuau nenu eshishuetau tshetshi minu ueuetenitetau eka pikunetau mak tsheminu kanauenitakuau nenu eishiniunanits mak eshikanauenitamuau tshekuanu. Nenu emiste shutshimauenitakunits essishuenanuts mak kaminu nitutakushin essikanauentamen etapatshitaushun mak eshinakuats tsheapatshitakan nenu nutshiakanitshe emishats atusseun mak tsheishinakutakants mak tshenispints tsheuauitakant tan eshinakuats uaishinakutakant mak ume atusseun tshika miste mishinanikanu , ume kauimiste nitutamatshet, ne niskueuts emamuitutau tshika minu uauitamuts tan tsheishinakutatau tshetshi minusten tshe minupanits mak nenu etenitakuau tan tsheinispitukuts ne timeouts mak kumquats mak nenu utassiuau tan tsheishinakutakanits nash tshika uiminutakanu. Kuskun ishinakunu, tsheuauitapetakunits mak tshetshi minustutakunits tshetshi nitutakuau ne auentshi ete utassiuats mak netamuk eshinakust utshimauts.

Nete utassiuats kakukuetshimakanits: Ute kakukuetshimitunanuts eukun (Napuatua Utenaua) mak uitshuats enistits eshinakushets etatishets: eukun ne innuts, aissimeuts mak ne pusk ekakeshaut mak innu etentakushet put kie aissimeu. Mak passe etats auentshi emiste ekakakeshauts uipats etats ute Napuatua mak uikanishuaua etantshi ute Napuatua nash uipats mak etantshi ute tetauts Napuatua eiapits.

Ume kauikukuetshimitunanuts tshika nistuets ishinakun ushitakantshe, eukun kukuetshimitun mishinanikan, mak tshika tauts auentshi tshetshi kukuetshimats auenua. 162 tshika ispishaua tatina kukuetshimituna eukun tshetshi tshishitakanitshi mak 98 tshika tatina ne epapeikushets kauauitshinueshuts ekuekuetshimuets mak tshetshitapatikuau. Ume etshitapatakanitau eminuatshi etistetshi uinuau ne kakuetshinitunanuts shash mitshena essi tutakantshi. Passe shash etutakuau eukun espishats 10% eukun auentshi essi tshitapamakanitau tan etenitakuau mak etapuetakuau auentshi etats Napuatua.

Napuatua auentshi katats uinuau mak tshika tauts euitshimakatatuts nete mamu atusseskatuts mak tshetshi tshishapaninushuts tshetapuetatishuts, euauitshituts eminupanitishuts, mak enistuapumushuts nenu etatshimushuts mamueatussetau. Ume essi uauitakants mak emishinanikant tshekuan eukun tshika uishutshitaun nenu essishuetau emamupinits, nenu euitshamakatatuts, emitunenimitishuts, etapuetakushets, emamitunenimitishuts, estitshumushuts, mak nenu nakatuenitakantshi nete eatussenanuts mak tshetshi minu kanauenitakantshi.

Napuatua Aissimeuts kanutshiats nenu assinu mak kaushitakau ne Nunatsiavut eukun eiapits tshetshi mamuikanushanuts, tshetshitamatunanits mak ueueshitanunanuts mak atuskatatunanuts. Esk eka pepemau etananuts nete eitishuenanuts mak ne kamiste atusseshuts katats Regional Economic Board eukun tshetshi mushinau tsheuitamuats nete auenua etantshi Napuatua tan enitinanuts. Napuatua innuts(auentshi) uinuau shash mamu uiataussepants tshetshi uskassishipanits mak tshetshi tatau ueuetenitakanitshe. Ume uaushitakan atusseun mak enishekuapitshitashunanuts eukun thither emiste nutshiakantshi put muku tsheeka menupuants, eku ume aboriginal tsheutshimauts mak Regional Economic Development boards katats kaistishimakanits mamu etataui.

Mistshet Napuatuau Auentshi uinuau eka etenitakushets aboriginal tapuetamupants nenu etutakanits mak tsheishi minukaniunanits nenu tshiakanitshe pimia nete tauts mak mishiue inspirits ute Napuatua utenaua mak mishiue minuatussenanut mak mishiue ushuneaninanuts ute. Ume uets uinakatuenitakant tshetshi ishinakuats nets kauimiste kaniuits ute Napuatua, ume kaueuenitakuau tshekuan katutats eukun minu kaniunanits eshuneaminanitshe mak ute Napuatua utenaua eukun tshitshiue essi miste shutshitau. Napuatua Auentshi katat ute eukun tshitshiue miste uintussenanuts tshetshitutakuau nenu etutakanits mak minutshitapameuts nenua auenua ettu tshessenitamintshi tsheishinakutakanits mak tshetshi uitutamantshi minu tshissentamintshi eminuskutamashuntshi mak auen, tan etatishinanuts tshetshi ettu minu tshiskutamuakanits. Shash miste shutshenitakushuts ume Napuatua auentshi katats nenu ettu takanits atusseunu mak tshetshi kastinakuau umenua atusseuna. Eukun eiapits niskueuts tshetshi kastinakuau atussenanutshe, niskueuts eiapits tutamuts nenu utuskanutshe. Ume essi tutakanitshi nenua mishinanikana kakukuetshimitunantshi niskueuts passe epitaph ishinakutauts nenua kukuetshimitunu mishinanikana mak napeuets passe epitaph nist eientistauts nenu katutakantshi mishinanikana mak nenu eueuetenitakanits. Mak nenu uiskutamuakantaue nenua atusseuna mak miste mitunentamuts etapuetuau mak uinakatuenitakuau. Napuatua auentshi katats shash tapuetamupants tshentumeskatau atusseuna mak ne kauassiuts auentshi tshetshi ntumeskatau atusseuna, mamu ushitakuau utatusseuna mak mamu mushinau takuau ute utenanutats tshetshi nitautshiaiats nenua uikanishuaua. Mamu atuskatatau nenu kaushitats atusseunu ute utenauats, tsheminununiuts mak tshetshi minussentakuau etutakanits. Aue mamu tshiskutamashunanuts, atussenanuts, tshika miste mishau shuneau ekaniunanuts, mishatshi atusseuna mak uenutishinanuts mak miste uitshitapatamuts nenu essi kutakua tshekuanu tshetshipimpimitakanits.

Napuatua auentshi katats (innuts) mak eiapts tapuetuakanits nenua tshe eka shuka miste apatshitakanits mak piuenitakanits mak eiapits nete utenauats tsheminu nakatuapamakanits mak tshika uauitamuakanuts tshetshi tapuets nenu uantutushumakanits nete eatussetaui.

Entushumakanits: Nenu Napuatua auentshi (innuts) katats kauintussentakuau tshetutakuau eukun kanauentakuau etushumakanits ettakunutshi mitshets tshekuanu kaissishuetau eukun tshetshi miste tshitapatakanits nenu entushumakanits, eukun enu emiste tshika uauitenu mak nenu eueuetenitakanits mamu atussenanutshe.

- **Euauitshitaunanuts eatusseanutshe:** Napuatua auentshi katats ute tapuetamupants tshetshi mamu atussepakanits umenu uitshitunanitshe eatusseanutshe mak eukun tshetshi tshishipinitakant uauinakatuenitakant mishiue tshekuan tsheushitakant mak tshetshinue tshetakuats.
- **Tshetshi tapuetatunanuts:** Napuatua auentshi katats ute uinuau mamu atussemitutatunanuts. Umenu uaatussenanuts eukun tshetshi uauitshitunanuts mamu takuau atusseshitau kaueuetishuets mamu ute Napuatua auentshi katats. Napuatua mak Nunatsiavut tsheutshimau tshetshi mamu tats mamuitunanitshe nete C-NLOPB mak mamu ne Regional Economic Development Boards atusseshuts kaiapits eiapits.
- **Mamu uitakants tshekuan:** Napuatua auentshi katats nash uinistutamuts, tapuetatunanuts mak nash tshetshi minu uauitamakuanats nete nitassinats nenu uatutakunats mak uatutakants eiapits mushinau mamuitunanuts mak miste

uauitamakunats ute mishiue auentshi uapetakuau. Ne Napuatua auentsshi tshetshi minu tapuetakuau nenu nash tshishitakanitshe, mak nenu atusseuna kauauitakantshi mak uapatinakanits auentshi etats nete utassiuats.

- **Tsheishikaninunanuts kanitapueanuts mak tshetshi shutshinanuts mak tshimina tananuts:** Aissimets tapuetamuts tshetshi ueuetenitakuau nete IBA nenua uts uinuau Nunatsiavut tsheutshimau mamu tantshi nete mamuituntsheni mak tsheeka miste ustuenitakuau ume mamuitunanitshi. Napuatua auentshi katats mak eiapits eanish eukun tailskids tshika minu kastunamuts nenu eishi kastinakanits tante miste skutamashuts tshekastinakua atusseuna mak tshishipinitatau atusseuna. Nenu entushumakanitshi eukun thither tshika miste uauitakanu mak tsheeishitshitapatakuau.
- **Muku auen eshinakust tshika tauts mak mamu uiatshitussemats nenua niskueua:** Nenu entushumantshi auen eukun tshika tshitapameu nenu eishintutussentshi mak tshetshi minu nakatuenimakanits. Niskueuts eatussets eukun tsheitshitapamakanits. Tsheeka mamu takuau nete eatussenanuts put kie nenu atusseunu emiste tutakuau nete etananuts.
- **Atusseuna tsheishi pimpinitakantshi:** Ne Napuatua auentshi katata shash kanauenitamuts nenua epimpinitats atusseuna, eukun eiapits tsheishi kanauenitashuts mak tsheishipimpinitakuau atusseuna ute Napuatua eukun eiapits espants shash. Eukun miste tshitapatamuts nenu tshekeuenitakuau mak atuskatatuau tshetshi minupanikuts nenu emishi atussemakanitshi katshi uauitshiakanits kaishintuenitakuau. Ume essi meskat IBA mak nenu tapuetakuau tsheishi pimpinits atusseunu nete aboriginal atusseunits, ne aboriginal auentshi eukun mamu kutak *Napuatua* atusseunuaua eukun eiapits eshipimpinits nenua utatusseunuaua. Kutakuts esk tapuetamuts tshetshi miste shutshitau tshetshi miste shutshitau tshetshi miste pimpinitatau nete aboriginal atusseuna, (eukun tshetshi miste amusements nenua aboriginal kaiatusseshintshi mak niskueuts mak Napata auenua etantshi) eukun tshetshi mamu uiatshitussemats eiapits eka ueuetenitakuau nete etantshi.
- **Tshemsite tshuanitshet:** Ume ushitakantshe ne uatutakant eukun tshika miste tshuanitshet ute tshitassinats, mak nenu uatshishipinitakantshi umenua atusseuna eukun tshika uauitakanu tan tsheishinakuats tshishipintakantaue.
- **Nenu uipats kainitinanuts kamiste shuneauts mak kaminuanuts shuneau:** Ume kauiminitunan eukun tshika miste kanauenitakanu ute tshishipintakantaue atusseuna mak auentshi tutakuaue nete utassiuats. Ume kauimiste kanauentakant eukun tshika mamu uitshitunanuts eskutamashunantshi mak eatutussenanuts mak kanauentakantshi tsheeka tshuapinanuts tutakantshe mak kaapitau nete Napuatua kaueueshitau uinuau.
- **Kaatussenanuts kanauentashunanuts:** Tshikatshia titian tsheeka takuats nete tshitassinats ume uauishinakutakants muk auentshi tapuetamuts uauitshitunanuts tshetshi mamu petauanakanits mak pushakanits kaatusseshuts tutakanits. Napuatua auentshi katats eiapits tshitapatamuts nenu niskuteuapunu mak kapituatakanitshi tshetshi eka takunits nete eatussenanuts. Mak minimalist uaiu tshetshi takunitshi nenua utenana essi mitshentshi ute Napuatua mak kukuetshipitakant tshetshi eka tananuts nete utenats uets uts uiushuneamitunanuts mak miste minitunanuts umenua atusseuna nete uaatussenanuts uatshishipinants, ume katshishipinitats atusseuna tshika miste tshitapatamuts tshetshi tutakuau nenua atusseuna ute utenats.
- **Tshetshi mamyu tananuts nete kamamuitunanits tsheeka pikunakuau nete**

uatussenanuts: Tshetshi eiapits minimalist nenu kaishiuitamuakanits mak tshetshi tapuetuakanits nenu atusseuna. Napuatua auentshi katats eukun miste uauitamuts nenu tshetshi mamutananits nete etananuts mak nakatuenimakanits nenu entutussets mak tsheka ueuetenitakanits nete mamu uautussenanuts mak etishueanits.

- **Epikunikant tshekuan tshemestishuneauts:** Mitshet Napuatua auentshi katats tapuetamupants ume tshekuan emistepikunikant eukun tshe ueuestakanuts etutakanuts, tsheushitakanut esk eka emishitakant mak etutakant mak tshetshi takuats tapanikants nete epikunikant etananuts.

Kimiggutausimajuk nigiugijaujut Inuligijet-kenaujaliugutellu attutauniagijaujut Labrador imappisuami kitâni Utsualunnut ammalu kiasaleninut pinianniKajunut attuilangajut Labrador Nunanginnut ammalu Inunnut

Aulatsijik Naittotitausimajuk

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Aulatsijik Naittotitausimajuk

MânnaKammik imappisuami nunait aullaitausimajut, malillugit Canada-Newfoundland ammalu Labrador Imappisuami Utsualutsajannik AngajukKauKatigengit piusigiKattajanginnik, sakKititsisimajut nutâmik KanuttogutiKannimik imappisuami utsualunnik Kaujisagiamik Labraorip satjugiangani. Tamanna nutângujuk KanuttogutiKannik nalunaittisijuk ukununga Avatet Kaujisattet Kaujisattiligijet kenaujaKutinginnut Aulatsijet AngajukKauKatigenginnut mânnaujumik KimigguKujijut attuigajattunik inuligijet ammalu kenaujaKutiujunut attuigajattunut piniannigijaujunut Labrador satjugiangani Kaujijaullagijaugialet.

Tugâgutinga tamatsumunga Kaujisannimik ilautitsijuk pivalliatitsigiamik allaKutimmik sakKiniakKotumik atuttauniattumut ilingajunut kiasalenet piviannatunginnut mânnaluatsiak tukisijaujumut sakKiniattumut Labradorip satjugiangani. Tânna allaKutik sakKititsilangajuk amigattaujunut Kaujisannimik. Ammalu Kimiggutausimajut allatausimajuillu ilinganiKatsiatunut tamatsumunga pivalliataugajattumut malilluni. Atautsikut, Kaujisagiamut piusitsak pivalliatausimammijuk atuttaulauttulu Kaujisattisigalaniammata. Tammakua allatausimajut sakKititsilangajut pitagijanginnik ammalus sakKisimajunik atunik piniannigijausimajunut.

Pisiugijausot AllaKutinga: Ajunnatunik uKausilik allaKutik *katitsutausimajuk ammalu Kimiggutausimajuk SakKigajattunut Kaujisannimik ammalu PivalliataugajakKotunik – Imappisuami Labradorimi* atuinnaguttitausimajuk pikKujaliangutluni taikkununga Avatet Kaujisattet Kaujisattiligijet kenaujaKutingit Ajunnatunik uKausilinnik UKautjigiajet katingaKatigengujunut. Ilingagasuamut tamatsumunga Kaujisannimik, sanagiamut taijaujunut hydrocarbon sanagiamut imappisuamit pisimajunit Labradorimi isumagijaujut pitaKanninganik 100,000 tikilluni 200,000-inut utsualuKautinnik atautsimik ullumi utsualunnik upvalu 500 Million Piusituinnanik Cubic Feet ullumi upvalu kiasalenituinnanik, tamakua numarait atuniKatsiamagittut suliatsamik pigiasititsigiamik.

SakKigajattuk Kaujisannik ammalu pivalliatitsigiamik atuttausonik uKâlautaujut allaKutimmi allatauluasimajut atutlutik takunnâtlutillu suliaKagettunut taimaittusainanik ammalu aulataugajattunut imappisuami kitâni Labradorimi ammalu ilangit atuttaugajammijut sakKiluagajakKotut asinginnut. Kaujimajaujut sakKititsilangavuk Kanuittumik piniannimik atuniakKotanginnik pivalliatitsigiamik isumagituinnalugu Kanuittoninga suliagijaujuk (utsualuk upvalu kiasalenik), pisigajakKotut aullaigumajamminik, sanagiamut akigijanga, suliatsaugajattut sanalippata ammalu Kanuk akuniutigijumik suliagijaugajammangât, ammalu ikajotiugajammijut Newfoundland ammalu Labradorimut. Ininga ilusigijanga ammalu itijonninga imak ikKanattumagiummijut isumagigiangit annigusugiammik Kanuittumik suliatsaKaniammangâmmik pivalliatitsigiamik. AllaKutik naittotitsijuk pivalliataugajattunut isumagillugu sakKigajanninginnik, akinga (akingit ammalu suliatsait), Kanuk akuniutigijumik sananiammangâmmik, nunangata tumingit iluani Labradorimi ammalu asigiallait sakKigajattut nunalinnut ikajotet.

Allatausimajut Kimiggutaujut: Allatausimajut Kimiggutaujut takunnâlauttut mânnaKammik inuligijet ammalu kenaujaliugutt Kaujisattausimajunik ilinganiKagajattunut Laradorimi ammalu piluattumik ilinganiKatsiaKottunut imminik sakKiKattajunut piviannatunik tigusipviutauut taggâni avatiKutinginni; attuijut inunnut ammalu nunaliujunut; ammalu Kaujimajaujut nâmmasiattut ammalu sivuppiasiajut ilonnâgut piusigijaujumik angijummaginnik sulianguKattajunik piviannatunik pivalliatitsigiamut.

Inuit, nunalet ammalu kavamait pivalliatitsijut ilonnâgut ikajugumaKattajut aulajanginnik suliatsanut, kenaujanik, anginitsanik sanagiamik ammalu atuniKatsialutik ilinganiattumut sivunittinut. Takunnâluatlutik inuligijet pitjutinginnik ammalu adjigettisigiamik ammalu pivitsagijaujut nunalet ikajotigigialinginnik utittitaugialet iluani Norwegian kavamakkunginnik utsualunnut ammalu kiasaleninut

pivalliatauKattajunut Taggâni imappisuani ammalu kavamamut Newfoundland ammalu Labrador-imi iluane Atlantic AngiKatigegutillagingani (1985) ammalu iluanettumi Hebron Ikajotet Tugâgutinganik (2010).

Nunalet ammalu inuit sakKititsijut sangijonninginnik sungiutiKasongugiamut asiangugiamut piunitsauniattumut ammalu taikkuanguvut tigusisongujut piungitunik attuilangajunut. SakKijut tunitsiKattajunut sangijonninginnik ilautitsivuk angijumik inuit ammalu nunalet KaujimajautsiatitauKattavut pitjutigitlugit suliatsanik, kenaujaliugutausonik namminiKagiamut ammalu piusigijaugajattunik; malitsiasot pivalliataujunik; ilautsiajut sulijugijausinik kajusiutigijauniattunik; ammalu tigumiallutik ilugguset ammalu piusituKannik. Sangijut KaujimaKatigetsinik ammalu tukiKatisiatunik ilauKataunnik atuKatigellutik sunatuinnanik ikajotinnik ammalu piusiujunik sollu AttutaujuKappat ammalu Ikajotet AngiKatigegutinginnik, maligatsaliugiamut tungavitsait, ammalu kamanginnagiamut ammalu KaujititsiKattanik ikajugumallunillu sanagiamut Avatimmik Kaujisattaunitsanganut piusitsanganik ammalu suliatsamik pivalliatitsigiamik kajusinginnaKullugu. Tataminattuk, annait uKâlagiasimmata, adjinguangana, Kimiggutauninga ammalu satusainningit, isumâlotigijangit ilonnâgut ilinganiKaluattut Kanuk pivallianik attuiniammangât ilagengujuut ammalu nunalinnut isumaKangimaigitlutik sittutittauninanginanut kenaujaliugutet pivalliataugatsait. Tukisinatsiamagittuk, ajunnalugani, sulijunik Kaujigatsanik atuniKatsiamagijut nâmmasittisigiamik inunnik nunaliujuni ammalu NunaKakKâsimajunut kavamaKajunut.

Nunalinnut Kaujimatitsinik: Kaujimatitsinik inigijanga (satjuiami Labradorimi) angiggagijaujuk pingasunut nunaKakKâsimajunut: Innu, Inuit ammalu NunatuKavut (sivungani Kaujimajaulauttut Labrador Metis-nik) Tamakkua Kallunângajuillu ilagengutlutik sivullivinginit iniKasimajut Labradorimi unuttumaginnik jârinik ammalu tikiajatainnalimmijullu Labradorimut, piluattumut KikKangani Labradori nunanganut.

Kaujimatitsinik ilautitsilaukKuk pingasunik adjigengitunik Kaujijausimajunik katitsuinimmilu Kaujigatsanik piusinik, apitsunikkut, katimattisinikku apitsugalannik ammalu Kaujimammagijunut apitsunikkut. 162 apitsotet pijagettausimalauttut ammalu 98 inuit ilauKatautillugit katimannikut ammalu Kaujimammagitlutik apitsutaulauttut piusinginnik. Nalunaitsiagasuagiamut, Kaujimatitsinik SakKilualauttunut AllaKutet ilijaulauttut Kagitaujammut ammalu utittitautlutik 100 inunnut kiugunnasimajunut. Kiugunnasimajut 10%-imik inunnik kiggatuvuk adjigengitunut inojunut ammalu taikkua uppiniKalauttut kiggatuttausiasimajut adjigengitut inosiKajut nanituinnak kiggatuttautlutik satjugiami Labradorimi. dividuals

Labrador Inungit ilauKatautsiagumajut “ilagennimik” taikkununga kampaniujunut pivalliatitsigumajunut imminik sakKiKattajunik piviannatunik ammalu uppiniKatsiajut ikajuttigennimik, sulijuginnimik, ammalu tukisinatsiatumik, sakKinginnatumik ammalu takutsausiajunik KaujimaKatigennimik atuniKatsiamagijut sanagiamut ilagennimik. Tamakkua illinattut ammalu malittausiagialet kiggatuvuk sangijumik tungaviKagiamut sivuppiasiagiamut: *Ilagennimik, sulijuginnimik suligiamut ammalu Kaujimajaulluni inotsianimminik, ilauKataunnik, tigumiattausongulluni Pivalliataujuk ammalu pasigatsausongulluni sujuKagajappat.*

Satusattausimajut Labrador Inuit Nunamut Satusattausimajuk ammalu sakKititauninginga Nunatsiavut katingatitsisimajuk inunnik taggâni satjugiap nunagijanginnik ilitagijaugutiKagiamut, pannnaigutiKagiamut ammalu ilitagijautuinnagiamut, pannaigutiKannimik ammalu sivukkatiKagiamut. Isumagilunnagu adjigengitonningit pitsatuniKannik, NunakKatigengitut killiniattausimajut AngajukKauKatigengit sakKititsivut taimaittusainammik katingaKatigennimik taikkununga nunaliujunut isumagillugit killiniattausimajanginnut nunanginni. Labrador Inungit ilauKataugumajut pigiannimit ammalu ilauKatauKattalutik kajusiutigijauniattunik. Tungavik ammalu piuset ikajutsijut tamakkuninga piusinik ilautitsijuk, tâvatuak nukKatitaungitut, ilautitsigiamik NunaKakKâsimajut kavamanginnut

ammalu NunakKatigengitut kenaujaliugutet Pivalliatuligijet AngajukKauKatigenginnut.

Unuttumaget Labrador Inungit NunaKakKâsimajuingitut beliIsumaeve tamakkua pivitsait ammalu ikajotet pisimajunit imappisuami Kaujisannimik ammalu pivalliatitsigiamik namutuinnak ilijaugialet nanituinnak satjugiami Labradorimi ammalu ilonnait inuit adjigengujumik kamagijaullutillu taimâsainak pivitsaKagiamut inosiKatsianiammata. Isumagilunnagit sakKijâjut mânnaluatsiak kavamaligijet sakKigiaKajunut ilinganiKajumut avatimmik Labradorimi, isumagijaujuk adlusialluni ikajuttigennimik ammalu namutuinnak sakKiKullugu adlunimmik ammalu pivitsagijaujut nanituinnak satjugiami Labradorip nunagijanginnik sangijummagiulauttuk.

Labradorimiut ilonnâgut pigumatlatut pitjutigillugit pivaliatitsinik ammalu taikkua imminik Kaujimajunut avatimmik, taikkua pigumajut ammalu ilinniagunnatit ammalu taikkua, iluingalutik, ilivallialualittut. Sangijumik uppiniKatsiatut Labradorimiut inuit atuttaugialet takugiamik pivalliagiamut. Taimâtsainak KanuttogutiKammijut annait adjigettitaugialet ilonnanginik ikajotinnik pivallianimmit, pijakkumik annait imminik ilauKataugumagiaKammijut annait. Kaujisannik sakKisimajut malittigetsiajut allatausimajunut ammalu sakKititsisimajut tamakkua pitjutaujut isumâlotigijaujut annanut adjigeKattalungitut taikununga angutinnut taimaimmait ilauKataugasuagialet Kimiggutaujunut, pannaigutiujunut ammalu kajusiutigijaujunut. Atugunnagiamut ilinnianiujunik ammalu suliatsanut pijakKumik ilauKataugumagialet ammalu kamanginnagiamut. Labradorimiut uppiniKatsiajjut atuniKatsiamagijut aulatsisongugiamut pivalliataujunik inosuttut suliatsatâniammata, sanallutik nutânik suliatsanik ammalu nunanginneniammata satjugiap nunanginni pigutsaigiamut ilagianginnik. Nigiujut tungavitsatâgiamut pivalliagiamut nunaliujunik, Kanuittailinimmut kiggatotitsait ammalu Kaujimajauniattunik avatimmik. Asianit ilinniagatsanik, suliatsanut, puttugiajunut akiliusiat, kenaujaliugutitsait namminigjausot pivitsait ammalu ikajotet kenaujatigut, takugumammijut ikajotinnik sollu akikinnisanik ikumautigalannik akigijanginnik.

Labradorimiut pigumammijut piusigijangita avatik paigijautsiagialik ilimanattunik sakKititsitailaittaugiamut ammalu atuttaulualugani, ammalu pigumammijut nunangit kamagijaunginnagialet ammalu kinakkutuinnait KaujititsiKattagialet allatauKattalutilu angiKatigegutiujunut.

Maligatsait: KanuttogutiKannik ammalu takunnâtaujut Labradorimiunut, tunijausimajunut Kaujimatitsigalaniammata, sakKititsilauttuk sutaijunut pitjutaujunut kamagijaugajakKotunut maligatsanik pivalliataunitsanginnut. Ukua pikKujaliangusimajut kamagasuagiamut ikajotinnik ilinganiattumut pivalliataujunut, atuttaujut ilauKataugiamut, kajusiutiKagiamut, paigijaunitsanganut avatik ammalu suliaKapvet avatinginnut.

- **Tigumiannik Pivalliataujunik:** Labradorimiut uppiniKavut tungaviKatsiagialet tigumiagiamut pivallaitaujunik ammalu pivalliataujut kajusitsiagialet kamagijautsialutik ammalu paigijaugutiKatsiagialet piusigijangit avatik ammalu isumagijautsialuni akuni pannaigutiliujut taikkua piviannatut nungusimalippata.

- **TukiKatsiatuk Atunnimik:** Labradorimiut inungit ikajuttigeKataugumajut. Piusigijaujut ikajugajattuk tamatsuminga atuttaujumik ilautitsilunillu sakKititauningit katingaKatigejut kaunsalinnik Satjugiami Labradorimi; Labrador/Nunatsiavut kavamanga kiggattutiKallutik AngajukKauKatigengujunut Newfoundland ammalu Labrador Utsualuligijiujunut ammalu ilauKataullutik NunakKatigengitunut kenaujaliugutet Pivalliatuligijet AngajukKauKatigenginnut.

- **KaujimaKatigennik:** Labradorimiut inungit nalunalungitumik pigumajut, kajusitsiatumik, takutsausiajumik ammalu sângalutik KaujimaKatigennimik akKusâgalannikut nunaliujunut, kinakkutuinnanut katimattisiKattalutik, atullutik tusagatsaligijiujunut ammalu atullutillu nunalet

inunginnik. Labradorimiut Inungit uppiniKammiut pijagesimalippata, Kaujisannik ammalu KaujimaKatigennik allaKutet atuttaugialet inunginnut taikkununga nunagijanginnut.

- **Ikajotet AngiKatigegutingit, Tigumiasongugiamut sanannik ammalu AtaKatigennik:** Inuit uppiniKavut satusaigialet AttutaujuKagajappat Ikajotet AngiKatigegutimmik taikkununga Nunatsiavut kavamakkunut taimailingaluattuk Kaninnipaungummata piviannatojumik ammalu siunniuluagajattut angijuk sunatuinnak ilimanattut sakKigajappat. Labradorimiut Inungit asinginnik killianiattausimajuk uppiniKajut pitaKagialik Ikajotet AngiKatigegutinganik pivitsaKattisijumik ilonnanginnik ammalu nâmmasiattumik atugiamut ikajotinnik isumagillugit atajunut ilonnanginnik illinniagatsanik, suliatsanut ammalu kenaujaliugutet namminiKagiamut pivitsanik. Maligatsait kamagijaugiaKalâttut kamalangajumik tamâgennik Kaujimajaugettunut sakKilangajunut ammalu Kanuttogutigijaujunut immigolingajunut inunnut.

- **Inoningit adjigettisinnik ammalu PijakKumik Atuttauningit ilingajunut Annanut:** Maligatsait pijakKumik kamagiaKalangajut inunginnik kinakkningit adjigettisigasualluni kenaujaliugutet tugâgutigijauniattunut sanajaujunut ammalu kamagijaujunut. Ilagiallugullu Kaujimatitsigalannik, piluattumik ilingajunut annanut ammalu annait katimattiujunut, ununnisanik KaujimaKatigettisigialet upvalu avatik Kaujisattaulippat piusigijauKataugialik.

- **kenaujaliugutet NamminiKagiamut Pivalliataunningit:** Labradorimi kenaujaliugutilet Kaujigumajut kenaujaliugutet, piKutigalait ammalu kiggatotet sakKigajattunut Labradorimi, sakKigialet tamâni. Nalunaittisijut ilinniagatsanik ammalu pijakKumik piniannigijausonik kamagijautsianimmat nunalet kenaujaliugutitsait namminiKajunut ikajuttauniammata Kinugautigijangit. Taimaimat AttutaujuKagajappat Ikajotet AngiKatigegutingt ammalu sulitsiagiamut atulangajut kenaujaliugutigijaujut namminiKagettunut taikkununga nunaKakKâsimajunut kampaniujuut, nunaKakKâsimajut ikajuttigeut sakKititausimajut, ammalu asigiallati Labradorimi kenaujaliugutet takunnâjut tamanna atuniKalungituk. Ilangit uppiniKajut “Labrador” kenaujaliugutilet pitâgialet adjigengujumik sivulliutitaugiamut tamânemmata nunaKakKâsimajiullutik kenaujaliugutiKatlutik. Ammalu suli asigiallait uppiniKajut sanagiallagiamut piggautigijaujut kampaniujunut (tigusigalagiamik nunaKakKâsimajiujunut suliaKattinik, annanik ammalu Labradorimiunik) isumagijaugialet kajusiutiKalippata kântrâkkinik.

- **Tungavitsak:** Pivalliatitsinik uKumaittumik sakKititsilangajuk sakKijâgettunik nunalet tungavinginnik, ammalu kinakkutuinnanut kiggatotiujunut tungavinginnik ammalu pannaigutiliuttausimajuk pivalliataugumajut kamanialungituk tamakkuninga isumâlotigittaujunut tâvatuak angillivalliatitsiluni tungavitsanginnik tigumiasongugiamut.

- **PiusituKait kenaujaKutingit/Aittotitsailu:** Atuttausimajut inuligijet utittisipviunimmik sanajausimajunut ilonnâgut piujoKattajut atuttausimatluni kampaniujunut, inuit ammalu nunalet. Sanajausimajut ilautitsijuk tungavitsanik pivalliagiamut ammalu ikajutsimijuk inuligijet suliatsanik ammalu kiggatotinnik, ammalugiallak sanajaujut atujullu Kaujimajaujunut pisimajunut tungavinnik nunakKatigengitunik isumagillugit tunijaumajunut sollu initsanut Kaujisannkut Itsivautannut Labrador suliaKapvini.

- **SuliaKapvimi Avatingit:** Sanajaujut/piulimatsivet iningit pivalliataugialet ilautitaunialungimata sakKijâgettunut nunalinni, inuit uppiniKaniammata ikajuttaujut Tingijokkut utittaKattalutik. Labradorimiut takunnâjut ikajotinnik talannatuKalugatik ejalukaKalugatik suliaKapviKallutik. Kaningitommat unuttumaget nunaliujut satjugiami ammalu aullaKattagiaKaKattalâmmata nunagijamminik suliaKagiattugiamut, ammalu tigumiasongugiaut ilanginnik suliatsanik aulatautillugit ikumautikkut Kagitaujatigut, kampvanet Kaujisagialet atuttaugajattunik satellite-ikut suliaKapviKallutik atuttausongummijuk suliatsanik sakKititsigiamik nunaliujunut.

- **Atulluni Union-inik ammalu sakKititsitaililluni PaigijaugutiKajunut:** GAtuttausimammat satusaigiamut ammalu angiKatigegutinnik angijunut sanajaugasuattunut, Labradorimiut inungit isumâlotiKajut unionet atuttaulangajut ammalu apviagajattuk suliatsatâgiamut ammalu piusitsanik ammalu uKumaigijaujunik sittutisigiamut unionet atuttaupata pitjutigillugit tamakkuninga pitjutaujunik.

- **Ikilliumittisigiamut kenaujaKutingit:** Unuttumaget Labradorimiut inugijangit uppiniKajut ikilliumititsigiamik kenaujaKutinginik, kamagiamut angijumik piungitumik sakKituKagajappat, sakKititaugialet sivungagut pivalliataugumajuk sakKiKâgani ammalu sanagiasikKâgatik ammalu pitaKagiaKammijuk atuttausomik asikKituKagajappat utsualunik tapvainak kamagijauniattumik paigigasuallugu inigijanga.

1.0 INTRODUCTION

The Environmental Studies Research Fund (ESRF) finances environmental and social studies to support regulatory decision-making as to how and under what conditions development and production activities on frontier lands is conducted. Under the Canada Petroleum Resources Act, the Labrador Shelf is considered a frontier land.

Between 1971 and 1985, 26 exploration wells and two delineation wells were drilled on the Labrador Shelf. With the discovery of natural gas at a number of these exploration wells, five significant discoveries licences (SDLs) were granted by the Canada-Newfoundland & Labrador Offshore Petroleum Board (C-NLOPB). The five SDLs represent an estimated 4.244 trillion cubic feet (TCF) of natural gas reserves. Recent offshore land sales, pursuant to the C-NLOPB processes, have demonstrated renewed interest in offshore oil exploration along the Labrador Coast. This renewal of interest indicated to the ESRF Management Board the need for an up-to-date evaluation of the potential socio-economic effects of such activities on the Labrador coast .

ESRF retained Sikumiut Environmental Management Ltd. (Sikumiut), under the guidance of a Technical Advisory Group (TAG) to produce a current evaluation of the potential socio-economic effects on the Labrador coast as a result of the resumption of offshore oil and gas exploration and possible future development. To address this objective, the work was developed in five Tasks as outlined below. Further detail on the methods related to each one is provided in subsequent report sections.

Task 1 – A Compilation and Analysis of Potential Exploration and Development Scenarios
Sikumiut sub-contracted the services of IntecSEA to produce this “Scenarios Report” and it is attached as Appendix A to this report. The Scenarios Report is based on knowledge of the local petroleum industry vested with IntecSEA, input from various oil producers within the Province of Newfoundland and Labrador, input from the Technical Advisory Group members and from available literature related to local exploration and development, and general exploration and development activities.

Task 2 – A review of Associated Socio-Economic Conditions in Labrador

Sikumiut consulted available information from a variety of sources to produce a current summary of socio-economic conditions in Labrador and also conducted a literature review related to socio-economic topics in Labrador. The results of these efforts were documented in a Literature Review Report and a Community Profiles Report, respectively, and both were submitted to TAG.

Task 3 – Conduct Interviews with Key Informants

Sikumiut prepared two sets of interview questions for delivery to government and industry audiences and general public audiences. In excess of 100 people from coastal Labrador communities, government, industry and other groups participated in the interview process and provided input on their thoughts and opinions about offshore Labrador oil and gas exploration and development. The results of the interview effort were compiled in a Community Consultation Report, submitted to TAG.

Task 4 – Draft Final Report

A report outlining the overall project effort and results was produced and submitted to TAG.

Task 5 – Final Report and PowerPoint Presentation

Based on TAG feedback on the draft report delivered for Task 4, this Final Report was produced and submitted to TAG. Following acceptance, the PowerPoint Presentation on the project will be developed and submitted to TAG, along with a publishable Executive Summary.

The Structure of the Final Report

- Section 1: Introduction – places the project in context and briefly describes the reports produced as part of the project.
- Section 2: Scenarios Report – provides the summary of possible drilling, exploration and development scenarios, the cost and the potential footprint on Labrador.
- Section 3: Literature Review – provides the major themes as addressed in the literature regarding natural resource development in northern environments.
- Section 4: Community Profiles and Socio-Economic Indicators – provides a summary of social and economic indicators for the four regional economic zones.

- Section 5: Community Consultation – describes the process and highlights findings regarding the potential effects of offshore oil and gas exploration and development anticipated by Labrador people.
- Section 6: Policy Recommendations – provides an overview of policy recommendations arising from and based on the input received through the community consultation process.

2.0 SCENARIOS REPORT

At the outset of this project a technical report, *Compilation and Analysis of Potential Exploration and Development Scenarios – Offshore Labrador* (Scenarios Report) was prepared to provide a basis for the study (Appendix A).

The Scenarios Report describes the kinds of activities that might reasonably be expected to occur as a result of exploration and development of offshore Labrador hydrocarbon resources. The scenarios considered were as follows:

- Two-dimensional (2D) and three-dimensional (3D) seismic surveys;
- Exploration drilling from drill ships or mobile offshore drilling units (MODUs); and
- Production from facilities such as:
    - Gravity-based structures (GBS);
    - Floating production, storage and offloading vessels (FPSO);
    - Subsea developments;
    - Export pipelines and flowlines;
    - Compressed or liquefied natural gas production and transhipment; and
    - Onshore processing and other facilities.

For the purposes of this study, hydrocarbon production from offshore Labrador is assumed to be on the order of 100,000 to 200,000 barrels per day of crude oil or 500 Million Standard Cubic Feet per Day (MMSCFD) of natural gas. These numbers are in line with production rates that might be considered reasonable for a project to be viable.

The following is a brief summary of the Scenarios Report and the reader is directed to the full report for further detail. The potential exploration and development scenarios discussed in the report are based on comparable oil and gas development activities and projects. For operations offshore Labrador, some scenarios are more likely to occur than others. Factors that determine the most viable option are the development type (oil or gas), potential market for the product, construction costs, employment during construction and life of project, and the potential benefits to Newfoundland and Labrador. The field characteristics and water depth also play an important part in choosing the most feasible option for field development.

The possible scenarios are summarized in Table 6.1 of the Scenarios Report and are based on the likelihood of occurrence, value (cost and employment), construction time, geographic footprint in Labrador, and other potential local benefits. The assessment of the likelihood of occurrence is based on the current state of technology, the onshore/offshore Labrador environment, oil and gas production estimates/reserves, potential products/markets, and norms with regard to typical industry projects.

The reader is referred to Table 6.1 of the Scenarios Report which provides an overview of the major phases of a typical hydrocarbon field development project from exploration through production and finally abandonment. The timelines are intended to be indicative only and depend on several factors such as the local regulatory conditions, specific project requirements, availability of labour and equipment and unforeseen delays, among others. It is important to note that the Capital Expenses (CAPEX) are for the production phase only and do not include exploration and appraisal activities.

For the purposes of this study, the Scenarios Report breaks the field development into five main stages described as follows:

Exploration – Available field information and field works are first obtained through testing such as magnetic, geophysical and geotechnical surveys. The data gathered in these surveys undergo further analysis and modeling by geologists and reservoir engineers. If sufficient hydrocarbon potential is indicated, exploration wells may be drilled to obtain a better picture of the field's geology and recoverable reserves.

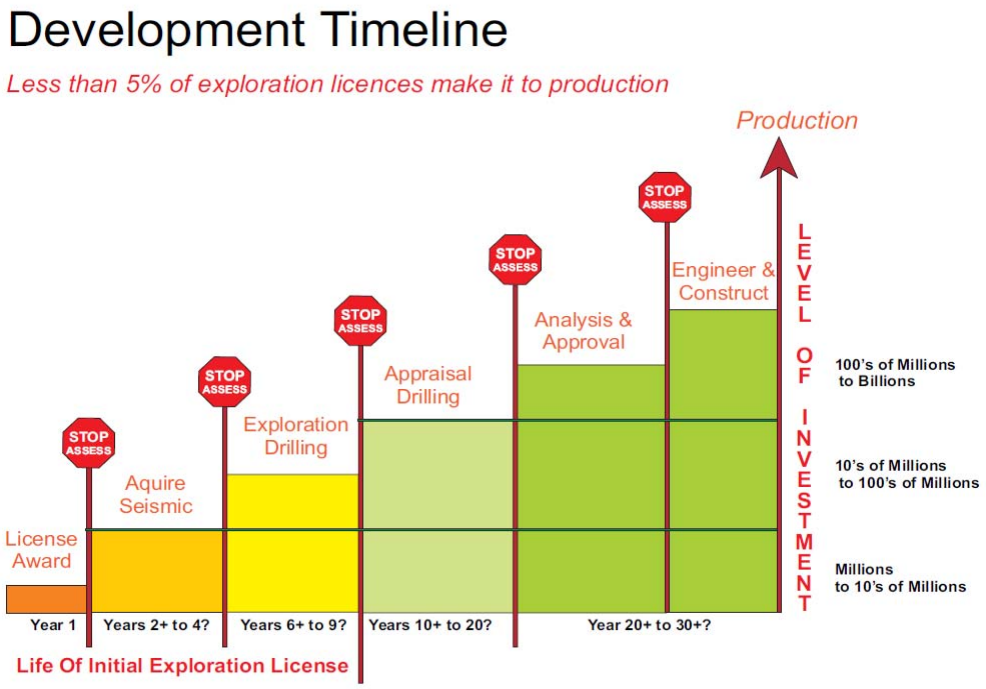
Appraisal – Once hydrocarbon accumulation is discovered, an economic analysis determines the financial viability of the field and the most effective development scenarios based on the field's characteristics. Drilling of appraisal wells may be required for verification and analyses of exploration well results.

Development – When the field is deemed viable and the appropriate development scenario is chosen, the conceptual and front-end engineering and design is completed. The development stage also includes the construction, procurement, commissioning and start-up of the chosen facilities.

Production – This stage occurs when hydrocarbons are produced from the reserves and the production facility is operational. It begins at production of first oil/gas and continues until the last well is shut-in. It includes the periodic maintenance (turnarounds) and modifications required to maintain the production facility. The length of the production cycle is normally determined by project economics and volume of recoverable reserves.

Decommissioning – The final phase of hydrocarbon field development occurs when recoverable reserves are depleted and it is not economically feasible to continue with production. Decommissioning includes the final shut-in of wells, removal of subsea infrastructure (if necessary), environmental remediation and removal or abandonment of the production facility following applicable regulatory approval.

The following graphic (provided courtesy of Dave Taylor) depicts relative timelines and costs related to oil field production:



3.0 LITERATURE REVIEW

The methodology for the literature review included a search of Memorial University Libraries for all information relevant to either socio-economic impact of offshore oil projects or to Labrador communities. An Internet search using Google was conducted using the following key words: Socio-Economic Impacts Offshore Oil; Offshore Oil Arctic; Offshore Oil Community Effects; Offshore Oil Labrador; Inuit Statistics; Inuit Voisey's Bay; Innu Statistics; Innu Voisey's Bay; and Resource Extraction in Northern Environments. In addition, Environmental Impact Assessments for other natural resource extraction projects in Labrador and ESRF Reports available online were reviewed as well as bibliographic sources identified in other studies, articles and reports. Documents and reports held in house by Sikumiut, as well as documents from the C-NLOPB library relevant to the socio-economic effects of a potential offshore oil development in Labrador were also reviewed. Major themes arising from the literature review are highlighted below. Information gathered during the literature review was incorporated in the development of the survey questionnaire and interview guides used as part of the community consultation process.

3.1 Sustainable Development

The discourse, practices and emphasis in the natural resource development arena have evolved over the years. Storey and Hamilton (2003) state that "triple bottom line" thinking in the mining industry in particular have expanded the focus past "financial bottom line" to consider the environment and social and cultural issues with respect to the workforce and communities and region. Consideration for communities and how development affects them socially has also been described as "social justice" and "social equity" which introduces a stronger moral value or rights orientation to the discourse. This focus on local benefits is reflected in the Norwegian Government's controlled pace of development to allow the regional economy to grow gradually and benefit from oil and gas opportunities (House 2003). The Government of Newfoundland and Labrador has taken a similar stance within the Atlantic Accord (1985). More recently, with the Hebron Development, even more attention to local benefits is addressed in a Benefits Plan Agreement between the operator and the Government of Newfoundland and Labrador, which is in addition to the Benefits Strategy outlined in the legislation that governs the C-NLOPB.

Generally, people, communities and corporations support the concept of sustainable development with its stated aim of meeting the needs of today's population without limiting the opportunities of future generations. The pillars that support this commitment are economical, political, cultural and social.

3.2 Social

People, communities and governments engaged with development generally want to benefit from the industry with jobs, money, capacity building and investment in the future. Positive effects of development, highlighted in the literature, include improved access to health care, roads, search and rescue, education opportunities and scholarships. While evidence suggests increased incomes lead to increased rates of alcoholism and other drugs, "research suggests that after a community has witnessed a year or two of increased income levels, the purchase and consumption of alcohol declines. The decline is associated with an increase in social stability and community wellness" (NAHO 2008).

3.3 Resilience

Natural resource development, whether land-based or offshore, presents an opportunity for increased self-reliance, autonomy and sustainable futures for people and communities. In writing about Canada's north and the impact of mining on Aboriginal communities, Gibson *et al*. (2005) developed the idea of a model of resilience and identified the equity factors that contribute to resilience. In essence, resilience is the ability to shift and change to create a new balance and this capacity is a positive for all communities engaged with natural resource development. The factors that contribute to resilience include the degree to which people and communities are well informed about jobs, business opportunities and processes, are able to pace development, are engaged in respectful decision-making, and are able to maintain culture and traditions.

3.4 Political

Clearly, jurisdictional changes resulted in Aboriginal governments acting with greater autonomy and self-determination. The expertise of Aboriginal governments in negotiating agreements is steadily growing, as is the commitment to define participation in development through mechanisms such as Impacts and Benefits Agreements (IBAs). Strong communications and meaningful participation coupled with tools and mechanisms such as IBAs, regulatory frameworks, and monitoring and reporting commitments help make the Environmental Assessment (EA) process and project development more inclusive. IBAs and Benefits Strategies generally focus on capacity building, training, access to employment, business opportunities, royalty sharing and other issues identified by the group involved. In the case of the Labrador Shelf, the area is designated as part of Canada's "frontier lands" and it would be expected that the interests of Labrador Inuit, Labrador Innu, NunatuKavut (previously referred to as Labrador Metis) and citizens of the province of Newfoundland and Labrador will be addressed should development and production occur.

3.5 Benefits Strategies and Capacity Building

One of the procedural issues that affect people, communities, industries and governments is the EA process itself. The process raises the expectations of people and communities as to economic benefits in particular and social impacts in general. While the EA process provides opportunity for engagement, input and some influence, engagement is often focused on negative impacts as opposed to positive effects (Shrimpton 2004).

The political reality of negotiating IBAs is consistent with the four pillars of sustainable development: economic, social, environmental protection and culture. Greater involvement with Aboriginal governments has broadened the emphasis of development beyond economic prosperity and environmental protection, to capacity building and investment in future economic diversification to support sustainable development. In addition to financial royalties, IBAs address access to employment, training, business development opportunities and obligations regarding monitoring and reporting.

3.6 Increasing Autonomy for Aboriginal People and Communities

The desire of communities to be funded to complete their own research and assessments as part of both the Environmental Impact Assessment (EIA) and the monitoring and reporting requirements is noted and this kind of self-directed involvement is seen as capacity-building, empowering and contributory to stronger engagement (Buell 2006).

3.7 Economic

The emphasis on training and education in IBAs is seen as an investment in the future which meets current needs and also provides students with possibilities and options for the future. Employment benefits for local residents are often manifested in the construction phase (if required) and supply and services such as transportation, hospitality industries, catering and cleaning. As a result of the Hibernia development in Newfoundland and Labrador, the knowledge-based economy has been a positive spin-off in areas such as consulting and communications (Storey *et al.* 1996).

3.8 Cultural

The move from the traditional economy to a wage-based economy has both positive and negative repercussions on Aboriginal people and they see the need for a balance between the desire to retain their distinctiveness and avert assimilation into the global wage-based economy and the increased opportunities provided through development (Buell 2006). The experience of Inuit working at Voisey's Bay, as with other developments in the North has, for the most part, been positive. Greater purchasing power and financial stability facilitates improved housing, and purchasing equipment can promote greater engagement in traditional activities. Buell reports that as development in a region increases, the contribution of the traditional subsistence land-based sector decreases. Reduced hunting can mean less traditional food (foods obtained from wild sources, including seal, caribou, Arctic char and sea birds) for families and in the long term the dietary change can have a negative impact on health if it means a reliance on more

"store-bought" and sometimes less healthy food. Work schedules such as two weeks on and two weeks off can also mean the opportunities to pass on skills, traditions and knowledge may be limited to time in the community and what is possible given the weather, movements of animals and a need to attend to other tasks such as gathering wood for fuel. On the other hand, the time available for teaching skills may be intensified because workers have extended periods of time off work available to them and their families to pursue traditional activities. A decrease in the amount of time spent on cultural activities can negatively affect the sense of identity and self-esteem of Inuit and the loss of identity is a concern with serious ramifications on mental health, substance abuse and violence (Buell 2006). Retaining traditional values and a sense of community integrity is seen as very important.

Cultural diversity awareness and sensitivity to race and gender are important for retention and overall creation of respectful work environments.

3.9 Gender

When women enter into discussions, dialogue, assessment and negotiation, their concerns generally relate to how development will affect families and communities as opposed to focusing on economic development factors. Childcare options in northern communities are generally quite inadequate and women are primary caregivers for children and seniors in the communities. Inuit women sometimes see development and the move to a wage-based economy as leaving them with more responsibilities such as needing to take care of the household fuel supply and other household maintenance duties in addition to all of the child and elder care (Archibald and Crnkovitch 1999).

3.10 Communications

Clear, plain, honest and informative communications are key to satisfying engagement with people in communities and Aboriginal governments. Local benefits are very much linked to the level of broad-based and inclusive participation marked by self-determination and respectful engagement in decision-making processes (House and Vodden 2002).

Timing and long breaks in the flow of communication during project development are major issues for people and communities. The length of time which passes between project exploration (and, for example, related consultation sessions) and tangible evidence of a project occurring (i.e. available jobs and other economic benefits within the community), should the project happen at all, means that community members find it hard to maintain interest or even belief that development will happen.

4.0 COMMUNITY PROFILES AND SOCIO-ECONOMIC INDICATORS

An overview of social and economic indicators, disaggregated according to the Regional Economic Zones included in the study area (Figure 1), is presented below. The Community Profiles reflect information collected from the *Community Accounts* website (www.communityaccounts.ca, a database offered by the Government of Newfoundland and Labrador), websites of the Labrador Regional Economic Development Boards (REDBs) and Statistics Canada. Regional Economic Zones are used to represent the study area.

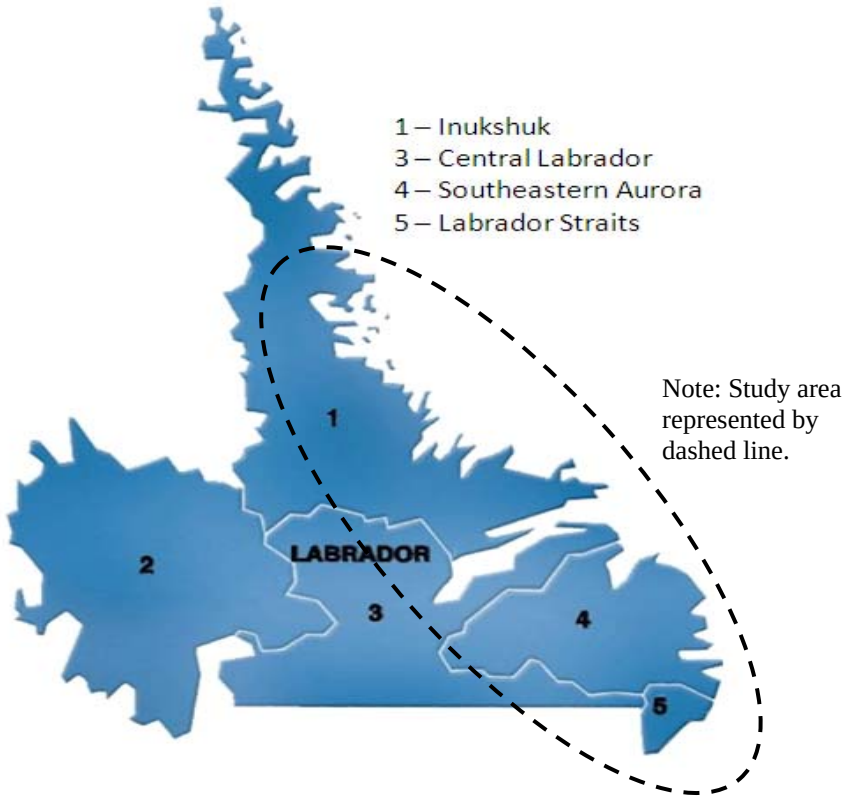


Figure 1 Regional Economic Development Boards in the Study Area

The Labrador Rural Secretariat Region includes Labrador West and, while larger than the area defined for this study, has identified two major concerns for communities in Labrador:

- Transportation is the number one concern and is an obstacle to moving forward with economic and social investment. Roads will bring traffic and traffic will bring business, reduced shipping costs and increased affordability throughout the region; and
- Isolation, particularly as it affects youth, is another core issue. Keeping youth in the region by reducing the feeling of isolation, getting them educated and having employment available for them afterwards will be important in moving the region toward sustainability.

The Regional Economic Zone profiles reflect information, on a regional basis, for the regions of Labrador that are of interest to this ESRF study. The zones are:

- Inukshuk, Zone 1, the north coast of Labrador representing six communities, a population of 3,120 and reaching from Rigolet to Nain;
- Central Labrador, Zone 3, representing the four communities in the Upper Lake Melville area and a population of 9,175;
- Southeastern Aurora, Zone 4, representing ten communities from Black Tickle to St. Lewis and a population of 2,610; and
- Labrador Straits, Zone 5, representing seven communities from West St. Modest to Forteau and a population of 1,820.

The federal and provincial governments have set five core functions for REDBs and these are outlined in the Report of the Ministerial Committee on the Process to Renew Regional Economic Development, 2005:

1. Develop and coordinate the implementation of a strategic economic plan in each zone, supported by an integrated business plan;
2. Develop a strong partnership with municipalities in each zone that incorporates the strategies and priorities of municipalities in the economic planning process;
3. Develop partnerships in planning and implementation with Chambers of Commerce, Industry Associations, labour organizations, post-secondary institutions, Canadian Business Development Corporations (CBDCs), and other zones that advance and support the economic and entrepreneurial environment of a zone;

4. Undertake capacity-building and provide support to stakeholders to strengthen the economic environment of the zone; and
5. Coordinate and facilitate links with federal, provincial and municipal government departments and agencies in support of the strategic economic plan. Representatives from REDBs were key informants for the community consultation and the REDBs will be key stakeholders and partners should oil and gas development and production occur off the coast of Labrador.

(Source: http://www.nlreda.ca/system/filestore/Reports/Min%20Comm%20_Final%20Report.pdf)

Table 1 uses select social and economic indicators to compare the Regional Economic Zones with each other and with the province.

From the education perspective, the Inukshuk zone continues to have the lowest rate of high school completion at 68.2% and the Central zone the highest at 80.8% compared with the provincial rate at 85.4%. The level of education may help to target areas for pre-employment training, bridging and access to employment training programs.

From the economic perspective, personal per capita income, the median income for couple families and lone-parent families are reported. When compared with 2001 census data, all family types have steadily increased income between 2001 and 2006. However, the percentage increase in income for lone-parent families (most often female led) is less than for couple families. For example, between 2001 and 2006 in the Inukshuk Region, a couple family median income increased by $6,600, whereas a lone-parent family median income increased by $1,100. In the Central region the difference is even more marked with couple incomes increasing between 2001-2006 by $16,700 while lone-parent family median incomes increased by $3,800. In 2006, the median income for lone-parent families ranged from $24,000 to $50,800 less than the median income for couple families (www.communityaccounts.ca).

Table 1 Select Social and Economic Indicators of Zones and Province

Indicator	Inukshuk	Southeastern Aurora	Central	Labrador Straits	Province
Education Percentage of people age 25-34 having at least a high school diploma	68.2%	73.9%	80.8%	87.9%	85.4%
Economic 2006 Census Data Personal per capita income	15,400	17,000	27,400	20,100	22,900
Median couple	53,200	46,600	77,900	51,400	56,500
Median lone-parent	20,700	20,900	27,100	27,000	25,300
Incidence of income support (2008)	17.5%	8.0%	8.1%	3.3%	10%
Labour force characteristics (May 2006) Employment	40.9%	26.3%	62%	39.9%	63.3%
Unemployment	29.7%	66.7%	14.4%	33.1%	18.6%
Weeks worked 2005 census data					
12 wks	295 (18%)	295 (18%)	475 (8%)	95 (9%)	24,755 (9%)
12-20	310 (19%)	605 (37%)	595 (11%)	340 (34%)	45,800 (18%)
21-49	445 (28%)	400 (24%)	1,425 (26%)	220 (22%)	70,370 (26%)
50+	565 (35%)	340 (21%)	3,040 (55%)	355 (35%)	126,245 (47%)
Total	1,615	1,635	5,535	1,010	270,170

Data on residents of the Central Region suggests incomes are significantly higher than in the other Zones and in fact higher than provincial income statistics. This may reflect the number of professionals in the area, the higher employment rate and the proportionally higher level of education for the zone compared with the other zones examined.

The incidence of Income Support (formerly called Social Assistance) has been steadily decreasing during the 2001 to 2006 Census periods. This is likely influenced by the province's Poverty Reduction Strategy and the effort the provincial government expends to ensure that workers, particularly in the fishery, receive the minimum number of weeks worked to be eligible for employment insurance. It is notable that the incidence of income support in the Inukshuk Zone is considerably higher than in the other Zones and higher than for the province. The Labrador Straits has the lowest incidence of Income Support and this could well be attributed to the efforts of the Labrador Fisherman's Union Shrimp Company (LFUSC) and their dedication to ensuring workers from that area have enough weeks worked to qualify for employment insurance.

With respect to Labour Force participation, the most common worker type and occupation group in all zones is sales and service, a category which includes a wide array of jobs from retail sales to public service jobs such as education, government and health care. Not surprisingly, this group is the most highly represented in the 50+ weeks worked per year. The number of weeks worked would have a significant impact on income, and income affects well-being. For those whose weeks worked are "topped up" through government subsidized Community Enhancement Projects in order to qualify for employment insurance, the annual income is likely low. The effort of the LFUSC is evident in the Labrador Straits and Southeast Aurora regional economic zones with much higher participation rates in the 12-20 weeks of work. Nonetheless, the Southeastern Aurora Zone has the lowest employment rate (26.3%) and a significantly higher unemployment rate (66.7%) than the other zones. Generally, the number of weeks worked suggests there are likely many workers who could be available for more weeks of work if the work were available.

5.0 COMMUNITY CONSULTATION

This section describes the study area, communities and people involved in the community consultation. The methodology of the community consultation is outlined and the findings are reported according to the major thematic areas represented in the survey questionnaire and the interview guides.

Labrador People: Shaping Our Future (Community Consultation Report), reflects the voices, experiences, fears, wishes and dreams of Labrador people as they begin to anticipate the potential development of offshore oil and gas. Labradorians are resilient people who have adapted to significant changes in the social, economic and natural environments over the past century and many have witnessed monumental changes in their communities and lifestyle in the past 60 years. Their capacity to respond to change, moderate the impacts and create a new balance has been proven many times over. Nonetheless, there are also Labrador people who have suffered deeply because of changes, relocation, culture clashes and a sense of displacement. Anticipating changes in the social and economic environment, and developing community capacity to adapt to change must also take into account the needs of these people and offer them stepping stones for a better life as well.

The specific consultation area is home for three aboriginal groups; Innu, Inuit and NunatuKavut. There are also settler families whose ancestors settled in Labrador over two hundred years ago as well as relative newcomers to Labrador, particularly in the central Labrador area.

Nunatsiavut comprises five Inuit communities on the North Coast of Labrador (Nain, Hopedale, Makkovik, Postville and Rigolet) and Inuit beneficiaries also live in Upper Lake Melville area and in other Labrador communities.

Innu live primarily in two Labrador communities considered reserves under the Federal Indian Act. Sheshatshiu is in the Central Economic Zone, and Natuashish, on the North Coast, is part of the Inukshuk Economic Zone. The Innu Nation, the governing body representing the Innu Band Councils from both communities, did not respond to requests to engage the Innu in the consultation process for this project. Data on the Innu communities is, however, included in the Zone Profiles.

NunatuKavut are strongly represented in the Southeastern Aurora and Labrador Straits economic zones, though members can be found in many other Labrador communities. NunatuKavut are in the process of addressing their land claims with the federal government.

5.1 Geographic Area of Consultation

The geographic boundaries for the consultation were determined by the ESRF Technical Advisory Group for the project. The area considered as part of this study involves Labrador with the exclusion of Labrador West which comprises the communities of Wabush, Labrador City and Churchill Falls. For the purposes of this report, the area is described using four Regional Economic Zones (Inukshuk, Central Labrador, Southeastern Aurora and Labrador Straits). The four Regional Economic Zones represent 25 communities and a total population of 16,725 (2006 census data). The general study area is depicted in Figure 1.

5.2 Methodology

The consultations involved three different data-gathering processes: a survey questionnaire, focus group interviews and key informant interviews.

The survey questionnaire (Appendix B) inquired about possible effects of offshore oil and gas development and provided respondents with a number of possibilities. The list of potential effects was drawn from the literature review and the documented experience in other northern environments. Respondents could also add to the lists if they wished to identify potential effects other than those listed.

Two different interview guides were used, though both addressed similar content. The Key Informants who responded to Interview Guide 1 questions also completed the survey questionnaire. Guide 1 was used as a supplement to the survey and inquired specifically about remedies and mitigation measures that could be used to address the effects listed in the survey. It also inquired about evidence of community resilience, strengths and lessons learned that would help communities deal with development and change. Interview Guide 2 was used with

representatives from provincial organizations or those in key leadership positions in communities. The interview questions were consistent with the topic headings in the Survey Questionnaire.

In all instances, respondents completed an informed consent, were free to choose their level of participation, and free to stop the process at any time. The great majority of surveys and interviews were completed face-to-face with the researcher, but two interviews were completed by telephone. Prior to completion of the survey or interview, the researcher gave a short presentation based on possible exploration and development scenarios off the Labrador Coast derived from the Scenarios Report.

Data Analysis

The survey responses were compiled using Microsoft Excel and data was disaggregated according to gender. Interview responses were compiled and reviewed using an iterative process of capturing themes, consistencies and differences. The data collected through the focus group and interview processes were also compared with the data from the survey responses as the topic areas were consistent.

Verification and Validity

Methodological triangulation, a method used widely in social sciences, involves using more than one method to gather data, such as interviews, observations, questionnaires and documents. The idea is that one can be more confident with a result if different methods lead to the same result. Triangulation facilitates validation of data through cross-verification from more than two sources. Three direct data gathering methods were used as part of the community consultation: survey questionnaire, focus groups and key informant interviews. The content and analysis of the data gathered also lends to validity and reliability.

For the most part, individuals self-completed the Survey Questionnaire. In one instance, where the researcher completed the survey for the respondent, the survey answers were reviewed and the document initialled by the respondent. The response notes taken by the researcher from all key informant and group interviews were reviewed and initialled by the respondents to ensure accuracy and in some instances respondents chose to submit their own written notes.

A Community Consultation Highlights Report was forwarded electronically to the one hundred respondents who provided contact information. Feedback was received from 10% of the contacted individuals representing people from various facets of life and some responses seemed likely to have represented groups of individuals though this was not specifically stated. All responses were consistently supportive of the document, and respondents felt it fairly conveyed the perspectives of people throughout coastal Labrador. In addition, the literature review included review of documents relevant to Labrador and natural resource development, and the community profiles gathered social and economic indicators from Community Accounts and Census Canada data sources.

5.3 Participant Profile

The participant profile was determined in response to the ESRF guidelines and included representation from all facets of community life, governments, institutions, business and regional and community organizations. The consultation was successful in exceeding anticipated participation rates with 162 surveys completed and 98 individuals engaged in focus groups and key informant interviews. Many of the focus group participants and some key informant interviewees also completed surveys. In addition to Labrador people, representatives from key provincial organizations were consulted. Figure 2 illustrates the number of survey respondents according to regional economic zone.

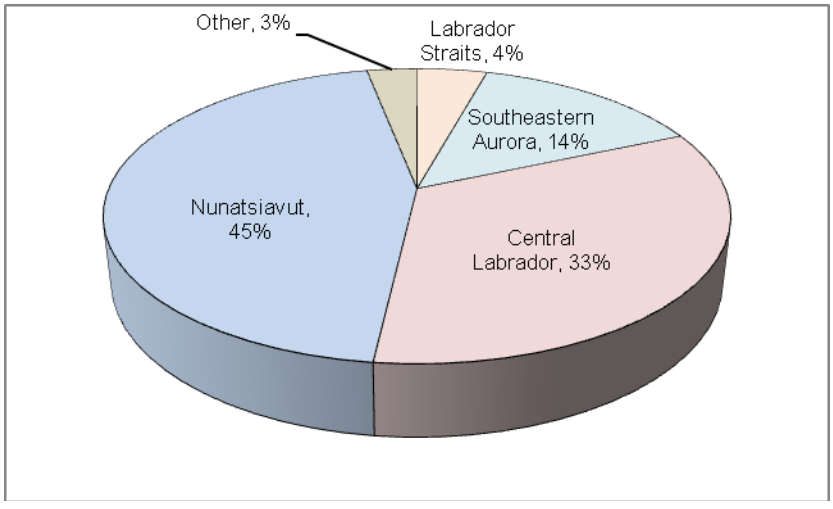


Figure 2 Survey Population Based on Zone

More than half of survey respondents were female as illustrated in Figure 3, and just over half identified as Inuit as illustrated in Figure 4.

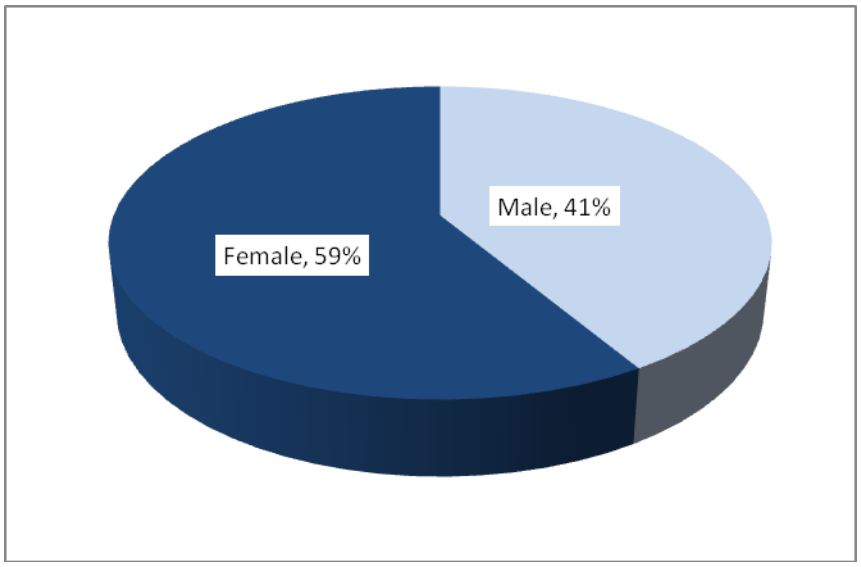


Figure 3 Survey Population Based on Gender

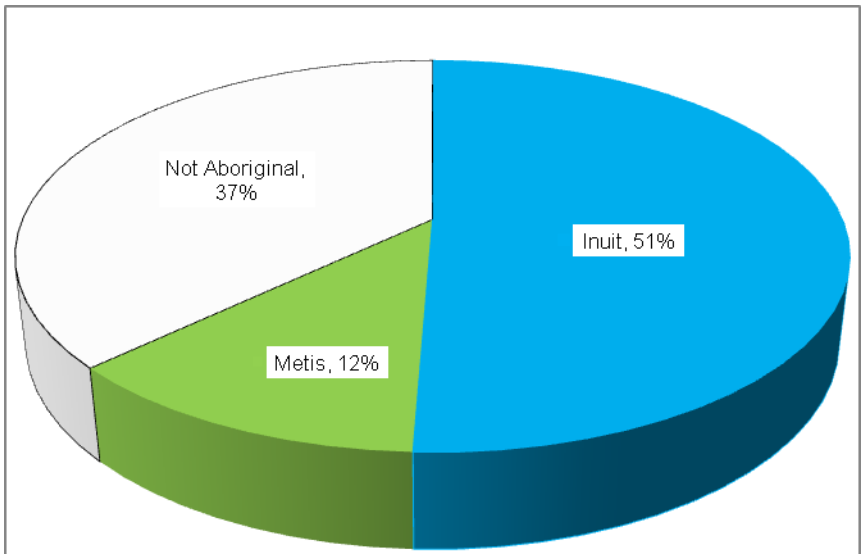


Figure 4 Survey Population Based on Aboriginal Status

Survey respondents ranged in age from 20 – 74 years with the majority being between 40-59 years of age as illustrated in Figure 5. Over 85% of respondents had education levels at high school or higher as illustrated in Figure 6.

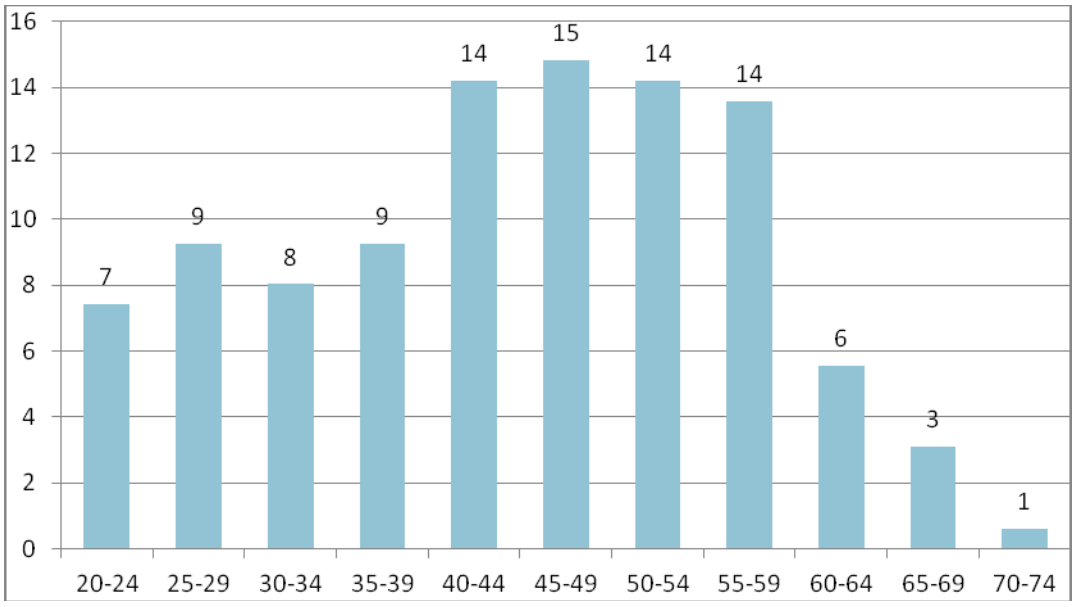


Figure 5 Survey Population Based on Age

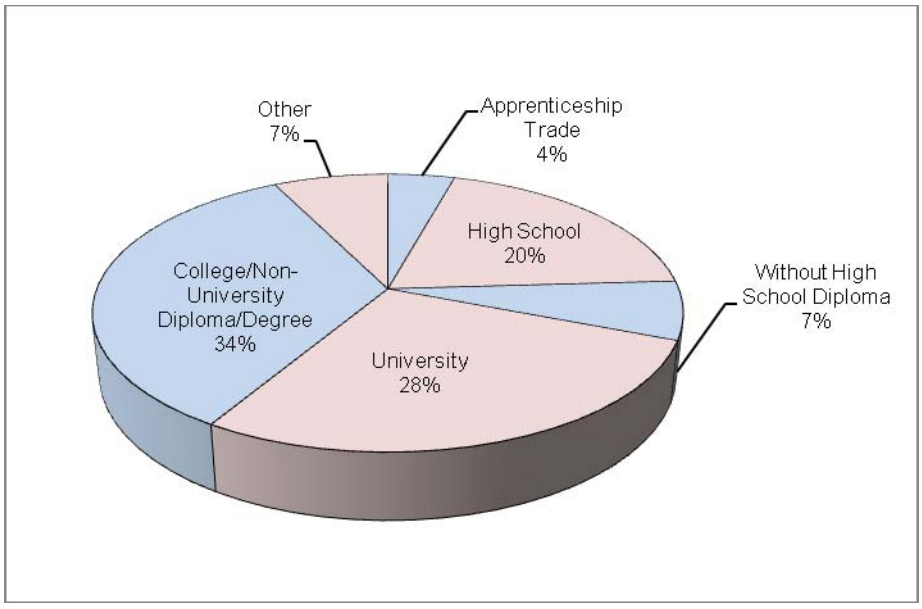


Figure 6 Survey Population Based on Education

5.4 Community Consultation Findings

The Survey Questionnaire listed a number of different potential effects under seven topic headings. Respondents were asked to identify the potential effects they thought might be relevant should oil and gas development occur and were free to choose as many or as few as they liked. Respondents were not asked to identify a priority order and could also identify potential effects they anticipated that were not listed on the survey questionnaire. The data was compiled using Excel with responses presented as a composite group (Total) and disaggregated according to Female and Male responses. The data are presented in tables and ranked according to the response rate and as such may be presumed to suggest levels of interest and concern and are referred to as ranking.

5.4.1 Social

This section of the Survey Questionnaire, outlined in Table 2 lists seven different potential social effects. The percentages of responses from the total group of respondents, females and males all concur. Notable is that the males' response rate was higher than females' to those effects that are linked to good jobs, higher income, purchasing power and pressure on family relationships. Females, on the other hand, seem to be more conscious of the possible changes in community life, such as volunteering.

Table 2 Potential Social Effects

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Increased income	86%	1	82%	1	93%	1
Encouragement for students to finish school and prepare for jobs in the offshore	81%	2	76%	2	88%	2
Pressure on relationships and family togetherness	57%	3	54%	3	61%	3
More responsibilities for the parent left at home	52%	4	51%	4	54%	4
Increased purchasing power	49%	5	45%	5	55%	5
Fewer people available to do the volunteer work required in a community	39%	6	41%	6	36%	6
Greater differences between those working offshore and those onshore-more inequity in our community	28%	7	29%	7	27%	7

Interview respondents deepened the understanding of the potential social effects on people and communities. They note that sometimes increased income brings social problems such as drugs and alcohol abuse and family disruption. The workplace restrictions around alcohol and drug use, such as exists at the Voisey's Bay Mine and Mill Operation, are seen as positive and are worth replicating.

According to respondents, the creation of new company towns around natural resource developments and the eventual need for decommissioning whole towns is seen as less desirable. Fly In Fly Out operations (FIFO), while challenging for families when a member is away from home for an extended period, are seen as the better option. This practice helps ensure that people stay and bring the economic benefits to their home communities, which in turn contributes to the sustainability of coastal communities. Participants from existing communities that may be significantly affected should development occur believed the economic development could be positive as long as the communities were involved in the planning process. Concerns were also raised about the availability of goods and services in communities if businesses have not done adequate planning to meet the needs of industry and community members alike.

Homecare, elder care and childcare/daycare services are not readily available, especially in small communities. This may constrain some individuals, particularly women, from seizing opportunities for training and employment.

Generally, people believe that development should lead to improved quality of life and also recognize that some people will benefit from personal skill-building opportunities such as budgeting and life management.

5.4.2 Health

This section of the Survey Questionnaire, outlined in Table 3, lists seven health-related potential effects. It is notable that the overall response rate to the items in this section was significantly lower than the social effects section which could suggest less concern about health-related effects. The ranking order of potential health effects from the total group and the male group were exactly the same. Female respondents present a different picture with a 14% difference in response between males and female with regard to increased self-esteem, with males seeing this as a more likely effect. Consistent with the higher male emphasis on economic improvements in the social section, there is a 10% difference in responses relating to better health due to greater prosperity, with the male response ranking 3rd and female response ranking 6th. Most notable is that females are more concerned (12% difference in response) than males about negative effects on mental health due to stress.

Table 3 Potential Health Effects

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Increased self-esteem	57%	1	52%	2	66%	1
Engagement in high risk behaviours	55%	2	55%	1	55%	2
Better health due to greater prosperity	49%	3	45%	6	55%	3
Substance abuse	48%	4	51%	3	45%	4
Increased risk of being injured on the job, occupational health and safety issues	47%	5	48%	5	45%	5
Effect on mental health due to stress	46%	6	51%	4	39%	6
Not feeling part of the onsite workforce; a sense of dislocation	31%	7	35%	7	25%	7

Interview respondents raised health issues other than those listed in the survey questionnaire. Healthcare services may improve with investment in infrastructure or there could be more stress on existing healthcare systems should the population increase during construction. Personal health could improve due to access to healthier diets; for example, increased air traffic could result in greater access to fresh vegetables and affordable dairy products. It is possible there could be an increase in activity level and general well-being that comes with social and economic prosperity. On the other hand, the potential risk of polluting ocean harvesting grounds and land based wildlife habitats was also raised.

5.4.3 Gender

This section of the Survey Questionnaire, outlined in Table 4 suggests four potential effects. The responses and ranking of effects for the total group, males and females were very similar. While the response rate for the effect “less time to give to community” was low, 43% for males and 34% for females, male respondents noted this effect at almost 9% higher than females.

Interview respondents added to the analysis of potential gender effects, and more particularly how females might be affected differently than males. While most acknowledged they expect fair and equal access to all opportunities regardless of gender, they believed this would not likely be a reality. Because there are few services in the areas of childcare, daycare, homecare and elder care, it was anticipated that women, who traditionally fill these roles in families and communities, will likely face barriers to training and employment unless the issues are addressed and services developed in communities. For people from coastal communities in general, and women with families in particular, the lack of training facilities in their own communities is a barrier.

Some of the remedies identified to address potential effects on women include employment-based gender equity programs with a percentage of training and employment positions targeting female employees. Also, when companies across the spectrum of those involved in exploration and development have women in executive positions, it sends a strong message to women and the public. Attention to safe and secure workplace environments and respectful workplace policies are fundamental commitments. Encouraging young female students to pursue work in

the oil and gas field was also identified as a long-term measure. Other employment-based ideas include encouragement and concrete assistance to women to help them develop their own businesses and pursue contracts in the field.

Attention to housing infrastructure in communities is critical, since decent and affordable housing, whether owned or rented, is important for the well-being of families. Women and children suffer, all too often, from some of the negative behaviours that result from increased prosperity. Alcohol and drug use, gambling and relationship violence all present challenges for women who may not have another place to live and stay safe. Some respondents suggest the benefits of development ought to be applied to creating "safe houses," with core programming and full-time staff, in all coastal communities.

Table 4 Gender

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Fair and equal access to training and jobs	73%	1	75%	1	72%	1
Increased burden for family responsibilities	70%	2	71%	2	69%	2
Participation of women in decision making and leadership	65%	3	65%	3	64%	3
Less time to give to community	38%	4	34%	4	43%	4

5.4.4 Cultural

This Survey Questionnaire section, outlined in Table 5, lists eighteen different potential effects related to culture. The responses and ranking of the total group, males and females identified potential effects that addressed activities close to the heart of most Labrador people; the fishery, habitat destruction and wildlife harvesting. There are some notable gender differences in terms of ranking. For instance, in-migration was identified by only 42% of female respondents while 61% of males identified in-migration as a potential effect. While less than half of respondents noted more than five of the listed effects, there are some interesting perspectives in the lower ranking effects when considered from the perspective of gender. 45% of males compared to 36% females were concerned that more people with access to the land and natural resources might cause a strain on resources. Males (48%) compared to females (28%) felt that

development might actually strengthen traditional ecological knowledge because of the need to record the knowledge for environmental assessment. Males (30%) were much more likely than females (14%) to identify the effect that ethnic identity will be stronger.

Interview respondents raised a number of concerns around the migration of people. Labrador people believe that it is critical to manage development so that young people will find jobs, build careers and potentially stay in coastal communities to raise their families.

Table 5 Cultural

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Effect on fishery	79%	1	79%	1	79%	1
Effect on wildlife and habitat destruction	70%	2	73%	2	66%	2
Effect on wildlife harvesting and traditional activities	60%	3	60%	3	61%	3
Loss of traditional skills and knowledge because there is less time spent on these activities	54%	4	55%	4	54%	6
Change land-use patterns	52%	5	51%	5	55%	5
In-migration	50%	6	42%	7	61%	4
Work rotation schedules may result in fewer opportunities to promote cultural activities to the next generation	48%	7	44%	6	52%	7
Change in diet because of less access to traditional foods	40%	8	41%	8	37%	10
More people with access to land and natural resources will cause a strain	40%	9	36%	10	45%	9
Changes in attachment to the community	37%	10	39%	9	34%	11
Strengthening traditional ecological knowledge because of the need to record for environmental assessment	36%	11	28%	12	48%	8
Effect on traditional economy of sharing resources and time as compared to wage economy	31%	12	29%	11	34%	12
Less attention to spiritual traditions and support for local churches	29%	13	25%	14	34%	13
Out-migration	27%	14	26%	13	28%	16
Less sharing of food and resources	27%	15	24%	15	30%	14
Ethnic self-identity will be stronger	20%	16	14%	18	30%	15
Ethnic self-identity will be lost	17%	17	16%	16	19%	17
Strengthening cultural activities	15%	18	15%	17	16%	18

In-migration is seen as the price of progress by some and has positive effects such a larger tax base, more children in schools, the potential for increased recreational and social infrastructure and a larger pool of community volunteers. On the downside, in-migration could stress the community housing infrastructure and the need to develop more infrastructure such as water and sewer or housing construction would be costly, especially so because it would happen at a time when construction costs are elevated because of increased demand in construction.

Out-migration is sometimes a natural response as people move around and go where the jobs are to be found or they get educated and leave because there are no opportunities for them in their community. Many believe that young families move to larger centres so they can have access to social and recreational facilities. The loss of young people and young families affects school registration and the support system for parents and grandparents as they age, and lowers the community tax base.

Respondents recognized the need to keep pace with the rest of the world. In doing so, the preservation of the cultures of the aboriginal people, as well as Labrador people in general, will require attention and effort. People expressed a need to be cautious and vigilant in order to make sure they were not overwhelmed by development. Anticipated full-time, year-round jobs can result in increased income and capacity to purchase equipment that helps people engage in traditional activities, though it may also mean less time for the activities. Ensuring workplaces are culturally sensitive will demonstrate respect for aboriginal culture and practices. The work of creating culturally respectful workplaces and promoting the flow of communication between companies and people in communities is best facilitated by hiring Labrador people who are good communicators and educators.

Fishers raised concerns about seismic work in particular and how it might impact where they set their nets and even their access to the resource. Potential negative effects of seismic testing, drilling, and production on fish and crab not only affects fishers but fish plants and communities as well. For example, Cape Harrison is noted as a possible landfall site in the scenarios report. Fish harvesters are concerned about the turbot grounds off Cape Harrison, and whether they would they be negatively affected. If so, not only fish harvesters but also the Makkovik fish plant would be affected. Fishers noted that there must be clear lines of communication between the

industry and fish harvesters and clear points of contact to deal with issues and concerns that arise. It is important to build collaborative relationships prior to exploration activity.

5.4.5 Economic

The Survey Questionnaire listed sixteen potential economic effects of development, outlined in Table 6, the last five of which identify demand on community infrastructure systems. Employment and training were the most highly identified effects, with employment the highest ranked overall for the total group and for males. Female responses ranked training only slightly higher than employment, which may acknowledge the access route they see for greater economic benefits from development. While there is total consistency for both males and females with the number three, four and five ranked effects (spin-off business opportunities; increased revenue for the community/government and improved standard of living), it is notable that the response rate is approximately 18% lower for females than males on these effects. Females appear less optimistic that housing will improve (43%) compared to males (63%) and males anticipate potential capacity to purchase equipment to assist with harvesting at 43% compared to females at 25%.

Table 6 Economic

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Employment	90%	1	86%	2	94%	1
Training opportunities	89%	2	87%	1	91%	2
Increased spin-off business opportunities	69%	3	61%	3	79%	3
Increased revenue for the community/government	67%	4	60%	4	76%	4
Improved standard of living	65%	5	58%	6	76%	5
Increased business opportunities directly related to offshore oil and gas	64%	6	60%	5	69%	6
Loss of community-based workers to higher paying jobs	53%	7	50%	8	58%	8
Increased purchasing power	52%	8	48%	9	58%	9
Improved housing	51%	9	43%	10	63%	7
Strain caused by in-migration and demand on local goods, services, housing	50%	10	53%	7	46%	10

Capacity to purchase equipment to assist with harvesting	33%	11	25%	11	43%	11
Increased Demand on Infrastructure						
Health services	77%	1	81%	1	72%	1
Phone lines	67%	2	71%	2	63%	2
Roads	65%	3	71%	3	58%	3
Public transportation	65%	4	71%	4	58%	4
Water and sewer	56%	5	62%	5	48%	5

With regard to the increased demand on infrastructure, there is consistency in response ranking, although the female response participation rate for these effects is much higher than males. Conversely, the response rate for male respondents was higher for the other economic effects listed.

The potential economic effects of development and the interest in having the benefits meet the needs of Labrador people were addressed in focus groups and interviews. The responses can be clustered in four thematic groupings: Education and Training; Business Development; Operations and Community Infrastructure.

Education and Training: Labrador people believe that it is as important to develop the human resources in Labrador as it is to develop the natural resources – that the people closest to the resource ought to have the opportunities to respond. People want to see a stronger link between successful completion of training and employment. Early identification of labour needs for all phases of exploration, development and production; and the knowledge of the required education/training for jobs, is seen as critical to good preparation and ensuring Labrador people are ready for opportunities that come with development.

While some Labrador people will move easily into training opportunities and handle the studies with ease, some others face a number of barriers that will need to be removed in order for them to prosper. Academic entrance issues are problematic for some and bridging efforts will be required for some students. Others need to begin with basic literacy and complete Adult Basic Education (ABE) in order to prepare for training. Still others have skills and knowledge but do not have academic qualifications and for these people Prior Learning Assessments (PLAs) should be considered and lead to credentials for successful candidates.

The College of the North Atlantic (CNA), particularly the Happy Valley Goose Bay (HVGB) campus, is poised to play a significant role in training and education. Over the last few years the Happy Valley Goose Bay College has made changes and developed supportive services which create a welcoming and supportive learning environment for aboriginal students from Labrador. Even so, many people from coastal communities find leaving their community and family very difficult. The financial cost (even when a student is receiving financial support), the lack of available, affordable and safe housing in Happy Valley Goose Bay and plain homesickness are significant hurdles. Labrador people would like to see more training offered in their home communities or even regions.

In the same way, the College of the North Atlantic has intentionally made changes and created supportive services to encourage aboriginal enrollment, and the Labrador Institute of Memorial University has emphasized the role of the Institute in Labrador related research and activities that support the social and economic well-being of the people of Labrador. The Labrador Institute of Memorial University gives priority to education and research opportunities in Labrador, and partnerships with aboriginal peoples. It is involved in initiatives that preserve and promote Labrador history, culture and language and furthering the economic and social development of the region. The Institute`s mandate is to: (a) identify opportunities in research, including those proposed by the Labrador community; (b) assist researchers in engaging Labradorians in the planning and implementation of research; (c) carry out research projects in accordance with the expertise of LI staff; (d) co-ordinate and facilitate the process of communicating research results to the community; and (e) establish a repository of Labrador research data and outputs (http://www.mun.ca/labradorinstitute/home/LI_MissionandMandate-approved-1.pdf). The current Director of the Labrador Institute (Dr. Keith Chaulk) sees the development of world-class academic presence in Labrador and research initiatives to develop our understanding of what it means to live, work and develop in northern environments.

Business Development: There is no doubt that Labrador people are anticipating business development opportunities and believe they can deliver and use local resources if they have sufficient time to prepare. However, they find the potential business picture very confusing and look for transparency and clear communication with honest effort to engage them and support them in preparing to respond to development. Their needs include plain language information about the kinds of business opportunities anticipated and how to access them, processes

developed so they can understand procurement better and a valuing of community capacity building. They want to be certain of their capacity to respond and the "unbundling" of contracts so they can be more easily managed. Some new business owners may need assistance in getting established and see accessible loan funds or grants as being critical to their success.

Operations: Respondents consistently suggested that human resources already exist to support offshore exploration and development if it proceeds in Labrador. Labrador people have capacity, skills, knowledge and talent. Given the level of interest in a number of different natural resource developments in Labrador, there are concerns that parallel development of resources will create a boom situation and a shortage of workers would necessarily require workers coming to Labrador from other parts of the province or elsewhere. Pacing development to ensure optimal benefit for Labrador people is seen by many as the most desirable scenario. The issue of unions, seniority and protectionism over the jobs on a worksite are a concern for people and an issue that Labrador people believe needs to be explored and settled prior to construction development. Respondents also suggest there is room for greater creativity and the use of practices such as satellite offices or individuals working electronically from their own communities or homes.

Some respondents also noted the role of unions in large construction projects and cited previous experience with large-scale projects when union membership (or lack thereof) served as a barrier to employment. Respondents indicated that despite having relevant training and experience, their lack of union membership resulted in delays with being employed at sites where union membership was required.

Community Infrastructure: As already stated earlier in this report, potential demands on community infrastructure, housing, water and sewers, communications as well as health services are anticipated concerns. In addition, the capacity of communities to respond to environmental emergencies was raised as a concern and they expressed a desire to have a mitigation fund established to assist with response to local environmental emergencies related to oil and gas exploration and production.

5.4.6 Political

This section of the Survey Questionnaire, outlined in Table 7, addresses the potential effects on the community and regional political environment. Only two effects were listed, the need for community involvement in monitoring and the need for decision-making around development. Table 7 reports that there was consistency in response ranking and high participation rates from males and females, and by extension, within the total group.

Table 7 Political

Potential Effects	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Need for community involvement in monitoring the effects of development on people and communities	92%	1	93%	1	91%	1
Need for participation in decision making around development	82%	2	82%	2	82%	2

Interview respondents provided more depth in understanding of the potential effects of development on the political environment in Labrador. While acknowledging all want positive outcomes from development, and that they share common interests, they also want to protect their particular interests.

There was a strong sense of identity and pride of ownership of Inuit from Nunatsiavut and many Inuit respondents from both Nunatsiavut and Central Labrador stated they believed the Nunatsiavut Government ought to have a status in planning and decision-making that is different than others. This is based on the fact they are an aboriginal government with a Land Claims Agreement and, because of their proximity to the oil and gas resource, they have the greater risk in the case of environmental catastrophe. Apart from a seat at the decision-making table, some suggested the Nunatsiavut Government should have representation on the C-NLOPB.

NunatuKavut want recognition of their land claims negotiations and history on coastal Labrador, and also believe they have a place at the decision-making table regarding natural resource development in Labrador.

Many Labrador people who are not aboriginal believe that the opportunities and benefits from offshore exploration and development ought to be spread around all of coastal Labrador and everybody should have a fair and equal chance at prosperity. It was suggested by some respondents that one mechanism to support this could be the creation of a Combined Councils of Coastal Labrador Communities as a body to work with industry and government in anticipation of oil and gas exploration and development. The emphasis on ***coastal*** Labrador is what would make this entity distinct from the existing Combined Councils of Labrador.

5.4.7 Agreements

Survey Questionnaire respondents were asked what ought to be in the Impact Benefits Agreements if they were ever negotiated. A list of eight items, outlined in Table 8, was provided and, as with all other sections, the respondents had the option to add to the list. The list represents the major themes arising from the literature, previous practice in IBAs and to a certain extent repeats potential effects listed previously.

Not surprisingly, the response rate for this section was high with response rates on all items over 65%. Education/training and employment were the two most highly ranked with responses overall above 95% and 93% respectively. Royalties to communities was ranked third for males (91%) while the same ranking for females (85%) was awareness of issues related to gender, culture, race and social well-being. This effect was ranked seventh in the male response rate (72%).

Table 8 Agreements

Commitments	Total		Female		Male	
	Total %	Ranking	Female %	Ranking	Male %	Ranking
Education and training opportunities	95%	1	95%	1	96%	1
Employment and access to jobs	93%	2	94%	2	93%	2
Royalties to communities	88%	3	85%	4	91%	3
Awareness of issues related to gender, culture, race and social well-being	81%	4	87%	3	72%	7
Monitoring, oversight and public reporting commitments	81%	5	84%	5	76%	5
Consultation process and commitments	73%	6	71%	8	76%	6
Business development and opportunity management	72%	7	72%	6	73%	4
Recruitment strategies and commitments	69%	8	72%	7	66%	8

Once again the focus group and interview respondents were able to extend the understanding of what fairness would look like for Labrador people and communities, and identified issues that must be addressed in the interest of sustainable development.

Respondents identified the need for agreements around environmental monitoring, and care for the natural and physical environment was a common expectation, particularly so because of the recent catastrophic events with the drill rig Deepwater Horizon in the Gulf of Mexico in April, 2010. Negative environmental effects might result from drill sites and supply vessels. To that end, people suggest good planning would require a mitigation fund available in the event of such happenings or other extreme impacts.

During times of economic boom, there is considerable competition for workers, housing and services such as transportation. Public health and human services exist alongside businesses in such competitive environments and they are challenged to equalize benefits with those of industry in order to retain employees and provide mandated services. This reality requires mitigation measures either from governments or companies.

The cost of energy for heating homes and running fish plants is high for coastal Labrador communities. Respondents suggest it would be good to see real concrete benefits to offshore

oil and gas developments such as lowered fuel costs and development of alternate economical energy sources that can support local industries such as fish plants.

Notwithstanding the realities of the political environment in Labrador, the notion of wealth sharing and distribution of new wealth and opportunity across coastal Labrador communities was strongly expressed. This spread of benefits could be achieved with, but not limited to, greater community infrastructure, business development and potential royalties to communities. People note it is common practice, and often part of benefits agreements with governments, that companies invest in the communities from which they work. Labrador people see these social returns on investments as opportunities to build sustainable futures for all people and communities, not only those who work in the industry. Ideas such as Endowments, Heritage Funds or Legacy Funds were seen as options to achieve these ends.

5.4.8 Resilient Communities and Lessons Learned

The Interview Guides, structured around the same topics as the Survey Questionnaire included additional questions which examined community resilience and the lessons learned from previous experience of challenges and change. Respondents were also asked to describe the fundamental values and principles which ought to guide development and be evident in the kind of relationship Labrador people and communities have with companies. The following is a summary of the ideas expressed by respondents.

The resilience of Labrador people and communities has been nurtured by the need to be creative, adaptive and cooperative. It has also often come at the expense of hard lessons learned. Moving from remote outposts to communities gave greater access to education, goods and health services, churches and sometimes jobs. It also changed the way people lived off the land, led to greater dependence on purchased goods and the need to purchase fuel for home heating. Resettlement and relocation, sometimes by choice and often not, resulted in a sense of dislocation and sense of exclusion for some while bringing greater access to services. There have been boom times in industries such as forestry, fishing, fur trading, construction and employment support to Canadian, American and Allied initiatives (e.g. American forces built and stationed Dew Line radar stations in Hopedale and Cartwright and Canadian Forces Base 5

Wing, Goose Bay). There have also been times of recession with the cod moratorium, changes in markets and shrinking community populations.

The resilience of Labrador people is evident in their adaptability, creative problem-solving, collaboration and commitment to each other. The Labrador Fisherman's Union Shrimp Company (LFUSC) is one example of how people have stood together to support the communities and workers that span two regional economic zones. The creation of the Eagle River Credit Union, to ensure banking services would continue to be available, is another example of how Labrador people have taken charge and solved their own problems. The Mining Technology program in Labrador West, while happening outside of the geographical boundaries of this report, is another such example. The Mining Technology program met the needs of the mining companies but also led to young people and families staying in Labrador West and getting good jobs. Because their children and grandchildren were in the community, many retired people chose to stay in Labrador West.

The enthusiasm and energy around preparing for potential development is high in many areas. Labrador people see themselves as people who know the environment, are willing and capable learners and a population that is becoming better educated. People are ready to respond to employment opportunities given a chance and there is a strong belief that Labrador people are human resources who ought to meet the needs of development.
The settlement of Labrador Inuit Land Claims and the creation of Nunatsiavut brought the Inuit north coast communities together in identity, planning and leadership. While not comparable in jurisdiction, the Regional Economic Zone Boards provide a similar cohesiveness to the communities in their respective zones. These community leaders want to be engaged with development from the beginning.

The lessons learned, as identified by respondents, are diverse:

- High expectations need to be grounded in reality and the need to plan for when things are not going well;
- Exploration (mining particularly) presented more jobs across the spectrum of people and skills; construction provides many unskilled labour jobs that disappear after construction, and if Labrador people are going to access well-paid jobs that are sustained over time,

they need to get the training and experience to make it happen. There is no hesitation that this can be achieved with the right support and opportunities;

- If you want to keep working at well-paid jobs (such as Voisey's Bay), you need to mind your behaviours and maintain a good work ethic;
- Stakeholders need to be engaged in decision-making about resource development from the beginning and at all stages;
- Social return on investment, when companies invest in services and infrastructure in communities, can have lasting benefit for the entire community particularly the most vulnerable in the population;
- Services in communities such as family resource centres, daycare, homecare and elder care, are very important when workers are away working; and
- Access to secure, safe, affordable housing is critically important and must be foremost in planning.

Interview respondents suggest that community resilience is nurtured by communication and information sharing, building trusting relationships, knowing the timelines and what to expect.

5.4.9 Core Values and Guiding Principles

Interview respondents were asked what values ought to be evident in the relationship between Labrador people, industry and government. The following is a distillation of the input received though the community consultation. Labrador people suggested the following values and principles present a solid foundation for moving forward.

Relationship

- It takes time and effort to build strong and positive relationships, and relationships need to be nurtured over time. This is an important investment;
- Get to know us, what is important to us, our assets, our people and our communities; and
- Come visit our communities and talk with us face to face. Keep us in the communication loop.

Respect

- Respect our leaders by engaging them in decision-making and in the flow of communication;
- Respect our people by talking to us in our communities, listening to our concerns, appreciating our capacity to learn and to do the jobs;
- Respect our natural environment with strong environmental stewardship, taking the greatest of care and understanding that the ocean and the land are our sources of food and nurture our cultural identity;
- Respect our cultures and languages: we are Labrador people and we are a diverse people, retention of those things that make us distinct should be honoured; and
- Respect our elders and leaders and their wise counsel by including them in events and discussions.

Honesty and Integrity

- We value open dialogue;
- Be transparent in dealing with people, communities and businesses;
- Tell us the truth and accept responsibility when you must; and
- Be fair to people and communities.

Inclusion

- We cannot be in a relationship with you unless we are included as key partners in development. Work with our leaders and community representatives;
- The wealth and benefits that accrue from development of our natural resources should result in social and economic well-being for Labrador people and communities; and
- Recognize the learning and development curve of small community-based businesses and support their development.

Sustainable Development

- Nurture community resilience by ensuring we are part of the planning and decision- making. As Labrador people, we need to ensure our communities have sustainable futures for generations to come;

- Acknowledge there will be cycles in development and help us anticipate strategies to deal with them;
- Plan to anticipate the end of the resource and invest in communities; and
- Leave our people with skills so they can go to work elsewhere once the resource is depleted.

Accountability

- We expect you to be vigilant and make sure this development is done right and that you keep the interest of Labrador people and communities in the forefront.

5.4.10 Summary

The Survey Questionnaire listed a number of potential effects of offshore oil and gas development. Respondents could choose as many as they thought relevant. Those items that had a response rate of over 65% tell the story of the interests and concerns that are likely most important and the response rate for many was over 90%.

Generally, there was a very positive response from participants regarding the level of information shared through this consultation process. They appreciated hearing about possible oil and gas development scenarios and they valued the face-to-face meetings. For example, the efforts of Aurora Energy to meet face to face with people in communities and keep them in the communication loop was highly praised and suggested as a model for other companies. People feel that Aurora is interested in engaging with them and committed to keeping them informed. Engagement, communication and inclusion are essential to moving forward. The literature suggests that if communities and people are involved in the process of development they are more resilient and better able to adapt and moderate negative impacts. Labrador people want to be “in a relationship” with companies interested in developing natural resources.

Labrador people want to see a clear, consistent, constant, transparent and two-way flow of communication throughout the entire process of offshore exploration and development. Face-to-face meetings with people in communities, assisted by local people, are considered optimal.

Also important to planning is timely information sharing. From training, to jobs, to business opportunities, Labrador people want to be ready to seize opportunities and have sufficient time to remove barriers to their participation. This flow of communication and level of participation will support engagement in the Environmental Assessment process, planning for education/training, business development opportunities, increased understanding of the industry and raising of environmental concerns. From a communications perspective, Facebook is a widely-used social networking medium in Labrador.

The structures and mechanisms that support these processes include, but are not limited to, the inclusion of Aboriginal governments and Regional Economic Development Boards in planning and development. The suggestion of a Combined Councils of Coastal Labrador Communities may be a mechanism worthy of further dialogue and exploration.

Labrador people want to have jobs and training to prepare for those jobs and want these written into formal agreements. They want futures for their children and the information brought to schools so that young people can prepare for the opportunities. If the young people get well-paid work and can anticipate careers in the industry, there is a better chance they will stay in Labrador and create viable futures for communities. The value of FIFO operations is recognized as one way to ensure support for existing Labrador communities.

While it is hoped that women will have fair and equal access to all the benefits of development, it will require intentional actions to get results. The survey results are consistent with the literature and demonstrate that the issues of concern to women are often different from men and therefore they must be intentionally involved in assessment, planning and decision-making. Access to training and jobs must also be intentional with firm commitments and monitoring.

Labrador people also want to make sure the natural environment is kept safe from pollution and from overuse and want community monitoring and public reporting to be written into formal agreements.

6.0 POLICY RECOMMENDATIONS

This section of the report outlines the issues arising from the consultation which could have policy implications. The following policy recommendations address the benefits of development, the mechanisms for engagement, patterns of decision-making and protection of the environment and the workplace. The recommendations provided arise out of the consultation process and reflect the views and opinions of the study participants, not the study report authors.

6.1 Meaningful Engagement

Labrador people are united in their desire to be involved in development as collaborative partners. There are a number of mechanisms that can facilitate this level of engagement:

- **Combined Councils of Coastal Labrador:** The communities most affected by offshore oil and gas development are on coastal Labrador; Happy Valley Goose Bay, North West River, Sheshatshiu and Mud Lake are also expected to be affected. A mechanism such as Combined Councils of Coastal Labrador has the potential to bring Labrador interests to the decision-making tables and facilitate the flow of communication to people and communities.

- **Labrador/Nunatsiavut Government representation on the C-NLOPB:** Currently, there is no representation from Labrador on the C-NLOPB, though this entity regulates the oil and gas industry off the coast of Labrador. The idea of C-NLOPB representation, whether from Nunatsiavut Government, or a more broad-based Labrador representative, is a mechanism for involvement in decision-making and oversight.

- **Regional Economic Development Boards:** For the Central Labrador, Southeastern Aurora and Labrador Straits zones, the REDBs provide links and cohesion for communities and could be conduits for engagement with people and communities as well as planning and decision-making regarding development.

6.2 Communication

People want clear, constant, transparent and face-to-face communication. The mechanisms previously noted support the flow of communication. Building on what has clearly worked for other companies, visits to communities, public meetings, using multi-media presentations and engaging local people helps build relationships over time. Labrador people also believe that once completed, research and consultation reports ought to be presented to people in their communities.

6.3 Benefits Agreements, Capacity Building and Adjacency

Inuit believe there ought to be a negotiated IBA with the Nunatsiavut Government because they are closest to the resource and would suffer most from adverse events. Labrador people from other zones believe there ought to be a Benefits Agreement that gives them full and fair access to benefits.

Labrador people believe that a prosperous future is dependent on the development of their tremendous human resources as well as the business resources and capacity available in Labrador. They believe the concept of adjacency (i.e. that those closest to the resource should benefit most from development) is critical in all phases and aspects of development. They believe they have the ability to meet the challenges of labour and business requirements and develop the infrastructure for major development. In order to do this they need to know what is required, they need sufficient time to prepare and in some cases they will require technical support to grow the resource.

Preferential employment of trained people from Labrador as well as access to training for the kind of jobs that are predicted for offshore oil and gas is seen as one of the primary benefits of development. In order to optimize the opportunities for individuals from coastal communities, employment counselling, academic bridging and financial support to complete training are essential. Customized training, available in coastal communities, is one way to lower the hurdles for those individuals who face significant barriers.

While there are many common interests and much consensus on the preferred outcomes of development, there are also differences in the way Labrador people are thinking about development and engagement should offshore oil and gas exploration and development occur. Generally it is when people, because of aboriginal identity or geographical location, begin to feel the need to protect their particular interests that this divergence appears. When discussing the specific issues of adjacency, business development opportunities, benefits and level of decision-making participation, there is more emphasis on the interests tied to identity and rights. Policy development will need to address both common and individual interests.

6.4 Gender Equity and Intentional Engagement with Women

Based on the consultation, it is clear that women raise different priorities and that they do not see themselves as actively engaged in oil and gas development to the same extent as men. While most believe the same opportunities ought to be available to women and men, most do not see this as being a reality. Policy will need to direct intentional gender equity initiatives that are formalized and monitored. Additional consultation, specifically with women and women's groups, ought to be part of any further consultation or environmental assessment process.

6.5 Business Development

Labrador business people believe they can deliver the service and supply needs of development, given sufficient knowledge of what is required and time to prepare. They want assurance that business, supply and service that can happen in Labrador does happen. They also identify learning needs and suggest intentional activities to nurture capacity for local businesses to respond to procurement requests. Unbundling of contracts to make them more manageable for small companies is also seen as necessary.

As a result of IBAs and commitments to do business with aboriginal companies, aboriginal joint ventures have formed, and other Labrador businesses perceive this is not a level playing field. Some believe that "Labrador" businesses ought to receive the same priority standing as aboriginal businesses. Still others believe that the capacity-building efforts of the company

(hiring aboriginal workers, women, and Labrador people) ought to be considered when weighing decisions on contracts.

6.6 Infrastructure

Labrador people raised concerns about the strain on the existing community infrastructure and public services infrastructure. They also anticipate well-planned development will not only address these concerns but also lead to increased infrastructure capacity.

Access to homecare, elder care and childcare is often present as a barrier to participation in training and employment for women and infrastructure development will also need to address development of these services.

6.7 Heritage Funds/Endowments

It is customary that large companies operating in an area make major contributions to the community/region. This practice of social return on investment is generally a positive experience for companies, people and communities. Labrador people anticipate seeing this social return on investment in infrastructure development, support for social programs and services and investment in the knowledge base of the region.

6.8 Worksite Environments

Based on the experience of Voisey's Bay, Labrador people see the benefits of FIFO on maintaining coastal communities. Should a production/storage site be developed that is not part of an existing community, the people believe it should be supported by a FIFO arrangement. Labrador people also see the benefits of an alcohol- and drug-free worksite.

Given the remoteness of many communities on coastal Labrador and the challenges of leaving communities for employment and given the capacity to perform some jobs off-site electronically, companies ought to explore the possibility of satellite offices as one way to bring jobs to communities.

6.9 Engagement with Unions and Avoidance of Protectionism

Recent practice in large-scale construction is to have a collective agreement between the Construction Trades Council representing all the constructions trades and an employer's council representing the employers. Labrador people are concerned that union protectionism may interfere with access to jobs and encourage dialogue and problem-solving with the unions regarding this issue.

6.10 Mitigation Fund

The potential of catastrophic environmental events is a grave concern for Labrador people. Many believe that a Mitigation Fund, to deal with adverse events, ought to be created prior to development and production and that there must be measures for a spill response close to the geographic area.

6.11 Sustainable Development

Labradorians see the development of natural resources and the many benefits that come from development as key to their future and the sustainability of their communities into the future. Labrador people also know that development has costs and their passion and commitment for the land and ocean is paramount. They believe that development should only proceed with great care and vigilance for the protection of the natural environment and attention to long-range planning for when the resource is depleted. Commitment to sustainable development, ensuring that the needs of the present do not affect the ability of those in the future to meet their needs, is a commonly held belief.

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Appendix A

Labrador Shelf Oil and Gas Study

Compilation and Analysis of Potential Exploration and Development Scenarios – Offshore Labrador

Sikumiut
Environmental
Management Ltd.

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Kamajingit

Labrador Shelf Oil and Gas Study

Compilation and Analysis of Potential Exploration and Development Scenarios – Offshore Labrador

Submitted To:
Environmental Studies Research Fund
Technical Advisory Group
Tom Sheldon, Chair

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17 December 2010

Table of Contents

List of Figures

List of Tables

1.0 INTRODUCTION

"The purpose of the Environmental Studies Research Funds, ESRF, is to finance environmental and social studies pertaining to the manner in which and the terms and conditions under which petroleum exploration, development and production activities on frontier lands should be conducted. Frontier lands, defined as those areas where Canada has the right to dispose of or exploit the natural resources, are situated in the offshore areas of Canada's East and West Coasts and the areas north of 60°. Environment is interpreted in the broadest possible sense and extends from the physical environment and biological environment issues to socio-economic issues" (Ref. /1/).

Between 1971 and 1985, 26 exploration wells and 2 delineation wells were drilled on the Labrador Shelf. With the discovery of natural gas at a number of these exploration wells, five significant discoveries licences (SDLs) were granted by the Board. The five SDLs represent a total of 4.244 trillion cubic feet (TCF) of natural gas reserves. Recent offshore land sales, pursuant to the Canada-Newfoundland & Labrador Offshore Petroleum Board's (C-NLOPB) processes, have demonstrated renewed interest in offshore oil exploration along the Labrador Coast. This renewal indicates to the ESRF Management Board that an up-to-date evaluation of the potential socio-economic effects of such activities on the Labrador coast is warranted.

The ESRF has retained Sikumiut Environmental Management Ltd. (Sikumiut) to produce a current evaluation of the potential socio-economic effects on the Labrador coast as a result of the resumption of offshore of oil and gas exploration and development and possible future production. This work is comprised of the following tasks:

- Task 1: A Compilation and Analysis of Potential Exploration and Development Scenarios
- Task 2: A Review of Associated Socio-Economic Conditions in Labrador
- Task 3: Conduct Interviews with Key Informants.
- Task 4: Draft Final Report
- Task 5: Final Report and Presentation of Findings

This report has been produced to meet the requirements of Task 1; a compilation and analysis of exploration and development scenarios, as recommended by the ESRF Technical Advisory Group. These scenarios include:

- Two-dimensional (2D) and three-dimensional (3D) seismic surveys;
- Exploration drilling from drill ships or mobile offshore drilling units (MODUs);
- Production from facilities such as:
    - Gravity-base structures (GBS);
    - Floating production, storage and offloading vessels (FPSO);
    - Subsea developments;
    - Export pipelines and flowlines;
    - Compressed or liquefied natural gas production and transhipment; and
    - Onshore processing and other facilities.

For the purposes of this study, hydrocarbon production from offshore Labrador is assumed to be on the order of 100,000 to 200,000 barrels per day of crude oil or 500 MMSCFD of natural gas. These numbers are in line with production rates that might be considered reasonable for a project to be viable.

1.1 Acronyms

Acronyms	
2D	Two-Dimensional
3D	Three-Dimensional
ASD	Australian Standard Dollars
B	Billion
Bbl	Barrels (measurement for oil) (1 bbl = 0.159 m^3)
CNLOPB	Canada Newfoundland Labrador Offshore Petroleum Board
CAPEX	Capital Expenses
CCG	Combined Cycle Generator
CNG	Compressed Natural Gas
CSU	Commissioning and Start-up
EPC	Engineering, Procurement, Construction
ESRF	Environmental Studies Research Funds
Est.	Estimated

FDPSO	Floating Drilling Production Storage Offloading
FEED	Front-End Engineering Design
FLNG	Floating Liquefied Natural Gas
FLO	Fisheries Liaison Officer
FPSO	Floating Production Storage Offloading
GBS	Gravity-base structure
GRT	Gross Registered Tonnage
GTL	Gas-to-Liquid
HRSG	Heat Recovery Steam Generators
HVDC	High-Voltage Direct Current
KBOPD	Kilo Barrels of Oil per Day
LNG	Liquefied Natural Gas
MM	Million
MMSCFD	Million Standard Cubic Feet per Day
MMO	Marine Mammal Observers
MODU	Mobile Offshore Drilling Unit
MOF	Material Offloading Facility
NGL	Natural Gas Liquids
NTL	Newfoundland Transshipment Limited
OLS	Offshore Loading System
OPF	Onshore Processing Facility
psi	Pounds per square inch
SDL	Significant Discovery Licence
TCF	Trillion Cubic Feet
TIC	Total Installation Cost
USD	United States Dollars

1.2 Glossary of Frequently Used Terms

Bathymetry - The measurement of water depth, normally along a line or lines that present a profile of the seabed.

Compressed Natural Gas - Compressing natural gas (primarily methane) to less than 1% of the volume it occupies at standard atmospheric pressure. It is stored and distributed in hard containers at a pressure of 2,900 to 3,600 psi, usually in cylindrical or spherical shapes.

Directional Drilling - A technique whereby a well is deliberately deviated from the vertical in order to reach a particular part of a reservoir. This technique can be used on land to a subsea reservoir, if the reservoir is less than 10 km offshore, to eliminate ocean challenges and expenses.

Disconnectable Turret – A mooring system on an FPSO that permits the vessel to disconnect and reconnect to avoid icebergs and severe sea ice conditions. The time for planned riser and buoy disconnect is less than four hours and is fully reversible up to the final disconnecting command while time for emergency disconnect is approximately fifteen minutes. The swivel stack consists of low- and high-pressure fluid swivels, low- and high-pressure utility swivels, power and optical swivels.

Drillship Drill Rig - A marine vessel fitted with a drilling derrick used to drill in waters that are too deep for jack-up rigs and semi-submersible rigs. A drillship must stay relatively stationary on location in the water for extended periods of time, accomplished with multiple anchors, dynamic propulsion (thrusters) or a combination of these.

Flowlines - A pipeline within an oil field that carries produced hydrocarbons or water between equipment (wellhead to manifold, manifold to riser, wellhead to production facilities such as an FPSO or a GBS)

FPSO - A floating production, storage and offloading (FPSO) unit is a floating vessel for the processing and storage of oil and gas. An FPSO vessel is designed to receive oil or gas produced from nearby well templates, process it and store it until oil or gas can be offloaded onto a tanker or transported through a pipeline. FPSOs can be used in waters too deep for a gravity-base structure.

GBS – Gravity based or base platforms are built on a concrete or steel base which sits directly on the seabed, supporting a deck with space for drilling rigs, production facilities and crew quarters. Such platforms are, by virtue of their immobility, designed for very long-term use.

Geotechnical Testing – Laboratory testing used to obtain information on the physical properties (e.g. strength) of soil and rock at a particular site and includes surface and subsurface exploration. Geotechnical is concerned with the engineering behaviour of Earth materials.

Glory Holes – Dredged holes in the sea floor to protect wellheads and subsea equipment from potential iceberg scouring. They have been commonly used offshore Newfoundland.

Hydrophone Streamer - The hydrophone streamer acts as a receiving device for the refractive waves that were generated by the single source array. It receives the sound wave from the sea floor and converts it to an electrical signal.

Jack-up Rig - A self-contained drilling rig fitted with long support legs that can be raised or lowered. The jack-up is towed onto location with its legs up and the deck floating on the water. When arriving at the drilling location, the legs are jacked down to the seafloor, and the entire barge and drilling structure are slowly raised to a predetermined height above the water.

Liquefied Natural Gas (LNG) - Natural gas (predominantly methane, CH_4) that has been converted temporarily to liquid form for ease of storage or transport. Taking up about 1/600th of the volume of natural gas in gaseous state, it is odourless, colourless, non-toxic and non-corrosive.

Manifold – A junction of flowlines that come from different wellheads in a subsea development. It acts to control, distribute and monitor fluid flow in a system and has configured well-control operations

Naphtha - Refers to a number of different flammable liquid mixtures of hydrocarbons, i.e. a distillation product from petroleum or coal tar boiling in a certain range and

containing certain hydrocarbons. It is a broad term covering the lightest and most volatile fraction of the liquid hydrocarbons in petroleum.

Paraffin – A term that can be used simultaneously with “alkane”, indicating hydrocarbons with the general formula of C_nH_{2n+2}.

Rankine Cycle - a cycle that converts heat into work. The heat is supplied externally to a closed loop, which usually uses water. The cycle consists of four processes: a steam turbine, condenser, pump and boiler.

Riser - A large-diameter pipe that brings fluids up through the water column to a floating production facility. The riser includes a flexible joint near its connection at the seabed and is supported at its upper end from the floating structure.

Seismic Survey – One form of a geotechnical survey that aims at measuring the Earth’s properties by means of physical principles such as magnetic, electric, gravitational, thermal and elastic theories. Seismic energy is studied by scientists to interpret the composition, fluid content, extent and geometry of rocks in the subsurface.

Semi-submersible Drill Rig – A MODU that sits in the water column above the subsea wellhead and is anchored or dynamically positioned in place. The operating decks are elevated perhaps 100 or more feet above the pontoons on large steel columns. This design has the advantage of submerging most of the area of components in contact with the sea and minimizing loading from waves and wind.

Single Source Array – A type of seismic source that provides a single pulse. The generated seismic wave travels through the medium (i.e. water and subsurface rock). For the case of marine seismic 2D and 3D surveys, a specialized air gun emits a sound wave to reflect and refract the rock layers and which can be collected by receivers, such as geophones and/or hydrophones.

Tiebacks - Subsea tiebacks connect subsea wells back to a production facility. They are also used to connect new discoveries to existing production facilities, improving the economics of offshore oil and gas production and transforming marginal fields into profitable assets. Tie-backs can be up to approximately 100 km long.

Topsides – The equipment on the deck of a drilling rig or production facility. This includes the hydrocarbon processing plant, crew accommodation block and any drilling rig.

Turnaround - A planned, periodic shut-down (total or partial) of an offshore facility or onshore processing plant to perform maintenance, overhaul and repair operations and to inspect, test and replace process materials and equipment.

2.0 SEISMIC SURVEYS

2.1 Two-Dimensional (2D) and Three-Dimensional (3D) Seismic Surveys

Seismic surveys enable us to map the rock layers beneath the Earth's surface by detecting the differences in the amount of sound energy reflected from these various rock layers (Figure 2-1). From this information, geophysicists and geologists can interpret which section of the rock formation may contain hydrocarbons.

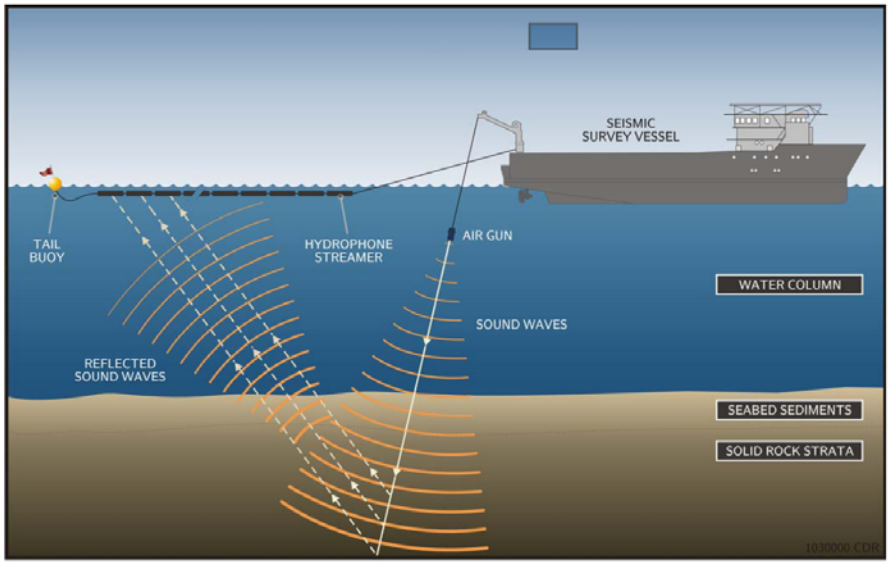

Figure 2-1: Schematic of Seismic Survey Operations (Ref. /2/)

2.1.1 Two Dimensional Surveys

2D seismic surveys cover relatively large geographical areas and, hence, are of short-term duration at any given location. Survey lines tend to be one or more km apart, and are often laid out in a number of different directions. The 2D survey is typically used for

exploring a large area in order to identify areas which require further study (Ref. /3/) and use a single source array and a single streamer.

2.1.2 Three-Dimensional Surveys

3D seismic surveys enable a greater resolution of potential and existing oil and gas fields. These seismic surveys provide a detailed picture of the area under investigation, allowing for a more detailed analysis of the quantity and distribution of hydrocarbons (Ref. /3/). These can result in a reduced number of wells required to define a field and allow for optimal oil and gas recovery. Such surveys may concentrate activity over a relatively small geographical area for extended periods (often weeks at a time), with survey lines usually spaced several hundred metres apart. 3D surveys typically use two source arrays that alternate shooting and multiple streamers (Ref. /2/).

2.1.3 Logistics

A geophysical offshore survey vessel is typically 80 to 95 m long, with a crew of approximately 40. Exploration surveys are commonly conducted with dedicated seismic vessels, sourced internationally (Ref. /4/). Most technical survey personnel would be employees of the contracted geophysical surveying company and be previously trained and certified for their task. Local technical crews may be involved to varying degrees depending on the individual campaign. Training opportunities for local personnel (near the worksite) are possible, if sufficient lead time were available. Potential positions onboard the survey vessel for local personnel include qualified marine crew, Fisheries Liaison Officers (FLOs), Marine Mammal Observers (MMOs) and paramedics, if suitably trained (Ref. /5/).

The most probable local mobilization port for work offshore Labrador is St. John's, located approximately 1,500 km away. St. John's is the nearest major port and has

existing equipment, facilities and infrastructure to support the mobilization of an exploration program.

The local support and indirect benefits to Labrador would be proportional to the duration of the seismic program. For a survey that exceeds two-to-three weeks, there is a requirement to dock to take on provisions, refuel, remove garbage, pump bilges, take on potable water, change crew and other tasks. With anchoring in port, indirect billing of dockage fees, line handling, charges, taxis, hotel rooms and others are expected. There is also a possibility of trucking, cranes and other equipment, if supplies and data/core samples are offloaded (Ref. /5/).

Actual benefits during seismic surveys would be reflected in an Exploration Benefits Plan submitted to the CNLOPB for review and approval. This plan must address how the operator will hire people and procure goods and services. The process for hiring must give first consideration to qualified NL residents and also full and fair opportunity to qualified Canadian residents. The plan must also address how full and fair opportunity will be given to Canadian businesses, with first consideration to NL based companies in the procurement of goods and services on a competitive basis. The Benefits Plan does not have to specify the outcome, but must establish the process (Ref. /6/).

2.2 Geohazard Surveys

A geohazard can be defined as an event caused by geological features and processes that present severe threats to humans, property and the natural and built environment and has the potential to develop further into a situation leading to damage or uncontrolled risk (Ref. /7/). Geohazards may be natural (e.g. shallow gas) or anthropogenic, such as wrecks or debris.

A well site/geohazard survey is required to detect hazards or potential hazards in the immediate vicinity of the proposed well locations. The survey would also ensure suitable subsea conditions for drilling purposes. The purpose of the survey is to demonstrate that

drilling activities can be conducted in a manner that does not endanger personnel or the environment (Ref. /2/).

Vessel mobilization and logistics would be similar to what was presented in Section 2.1.3 above, which describes these aspects of an offshore program related to seismic surveys.

2.3 Seabed Sampling/Geotechnical Testing

A certain amount of seabed/geotechnical data would need to be collected in support of offshore facilities design and construction for offshore Labrador.

Seabed coring and testing would take place from vessels specific to this purpose. Geotechnical information could be gathered from sediment samples obtained through drilling of cores, from shallow gravity cores, vibro-cores and grab samples. Depending on the facilities proposed for development, information from the upper tens of metres may be required. Samples are then tested in a laboratory and the data analyzed to determine relevant soil properties (Ref. /8/).

A large geotechnical campaign requires a geotechnical drillship that is not available in Eastern Canada. The vessel would mobilize from the North Sea or the Gulf of Mexico (Ref. /1/). Logistics would be similar to Section 2.1.3 above, which describes these aspects of an offshore program related to seismic surveys.

2.4 Potential Benefits to Labrador

As indicated in the sections above, most of the vessels would come fully crewed although there could be opportunities for employment as FLOs or MMOs. If the field programs were significant, there could be the potential for training of local personnel to support the programs.

Field programs that are longer than two-to-three weeks will require vessels to dock for resupply, refuelling, garbage removal, pumping of bilges, taking on potable water, crew changes and other tasks. Other services could include, but not be limited to, customs brokerage, navigation and positioning, medical services, emergency response services, weather forecasting and ice management. With the proper preparation, these goods and services could be provided in Labrador. In addition, because of the requirement to dock, additional expenditures associated with dockage fees, line handling charges, trucking, craneage, local transportation, accommodation and other costs would be expected.

Historical information from seismic surveys carried out offshore Newfoundland have indicated that such surveys could cost millions of dollars depending on the scope of work, with approximately 80% of the procurement costs expended in the province (Ref. /9/).

Potential benefits to Newfoundland and Labrador would be reflected in an Exploration Benefits Plan as described in Section 2.1.3.

3.0 EXPLORATION & PRODUCTION DRILLING

Drilling operations on the Canadian east coast have typically been conducted from several types of mobile offshore drilling units (MODUs), such as a jack-up rig, semi-submersible rig or drillship. The type of rig chosen is based on the characteristics of the well site physical environment, well site water depth, expected drilling depth and mobility required based on well site weather and ice conditions (Ref. /10/).

It is likely on the Labrador Shelf that a floating platform would be used for exploration drilling operations (i.e. a drillship or semi-submersible). This is due to the extreme environment, particularly conditions of pack ice and icebergs. A jack-up rig would satisfy the water depth criterion in some areas, although potential for ice incursions limit their use and they have generally not been considered for this area. Jack-up rig structures cannot endure any interaction with significant ice and although some ice class jack-up designs can be found in the literature, it is believed none has been constructed (Ref. /2/).

A floating drilling platform would normally be used for production drilling when the production facility does not have inherent drilling capabilities, such as with a FPSO or a subsea development. A drilling platform would be brought in for this phase of the project. Examples of these drilling platforms are shown in Figure 3-1 and Figure 3-2. In the case of a fixed platform, such as a gravity-base platform, or GBS (Figure 3-3), production drilling operations would normally be conducted from the production structure which has been outfitted with drilling facilities and a separate drilling rig is not required.

Historical data from offshore Labrador for wells drilled with semi-submersibles or drillships indicate that the earliest time drilling occurred was in June, while the latest time drilling occurred was in October or November (depending on drill unit type) (Ref. /11/).

If future exploration licences border the coast of Labrador, directional drilling from land may be a plausible scenario and/or option. This technology can be used to access

offshore hydrocarbon reservoirs by drilling the well from shore. This technology has been considered on the west coast of Newfoundland and Labrador, on the Port au Port Peninsula. However, the use of extended reach drilling from shore is limited to approximately 10 km offshore; currently, existing discoveries in offshore Labrador are well beyond this limit. Geology may also be a significant limitation in the distance that can be achieved using directional drilling from land.

Figure 3-1: Ocean Odyssey, Semi-Submersible Rig (Ref. /12/)

Figure 3-2: Northern Explorer II (formerly the Canmar Explorer II and Explorer II), Drill Ship (Ref. /13/)

Figure 3-3: Hibernia – Gravity-base structure (Ref. /14/)

3.1 Logistics

An important part in any development scenario would be the logistics support required for the various aspects of the development. Large quantities of well construction materials, consumables and personnel must be transported from places such as Goose Bay, Hopedale, or Cartwright to the well site. Potential main staging area for flights, personnel movements and equipment could include Goose Bay, Cartwright and/or Hopedale. Consideration must be given to the size of the community, available facilities and infrastructure, distance from the project and accessibility, when assessing potential storage/staging areas. Equipment and materials could be transferred to secondary staging areas as required for pickup and transfer offshore. Transportation could be by sea, air and/or land.

It is assumed that an assessment of shore-based facilities in Labrador would be required to determine what upgrades might be required with respect to the installation of bulk tanks, potential fuel storage facilities and material laydown areas; all of which may be required to support drilling operations. Analysis of the existing shore-based facilities and the upgrades required to support an offshore campaign is beyond the scope of this report. Renovations and upgrades would translate into employment opportunities for the involved communities and the region.

A local helicopter service facility would be required to support development given the distance from St. John's, where the helicopter service facility for the Jeanne d'Arc Basin operations is located. This facility, likely in Happy Valley – Goose Bay, would require a complete spare parts inventory, technician and fuel supply facility. It is expected that at least two helicopters would be needed; one helicopter plus a back-up would likely be required for emergency scenarios or in the event the primary helicopter is grounded for servicing. The results of the helicopter inquiry into the Cougar 491 helicopter crash off the coast of Newfoundland will be important in determining the future role of helicopters in the offshore oil and gas industry. The outcome of this inquiry may create changes in current regulations in equipment, maintenance facilities or flying times and conditions.

Fixed-wing aircraft would be required for routine personnel movement, crew changes and transport of equipment and consumables.

Support vessels are required that can handle the extreme environment and demands placed on them in terms of supply, ice management and standby duties such as emergency response. Newfoundland Petroleum OSH Regulations require each MODU to have at least one standby vessel; typically one-to-three vessels provide support to the drilling platforms (Ref. /15/). If multiple MODUs are used simultaneously, additional support vessels would be required. Support vessels may use products, services and facilities in Labrador for refuelling, resupply and crew changes.

3.2 Personnel Requirements

Personnel required to support a single MODU drilling operation could be estimated as 200 to 300 workers including rig workers, third-party service companies, office and support staff, and logistics personnel including boat crews and helicopter pilots.

With respect to vessels, regardless of the vessel's country of origin, the legislation states that owners must "crew such vessels with a proportionate mix of other Canadian and Newfoundland and Labrador residents based on the expected time spent working in the respective jurisdictions" (Ref. /16/). The available positions could be experienced personnel or engineering companies but also include contracts for services such as catering or cleaning. Spin-offs or indirect employment as the result of supporting the drilling operations may also benefit local employment.

Historically, of the approximately 200 rig workers associated with an offshore drilling program on the Jeanne d'Arc Basin, about 80% were Newfoundland and Labrador residents (Ref. /9/). Labrador drilling programs might be expected to have the same level of local content.

3.3 Costs

Costs associated with a drilling operation are substantial. The drilling unit itself might cost $400,000 to $500,000/day and total well costs could reach $1 MM/day (Ref. /17/). It might be expected that a drill season could run 180 days, achieving one to two wells per season. The cost per well could approach $100 MM.

3.4 Potential Benefits to Labrador

Large quantities of well construction materials, consumables and personnel will be required for a drilling program and must be transported from places such as Goose Bay, Hopedale or Cartwright to the well site. In order to support a significant exploration and production drilling program, it would be expected that some upgrade of shore-based facilities in Labrador would be required, including the installation of bulk tanks, potential fuel storage facilities and material laydown areas. This would create direct employment not only in the upgrade of facilities but also the operation during drilling programs.

Materials and personnel would be transported by road, air and boat. Where vessels dock, there will be a requirement for resupply, refuelling, garbage removal, pumping of bilges, taking on potable water, crew changes and other tasks. In addition, because of the requirement to dock, additional expenditures associated with dockage fees, line handling charges, trucking, craneage, local transportation, accommodations and other costs would be expected. There could be the potential for training of local personnel for employment on the supply boats. Other services could include, but not be limited to, customs brokerage, navigation and positioning, medical services, emergency response services, weather forecasting and ice management. With the proper preparation, these goods and services could be provided in Labrador; these services are currently available within the Province.

If a primary shore-based facility, such as Goose Bay, is identified for stockpiling of goods and materials, there is the possibility for a secondary facility such as Hopedale or Cartwright, from which vessels could pick up supplies, minimizing the transit distance to the well sites. However, it is assumed that an assessment of shore-based facilities in Labrador would be required to determine what locations might potentially be used as primary and secondary facilities, and what upgrades might be required with respect to the installation of bulk tanks, potential fuel storage facilities and material laydown areas; all of which may be required to support drilling operations.

A regular helicopter service would be required over the duration of the drilling programs. This would require a helicopter service facility, most likely in Happy Valley-Goose Bay. There would be the opportunity for local supply of fuel, transport, accommodation and supplies associated with a service facility. There could be an opportunity for employment at the service facility for local persons depending on the skills required.

Actual benefits during drilling operations would be reflected in the appropriate Benefits Plan submitted to the CNLOPB for review and approval. This plan must address how the operator will hire people and procure goods and services. The process for hiring must give first consideration to qualified NL residents and also full and fair opportunity to qualified Canadian residents. The plan must also address how full and fair opportunity will be given to Canadian businesses, with first consideration to NL-based companies in the procurement of goods and services on a competitive basis. The Benefits Plan does not have to specify the outcome, but must establish the process (Ref. /6/).

4.0 PRODUCTION FACILITIES

4.1 Conventional Floating Production Structures

The FPSO is a floating, production, storage and offloading vessel (Figure 4-1). An FPSO would house the hydrocarbon processing, gas compression, utility equipment and power generation required for operations. It would also include quarters to house all necessary operation and maintenance personnel. Reservoir fluids pass from subsea production wells via flowlines and risers, up into the FPSO production facilities. In some cases, an FPSO may have drilling capabilities and is therefore referred to as an FDPSO.

As an example of the type of vessels that might operate offshore Labrador, Grand Banks FPSOs can be considered. Two existing FPSOs operating offshore Newfoundland (the Terra Nova and the SeaRose) are double-hulled and double-bottomed for protection from sea ice and icebergs. The Terra Nova and SeaRose vessels have significant storage capacities of 900,000 bbls and 850,000 bbls of processed oil, respectively (Ref. /18/). Further detailed investigation would be required to determine if an FPSO could reliably operate in the Labrador Shelf Area based on current technology.

The development would require the installation of subsea facilities. Depending on water depth, the equipment would need to be in glory holes as the FPSO structure itself offers no protection to the facilities on the seabed. These vessels have limited storage capacity and processed hydrocarbons need to be shipped by pipeline or tanker. Variations on a traditional FPSO could include a floating LNG (FLNG) or CNG facility (see Section 4.2, which describes these facilities).

Installation of the FPSO would require a number of dedicated vessels as well as vessels with ice management capabilities.

Figure 4-1: SeaRose FPSO (Ref. /19/)

4.1.1 Construction

Using assumed production values of 200 KBOPD of crude oil or 500 MMSCFD of gas for offshore Labrador, it is possible that an FPSO for offshore Labrador would be larger than the vessels for Terra Nova and White Rose oil fields which have maximum production rates of 150 and 140 KBOPD of crude oil, respectively.

Both the Terra Nova and SeaRose FPSOs hulls were fabricated in South Korea but both vessels' topsides were completed in Newfoundland (half of the Terra Nova topside modules were completed in Scotland and the other half were completed in Newfoundland). For the White Rose project, topside modules were also fabricated in Marystown and testing of subsea components was carried out in Bull Arm (Ref. /20/). The Terra Nova's water injection module, produced water/glycol module, power generator module, flare stack and desk assemblies were fabricated in Bull Arm along with all installation and testing (Ref. /21/).

Bull Arm, Trinity Bay is a fabrication and construction site and a prime example of new infrastructure development resulting from the petroleum industry in Newfoundland and Labrador. The 2,560 hectare industry facility was built using a total capital cost of approximately $470 MM in 2000 ($573MM in 2010)[1]. It was originally established for the construction phase of the Hibernia project, upgrades include an extended quay to accommodate the Terra Nova PSO for outfitting, hook-up and commissioning work. Currently it includes multiple fabrication sites allowing for simultaneous operation (Ref. /21/).

This site may require upgrades in order to accommodate a larger FPSO, as suggested by the production rates assumption above. However, it still remains a potential construction site for several components and final integration for an FPSO for offshore Labrador. A detailed assessment of the site is beyond the scope of this study.

Despite the potential size difference compared to a proposed FPSO for offshore Labrador, the SeaRose can be used for comparative purposes. The engineering/construction/ installation phase of the SeaRose FPSO resulted in 11.3 MM work hours in Newfoundland over a 4-year period. Based on an average 40-hour work-week, approximately 1,360 people were employed during the entire duration of the development (Ref. /22/). This number includes FPSO construction, development drilling, installation of subsea equipment and project management.

4.1.2 Operations

As discussed in Section 3.1 regarding exploration and production drilling logistics, personnel movements and cargo/equipment mobilization is required for any offshore operations. Helicopters and related services, fixed-wing aircraft and supply vessels must be used and based in Labrador. The same infrastructure considered for a drilling

[1] An assumed 2% inflation rate and the following formula has been used to calculate present value:

$$Cost_{2010} = Cost_{YEAR}(1 + 0.02)^{(2010\text{-}YEAR)}$$

platform offshore Labrador would also be relevant for the operations of a future FPSO, albeit at a larger scale.

Historic projection trends show that slightly more than 90 per cent of all employees on production facilities are from Newfoundland and Labrador (Ref /23/).

Currently, the White Rose project employs 547 persons offshore and 509 persons onshore for a total workforce of 1,057 (this reflects employment for the 2nd quarter of 2010) (Ref. /22/). The breakdown is shown below in Table 4-1. The number of persons employed in Labrador in support of an FPSO operation would be dependent on the development scenario, the infrastructure in place at the time of the development, the onshore facilities/infrastructure required by the project and any requirements negotiated as part of a benefits agreement.

Table 4-1 White Rose Offshore Personnel Breakdown

Offshore Sector	Number of Employees
FPSO	180 (2 shifts of 90 personnel)
Tankers	100
Support Craft	110
Other Employees (drilling operations on 2 rigs and other contractors and services)	157
Total	547

4.1.3 Costs

The development period for an FPSO structure in Newfoundland and Labrador might be assumed to be four years. This is consistent with the development period observed for the White Rose field (Ref. /23/).

The development cost of the White Rose project was approximately $2.03 billion by the end of 2005. This included the FPSO ($1.01 billion for topsides, turret and hull), subsea production system ($352 million, including glory holes) and development drilling ($297 million). The balance was spent on project management and logistics (Ref. /22/). The

entire White Rose total pre-production capital expenditures were $2.04 B in 2007 ($2.16 B in 2010) (Ref. /23/). The difference of $1.128 B between the development and CAPEX costs is expected to come from indirect industry and infrastructure developments, including site upgrading, service industry employment and various investments in spin-off industries.

Typical development costs for an FPSO project and present values using the computation above are shown below in Table 4-2.

Table 4-2 Development and Operational Costs of an FPSO

	Cost ($ MM) (year)	Present Value (2010) (MM)
Development Costs		
Development Cost of SeaRose FPSO System (Ref. /22/)	$935 (2005)	$1,032
Total pre-production CAPEX for Terra Nova (Ref. /23/)	$2,800 (2007)	$2,971
Total pre-production CAPEX for White Rose (Ref. /23/)	$2,040 (2007)	$2,218
Operational Costs		
Yearly Rig Rate (semi-sub used in water depths <1,500 ft) (Ref. /24/)	$128/yr (2008)	$133/yr
Annual Operating Costs (Ref. /24/)	$384/yr (2007)	$408/yr
Decommissioning Costs		
Decommissioning Costs incurred in the final year of production (Ref. /25/)	$41 (2001)	$49
Post-production Decommissioning (Ref. /25/)	$778 (2001)	$930
Salvage Cost of FPSO (Ref. /25/)	$ 40 (2001)	$ 48

4.2 Floating LNG/CNG Facility

A floating LNG (FLNG) facility is a variation of a traditional FPSO where the produced natural gas is supercooled onboard, stored in liquid form and periodically offloaded to a specialized LNG tanker. Alternatively, gas could also be processed as compressed natural gas (CNG) on an FPSO and exported via specialized CNG carriers.

Offshore liquefaction is considered breakthrough in the development of remote stranded gas fields. Recent research activities by oil majors and engineering companies have demonstrated the viability of this concept, from commercial, technological and safety points of view. This concept offers the potential to increase reliability, shorten the processing/export time, increase overall profit and monetize smaller and remotely located gas fields.

Dimensions of floating LNG facilities (see Figure 4-2) are generally large. For example, a 640 MMSCFD Floating LNG plant being designed by Shell and Technip for offshore fields in Western Australia is expected to be 480 m in length and 75 m in width, with a weight of 600,000 tons in a fully ballasted condition, which will be the largest floating vessel in the world (Ref. /26/).

Figure 4-2: Sample Floating LNG Plant (Ref. /27/)

4.2.1 Construction

Currently planned projects will use large vessels (the Shell LNG floater mentioned above will be almost double the size in dimensions and triple the size in weight than Terra Nova FPSO). Only a few shipyards in the world (all overseas) are capable of building such vessels, but the infrastructure may exist in Newfoundland to develop and install the topsides, with further commissioning of the whole LNG floater. Specific components of a floating LNG plant and in some cases particular modules must be manufactured outside of Canada. Historically, the hulls for floating facilities offshore Newfoundland have been fabricated outside of North America. However, the assembly, installation and testing of modules and systems could be completed in Newfoundland and Labrador. Two potential sites are the Marystown Shipyard and Bull Arm Fabrication Site.

A vessel for CNG processing and offloading/export would be comparable to an FPSO discussed in Section 4.1, which describes conventional floating production structures.

4.2.2 Operations

For this study, it is assumed that offshore personnel requirement for the LNG FPSO would be at least 80 persons based on a comparable vessel with 550 MMSCFD of production capacity (Ref. /28/).

4.2.3 Costs

To date, there are no completed floating LNG facilities in operation. Therefore it is difficult to gather actual information on specific vessels.

For a floating LNG production system with a production level of 800 MMSCFD (double the size of what would be required for the Labrador field), the specific (unit) capital costs range from $595 to $756 CAD per ton per year of LNG production, depending on the liquefaction process employed and corresponding electric power requirements. These costs also exclude field development and shipping costs (Ref. /28/). This would translate

to a capital cost of approximately $2 B to $3 B plus additional costs associated with developing a vessel and mooring system appropriate for the environmental conditions.

Floating LNG facilities are predicted to take less than half the time to build compared with onshore units and cost one-third the amount of an onshore plant (Ref. /29/). The reason for the reduction in time and cost is that the FLNG unit would be built in a controlled environment (shipyard) specifically designed for building such vessels. All of the materials are brought to the shipyard rather than to an onshore site subjected to weather, personnel and logistics issues, among others.

4.3 Fixed Production Structures

GBS options can be considered for the Labrador Shelf for water depths ranging from very shallow out to approximately 150 m.

A typical GBS has three important components; a pedestal, modular topside facilities (for example process, drilling, accommodation) and a crude oil storage/loading system, as shown in Figure 3-3. The post-tensioned, reinforced concrete or steel caisson is made in a dry dock. When construction is complete, the dry dock area is flooded, the topsides are mated to the GBS at a deepwater site and the platform is floated out to location. Once in position, it is filled with ballast to help stabilize the structure until it sits firmly on the ocean floor.

Oil is stored within the base structure and exported by a subsea pipeline or crude oil tankers. Gas would typically be exported by pipeline. Alternatively, gas could be processed on the topside facilities and exported as liquefied or compressed natural gas via specialized LNG/CNG carriers.

A major advantage to using a GBS relates to the harsh environment offshore Labrador. Sea ice, icebergs, heavy seas and high winds are a common occurrence. A GBS is less

affected by harsh environmental conditions than a floating platform. This provides more annual production time as a floating structure may have to disconnect due to environmental conditions.

4.3.1 Construction

Bull Arm, Trinity Bay was the construction site for the Hibernia GBS and will be the construction site for the Hebron GBS. Prior to Hibernia, Bull Arm was a green site with minimal infrastructure but was selected for its proximity to St. John's and steep hills for dry-dock protection. As discussed in Section 4.1.1 regarding the Bull Arm construction/fabrication facilities, the site has capabilities to construct and develop a GBS for offshore Labrador.

The development period for a GBS scenario might be considered to be seven years. This is consistent with the development period observed for the Hibernia platform. During the peak construction year, roughly 5,800 people were employed at Bull Arm (Ref. /30/). The infrastructure did not previously exist to house, feed and entertain the workers. Therefore, a self-contained community was created that included: living accommodation to house a workforce of 3,500, a cafeteria large enough to seat 1,000 and serve 2,000 meals per hour, recreational facilities including a gymnasium, weight room and swimming pool and a fully-equipped emergency response centre which housed a medical clinic and fire department (Ref. /30/).

4.3.2 Operations

By way of comparison, Hibernia had 920 employees in December 2007. This number was made up of 454 onshore personnel and 466 offshore personnel. Of these, 91% were native to Newfoundland, 6% were from the rest of Canada and 3% were non-Canadian (Ref. /23/).

It would be expected that many of the supplies and support services required for operations would be secured from Newfoundland and Labrador. The supporting

infrastructure would be similar to that for an FPSO. Referring to Section 3.1 regarding logistics in support of an exploration and production drilling program, helicopter services, fixed-wing aircraft and supply vessels might mobilize from Happy Valley-Goose Bay and the appropriate logistics and other facilities would be required along the Labrador coast.

4.3.3 Costs

The development of the Hibernia GBS cost more than $5 B (as described below) and included the construction of the caisson and several topsides components at the Bull Arm facility. A breakdown of costs associated with a typical GBS structure and present value costs using the approach shown in Section 4.1.1 is shown below in Table 4-3:

Table 4-3 Development and Operation Costs of a GBS

	Original Value (MM)	Present Value (2010) MM
Development Costs		
Capital Cost of a Gravity-Base Structure (Ref. /23/)	$5,800 (1997)	$7,503
Operational Costs		
Annual Operating Costs (Ref. /23/)	$404/yr (2007)	$429/yr
Decommissioning Costs (Ref. /25/)		
Decommissioning Costs incurred in final year of production	$150 (2001)	$179
Post-production decommissioning	$359 (2001)	$429
Additional decommissioning cost for possibility of total removal of GBS	$500 (2001)	$598

4.4 Subsea Systems

In order to protect subsea well systems from iceberg scour, the equipment may be placed below the mudline in glory holes or protective caissons (Figure 4-3). A deepwater excavation system is required to create these glory holes and previous glory holes such as in the Terra Nova field are approximately 11.5 m deep (Ref. /31/).

Advancements in subsea technology are moving towards the processing of hydrocarbons subsea where processes such as separation, compression, boosting and water injection will be able to be accomplished at the well.

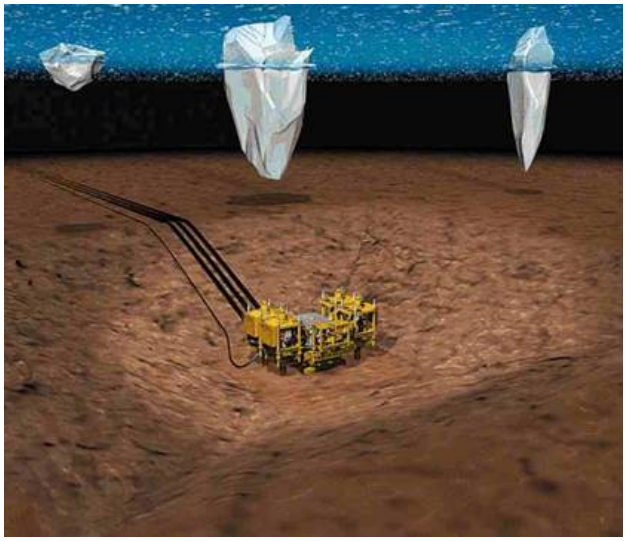

Figure 4-3: Glory Hole (Ref. /32/)

4.4.1 Tieback to an Offshore Facility

The subsea field layout may include a series of production wells feeding into a template such as a manifold which, in turn, would be connected by rigid or flexible flowlines to production risers that attach to an offshore production facility, such as a GBS or an FPSO.

4.4.2 Subsea to Shore

In some cases, there may not be the requirement for a platform offshore. Subsea development technology has progressed in recent years and tiebacks of 100 km or more have been achieved. The advancement of subsea processing technology will be a key enabler to continue the tieback distances that can be achieved.

4.4.3 Subsea System Installation

A large number of subcontractors, vessels and support services would be required for subsea installation offshore Labrador. Due to the relatively remote location, logistics will be a significant issue and add significantly to the cost. It would be cost-effective to mobilize vessels which can multi-task and have large storage capacity which will minimize the number of vessels and resupply required. Vessels will be required to dredge glory holes, lay flowlines and install wellhead equipment, among other things.

4.4.4 Logistics

Logistics would be expected to be similar to those presented in Section 3.1 for the support of an exploration and production drilling program.

4.4.5 Personnel Requirements

It would be expected that dredges and installation vessels would come fully crewed with experienced personnel and that the potential for employment on the vessel would be limited. There might be some potential opportunity for limited local employment as FLOs or MMOs. Greater potential exists for spin-offs or indirect employment as the result of supporting the installation operations. Indirect employment might result from the need for logistics personnel, including boat crews, helicopter pilots and support staff.

Personnel required for operations would be covered as part of the offshore facilities or onshore processing facility.

4.4.6 Costs

Costs associated with a subsea installation are substantial. Installation vessels may cost $300,000 to $500,000/day, or more, and have an associated mobilization and

demobilization cost of several million dollars (Ref. /33/)[2]. The majority of subsea equipment would likely come from outside Canada but some smaller structural steel components would likely be fabricated within the province. Other costs would be associated with the logistics support described above and fuel and other required resupply items.

4.5 Onshore Processing & Storage Facilities

Production fluids would be transported from the offshore field via a pipeline to shore. A hydrocarbon processing facility would clean, treat, separate and process crude oil and gas into gaseous and liquid components that meet quality requirements for shipment to a designated market. Onshore processing facilities (OPF) are constructed at the site of the reserves unless environmentally or legislatively difficult. There are several types of onshore processing facilities that would be considered as options as part of any development:

- Crude Oil/Gas/Condensate Treatment (to export specification)
- Liquefied Natural Gas (LNG)
- Compressed Natural Gas (CNG)
- Gas to Liquids (GTL)

4.5.1 Oil/Gas Processing and Storage Facility

Onshore oil/gas treatment facilities, similar to Figure 4-4, are normally comprise Inlet/Metering, Stabilization, Dew Point Control, Separation, Power Generation, Compression/Pumping and Storage (if required) facilities. Typical equipment includes pressure vessels (condensate heaters, flash drums, condensate stabilizers, separators, condensers, coolers, reboilers and storage tanks), pumps, compressors, power generation, sewage treatment, glycol regeneration and fire water.

[2] Where information in the public domain is available for costs, it has been used. As a general methodology, where information is not publicly available, information has been sourced from within WorleyParsons from persons with expertise in the technical areas of interest.

Figure 4-4: Example of an Oil/Gas Treatment Facility (Ref. /34/)

4.5.1.1 Construction

Based on similar projects worldwide, such as the Sakhalin Island Processing Plant (Ref. /35/), it is believed that building an onshore production facility in Labrador would likely take at least 2 years. Total construction hours would be in the range of 1M person-hours during that period, peaking at 300 - 500 persons depending on schedule constraints.

4.5.1.2 Operations

Personnel requirements for an oil/gas treatment facility in Labrador can be estimated using similar plants around the world as a basis. For example, the jointly operated BHP Billiton/SONATRACH wet gas development at Ohanet in southern Algeria produces 700 MMSCFD of gas (Ref. /36/) and has a camp designed for 150 operations and maintenance personnel. This number is expected to cover peak turnaround times when there are limited operations personnel and additional maintenance/construction

personnel on the ground. Experience suggests that there are approximately 70-100 operations personnel present at all times.

Drawing from the above information, it would be expected that a Labrador onshore processing facility will have approximately 50 operations personnel. In Table 4-4, it is predicted that a facility in Labrador may be designed for approximately 200 total personnel, to provide space for turnarounds (maintenance and upgrades).

Table 4-4 Approximate Total Personnel Requirements for an Onshore Processing Facility

	Number of Personnel
Permanent Operation Labour	50
Permanent Security/Catering/Medics	15
Seasonal Maintenance People	20
Seasonal Construction Labour (turnarounds, every 3-4 years)	100-150

Table 4-5 presents a breakdown of the 50 permanent personnel into specific areas required for the operations of an onshore processing facility.

Table 4-5 Approximate Breakdown of Permanent Operations Personnel for an Onshore Processing Facility

	Number of Personnel
Management/Finance/Office	9
Technical/Engineering	7-9
Maintenance/Warehouse	2-4
Control Room Operators	10
Field Operators	15
Shift Supervisors	5

Development options for onshore facilities in Labrador would be slightly more complex than in other areas. Its remoteness requires a higher redundancy factor with extra fuel supplies and spare equipment in case of bad weather, impassable ice conditions or heavy seas. Lack of surrounding infrastructure would require additional dedicated services such as a fire station, medical clinic and extra food and water. Winterization has

to be addressed. Personnel and equipment need adequate protection from snow and below-freezing temperatures. The temporary storage tanks would need proper insulation and the shelters and equipment housing would need excess heating capabilities.

4.5.1.3 Costs

An onshore processing facility could be estimated to cost on the order of $250 MM to $300 MM, based on the design and construction of similar facilities (Ref. /37/).

4.5.2 LNG Production and Transhipment

Liquefied Natural Gas is natural gas that is processed to contain primarily methane and cooled to minus 162°C at atmospheric pressure. An LNG processing facility separates water and heavy hydrocarbons, as well as acid gases such as CO_2 and H_2S and other impurities such as mercury (known for its devastating corrosion effect on aluminum alloy cryogenic exchangers and danger to human beings), leaving a stream of nearly pure methane. The methane stream is then sent through a refrigeration process to cool the stream to a liquefied state where it is stored in cryogenic tanks, either onshore or on specialized transport vessels. Extracted mercury is normally sent to special disposal plants and recovered elemental sulphur is sold in the market. Alternatively, acid gases can be re-injected into a suitable underground reservoir.

The unprocessed natural gas is shipped from offshore platform or subsea development via subsea pipeline to an LNG facility onshore. It would be processed, sent through the refrigeration process, becomes liquefied and then is shipped by LNG transport vessels to market. Liquefied gas is much more economical than gas to transport since it displaces 1/600th of the volume of gas. The reduction in volume makes it much more cost-efficient to transport over long distances by dedicated LNG tankers, since shipment of LNG through pipelines does not currently exist.

4.5.2.1 Construction

Development options for onshore LNG facilities in Labrador would have similar considerations for an onshore processing facility construction as discussed in Section 4.5.1.2. Winterization of facilities for cold winter environments would require extra insulation and protection. Redundancy helps in reducing the effects of a remote location by storing extra fuel and back-up supplies in case of delays in the delivery of supplies.

Construction of 500 MMSCFD onshore LNG plant in Labrador may take four years or more and have specific capital cost of $1,000 to $1,200 per ton per year of LNG production (roughly $2.8 B to $3.4 B for a Labrador LNG plant) and would require approximately 30 MM person hours to construct, when a pipeline to shore, site preparation, harbour dredging and docks are included. It should be noted that these are indicative unit costs for liquefaction facilities that would process relatively dry gas and would therefore not require NGL (Natural Gas Liquids) recovery facilities and associated infrastructure.

The estimated footprint of an LNG facility is approximately 1,000,000 m^2 of fenced territory and about 4,000,000 m^2 of a required safety zone where habitation is restricted due to potential risks such as explosion and discharge.

4.5.2.2 Operations

Operations personnel requirements for an onshore LNG facility in Labrador with a feedstock of 500 MMSCFD would be on order of 200-250 people including administration, operation, maintenance and security personnel.

Specialized LNG tankers are required for the shipment of LNG to market. The majority of the new ships under construction (Figure 4-5) are in the size range of 120,000 m^3 to 140,000 m^3 (max known capacity is 266,000 m^3 for Qatar LNG ships) of LNG storage capacity. An indication of typical sizing and employee requirements for LNG ships is presented in Table 4-6 (obtained from Sakhalin II LNG tankers).

Table 4-6 Typical LNG Tanker Specifications (Ref. /38/)

	Typical LNG Tanker size
Length	277 m
Width	49 m
Depth	26.8 m
Capacity	147,000 m^3
Weight	123,000 mt GRT
Personnel on Board	40

Tankers would need to have the ability to move through heavy onshore pack ice to dock and load. Support vessels would be required for supply operations including the transfer of personnel, bunkering and materials handling. Depending on the service class of these vessels, icebreaking support may be required in winter. Helicopter flights would be a regular operation for crew rotations and ferrying of some smaller pieces of equipment.

Figure 4-5: Sample LNG Transport Vessel (Ref./39/)

4.5.2.3 Costs

Figure 4-6 provides relative costing information for a typical onshore LNG concept development. This information is based on a number of projects and should be looked at in terms of relative costs of components and not absolute values.

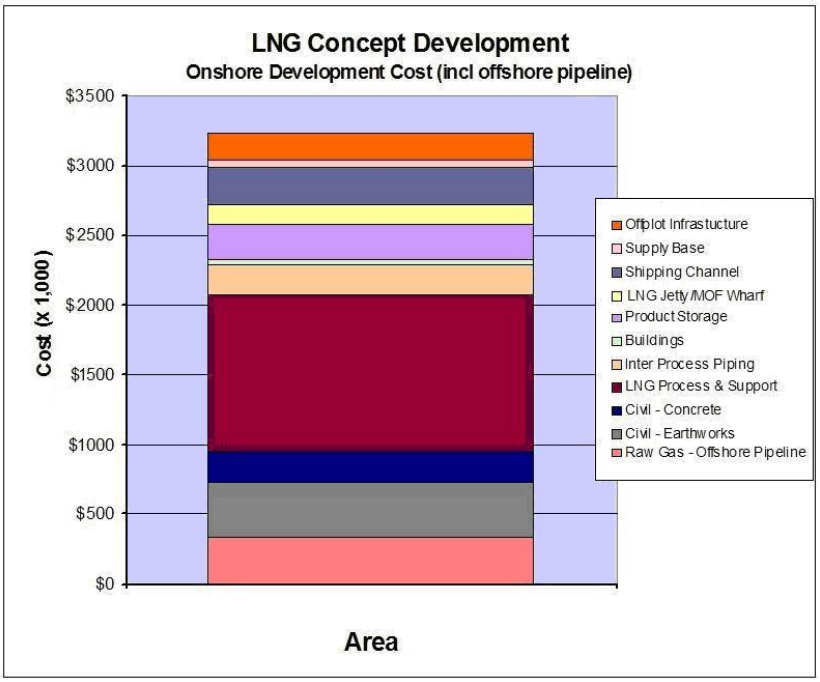

Figure 4-6: Relative LNG Concept Development Costs, modified from (Ref /40/).

These historical cost values should be used as a relative comparison only; development costs may have changed. The relative amounts could be scaled for high-level estimation.

4.5.3 CNG Production and Transhipment

Compressed natural gas is natural gas that has been compressed to between 2,500 and 4,000 psi such that it can be transported in pressurized containers on board specialized vessels. The facility cleans natural gas to remove impurities and heavy hydrocarbons to generate sales quality gas and requires large compression trains to increase the gas pressure adequately. It is similar to LNG but does not have the same intensive refrigeration process. If CNG is transported via vessel transport, it must be processed prior to transport to market.

Onshore facilities to process and compress gas would be approximately comparable to an OPF (Section 4.5.1 discusses an OPF) with additional compression facilities for loading CNG tankers.

4.5.4 Gas to Liquids (GTL) Production

Gas to Liquids is a technology to produce hydrocarbon products out of natural gas. Such products include GTL base oil for lubricating vehicle engines and transmissions, GTL gas oil to be blended with conventional diesel for cleaner burning and lower emissions, GTL kerosene used for cooking or as a jet fuel, and GTL paraffins and naphthas.

In a GTL processing facility, clean natural gas is mixed with steam and oxygen to form syngas (a mixture of carbon monoxide and hydrogen). The syngas is then converted to synthetic crude oil for further refining. Lower sulphur content of GTL products means substantial accumulation of sulphur reserves which can be used for sales in its raw/palletized form as well as for enhancing fertilizers and strengthening roads and concrete. Produced water is normally used for internal (cooling, steam generation) or external (landscaping) purposes.

Onshore GTL plants are normally large in terms of processing capacity and footprint. For example, the Qatar GTL plant being built by Shell is about 2.5 km^2 in size, designed for up to 1,800 MMSCFD of incoming gas, 0.786 MMSCFD of produced GTL products, 1.3 MMbbl/d of produced upstream products (LPG, Ethane, Condensate) and 140,000 bbl/d of produced water (Ref. /41/). At the end of the project, significant numbers are expected; over 1 MM work hours for pre-FEED and FEED, $15 B to $20 B USD of construction costs, and a workforce of 35,000 to 40,000 people at peak employment) (Ref. /41/). Applying these numbers to a 500 MMSCFD feedstock facility in Labrador would result in approximately less than 1,000,000 m^2 in size, $5 B to $7 B USD of construction costs and 5,000-7,000 employees at peak construction.

There are only a few GTL plants in operation in Asia and Africa hence operation statistics are limited. The Shell GTL (SMDS) plant in Bintulu, Malaysia built in the early 1980's has about 1/5 of the feedstock capacity of the potential Labrador plant and employs 360 operation people including supporting personnel. By recognizing the growth of hydrocarbon processing technologies since the development of the plant, this figure could be adjusted to approximately 250-300 operation people for a Labrador facility.

Figure 4-7: Qatar GTL Plant under Construction (Ref. /41/)

4.6 Potential Benefits to Labrador

In the case of offshore production facilities, historically there has been a certain percentage of the work associated with the engineering and construction of such vessels/platforms required to be carried out in Newfoundland and Labrador. This would be expected to continue with the development of resources offshore Labrador. While these vessels/platforms would not likely be built in Labrador, a project would provide opportunities for people from Newfoundland and Labrador in both engineering and

skilled trades, as well as support required during construction (e.g. construction site maintenance, cooks and support staff).

During the installation phase of a vessel, gravity-base structure or subsea equipment, there would be limited opportunity for employment offshore as most of the vessels would come fully crewed, although there could be opportunities for personnel for employment as FLOs or MMOs. If the field programs were significant, there could be the potential for training of local personnel to support the programs. During this phase, there would be an opportunity for onshore and logistics support as described in Section 2.4.

The operation of an offshore facility would require many of the same considerations for shore-based facilities, transportation, and goods and services as presented in Section 3.4 for offshore drilling programs. However, this phase would have requirements on a larger scale and longer term, potentially up to 25 years. There would be the possibility for long-term employment in the operation and support of the facility, although many of these opportunities may require specific education and training. Opportunities would include operations personnel, facility maintenance, supply boat personnel, cooks and support staff.

If development plans included an onshore facility, again it would be expected that a certain percentage of the work associated with the engineering and construction of such facilities be carried out in Newfoundland and Labrador. An onshore facility would likely be constructed by assembling modules constructed elsewhere and shipped to Labrador. While these modules would not likely be built in Labrador, the project would provide opportunities to people from Newfoundland and Labrador in both engineering and skilled trades, as well as all the support required during the off-site fabrication (e.g. construction site maintenance, cooks and support staff). There would also then be opportunities associated with the on-site construction of the facility over a period of several years including construction oversight, skilled trades and necessary support staff. A camp of a significant size, such as the one constructed in Bull Arm, would need to be erected to

house workers. There would be opportunities associated with the operations and maintenance of the camp.

The operation of an onshore facility would present many of the same opportunities presented above for an offshore facility. Again, there would be the possibility for long-term employment in the operation and support of the facility, potentially up to 25 years.

There would also be an opportunity for provision of onshore and logistics support as described in Section 2.4 during construction, and resulting from many of the same considerations for shore-based facilities, transportation, and goods and services as presented in Section 3.4 for offshore drilling programs.

5.0 TRANSPORT / EXPORT

5.1 Pipelines

Pipelines would be required for any FPSO, GBS or standalone subsea development scenarios that require transporting hydrocarbons to onshore Labrador. Given potential offshore development locations, Figure 5-1 (Snorri, Hopedale, Bjarni/North Bjarni, Gudrid), there are a number of potential pipeline routes to viable landfall sites. In pipeline routing exercises, bathymetry would be considered to identify channels or other features that would offer protection to a pipeline.

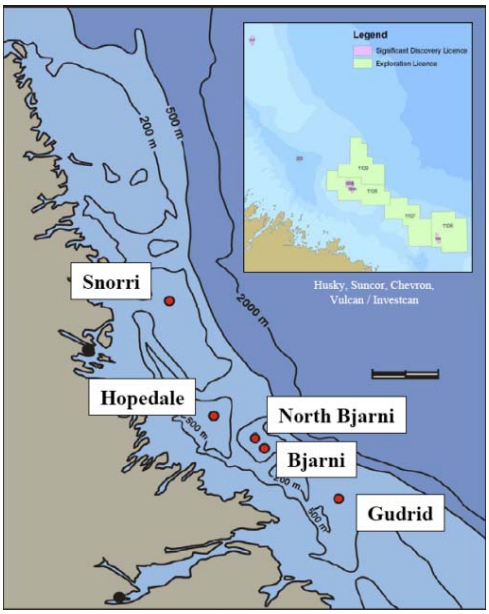

Figure 5-1: Potential Offshore Labrador Development Locations (Ref. /42/)

A number of landfall sites could be envisioned for a pipeline from these potential offshore development locations including, but not limited to the following landfall sites:

- Close to Nain and the Voisey's Bay mine site
- Hopedale
- Cape Makkovik
- Cape Harrison

These potential landfall sites are shown on Figure 5-2. It should be stressed that these are only hypothetical landfall sites. A detailed evaluation and assessment would be required to optimize any landfall location.

Figure 5-2: Potential Labrador Landfall Sites (modified from Ref. /43/)

The approximate straight-line distances from each possible drill site to the corresponding landfall location are shown in Table 5-1:

Table 5-1 Approximate Distances from Drill Sites to Landfall locations

Potential Drill Site	Landfall Location	Distance
Snorri J90	Nain	135 km
Hopedale E-33	Hopedale	100 km
North Bjarni F-06	Cape Makkovik	100 km
Bjarni O-82, H-81	Cape Makkovik	100 km
Gudrid H-55	Cape Harrison	135

5.1.1 Surveys & Data Collection

More data would need to be collected to support a cold-regions pipeline design compared to what might normally be collected in support of a pipeline in more temperate climates. In general, it would be expected that the following be carried out:

- Detailed Bathymetric / Pipeline Routing Surveys
- Ice Scour Data Collection
- Geotechnical Programs / Laboratory Testing
- Sediment Transport Analyses
- Detailed Survey of Landfall Sites
- Evaluation of Shoreline Erosion
- Ice Surveys
- Metocean Data Collection

Some of this data may be collected as part of the overall project data collection efforts, with possible collection of multiple years of data to support pipeline design and construction planning.

These field programs would have a relatively limited duration. It would be expected that the vessels to carry out the offshore field programs would come fully crewed with experienced personnel and that the potential for employment on the vessels might be limited. There might be some potential opportunity for limited local employment as FLOs or MMOs during

some offshore activities. Onshore field work would be a minor scope but may offer some regional temporary opportunities.

5.1.2 Pipeline Installation

Pipelines are typically installed from lay barges or reel vessels. A lay vessel (Figure 5-3) is a specially built oceangoing vessel aboard which the pipeline is fabricated (welded) as the vessel moves along the pipeline route. Such a vessel moves either by means of an anchoring system or by its own propulsion. If the lay vessel moves on anchors, anchor-handling vessels are needed to help reposition the anchors so the lay vessel can advance. A moored lay vessel usually does not have propulsion and is moved from one work location to another by tug. The lay vessel can carry a limited amount of pipe on its deck and pipe carrier vessels or barges supply additional pipe.

Figure 5-3: Pipe Lay Barge, Allseas Solitaire (Ref. /44/)

In the case of a reel vessel, the pipeline would need to be pre-fabricated at a shore-based staging area, where it would then be reeled into the vessel. Normally, a conventional reel vessel is a self-propelled, ship-shape vessel with a vertical reel (Figure 5-4). The advantage of a reel ship is that it could lay eight-to-ten miles of 12-inch pipeline (for example) in one continuous operation.

Figure 5-4: Technip's Deep Blue Reel Lay Vessel (Ref. /45/)

Trenching and backfilling would be carried out by either a dredge or a trenching spread using a plough, jetter, or mechanical trencher.

5.1.3 Logistics

Logistics would be expected to be similar to those presented in Section 3.1, which describes logistics support for an offshore exploration and production drilling program.

5.1.4 Personnel Requirements

It would be expected that pipeline lay barges would come fully crewed with experienced personnel and that the potential for employment on the vessel would be limited. There might be some potential opportunity for limited local employment as FLOs or MMOs. Greater potential exists for spin-offs or indirect employment as the result of supporting the pipeline installation operations. Indirect employment might result from the need for logistics personnel including boat crews, helicopter pilots and support staff.

5.1.5 Costs

Costs associated with a pipeline installation are substantial. The lay vessel may cost $300,000 to $500,000/day, or more (Ref. /33/). Line pipe, required to build the pipeline would likely come from outside Canada. Other costs would be associated with the logistics support described above and possible fuel and resupply.

5.2 Tankers

Both GBS and floating structures have limited storage capacity for produced hydrocarbons. Tankers are a viable option to transport fluids to their required destination. The size of the fleet depends on a number of factors: offshore/tanker storage capacity, distance to market and transport vessel size, which is expected to be 100 m in length or larger. The tankers would have the appropriate class to deal with the seasonal ice conditions or icebreaking support would be required. Offshore loading would be possible when environmental conditions (wind, waves, ice) are within operational limits.

Operating oil fields offshore Newfoundland provides an indication of the tanker usage offshore Labrador. The offshore Newfoundland fields use four tankers in total and they rotate between the three production facilities as required.

The four custom-built shuttle tankers, *Kometik, Mattea, Jasmine Knutsen* and *Heather Knutsen* service the Hibernia, Terra Nova and White Rose fields. These shuttle tankers have storage capacities of about 850,000 barrels, are double-hulled and have double bottoms with additional strengthening (particularly at the waterline). They are bow-loaded and are capable of quickly disconnecting from the offshore loading system, or OLS (Ref. /46/). Currently, the *Kometik* is used only to service Hibernia. Terra Nova, White Rose and Hibernia share the services of the other three tankers. The *Umiak I* has ice-breaking capabilities and is used offshore Labrador. Loading rates vary between installations,

depending on specific requirements and capabilities. Expected rates are approximately 34,600 to 44,000 bbl/hr (Ref. /47/). Each vessel requires approximately 23 crew members. Refer to Table 5-2 for specific crew regulations. A summary of the tanker specifications is also shown in Table 5-2.

Table 5-2 Summary of Tankers Currently Operating Offshore Newfoundland

Tanker	Project	Deadweight (tonnes)	Length (m)	Width (m)	Crew Sizes
M/T Kometik	Hibernia	126,647	271.8	46	23
M/T Mattea	White Rose/Terra Nova/Hibernia	126,360	271.8	46	23
M/T Heather Knutsen	White Rose/Terra Nova/Hibernia	148,644	276.956	46	24
M/T Jasmine Knutsen	White Rose/Terra Nova/Hibernia	148,706	276.956	46	24
M/V Umiak I	Voisey's Bay	31,500	188.8	26.6	22

5.2.1 Transhipment Terminal

Depending on the level of activity offshore Labrador, there may be a requirement for a transhipment facility in Labrador where smaller shuttle tankers can offload and where larger export tankers can pick up crude or LNG for transit to market.

There is currently an operational oil transhipment facility in Newfoundland. Oil from the Hibernia and Terra Nova oilfields is offloaded at a transhipment terminal located at Whiffen Head, Newfoundland (Ref. /48/). Operational in October 1998, the year-round terminal provides offloading and temporary storage capabilities for the crude until it is transferred to a second-leg tanker and shipped to refineries and processing facilities (Ref. /48/).

Newfoundland Transshipment Limited, NTL, is the operator and part owner of the terminal, which was completed in three phases. The first phase, valued at approximately $100 MM

in 1997 (present value of $129 MM) (Ref. /49/) had three crude oil tanks (capacity of 500,000 bbl), support buildings, diesel tanks and a causeway/trestle to one near-shore tanker berth. From January 1999 to October 2000, a $65 MM expansion to the facility (present value of $80.8 MM) included a second berth and two additional 500,000 barrel insulated storage tanks to accommodate production from the Terra Nova field. In 2002, a sixth tank was included with a capacity of 500,000 barrels. The two berths can manage vessels from 35,000 to 159,900 dead weight tonnes (Ref. /48/).

Custom-designed and purpose-built tugboats, the Placentia Hope and Placentia Pride, were fabricated in the Marystown shipyard on the Burin Peninsula. They are state-of-the-art, 5,600 horsepower tugs that provide escort services to the oil-loaded tankers through Placentia Bay, docking assistance at the NTL terminal and fire-fighting services in case of an emergency (Ref. /48/).

The Newfoundland Transshipment Terminal is a direct oil industry spin-off. It has created employment opportunities and strengthened the local economy. NTL has created about 47 direct full-time jobs and 15 to 20 part-time jobs at the facility, on the tug boats and in their St. John's office, exceeding their original estimate (Ref. /50/).

5.3 Gas or Oil to Wire

An alternate method of oil/gas transport is the conversion of processed oil/gas to electricity at an onshore power generation facility for subsequent transmission by wire. It is considered to be a highly efficient system in both economic and environmental perspectives (Ref. /51/).

Various technologies are available for generating electrical power from processed oil/gas, which include steam turbines, gas turbines, combined cycle generators, or thermal generation stations using fired engines (i.e. gasoline, diesel, bunker C). Generated

electrical power is transmitted via wire to the desired market, as shown in Figure 5-5. The optimum transmission form is High-voltage Direct Current (HVDC) for long-distance distribution.

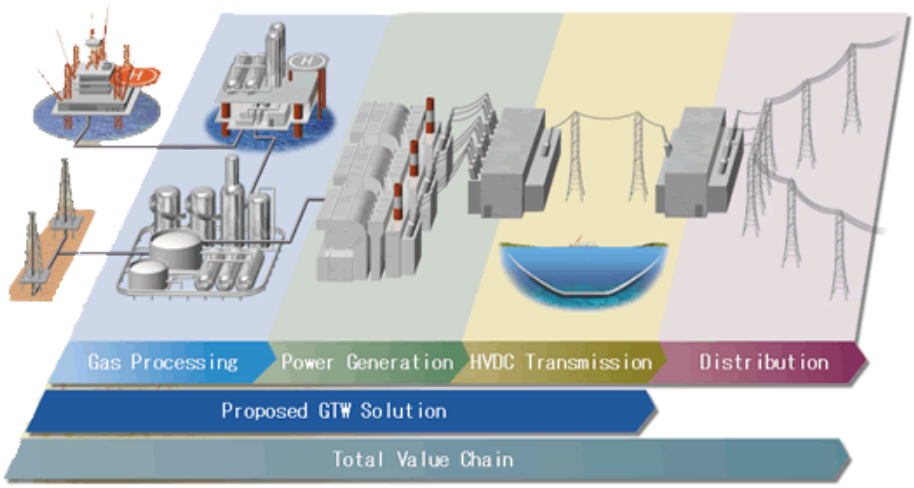

Figure 5-5: Overview of Gas to Wire Process (Ref. /51/)

The conversion of oil/gas to wire was investigated based on throughput values of 500 MMSCFD of processed natural gas and 200 KBOPD of processed oil. Combined cycle generators (CCGs) were considered for both cases. CCGs consist of a gas turbine, heat recovery steam generator (HRSG) and a steam turbine generator driven by the HRSG. In some cases, the processed (crude) oil is suitable for firing in the gas turbine and in this instance, steam generation with steam turbine(s) and a Rankine cycle feed arrangement is an alternative that could also be considered, although it would be less efficient than using a purely refined feed. Power generation specifications for oil/gas fed combined cycle generators are provided below in Table 5-3 for the assumed processed oil/gas input rates.

Table 5-3 Power Generation Specifications (Ref /52/)

Description	500 MMSCFD Natural Gas	200 KBOPD Crude Oil
Power Generated	2,800 MW	6,600 MW
Number of Stations	5	10
Cycle Configuration	Combined Cycle	Combined Cycle
Machine Selected	ALSTOM KA24-2	ALSTOM KA11N2-2

5.3.1 Construction

Power generation facility development(s) would likely take five years for both gas- and oil-fired facilities, with an oil to wire facility costing approximately 2.5 times the amount of a gas to wire facility, as shown in Table 5-4. It is important to note that these cost estimates do not include an electricity transmission grid (whether newly installed or an extension of existing infrastructure), and only pertain to development of required onshore power generation facilities.

Table 5-4 Approximate Developmental Costs and Requirements for a Power Generation Plant (Ref /52/)

Description	500 MMSCFD Natural Gas	200 KBOPD Crude Oil
Total Installation Costs (TIC)	$3,500 MM	$8,500 MM
Engineering & Design Hours of Work	4.6 MM	11 MM
Footprint (each station)	22,000 m^2	28,000 m^2
Peak Construction Personnel (each station)	1,000	1,300
Average Construction Personnel Requirements (each station)	600	700
Construction Hours of Work (per station; see Table 5-3)	1.75 MM	2.3 MM

5.3.2 Operations

The daily operation personnel requirements at a power generation plant vary for gas- and oil-fired facilities. A natural gas facility requires 25 people per station, which totals 125

people for the considered gas input rate (500 MMSCFD). An oil-fired power generation plant would require 30 people per station, which equals 300 personnel in total for the oil input rate considered (200 KBOPD).

5.4 Potential Benefits to Labrador

The installation of pipelines is carried out using specially designed vessels which would be mobilized from outside Canada. There would be limited opportunity for employment on these vessels or their support spreads as most of the vessels would come fully crewed. There could be opportunities for employment as FLOs or MMOs during the data collection and construction phases of the work. During installation of offshore pipelines, there would be an opportunity for onshore and logistics support as described in Section 2.4 as these programs could be one or more seasons in duration depending on the length of the pipeline.

Some scenarios associated with development offshore Labrador would require support vessels and tankers for export of hydrocarbons. All ships would require a port on the Labrador coast for long-term storage of spare parts and consumables. A mobilization dock would be constructed to transport goods/personnel by water and provide a port for support vessels. The port could create income by charging fees for services such as docking, line handling, trucking, craneage, local transportation and accommodation. A helicopter facility would be used to provide air transport and emergency response.

The construction of these tankers and support vessels, parts of the vessels, or outfitting of the vessels could be carried out in Newfoundland. There would be opportunities for people from Newfoundland and Labrador in both engineering and skilled trades during the construction phase as well as all the support required during the fabrication, such as construction site maintenance, cooks and support staff.

During operation, there would be opportunities for long-term employment on the vessels or at a transhipment facility (see Section 5.2). Multiple tankers and support vessels would be required (exact number depends on oil and gas activity) each with a crew size of at least 22. Although many of these opportunities may require specific education and training, courses are offered throughout the province for all necessary education. Ice-breaking support would be required for at least some of the year which may generate additional ice-breaking vessel fleets for the Labrador coast. The supporting infrastructure for these vessels would be the same as support vessels listed above.

The actual number of persons employed in Labrador in support of a tanker and support vessel operations would be dependent on the development scenario, the infrastructure in place at the time of the development, the onshore facilities/infrastructure required by the project and any requirements negotiated as part of a benefits agreement.

If a transhipment or power generation facility were to be constructed in Labrador, it would be expected that a minimum percentage of the work associated with the engineering and construction of such facilities be carried out in Newfoundland and Labrador. Such facilities would be constructed by assembling components fabricated or manufactured elsewhere and shipped to Labrador for erection of the facilities. Some components, such as generators, pumps, valves, etc. could not be manufactured in Newfoundland or Labrador, but for those that could, the project would provide opportunities to people from Newfoundland and Labrador in both engineering and skilled trades, as well as all the support required during the off-site fabrication (e.g. construction site maintenance, cooks and support staff). There would also then be opportunities associated with the on-site construction of the facility over a period of several years including construction oversight, skilled trades and necessary support staff. A camp of a significant size, such as the one constructed in Bull Arm, would need to be erected to house workers. There would be opportunities associated with the operations and maintenance of the camp.

The operation of a transhipment or power generation facility would require many of the same considerations for shore-based facilities, transportation, goods and services as presented in Section 3.4 for offshore drilling programs. However, this phase would have requirements on a larger scale and longer term, potentially up to 25 years. There would be the possibility for long-term employment in the operation and support of a facility, although many of these opportunities may require specific education and training. Employment at the existing transhipment terminal consists of 47 full-time jobs and 15 to 20 part-time positions, either in the facility, on the support tugboats or at the office. A typical power generation facility would create from 125 to 300 jobs, depending on whether power was generated from gas or oil. Opportunities would include operations personnel, facility maintenance, supply boat personnel, cooks and support staff.

There would be opportunity for provision of onshore and logistics support as described in Section 2.4 during construction, and resulting from many of the same considerations for shore-based facilities, transportation, and goods and services as presented in Section 3.4 for offshore drilling programs.

6.0 SUMMARY

The potential exploration and development scenarios discussed in the previous sections are based on analogous industry activities. For operations offshore Labrador, some scenarios are more likely to occur than others. Factors that determine the most viable option are the development type (oil or gas), potential market for the product, construction costs, employment during construction and life of project, and the potential benefits to Newfoundland and Labrador. The field characteristics and water depth also play an important part in choosing the most feasible option for field development.

Table 6-1 summarizes the possible development scenarios based on the likelihood of occurrence, value (cost and employment), construction time, geographic footprint in Labrador and other potential local benefits. The assessment of the likelihood of occurrence is based on the current state of technology, the onshore/offshore Labrador environment, oil and gas production estimates/reserves, potential products/markets and norms with regards to typical industry projects.

Figure 6-1 provides an overview of the major phases of a hydrocarbon field development from start to finish. The timelines are indicative and depend on several factors, such as the local regulatory conditions, specific project requirements, availability of labour and equipment, and unforeseen delays, among others. It is important to note that the CAPEX estimates do not include exploration and appraisal activities. The field development is broken down into five main stages, described as follows:

Exploration – Available field information and field works are first obtained through non-invasive testing such as magnetic, geophysical and geotechnical surveys. The data gathered in these surveys undergo further analysis and modeling by geologists and reservoir engineers. If sufficient hydrocarbons are found, exploration wells may be drilled to obtain a better picture of the field's geology and recoverable reserves.

Appraisal – Once hydrocarbon accumulation is discovered, an economic analysis determines the financial viability of the field and the most effective development scenarios based on the field's characteristics. Drilling of appraisal wells may be required for verification and analyses of exploration well results.

Development – When the field is deemed viable and the appropriate development scenario is chosen, the conceptual and front-end engineering and design is completed. The development stage also includes the construction, procurement, commissioning and start-up of the selected facilities.

Production – This stage occurs when hydrocarbons are produced from the reserves and the production facility is operational. It begins at production of the first oil/gas and continues until the last well is shut-in. It includes the periodic maintenance (turnarounds) and modifications required to maintain the production facility. The length of the production cycle is normally determined by the project's economics and volume of recoverable reserves.

Decommissioning – The final phase of hydrocarbon field development occurs when recoverable reserves are depleted and it is not economically feasible to continue with production. Decommissioning includes the final shut-in of wells, removal of subsea infrastructure (if necessary), environmental remediation and removal or abandonment of the production facility following applicable regulatory approval.

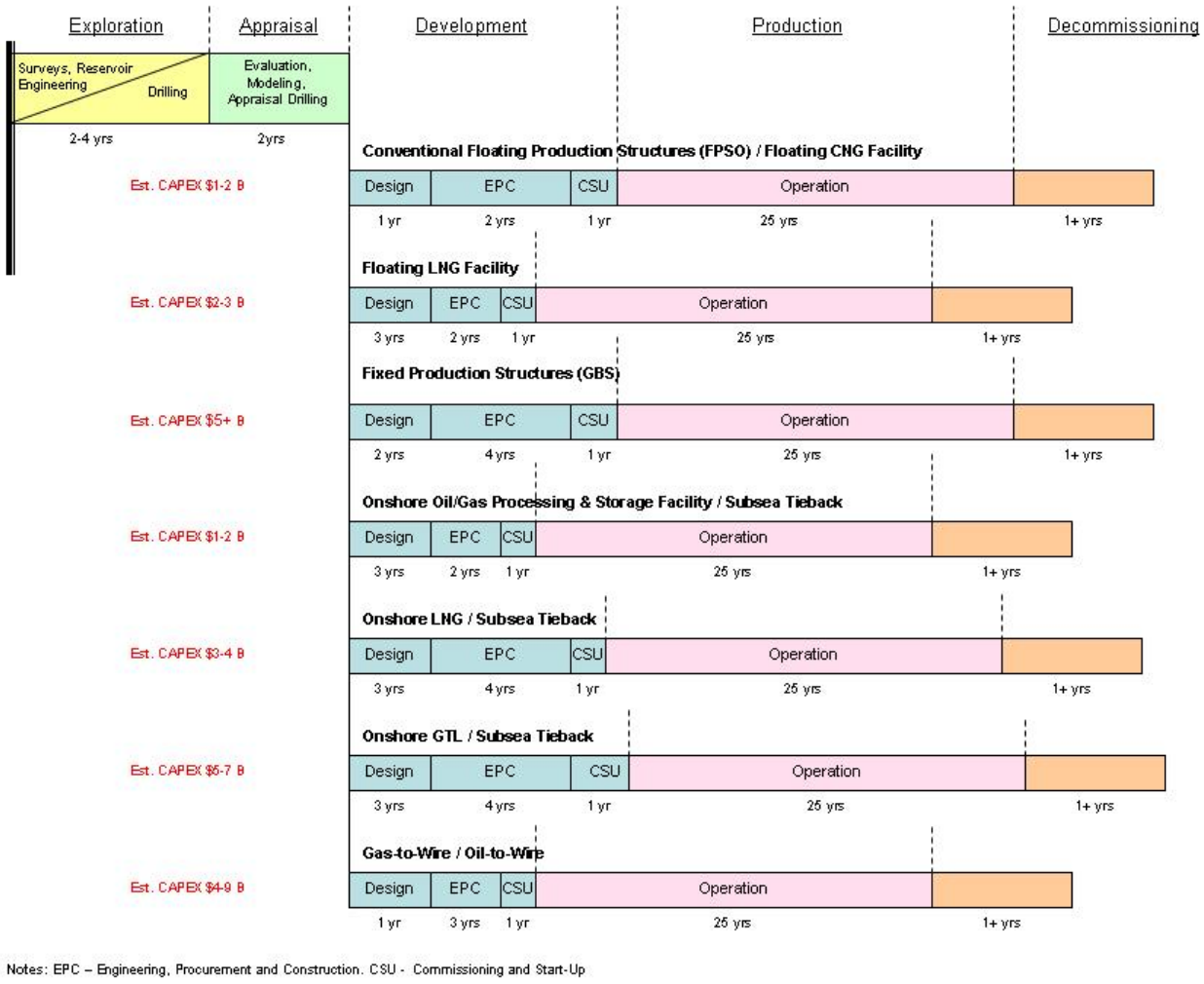

Figure 6-1: Approximate Scenario Timelines

Table 6-1 Summary of Development Scenarios

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
Geophysical/Geotechnical Surveys							
2D and 3D Seismic Surveys	More Likely	N/A	N/A	- Expect vessels would come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	- Existing vessels mobilized internationally - Typical program could range from a few weeks to a few months	Minor – local supply port necessary if program exceeds 2-3 weeks	-Training opportunities for local personnel to work on vessel - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown, - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Trucking, cranes, equipment if supplies and data/core samples are offloaded in Labrador
Geohazard Surveys	More Likely	N/A	N/A	- Expect vessels would come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	- Existing vessels mobilized internationally - Typical program would be a few weeks	Minor – local supply port necessary if program exceeds 2-3 weeks	-Training opportunities for local personnel to work on vessel - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Trucking, cranes, equipment if supplies and data/core samples are offloaded in Labrador
Seabed Sampling/ Geotechnical	More Likely	N/A	N/A	- Expect vessels would come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	- Existing vessels mobilized internationally - Typical program could range from a few weeks to a few months	Minor – local supply port necessary if program exceeds 2-3 weeks	-Training opportunities for local personnel to work on vessel - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
							- Trucking, cranes, equipment if supplies and data/core samples are offloaded in Labrador
Exploration/ Production Drilling							
Semi-submersible Rig	More Likely	N/A	N/A	- About 200 rig workers including 3rd party service companies – possibility for about 80% of these positions to be filled locally - Additionally, approximately 30 office/support staff including the operator and contractor's personnel and approximately 120 logistics personnel will be required	- Existing rigs mobilized internationally - Drilling season runs about 180 days/yr (approximately 1-2 wells)	- Long-term storage facilities required for well construction materials, consumables, spare parts - Helicopter/fixed wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels	- Well construction materials, consumables, personnel mobilized from Goose Bay/Hopedale/Cartwright - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay - Support vessel mobilization – possible local training for employment as crew
Drillship	More Likely	N/A	N/A	- About 200 rig workers including 3rd party service companies – possibility for about 80% of these positions to be filled locally - Additionally, approximately 30 office/support staff including the operator and contractor's personnel and approximately 120 logistics personnel will be required	- Existing rigs mobilized internationally - Drilling season runs about 180 days/yr (approximately 1-2 wells)	- Long-term storage facilities required for well construction materials, consumables, spare parts - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels	- Well construction materials, consumables, personnel mobilized from Goose Bay/Hopedale/Cartwright - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown, - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay - Support vessel mobilization – possible local training for employment as crew

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
Production Facilities							
FPSO	More Likely	$1-2 B (2010 $)	1,300+ personnel (average construction employment)	- About 180 full-time positions (2 shifts of 90 personnel) - Tankers employ 100 people, support craft have 110 crew - 509 persons onshore for support and engineering services	4 years	Installation: - Helicopter/fixed wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply Operations: - Long-term storage facilities required for consumables, spare parts - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels	- Well construction materials, consumables, personnel mobilized from Goose Bay/Hopedale/Cartwright - Provision of goods and services - Long-term shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay - Support vessel mobilization - A transhipment/storage terminal may be required - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations
Floating LNG/CNG Facility	Less Likely	$2 - $3 B (2010 $)	2,000 + personnel (at peak construction)	- About 160 full-time positions on an FLNG/FCNG Facility (2 shifts of 80 personnel)	4 years	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply	- Well construction materials, consumables, personnel mobilized from Goose Bay/Hopedale/Cartwright - Provision of goods and services - Long-term shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
						Operations: - Long-term storage facilities required for consumables, spare parts - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for	- Support vessel mobilization - A transhipment/storage terminal may be required - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations
Gravity-Base Structure	More Likely	$7 + B (2010 $)	5,800 at peak construction	- About 450 offshore personnel including support staff, 3rd party service companies - Onshore support and engineering services employ about 450 people	4+ years	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply Operations: - Long-term storage facilities required for consumables, spare parts - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels	- Well construction materials, consumables, personnel mobilized from Goose Bay/Hopedale/Cartwright - Provision of goods and services - Long-term shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay - Support vessel mobilization - A transhipment/storage terminal may be required - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g.. construction site maintenance, cooks, support staff) - Employment opportunities during operations
Subsea Systems							
Tieback to Offshore Facility	More Likely	$1+ B (2010 $)	N/A	- Expect vessels would come fully crewed however opportunity for local	1 year	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport	- Support vessels during the installation operations - Indirect employment through boat crews, helicopter pilots, support staff

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
				employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)		- Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply	- Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown
Subsea to Shore	More Likely	$1+ B (2010 $)	N/A	- Expect vessels would come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	2+ years	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply	- Support vessels during the installation operations - Indirect employment through boat crews, helicopter pilots, support staff - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown
Subsea System Installation	More Likely	$1+ B (2010 $)	N/A	- Expect vessels would come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	1 year	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply	- Support vessels during the installation operations - Indirect employment through boat crews, helicopter pilots, support staff, - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown
Onshore Processing Facilities							
Oil/Gas Processing/ Storage Facility	More Likely	Approximately $250 MM (2010 $)	- 300-500 at peak construction - Local employment opportunities in construction oversight,	- About 70-100 permanent labour positions and about 30 seasonal maintenance positions (life of project about 25 years)	5 years	- 1,000,000 m^2 for the facility - About 4,000,000 m^2 outside the facility of a required safety zone where habitation is restricted due to potential risks of explosion, discharge - A camp is required to house personnel during construction	- Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice. - Provision of goods and services - Support vessels for transfer of personnel, bunkering and materials handling

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
			skilled trades and support staff.	- A significant camp required to house workers and local employment opportunities for operations and maintenance of the camp		and operations - Mobilization dock to transport goods/personnel by water and provide a port for support vessels/tankers - During construction, storage facilities for installation materials, fuel, consumables, resupply - During operation, long-term storage facilities are required for consumables, spare parts	- Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations - Tankers may be required so docking infrastructure and ice-breaking capability needed
LNG Production/ Transport	Less Likely	$2 - $3 B (2010 $)	- 3,000 personnel - Local employment opportunities in construction oversight, skilled trades and support staff	- About 200-250 people including administration, operation, maintenance and security personnel. (life of project about 25 years) - A camp would be needed to house workers and local employment opportunities for operations and maintenance of the camp	5+ years	-1,000,000 m^2 of fenced territory - About 4,000,000 m^2 of a required safety zone where habitation is restricted due to potential risks of explosion, discharge. - A camp is required to house personnel during construction and operations - Mobilization dock to transport goods/personnel by water and provide a port for support vessels/tankers - During construction, storage facilities for installation materials, fuel, consumables, resupply - During operation, long-term storage facilities are required for consumables, spare parts	- Specialized tankers required so docking infrastructure and ice breaking capability needed - Support vessels for transfer of personnel, bunkering and materials handling - Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice - Provision of goods and services - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations
CNG Production/ Transport	Less Likely	Approximately $300 MM (2010 $)	- 500+ personnel at peak construction - Local	-About 60 permanent labour positions and 35 seasonal maintenance positions (life of	5+ years	- Approximately 1,000,000 m^2 for the facility - About 4,000,000 m^2 outside the facility of a required safety zone where habitation	- Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
			employment opportunities in construction oversight, skilled trades and support staff	project about 25 years) - A camp would be needed to house workers and local employment opportunities for operations and maintenance of the camp		is restricted due to potential risks of explosion, discharge. - A camp is required to house personnel during construction and operations - Mobilization dock to transport goods/personnel by water and provide a port for support vessels/tankers - During construction, storage facilities for installation materials, fuel, consumables, resupply - During operation, long-term storage facilities are required for consumables, spare parts	- Provision of goods and services - Support vessels for transfer of personnel, bunkering and materials handling - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations - Tankers may be required so docking infrastructure and ice-breaking capability needed
Gas to Liquid Production	Less Likely	$5 - $7 B USD (2010 $)	5,000 – 7,000 at peak employment - Local employment opportunities in construction oversight, skilled trades and support staff	- Approximately 250-300 full-time personnel - A camp would be needed to house workers and local employment opportunities for operations and maintenance of the camp	5+ years	- less than 1,000,000m^2 - About 4,000,000 m^2 outside the facility of a required safety zone where habitation is restricted due to potential risks of explosion, discharge - A camp is required to house personnel during construction and operations - Mobilization dock to transport goods/personnel by water and provide a port for support vessels/tankers - During construction, storage facilities for installation materials, fuel, consumables, resupply - During operation, long-term storage facilities are required for consumables, spare parts	- Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice - Provision of goods and services - Support vessels for transfer of personnel, bunkering and materials handling - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations - Tankers may be required so docking infrastructure and ice-breaking capability needed

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
Transport/Export							
Pipelines	More Likely	$1+ B	- Expected the vessels will come fully crewed however opportunity for local employment as Fisheries Liaison Officers (FLOs) or Marine Mammal Observers (MMOs)	- Included in operation of offshore or onshore facilities	1-2 years	Installation: - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - Storage facilities for installation materials, fuel, consumables, resupply	- Support vessels during the installation operations - Indirect employment through boat crews, helicopter pilots, support staff - Provision of goods and services - Shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown
Tankers	More Likely	Most likely leased; possibility of fabrication within NL	- Potential employment opportunities during tanker construction in construction oversight, skilled trades and support staff	- Multiple tankers required - Crew size of each vessel of 20+ personnel	1-2 years	- Long-term storage facilities required for consumables, spare parts - Helicopter/fixed-wing aircraft facility for emergency response and crew transport - Mobilization dock to transport goods/personnel by water and provide a port for support vessels	- Ice breaking support required - Long-term shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Helicopter services for emergency response and crew transport from Goose Bay - Provision of goods and services - Employment opportunities during operations
Transhipment	More Likely	$200 MM + (2010 $)	720 personnel (at peak construction) - Local employment opportunities in construction oversight, skilled trades	About 45 full-time positions (on site and in office) and 20 part-time staff	2 years	- Storage tanks, tankers berths and supporting infrastructure are required. - A camp is required to house personnel during construction and operations	- Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice - Provision of goods and services - Long-term shore-based facilities to resupply, refuel, remove garbage, pump bilges, take on potable water, change crew, install bulk tanks

Scenarios	Likelihood of Occurrence	Overall Value			Time of Operation or to Build/Construct	Footprint in Labrador	Potential Labrador Spin-offs
		Construction Cost	Employment During Construction	Employment During Operation			
			and support staff				and material laydown - Fees for dockage, line handling, trucking, craneage, local transportation, accommodation - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations
Gas or Oil to Wire	Less Likely	Gas - $3.5 B Oil - $8.5 B (2010 $)	Gas–3,000 personnel Oil–7,000 personnel (average construction employment) - Local employment opportunities in construction oversight, skilled trades and support staff	Gas – 120 personnel Oil – 300 personnel	5 years	Gas – 110,000 m^2 Oil – 280,000 m^2 - About 4,000,000 m^2 outside the facility of a required safety zone where habitation is restricted due to potential risks of explosion, discharge - A camp is required to house personnel during construction and operations - Mobilization dock to transport goods/personnel by water and provide a port for support vessels - During construction, storage facilities for installation materials, fuel, consumables, resupply - During operation, long-term storage facilities are required for consumables, spare parts	- Additional equipment required for remoteness: extra fuel storage and spare equipment, fire station, med clinic, extra food and water in case of bad weather, impassable ice - Provision of goods and services - Support vessels for transfer of personnel, bunkering and materials handling - Employment opportunities during construction in both engineering and skilled trades, as well as all the support required during the construction (e.g. construction site maintenance, cooks, support staff) - Employment opportunities during operations

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Appendix B

Survey Questionnaire

(not included in Report)