

**Geophysical Program for Anticosti Basin  
Offshore Western Newfoundland and  
Labrador EL 1120; EL 1128 and EL 1127;  
2012-2018**

**“Project Description”**



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## **1.0 Introduction**

Ptarmigan Energy Inc. hereby proposes to undertake a 600 up to 1000 square kilometers high definition 120 Fold 3D seismic program along with the potential to complete several regional 2D seismic lines totalling up to 500 linear kilometers during the fall of 2012 and winter of 2013; more specifically commencing in September 2012 and perhaps encroaching into as late as February 2013 if there are delays and weather permits. The 2D could be acquired from 2013 to 2018; although Ptarmigan hopes that we will get year round access if we do not we will acquire this data from September to April of each year. The program will be acquired within the geological confines of the Anticosti Basin offshore west coast of Newfoundland and Labrador where Ptarmigan owns the mineral rights to EL 1120 along with recently acquired lands of EL 1127 and EL 1128 (Figure 1).

This project description and report provides the necessary information and preamble to allow the Canada Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) to complete its responsibilities under the Canadian Environmental Assessment Act Federal Coordination Regulations. The information provided in this report will receive scoping advice from the review by the C-NLOPB and other agencies of Federal and Provincial jurisdictions and stakeholders which will establish the proper screening level for the currently ongoing Environmental Assessment being undertaken by Stantec Engineering of St. John's NL.

The C-NLOPB can provide Authorization to conduct a geophysical program to Ptarmigan and its partners as described in this report in accordance with their mandate outlined in the Atlantic Accord Implementation Acts.

Offshore geophysical surveys with marine federal waters are subject to review under the Canadian Environmental Assessment Act (CEA). As part of this review process an Environmental Assessment must be completed.

The C-NLOPB will be the Federal environmental assessment coordinator (FEAC) under the current proposed operations. This seismic survey activity may potentially have an impact on marine mammals, seabirds, fish, commercial fisheries and oceans. Relevant agencies and legislation related to this project include Canada-Newfoundland Atlantic Accord Implementations Acts, Canadian Environmental Assessment Act, Oceans Act, Fisheries Act, Navigable Waters Act, Canada Shipping Act, Migratory Birds Act and Species at Risk Act (SARA).

The specific project where activity will occur during said operations over the next couple of years are outlined in Figure 1. These works are designed to evaluate the potential for hydrocarbons accumulations of economic proportions with lands currently owned by Ptarmigan and its joint venture partners.

Although Ptarmigan has currently considered a contract operator to undertake the 3D seismic program namely Petroleum Geoservices Inc. (PGS) Ptarmigan may consider another operator for the possible 2D seismic coverage and may change the 3D operator depending on future developments that may occur beyond Ptarmigan’s ability to resolve. This report is being compiled with the best available information during the time of writing. The environmental Assessment will encompass all lands outlined in figure 1.

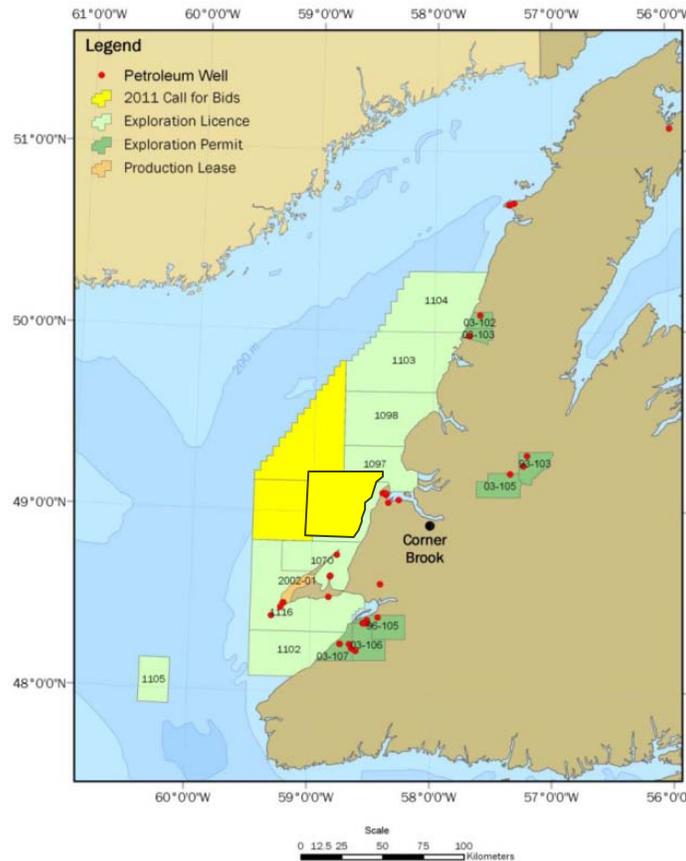


Figure 1 Location of the Project area include all lands in yellow owned by Ptarmigan Energy. These lands are located within 25 kilometers of Corner Brook which will be considered a supply depot for the seismic survey vessel. The lands in yellow include EL 1120, NL11-01 (EL 1128) and NL11-02 (EL 1127).

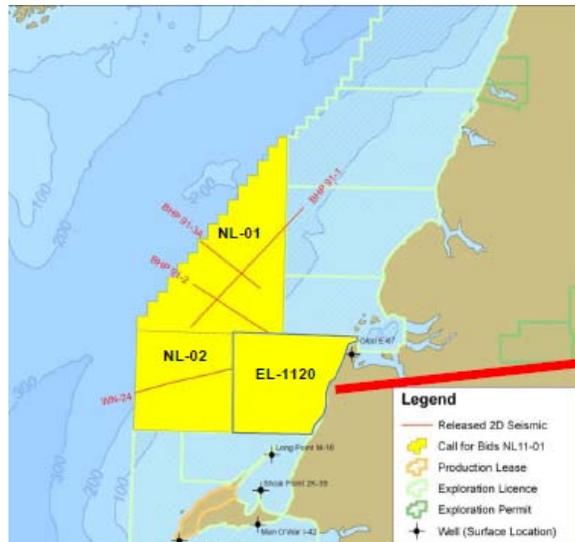


Figure 2 Shows outline of project lands which include EL 1120; NL-01 (EL 1127) and NL -02 (EL 1128). Besides the proposed 3D coverage PEI may consider acquiring additional regional 2D Seismic over the recently acquired NL -01 and NL -02 exploration licenses to complement data it already has acquired from purchase of the 1991 BHP data shown on map.

## **2.0 Operator**

Ptarmigan Energy Inc. is a privately held junior oil and gas exploration company focused exclusively on offshore Western Newfoundland, Canada. The Company has a solid management team that has been involved in the region since the 1980s. Its head office is in St. John's, NL and it maintains a presence in Calgary, Canada. The company was incorporated in NL November 13, 2009.

Ptarmigan Energy's vision is to be a leading and responsible industry player in facilitating the discovery and commercial production of oil resources offshore Western Newfoundland. Its strategy is to seek a farm-out arrangement to further explore six large and separate structures along with an emerging sub-crop stratigraphic play identified (in shallow water (30m)) within its 494,088 ha (1,224,724 acres) EL 1120, NL-01 (EL 1127) and NL-02 (EL 1128) parcels. The region is actively being explored and is generally described as a Cambro-Ordovician platform play in a similar setting to the Ellenburger and Arbuckle Petroleum Fields along the prolific Eastern North American paleo-margin.

Ptarmigan has been one of the more active operators on the West coast of NL whereby it has just completed a farm out arrangement with Shoal Point Energy and is currently moving forward with the acquisition of a 600 up to 1000 square kilometer 3D and has plans to be drilling within the next two years. PEI was also the successful bidder at the November 15, 2011 land sale acquiring both concessions posted on the west coast of NL.

## **2.1 Operators Objectives**

Ptarmigan's overall goals are to increase its position in the Anticosti Basin on the west coast of NL which it has recently achieved. Potentially establish a joint venture partner to share in capital requirements to carry the acquisition of a 3D seismic program, acquisition of possible regional 2D data, drill an exploration well and with success develop said discovery.

The goals surrounding the acquisition of the 3D are to execute a cost effective program from Corner Brook, while being aware of the strict policies surrounding the health, safety and environmental concerns. Establish cost effective and positive relationships with suppliers and contractors which will create longer term benefits to the local community and local infrastructure.

The 3D program will complement our existing 2D seismic coverage and will definitively confirm and optimise, reducing the risk associated with our initial location for our first offshore exploration well.

## **2.2 Health, Safety and Environment Requirements**

Although Ptarmigan Energy is recognised as the bona fide operator of EL 1120, NL11-01 and NL11-02 we will be sub-contracting the acquisition of the 3D to PGS (Petroleum Geoservices). Ptarmigan undertook proper protocol pertaining to procurement processes and chose PGS which will acquire the program for \$22 Million and commence operations in September or October 2012.

PGS further acknowledges Ptarmigan commitment to providing a safe, healthy and Environmentally sound workplace for employees, contractor and subcontractors. PGS is similarly committed, as testified by the following extract from our Corporate HSEQ Policy statements. A bridging document between the contractor and operator will be declared.

"PGS is committed to manage its business in such a way that it minimizes the risk to the health and safety of its employees and any other persons on whom it may impact and minimize the risk of damage or harm to the environment and wildlife. This commitment is recognized to be in the best interest of all PGS stakeholders and is essential for the long term business success of the organization."

Guided by PGS' Core Values and Corporate Social Responsibility principles, PGS has maintained its leading position within health, safety, environmental and quality measures prior to, and throughout the period 2006 to 2010. We have received recognition for system excellence and continuous improvement efforts throughout this period. PGS confirms it operates a comprehensive HSEQMS which complies fully with all required regulatory processes, including those of the C-NLOPB. The system is continuously reviewed for HSEQ improvement opportunities and is regularly subject to detailed auditing by many of PGS' leading clients worldwide.

As operator Ptarmigan will be establishing its own HSE (Health Safety and Environment) and SOP (Standard operating procedures) manuals which will provide the foundation for a bridging document between PGS and PEI.

### **2.3 Canada-Newfoundland & Labrador Benefits**

PGS and PEI acknowledges C-NLOPB's requirement for interested parties to comply with Section 45 of the Canada-Newfoundland Atlantic Accord Implementation Act and confirms its readiness to comply with the provisions contained therein.

Ptarmigan is also committed to improving the communities whereby it operates by providing supporting charitable and community groups. Dialogues with the communities are a necessary mandate to allow stakeholders to be aware of our operations in the format of open houses in affected communities.

### **2.4 Operator Contacts:**

Below is the contact information pertaining to this application:

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## **3.0 Proposed Project**

### **3.1 Location of 3D Program and Scheduling:**

The acquisition program for the up to 1014 square kilometer high definition 3D includes a ship borne seismic program which will occur within the confines of EL 1120 as outlined in Figure 3

showing the bathymetry map over the EL except where the vessel requires to turn on the northern and southern boundaries of the planned survey there will be encroachment of up to 5 additional kilometres into the adjacent EL's to facilitate the turns. Water depths will be restricted to those in excess of 25 meters to accommodate the streamer length, draft of vessel and source depth. Figure 4 shows the planned acquisition outline.

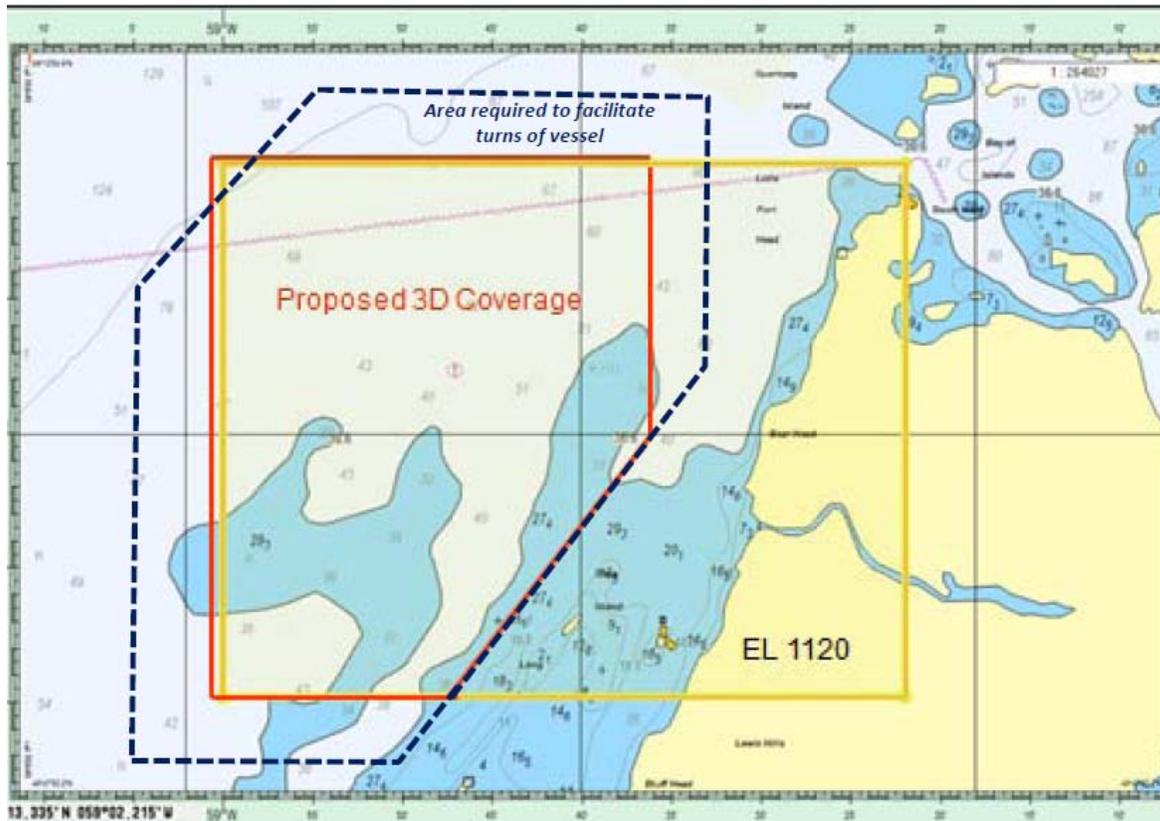


Figure 3 shows the outline of the proposed 3D coverage within EL 1120. Data will be acquired in water depths beyond 25 meters as shown in the bathymetry map above. The area dashed blue includes additional area required to allow turning of seismic vessel. Encroachment on the west side will be into PEI lands.

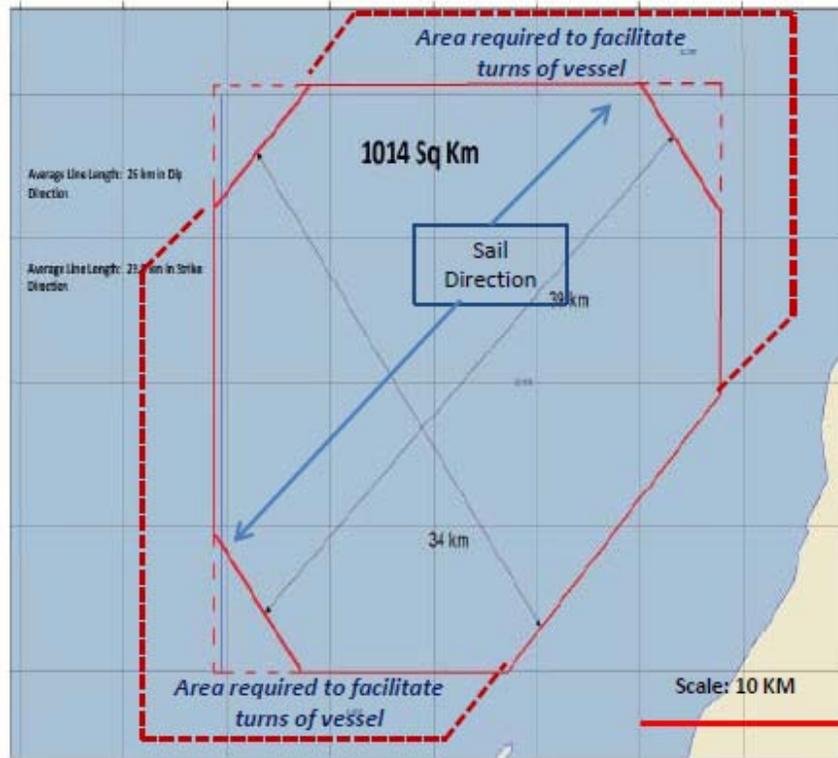


Figure 4 shows the planned acquisition outline which will have the data acquired in the strike direction parallel to shoreline in order to reduce the number of turns required by the seismic vessel as well as the additional area (red dashed) required facilitating turns of the vessel. The program will have an average line length of 26 km in dip direction and average line length of 29.8 km in the strike direction. Total program will be 1014 square kilometers.

In addition to the proposed 3D program which commence in September or October 2012 Ptarmigan may also acquire over EL 1127 and EL 1128 up to 500 additional linear 2D seismic data during 2013 and up to 2018. Although it is planned that we will have all year round access, if we do not, we will be conducting seismic from September to April of each year. The environmental assessment being compiled by Stantec Engineering of St. John's will encompass these lands.

Mitigation policies by Ptarmigan and PGS will include committed fulltime Marine Mammal Observers during starts and ramp up periods of the seismic array in order to avoid disturbances to marine life including species at risk; if present. A fisheries liaison officer will also be engaged to avoid conflicts or disturbance of any fisheries that may be present during the time of the acquisition. All of these concerns and issues will be addressed in detail within the confines of our Environmental Assessment.

### **3.2 Proposed Vessel:**

The proposed vessel could be the M/V Atlantic Explorer (or similar vessel). This vessel is an example of a vessel that may be used for the operations; however Ptarmigan may use any other vessel that can fulfil the acquisition parameters required by Ptarmigan. The vessel will arrive in St. John's as part of Mob and de-mob from Norway but may also arrange for additional supplies from Corner Brook. Details of the vessel specifications will be provided by PGS as part of their application process. The Atlantic Explorer or other vessel will come equipped with 6 (six) 6,000 meter Geostreamers and will be using the Bolt LLXT 3090 cubic inch airgun.



Figure 5 is a photo of the proposed seismic vessel the PGS operated MV Atlantic Explorer as an example of what may be used or a similar vessel. The vessel will be rigged with a six streamer (Geostreamer) at a length of 6 kilometres. Streamer depth will be set 15 meters. The source will be at 7m using a source volume of 3090 cubic inches. The shot point interval will be 25 meters resulting in a fold of 120. The recording length will be 6 seconds. The expected line change time will be 2.7 hours and the average line length will be 29.8 km resulting in 113 sail lines. The entire 1014 km square km will take 54 days to complete.



Mobilisation Port will be St. Johns and Corner Brook

Start date is September 2012

Includes PGS PSTM data processing

Budgetary Total Cost Estimate: \$22.0 M

### **3.4 Specific Plans for 2012**

Ptarmigan intends to submit its application to the C-NLOPB for proper authorisation to conduct a 3D seismic program on EL 1120 during the fall of 2012 (expected to be September to December; however may encroach into January and February of 2013 if weather permits) as part of its overall exploration program.

It is the intent of Ptarmigan to undertake the complete proposed 3D seismic coverage as outlined in Figure 3 but due to unforeseen circumstances associated with water depths the program may be reduced in size.

### **3.5 Future Well site and Sea bed Hazard Surveys:**

Upon completion of the 3D interpretation and a potential drilling location is identified it is normal industry protocol and requirement by the C-NLOPB that a well site sea bed hazard survey be conducted. The purpose of this geo-hazard seabed survey is to avoid any potential drilling hazards such as unstable substrate and or shallow gas pockets. This will be critical to Ptarmigan as we plan to use a jack up rig with its legs secured to the sea bed due to water restrictions.

The survey will address surficial data by using video and coring. Also high resolution multi-channel seismic data will be used along with sea bed imagery for the clearance survey.

### **3.6 Logistics and Support:**

As noted in the body of the text the principal vessel will be the seismic survey vessel. As part of Ptarmigan's mitigation plan there will also be a standby or chase vessel to monitor fisheries

activities during the acquisition. This will prevent lost fishery gear and also to warn other seaward traffic in the path of said vessel.

The seismic vessel being used by PGS will have a helicopter pad which will be used to assist in crew changes. The survey contractors will be responsible for arranging for helicopter support if needed.

The shore base will initially commence with St. Johns upon the initial arrival of the vessel; but during the acquisition it may from time to time be using Corner Brook to acquire supplies.

As for waste management aboard the seismic vessels it will be implemented in a manner consistent with Ptarmigans and PGS's waste management policies.

## **4.0 PROJECT SITE INFORMATION**

### **4.1 ENVIRONMENTAL FEATURES**

The project has the potential to interact with air, water, species at risk, fish and fish habitat, marine birds, benthic invertebrates, marine mammals, sea turtles, and commercial fisheries through noise disturbance, emission and discharges (routine and accidental), and presence of vessels in the area. The proposed Project in the Ptarmigan licenses (EL 1120, EL 1127 and EL 1128) occurs within a small section of a designated ecologically and Biologically Significant Area (EBSA) (#10, West Coast of Newfoundland. There are also three designated Important Bird Areas (IBAs), as well as important lobster spawning and nursery grounds in western Newfoundland. A description of the physical and biological environment for the Project Area and potential Project interactions will be provided in the EA Environmental Assessment which will be provided by Stantec Engineering upon review of this work program application followed by a scoping document provided by the C-NLOPB.

Besides the EA there is also a recently completed Strategic Environmental assessment SEA for the region in general commissioned by the C-NLOPB.

### **4.2 Valued Ecosystems Components (VEC):**

The VEC will include marine birds, fish and fish habitat, commercial fisheries, marine mammals and sea turtles. Recent legislative developments will include the identification and evaluation of "species at risk" will also be part of the detailed EA.

### **4.3 Fish and Fish Habitat:**

The fish species present within the outlined project area of activity and the other associated species and habitats that support these fish and mammals are expected to be those typical of the region. The details will be described and summarized within the confines of the EA.

**4.4 Species at Risk:**

The species at risk (according to their Schedule 1 status under the *Species at Risk Act* [SARA]) that could potentially occur in the Project Area are listed in the Table 1. Species that are not on SARA schedule 1 that have been designated as *endangered, threatened, or special concern* species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and could potentially occur in the Project area are listed in Table 3.2. There are sixteen SARA listed species and 32 additional species listed as at risk by COSEWIC that could potentially occur in the Project area (PTARMIGAN LICENSES). The likelihood of occurrence is provided in the tables. A more detailed analysis will be carried out during preparation of the EA.

**Table 1 Schedule 1 Species at Risk (SARA) that could Potentially Interact with the Project**

Common Name	Scientific Name	SARA Schedule 1 Status	Occurrence in Relation to Project
Blue whale	<i>Balaenoptera musculus</i>	Endangered	Low potential for occurrence. Rare species. Forages for krill in both coastal and offshore areas of the northern Gulf of St. Lawrence and eastern Nova Scotia during spring, summer and fall. May migrate through the Gulf and western Newfoundland waters during these months
North Atlantic Right whale	<i>Eubalaena glacialis</i>	Endangered	Low potential for occurrence. Rare species. Occurs very occasionally in the Gulf during late summer (north shore and east of Gaspé) where it forages for copepods
Northern Bottlenose whale	<i>Hyperoodon ampullatus</i>	Endangered	Low potential for occurrence. Deep water species. Scotian Shelf population occurs very occasionally in the Gulf during late summer (north shore and east of Gaspé) where it forages for copepods
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	Moderate potential for occurrence. Forages along the Scotian Shelf and in the southern Gulf of St. Lawrence from June to October, mainly feeding on jellyfish

White Shark (Atlantic population)	<i>Carcharodon carcharias</i>	Endangered	Low potential for occurrence. Rare in Canadian waters (32 records in 132 years). Most records are located within the Bay of Fundy. Extremely rare as far north as Project.
Ivory Gull	<i>Pagophila eburnean</i>	Endangered	Low potential for occurrence. May occur in the Gulf during winter months, on pack ice, both offshore and in coastal areas
Eskimo curlew	<i>Numenius borealis</i>	Endangered	Very low potential for occurrence. Likely extinct and extremely unlikely to be encountered in the Gulf
Piping plover subspecies melodus	<i>Charadrius melodus melodus</i>	Endangered	Low potential for occurrence. Breeds and forages on Atlantic Canada beaches during summer, including in western Newfoundland
Horned grebe	<i>Podiceps auritus</i>	Endangered	Low potential for occurrence. Small (average approximately 15 adults), isolated population exist on the Magdalen Islands during summer months where they breed and feed. Wintering grounds are unknown but likely along the mainland Atlantic coastline
<b>Common Name</b>	<b>Scientific Name</b>	<b>SARA Schedule 1 Status</b>	<b>Occurrence in Relation to Project</b>
Roseate tern	<i>Sterna dougallii</i>	Endangered	Low potential for occurrence. Occurs in low numbers at several remote islands in NS, NB and on the Magdalen Islands from April-early August, where they nest. This species exhibit high site fidelity; unlikely to occur in Newfoundland.
Beluga whale (St. Lawrence Estuary population)	<i>Delphinapterus leucas</i>	Threatened	Low potential for occurrence. The St. Lawrence Estuary represents the southern limit for belugas, however individuals and small groups are occasionally sighted in coastal Atlantic Canada waters, including the Gulf and western Newfoundland
Northern wolffish	<i>Anarhichas denticulatus</i>	Threatened	Low potential for occurrence. May occur along the slope of the Laurentian Channel. Most commonly found inhabiting the seafloor in water depths of 500 to 1,000 m
Spotted wolffish	<i>Anarhichas minor</i>	Threatened	Low potential for occurrence. May occur along the slope of the Laurentian Channel though populations are declining. Most commonly found inhabiting the seafloor in water depths of 200 to 750 m

Atlantic (striped) wolffish	<i>Anarhichas lupus</i>	Special Concern	Low potential for occurrence. May occur along the slope of the Laurentian Channel and the coast of western Newfoundland. Most commonly found inhabiting the seafloor in water depths of 150 to 350 m. In Fall, undertake short migrations to shallow waters to spawn
Fin whale (Atlantic population)	<i>Balaenoptera physalus</i>	Special Concern	Moderate potential for occurrence. Concentrated in the Northwest Atlantic region during summer months where they feed along oceanic fronts, including in western Newfoundland. Presence in EL 1120 would likely be transient
Sowerby's Beaked whale (Atlantic population)	<i>Mesoplodon bidens</i>	Special Concern	Low potential for occurrence. The distribution of beaked whales such as this species are not well known, but tend to be concentrated in deep waters along the edge of continental shelf and slope. Species may be uncommon.
Harlequin duck (Eastern population)	<i>Histrionicus histrionicus</i>	Special Concern	Low potential for occurrence. Forage in nearshore marine waters during summer, fall, and winter. Prefer offshore islands, coastal headlands and exposed rocky coastlines during winter and move inland to rivers during spring for breeding. Could occur off western Newfoundland and in coastal areas of the Gulf year-round
<b>Common Name</b>	<b>Scientific Name</b>	<b>SARA Schedule 1 Status</b>	<b>Occurrence in Relation to Project</b>
Barrow's Goldeneye	<i>Bucephala islandica</i>	Special Concern	Low potential for occurrence. Breeds on high altitude lakes. In the non-breeding (summer) season, occur in coastal areas

**Table 2 Species Designated ‘At Risk’ by the Committee of the Status of Endangered Wildlife in Canada that occur in the Gulf of St. Lawrence**

Common Name	Species Name	COSEWIC Designation	Occurrence in Relation to Project
<b>Marine Fish</b>			
Atlantic Cod (Laurentian North population)	<i>Gadus morhua</i>	Endangered	High potential for occurrence. Benthopelagic species that inhabit coastal waters as juveniles. Adults prefer deeper waters up to 500 m. Resident populations are located within the coastal waters of Newfoundland. Eggs and larvae may be present in upper water column from May to April
Atlantic Cod (Laurentian South population)		Endangered	Moderate potential for occurrence. Benthopelagic species that migrates from the southern Gulf to the waters of Cape Breton between May to October. Eggs and larvae may be present in upper water column from May to April
Atlantic Cod (Newfoundland and Labrador population)		Endangered	Low potential for occurrence. Atlantic cod from this population inhabit waters from the Northern tip of Labrador to the Southern Grand Banks
Atlantic Cod (Southern population)		Endangered	Low potential for occurrence. Atlantic cod from this population inhabit waters from the Bay of Fundy and Southern Nova Scotia to the southern extent of the Grand Banks
Winter Skate (Southern Gulf of St. Lawrence population)	<i>Leucoraja ocellata</i>	Endangered	Moderate potential for occurrence. Located within the southern Gulf, Scotian Shelf and Georges Bank. Closely associated with the seafloor and commonly inhabits waters 100 m in depth. Could occur at any time of the year. Non-migratory spawning occurs in fall. Eggs and larvae may be present up to 22 months after spawning
Winter Skate (Eastern Scotian Shelf population)		Threatened	Low potential for occurrence. Located on Eastern Scotian Shelf. Closely associated with the seafloor and commonly inhabits waters 100 m in depth
Winter Skate (Northern Gulf-Newfoundland population)		Data Deficient	Low potential for occurrence. Limited data on this population but appears to be a small population on Northern Gulf. Closely associated with the seafloor and commonly inhabits waters 100 m in depth
Roundnose Grenadier	<i>Coryphaenoides rupestris</i>	Endangered	Low potential for occurrence. Closely associated with the seafloor commonly found inhabiting waters 800 to 1,000 m in depth. Could occur at any time of the year. Non-migratory spawning occurs in fall
Porbeagle Shark	<i>Lamna nasus</i>	Endangered	Moderate potential for occurrence. Migrant in Atlantic Canadian waters. May be found in Project Area from May to December and are most often caught in water depths of 35 to 100 m
Atlantic Salmon (Anticosti island population)	<i>Salmo salar</i>	Endangered	Low potential for occurrence. Juvenile Atlantic salmon migrating from freshwaters streams to the North Atlantic may pass through Project Area, with any presence being transient in nature
Atlantic Bluefin Tuna	<i>Thunnus thynnus</i>	Endangered	Moderate potential for occurrence. Atlantic Bluefin tuna migrate into the Gulf following food stocks in July through December. Forms schools of <50 individuals.

Common Name	Species Name	COSEWIC Designation	Occurrence in Relation to Project
Deepwater Redfish (Gulf of St. Lawrence - Laurentian Channel population)	<i>Sebastes mentalla</i>	Endangered	Low potential for occurrence. Closely associated with the seafloor and commonly found inhabiting waters 350 to 500 m in the Gulf/Laurentian Channel. Mature individuals expected to occur in project area from May to October. Spawning occurs in fall.
Atlantic Salmon (South Newfoundland population)	<i>Salmo salar</i>	Threatened	Low potential for occurrence. Juvenile Atlantic salmon migrating from freshwaters streams to the North Atlantic may pass through Project Area, with any presence being transient in nature
Deepwater Redfish (Northern population)	<i>Sebastes mentalla</i>	Threatened	Low potential for occurrence. Closely associated with the seafloor, commonly found inhabiting waters 350 - 500 m in depth from the Grand Banks to Northern Labrador
Acadian Redfish (Atlantic population)	<i>Sebastes fasciatus</i>	Threatened	Low potential for occurrence. Closely associated with the seafloor and commonly found inhabiting waters 150 to 300 m. Mature individuals expected to occur in project area from May to October. Spawning occurs in fall. Larvae may be present in water column May to August
Shortfin Mako	<i>Isurus oxyrinchus</i>	Threatened	Low potential for occurrence. A pelagic species which migrates north following food stocks (i.e., mackerel, herring, tuna) and may pass through Project Area. Any occurrence would be transient in nature
American plaice (Maritime population)	<i>Hippoglossus platessoides</i>	Threatened	Moderate potential for occurrence. Closely associated with the seafloor and commonly found at depths of 100 to 200 m where soft sediments are present. The Maritime population is common to the Gulf and may be present within Project Area. Spawning occurs in April/May. Larvae may be present in the water column between May and June
American plaice (Newfoundland and Labrador population)	<i>Isurus oxyrinchus</i>	Threatened	Low potential for occurrence. Closely associated with the seafloor commonly and found at 100 to 200 m where soft sediments are present. The Newfoundland and Labrador population is located from the Grand Banks north to the northern tip of Newfoundland
Striped Bass (Southern Gulf of St. Lawrence population)	<i>Marone saxatilis</i>	Threatened	Low potential for occurrence. Evidence suggests that populations currently exist in only two Canadian rivers: the Shubenacadie which flows into the Bay of Fundy; and the Miramichi River in the southern Gulf of St. Lawrence. The Gulf population is considered extirpated.
Cusk	<i>Brosme brosme</i>	Threatened	Low potential for occurrence. Commonly found between the Gulf of Maine and southern Scotian Shelf. Rare along the continental shelf off Newfoundland and Labrador. Very rare within the Gulf.
Atlantic Salmon (Gaspé-Southern Gulf of St. Lawrence population)	<i>Salmo salar</i>	Special Concern	Low potential for occurrence. Juvenile Atlantic salmon migrating from freshwater streams to the North Atlantic may pass through Project Area, with any presence being transient in nature
Atlantic Salmon (Québec Eastern North Shore population)	<i>Salmo salar</i>	Special Concern	Low potential for occurrence. Juvenile Atlantic salmon migrating from freshwater streams to the North Atlantic may pass through Project Area, with any presence being transient in nature

Common Name	Species Name	COSEWIC Designation	Occurrence in Relation to Project
Atlantic Salmon (Québec Eastern North Shore population)	<i>Salmo salar</i>	Special Concern	Low potential for occurrence. Juvenile Atlantic salmon migrating from freshwater streams to the North Atlantic may pass through Project Area, with any presence being transient in nature
Spiny Dogfish (Atlantic population)	<i>Squalus acanthias</i>	Special Concern	Low to moderate potential for occurrence. Commonly found from the intertidal zone to the continental slope in water depths up to 730 m. Most abundant between Nova Scotia and Cape Hattaras, NC
Blue Shark (Atlantic population)	<i>Prionace glauca</i>	Special Concern	Moderate during summer and late fall, low potential for occurrence at other times of year. Commonly found in pelagic waters in water depths up to 350 m. Most abundant along the coast of Nova Scotia, and out on the Scotian Shelf
Basking Shark (Atlantic population)	<i>Cetorhinus maximus</i>	Special Concern	Moderate potential for occurrence during May-September, otherwise very low. Found in offshore waters and coastal waters of Newfoundland, concentrated between Port aux Basques and Hermitage. May be present within Project Area feeding on plankton during summer
American Eel	<i>Anguilla rostrata</i>	Special Concern	Low to moderate potential for occurrence. Adult American eels migrating from freshwater streams to the Sargasso Sea; or rearing on the continental shelf may occur within or near Project Area
Atlantic Sturgeon (Great Lakes/Gulf of St. Lawrence Populations)	<i>Ancipenser oxyrinchus</i>	Threatened	Low potential for occurrence. Highly migratory species capable of traveling great distances. Populations are spread out along the east coast of North America and over the continental shelf regions to at least 50 m depths, and therefore may pass through Project Area, with any presence being transient in nature
Atlantic Sturgeon (Maritimes Populations)	<i>Anguilla rostrata</i>	Threatened	Low potential for occurrence. Highly migratory species capable of traveling great distances and are spread out along the east coast of North America and over the continental shelf regions to at least 50 m depths, therefore may pass through Project Area, with any presence being transient in nature
<b>Marine Mammals</b>			
Harbour Porpoise (Northwest Atlantic population)	<i>Phocoena phocoena</i>	Special Concern	Moderate potential for occurrence. Occurs in both offshore and coastal waters of the Gulf and Newfoundland. Occurs regularly in coastal bays and inlets during summer and can move rapidly following prey or stay in areas where food is abundant for periods of time
Killer Whale	<i>Orcinus orca</i>	Special Concern	Low potential for occurrence. Distribution is not well documented, but orca are a widespread, far-ranging species. Sightings in this region are reported most commonly in the offshore and coastal waters of Newfoundland, including western Newfoundland
Northern Bottlenose Whale (Davis Strait-Baffin Bay-Labrador Sea Population)	<i>Hyperoodon Ampullatus</i>	Special Concern	Low potential for occurrence. The Northern bottlenose whale is confined to the waters of the northern Atlantic Ocean, with this population concentrated in deep areas of Davis Strait and northern Labrador. More survey effort is needed to fully describe the distribution and abundance of Northern bottlenose whales in Canada, particularly in the northern part of its distribution and around Newfoundland.

Common Name	Species Name	COSEWIC Designation	Occurrence in Relation to Project
<b>Sea Turtles</b>			
Loggerhead Sea Turtle	<i>Caretta caretta</i>	Endangered	Low potential for occurrence. Widely distributed in pelagic (>200 m) waters feeding, particularly on jellyfish. Juveniles concentrate along the edge of the Gulf Stream. Occurs in the offshore parts of the Scotian Shelf and Grand Banks, particularly in summer months

#### **4.5 Fish and Commercial Fisheries**

The marine waters of the Gulf support many species of marine fish and shellfish. One of the main reasons for this diversity is the presence of warm, productive waters in the summer followed by cold, ice-covered waters during the winter. Approximately 20 species of marine fish are currently or have historically been fished commercially or experimentally in the Gulf (DFO 2005).

Fish habitat in the Gulf is divided into shelf habitat (<200m) and deep channels. The shallow waters along the shelf areas are characterized by warm, highly productive waters in the summer, and are utilized as feeding, nursing and spawning grounds for many species of both demersal and pelagic fish, as well as shellfish. The highly productive, warm water areas also serve as important feeding areas for marine fish that migrate seasonally to the area seeking prey (e.g. Spiny dogfish, Bluefin tuna).

During the winter, the waters in the shelf areas become cold and subject to ice formation. As a result, the majority of fish that feed in these areas during summer migrate prior to winter. Spiny dogfish and mackerel migrate completely out of the Gulf to more southern areas, whereas other species, including Atlantic herring, Atlantic cod, White hake, American plaice, Witch flounder and Thorny skate, stay within the Gulf, but move into the deeper, warmer waters of the Laurentian Channel and slope. Some of these species remain in this area for the entire winter, while others (Atlantic cod and Atlantic herring) migrate to the entrance of the Laurentian Channel in Cabot Strait (Dufour and Ouellet 2007). The warmer, deep waters of the Laurentian Channel and slope also serve as feeding, nursing and spawning grounds for certain deep-water and slope species, including Redfish, Greenland halibut and Witch flounder.

A Cod Spawning Area was established by DFO in 2002 in the area west of Port au Port Peninsula (48° 15'N, 59° 20'W; 49° 10'N, 59° 20'W; 49° 10'N, 60° 00'W; 48° 15'N, 60° 00'W). This area is closed to all groundfish fishing between April 1 and June 15 to avoid the peak spawning period.

There are two main types of marine fish present in the Gulf: pelagic fish, those that live and feed close to the surface; and demersal or groundfish, those that live and feed close to the bottom. Approximately two-thirds of all marine fish species known to occur in the Gulf are demersal. A list of the most commonly marine fish known to inhabit the Gulf in the vicinity of the proposed Project Area are presented in Table 5.

**Table 3 Summary of Fish Species with the Potential to Occur in the Project Area**

Common Name	Latin Name	Relative Level of Occurrence in the Project Area	Potential Presence in the Project Area
Atlantic Argentine	<i>Argentina silus</i>	Low	Year round
Atlantic Hagfish	<i>Myzine glutinosa</i>	Moderate	Year round
Atlantic Herring	<i>Clupea harengus</i>	Moderate	Year round; Fall Spawning
Atlantic Mackerel	<i>Scomber scombrus</i>	Low	Migrate inshore in the spring; occupy moderately deep waters in winter.
Atlantic Salmon	<i>Salmo salar</i>	Low	Year round (adults)
Blue Shark	<i>Prionace glauca</i>	Low (anticipated)	Near surface in temperate waters.
Bluefin Tuna	<i>Thunnus thynnus thynnus</i>	Low (anticipated)	Migrate in to feed; leave October
Capelin	<i>Mallotus villosus</i>	Low	Mature fish migrate inshore in summer (to spawn)
Porbeagle Shark	<i>Lamna nasus</i>	Low (anticipated)	More common in Canadian waters in spring, summer and fall.
Smooth Skate	<i>Raja senta</i>	Moderate	Year round
Thorny Skate	<i>Raja radiata</i>	High	Year round
Winter Skate	<i>Raja ocellata</i>	Low	Year round
American Plaice	<i>Hippoglossus platessoides</i>	High	Year round
Atlantic Cod	<i>Gadus morhua</i>	High	Year round
Atlantic Halibut	<i>Hippoglossus hippoglossus</i>	Moderate	Migrate to shallow waters in summer, return for winter
Atlantic Hookear Sculpin	<i>Artediellus atlanticus</i>	Low	Year round; Fall spawning
Atlantic Softpout	<i>Melanostigma atlanticum</i>	Moderate	Year round
Atlantic Wolffish	<i>Anarhichas lupus</i>	Low	Year round; Fall spawning
Black Dogfish	<i>Centroscyllium fabricii</i>	Moderate	Year round
Checker Eelpout	<i>Lycodes uahi</i>	Low	Year round
Deepwater Redfish	<i>Sebastes mentella</i>	High	Year round; Fall spawning

Common Name	Latin Name	Relative Level of Occurrence in the Project Area	Potential Presence in the Project Area
Acadian Redfish	<i>Sebastes fasciatus</i>	High	Year round; Fall spawning
Fourbeard Rockling	<i>Enchelyopus cimbrius</i>	Low	Year round
Greater Eelpout	<i>Lycodes esmarki</i>	Low	Year round
Greenland Halibut	<i>Reinhardtius hippoglossoides</i>	High	Year round
Haddock	<i>Melanogrammus aeglefinus</i>	Low	Move to deeper water in winter; inhabit shallow banks in summer
Longfin Hake	<i>Urophycis chesteri</i>	High	Year round; Fall spawning
Lumpfish	<i>Cyclopterus lumpus</i>	Moderate	Migrate to shallow waters to spawn, return during Fall
Marlin-spike Grenadier	<i>Nezumia bairdi</i>	High	Year round; Fall spawning
Monkfish (goosefish)	<i>Lophius americanus</i>	Moderate	Year round
Northern Wolffish	<i>Anarhichas denticulatus</i>	Low	Year round; Fall spawning
Polar Sculpin	<i>Coltunculus microps</i>	Low	Year round
Pollock	<i>Pollachius virens</i>	Low	Migrate inshore during summer, winter offshore; Fall spawning
Roundnose Grenadier	<i>Coryphaenoides rupestris</i>	Low	Year round; Fall spawning
Roughhead Grenadier	<i>Macrourus berglax</i>	Moderate	Year round
Sea Raven	<i>Hemitripterus americanus</i>	Low	Year round; Fall spawning
Shortfin Mako	<i>Isurus oxyrinchus</i>	Low (anticipated)	Year round
Silver Hake	<i>Merluccius bilinearis</i>	Low	Year round
Spiny Dogfish	<i>Squalus acanthias</i>	Low	Present off southwestern NL in June, moves to southern Labrador late summer
Spotted Wolffish	<i>Anarhichas minor</i>	Low	Year round; Fall spawning
Threebeard Rockling	<i>Gaidropsarus ensis</i>	Low	Year round
White Barracudina	<i>Notolepis rissoi</i>	Moderate	Year round
White Hake	<i>Urophycis tenuis</i>	High	Year round
Windowpane Flounder	<i>Scophthalmus aquosus</i>	Low	Year round
Witch Flounder (greysole)	<i>Glyptocephalus cynoglossus</i>	High	Year round
Wrymouth	<i>Cryptacanthodes maculatus</i>	Low	Year round

Common Name	Latin Name	Relative Level of Occurrence in the Project Area	Potential Presence in the Project Area
Yellowtail Flounder	<i>Limanda ferruginea</i>	Low (anticipated)	Move from shallow to deep waters in the Fall

## 5 OTHER USERS

### 5.1 Marine Traffic

Some commercial shipping occurs in western Newfoundland, nationally through the ports of Corner Brook and Stephenville, and internationally through the Strait of Belle Isle. Traffic is busiest during summer when European traffic uses the Strait of Belle Isle. There is also local boat traffic in the area of the Project, the majority of which are fishing vessels. Sections of the Gulf have busy shipping routes to and from the St. Lawrence River.

The DFO Science Advisory Schedule will be accessed online (<http://www.meds-sdmm.dfo-mpo.gc.ca/csas-sccs/applications/events-evenements/index-eng.asp>) prior to the fall 2012 survey to determine if there are any DFO activities scheduled to overlap with the Project.

There is no known military use of the Project area.

### 5.2 Oil and Gas

Several exploration licenses exist in the coastal waters of Western. Any other geophysical programs will not overlap with the proposed seismic survey, as other surveys would interfere with data collection.

### 5.3 Commercial Fisheries

Management of the commercial fishing activity in the Gulf is by Fisheries and Oceans Canada (DFO) regional offices in Quebec, the Maritimes, the Gulf, and Newfoundland, using Northwest Atlantic Fisheries Organization (NAFO) divisions and subdivisions. Many of the major species are managed according to quota systems, and licensing, seasonal closures, and gear restrictions also apply. All major harvested species, including groundfish, pelagic fish, and shellfish in the Project area occur in NAFO subdivisions 4Rc and are listed in Table 5, and discussed in section 4.2.4. Updated commercial catch data has been requested from DFO and will be incorporated into the EA.

### 5.4 Public Consultation

Ptarmigan recognizes the importance of communicating with key stakeholders, including fisheries organizations, environmental organizations, First Nations representatives, regulators,

provincial, federal and municipal governments, media and others. Ptarmigan has already begun the consultation process and will continue with its efforts throughout the EA process. In order to assist in the scoping of the effects assessment, the identification of appropriate mitigation and addressing of any issues of concern, Ptarmigan and its consultants will undertake a consultation program with key stakeholders, including but not limited to:

- DFO;
- Environment Canada;
- Canadian Environmental Assessment Agency;
- NEB;
- Government officials and elected representatives, in particular inside the provincial Government of Newfoundland and Labrador;
- Fisheries groups and civic leaders in Newfoundland and Labrador, including One Ocean, the Fish Food and Allied Workers (FFAW), the Seafood Producers' Association, and Representatives in Western Newfoundland;

The Ptarmigan website will also be used as an information tool. A description of the proposed Exploration well will be posted as well as regular news updates.

Overall, the consultation for the proposed seismic survey and future exploration is designed to foster open, two-way dialogue with key stakeholders. Through this process, important issues will be identified and can be addressed. The results of the public consultation program will be compiled in the Environmental Assessment Report.