

**LAURENTIAN SUB-BASIN
SEISMIC PROGRAM, 2010-2013
PROJECT DESCRIPTION**

Prepared by



for



**September 2009
Project No. SA1047**

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SEISMIC PROGRAM, 2010-2013
PROJECT DESCRIPTION**

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September 2009
Project No. SA1047

Suggested format for citation:

LGL Limited. 2009. ConocoPhillips Canada Laurentian Sub-basin Seismic Program, 2010-2013: Project Description. LGL Rep. SA1047. Rep. by LGL Limited, St. John's, NL, for ConocoPhillips, Calgary, AB. 12 p.

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1.0 Introduction

ConocoPhillips Canada Resources Limited (hereinafter referred to as ConocoPhillips Canada, CPC or the Operator) proposes to conduct 2-D and 3-D seismic surveys (the Project) on its exploration acreage in the Laurentian Sub-basin (Figure 1.1). CPC proposes to conduct a 3-D seismic survey in this area in 2010 while other 2-D and 3-D surveys could be conducted at other times between 2010 and 2013. Geohazard information will be determined by reanalysis of 3-D seismic data.

It is important to note that the western extent of the Study Area extends across the jurisdictional boundary between the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and the Canada-Nova Scotia Offshore Petroleum Board (C-NSOPB). However, all seismic surveying will be conducted within the Project Area that lies in Newfoundland and Labrador waters. Therefore, only the C-NLOPB will issue Work Authorizations pursuant to legislation.

This document is a Project Description (PD) for the Project and is intended to allow the C-NLOPB to fulfill its responsibilities under the Federal Coordination Regulations pursuant to the *CEAA*. This PD together with the technical and scoping advice received from the C-NLOPB, other Federal Agencies and other stakeholders consulted by CPC will guide the preparation of a screening level Environmental Assessment (EA).

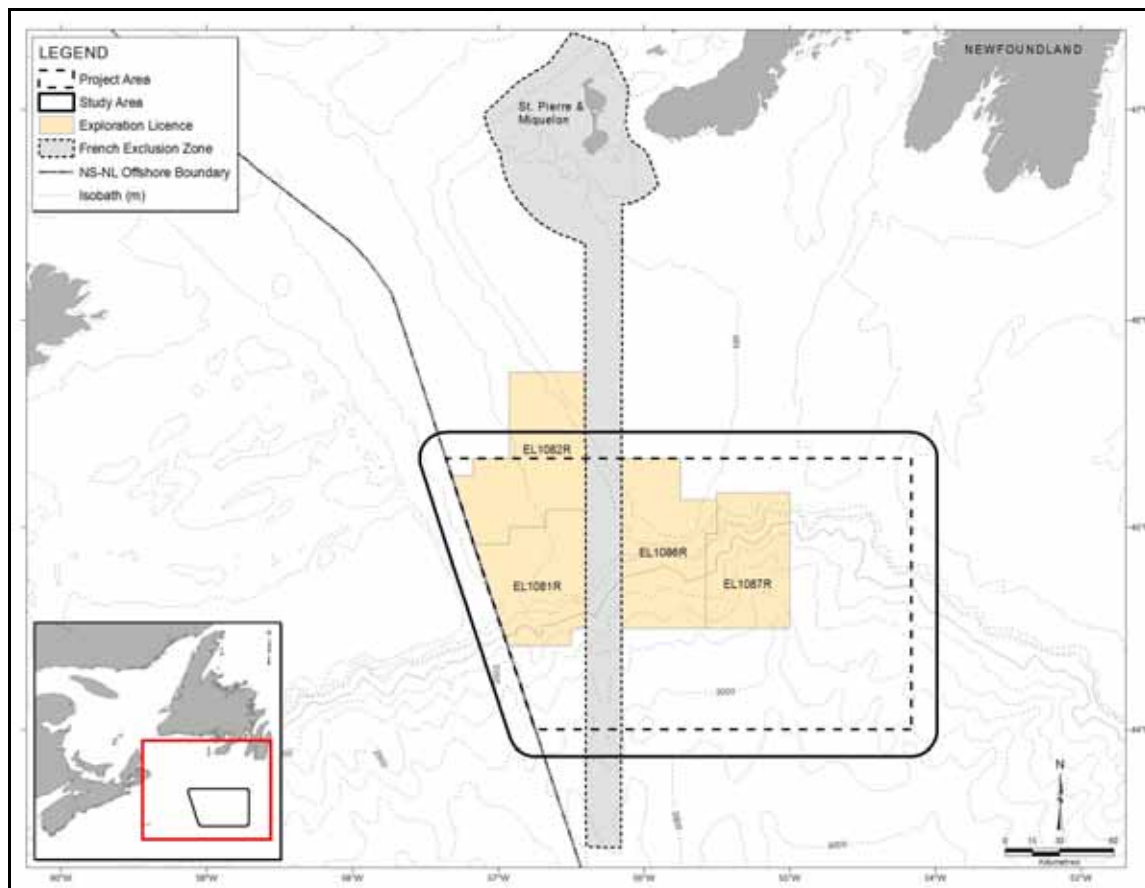


Figure 1.1 Locations of the Study and Project Areas of the Proposed Laurentian Sub-basin Seismic Program, 2010-2013, and the CPC Exploration Licences in the Area.

1.1 Relevant Legislation and Regulatory Approvals

Authorizations to Conduct a Geophysical Program will be required from the C-NLOPB as noted previously. The C-NLOPB is mandated in this matter by the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act*. In addition, offshore geophysical surveys on federal lands are subject to screening under *CEAA*. The C-NLOPB will act as the Responsible Authority under the *CEAA* and take the lead as the Federal Environmental Assessment Coordinator (FEAC). Because seismic survey activities have the potential to affect biota such as seabirds, marine mammals, and fish as well as commercial fisheries, the Department of Fisheries and Oceans (DFO) and Environment Canada are the federal agencies primarily interested and involved as Federal Authorities under the *CEA Act*. Legislation that is relevant to the environmental aspects of this Project includes:

- *Canada-Newfoundland & Labrador Atlantic Accord Implementation Act*;
- *Canadian Environmental Assessment Act (CEAA)*;
- *Oceans Act*;
- *Fisheries Act*;
- *Navigable Waters Act*;
- *Canada Shipping Act*;
- *Migratory Bird Convention Act*; and
- *Species at Risk Act (SARA)*.

One of the specific guidelines issued by the C-NLOPB, the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (May 2008), is directly relevant to this undertaking.

Authorizations issued under the *Atlantic Accord Implementation Act* for the kinds of activities described in this PD may be valid for one to five years at the discretion of the C-NLOPB.

1.2 The Operator

Headquartered in Calgary, Alberta, ConocoPhillips Canada Resources Limited is a Canadian-based integrated energy company serving global customers. Through the dedicated effort of its people, CPC is committed to maximizing returns to its shareholders in an ethical and socially responsible way. It is involved in:

- exploration and development of crude oil and natural gas;
- production, purchase, transportation, refining and marketing of crude oil, natural gas and natural gas liquids and sulfur; and
- transportation and marketing of refined products.

1.3 Canada-Newfoundland and Labrador Benefits

ConocoPhillips Canada is committed to bringing maximum benefits associated with East Coast operations to Canada and in particular Atlantic Canada where they are commercially achievable in accordance with CPC's operating philosophy and legislative requirements. In the spirit of the Atlantic Accord, ConocoPhillips Canada actively seeks to enhance the participation of Canadian, and Atlantic Canadian individuals and organizations in offshore oil and gas activity on the East Coast. CPC's commitment to delivering benefits to Atlantic Canada is outlined in the Drilling Benefits Plan.

ConocoPhillips Canada manages its East Coast operations from St. John's, Newfoundland and Labrador. Canadian individuals and organizations, and in particular those from Newfoundland and Labrador, are provided with full and fair opportunity to participate in CPC's activities on the East Coast. ConocoPhillips Canada also supports the principle that first consideration be given to personnel, support and other services that can be provided by Newfoundland and Labrador, and to goods manufactured in Newfoundland and Labrador, where such goods and services are competitive in terms of fair market price, quality and delivery. Contractors and sub-contractors working for CPC on its East Coast operations must also subscribe to and apply these principles in their own operations.

1.4 Contacts

Relevant contacts at ConocoPhillips Canada for the proposed seismic program include:

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2.0 Project Description

The official name of the Project is the ConocoPhillips Canada Laurentian Sub-basin Seismic Program, 2010-2013. ConocoPhillips Canada is proposing to conduct a seismic program between 2010 and 2013, including a 3-D seismic survey as early as May 2010, anywhere within its proposed 34,000 km² Project Area (Figure 1.1). Other seismic surveys, both 2-D and 3-D, may also be carried out during this period (i.e., the term of the exploration licenses) depending on the results of the initial 3-D survey in 2010 and/or the availability of survey vessels. Geohazard information will be determined by reanalysis of 3-D seismic data.

2.1 Spatial and Temporal Boundaries

In terms of *spatial boundaries*, the Laurentian Sub-basin Seismic Program Project Area includes ELs 1081R, 1086R and 1087R, and the southern portion of EL 1082R (Figure 1.1). The defined Project Area includes space to accommodate both streamer deployment and seismic vessel turning radius. The Study Area includes the Project Area plus a 20 km buffer around the Project Area (Figure 1.1) to account for the propagation of seismic sound that could potentially affect marine biota. The exact dimensions of the proposed 2010 seismic survey area will be determined in early 2010 as a function of vessel availability and cost.

The *temporal boundaries* of the proposed Project are year-round from 2010-2013. However, seismic surveys will most likely occur between 1 May and 31 October. The duration of a seismic survey is estimated at 40 to >100 days in a given year. In 2010, the seismic survey is anticipated to require at least 60 to 150 days.

2.2 Project Overview

The proposed Project is a ship-borne geophysical program consisting of approximately 2,000 -3,000 km² of 3-D survey in 2010 (or as soon thereafter as possible) and yet-to-be-determined areas of 2-D and/or 3-D surveys in the 2011 to 2013 period. Area adjacent to the exploration licenses is also included as part of the proposed Project Area to account for ship turning, holding and streamer deployment areas.

The seismic survey vessels used during the program will be approved for operation in Canadian waters and will be typical of the worldwide fleet. Specific vessels have not yet been selected through the bidding process. The 3-D seismic survey ship will tow a dual sound source (airgun array) and a multi-streamer composed of receiving hydrophones. The streamers will be up to several kilometers in length. Mitigation procedures, consistent with the Boards' guidelines for this activity will include dedicated marine mammal observers (MMOs), "soft-starts" or "ramp-ups" of the airgun array, and when possible, maintenance of single airgun operation during end of line turns to minimize disturbance to marine life, particularly marine mammals and Species at Risk. A fisheries liaison officer (FLO) will also be on board to ensure implementation of communication procedures intended to minimize conflict with the commercial fishery.

2.2.1 Objectives and Rationale

The primary objective of the Project is to determine the presence and likely locations of geological structures that might contain hydrocarbon deposits. The 3-D data are needed to provide images of higher resolution and quality than are available from 2-D surveys which use more widely spaced seismic lines and only one streamer. In general, 2-D surveys are used to determine areas where precise and detailed 3-D surveys should be done. Results of 3-D surveys are then used to find potential locations for exploration drilling.

2.2.2 Alternatives to the Project and Within the Project

ConocoPhillips Canada has reviewed the existing, interpreted 2-D/3-D seismic information available in the area. This information indicates structures that may contain significant volumes of producible hydrocarbons. Unfortunately, this existing seismic information is insufficient to determine the exact sizes and internal complexities of these structures. Therefore, acquisition of 3-D seismic survey data is required.

ConocoPhillips Canada has exploration commitments on exploration licenses 1081R, 1082R, 1086R and 1087R. A 2-D or 3-D seismic survey is now a standard precursor to offshore exploratory drilling. Acquisition of this information lessens the chances of expending resources “drilling dry holes” and increases safety. As such, there is no alternative to the 2-D/3-D Project other than to incur financial penalties and explore for oil and gas elsewhere.

Viable alternatives within the Project include the choices between different contractors’ ships and survey equipment which are presently being evaluated through the bid evaluation process.

2.2.3 Project Phases

The Project will have three phases. The actual timing of these activities within the temporal scope will be dependent on economic feasibility, vessel availability and the results of interpretation of survey work from preceding phases. The three phases are as follow:

1. Phase 1 will include a 3-D survey in 2010 in the area defined in Figure 1.1;
2. Phase 2 will include 2-D and/or 3-D surveys of any areas that may be identified through analyses of existing and acquired data, in preparation for a potential drilling program; and
3. Phase 3 will include the collection of additional 2-D and/or 3-D data in anticipation of a potential ongoing drilling program.

2.2.4 Project Scheduling

The surveys may occur between 1 May and 31 October of any given year. The estimated duration of the proposed 2010 3-D survey is 60 to 150 days.

2.2.4 Site Plans

The Project Area proposed for the 2010-2013 seismic program is shown in Figure 1.1. Water depth in the Project Area ranges from < 100 m to > 3,000 m. The survey line orientation for the proposed 2010 3-D seismic survey has not yet been determined.

2.2.5 Personnel

A typical seismic vessel can accommodate approximately 50-100 personnel. Personnel on a typical seismic vessel includes individuals representing the Operator (i.e., CPC), the vessel owner/operator (ship's officers and marine crew), and technical and scientific personnel from the main seismic contractor. The seismic vessel will have a FLO and MMO(s) on board, as well as a CPC representative(s) that serves as Client Quality Control and Processing Quality Control. All project personnel will have all of the required certifications as specified by relevant Canadian legislation and the C-NLOPB.

2.2.6 Seismic Vessel

Vessel specifics will be provided once the contractors are selected. Most survey vessels have diesel-electric propulsion systems (main and thrusters) and operate on marine diesel.

2.2.7 Seismic Energy Source Parameters

The 3-D survey sound source will consist of dual source airgun arrays, 4,000 to 5,500 in³ in total volume, towed at approximate depths of 6 to 15 m. The airguns will be operated with compressed air at pressures of 2,000 to 2,500 psi, and produce approximate peak-to-peak pressures 140 to 165 bar-m (i.e., source SPL of 262.9-264.3 dB re 1 µPa @ 1m_{peak-to-peak}).

Detailed specifications will be provided once the contractor is selected.

2.2.8 Seismic Streamers

There will be 8 to 12 towed streamers (strings of hydrophone sound receivers), each with an approximate length of 6,000 to 8,000 m. The streamers will be towed behind the vessel at approximate depths within the 6 to 15 m range. Streamer flotation will be either solid or liquid (Isopar), depending upon availability from specific contractors.

Detailed specifications will be provided when the contractor is selected.

2.2.9 Logistics/Support

Vessels

As noted above, primary support will be provided by a chartered seismic survey vessel. In order to mitigate any potentially adverse effects on marine animals, the commercial fisheries, and other vessel traffic, a mitigation plan will be developed as part of the Project. A standby or picket vessel may be required as mitigation. This vessel would be used as an additional method of obtaining information on commercial fishing activity in the area and of warning other vessels in order to avoid gear losses for all parties involved.

Helicopters

The larger seismic vessels are usually equipped with a helicopter platform, in which case helicopters are often used for crew changes and light re-supply. In some cases, survey contractors may prefer to come to shore for crew changes and re-supply.

Shore Base, Support and Staging

ConocoPhillips Canada and its contractors maintain offices and shore facilities in St. John's. However, some seismic contractors may prefer to crew change or re-supply in other existing Newfoundland and Labrador ports. No new shore base facilities will be established as part of the Project.

2.2.10 Waste Management

Waste management aboard the seismic vessel will be implemented in a manner consistent with ConocoPhillips Canada's East Coast Waste Management Plan and the contracted vessels policies and procedures that will be reviewed against the ConocoPhillips Canada Plan. ConocoPhillips Canada's East Coast Waste Management Plan is currently on file with the C-NLOPB.

2.2.11 Air Emissions

Air emissions will be those associated with standard operations for marine vessels, including the seismic vessel, any potential picket and/or supply vessel. There are no anticipated implications for the health and safety of workers on these vessels.

2.2.12 Accidental Events

In the unlikely event of the accidental release of hydrocarbons during the Project, CPC and its seismic survey contractor will implement the measures outlined in its oil spill response plan which will be filed with the C-NLOPB. In addition, CPC has emergency response plans in place which will be bridged with the seismic contractor's response plans prior to commencement of the seismic program.

2.3 Mitigation

Mitigation measures will be detailed throughout the EA.

2.4 Project Site Information

Project location is in the Laurentian Sub-basin (Figure 1.1).

2.4.1 Environmental Features

The physical and biological environments of the Laurentian Sub-basin have been described in recent EAs and Strategic Environmental Assessments (SEAs). The relevant EAs include ConocoPhillips documents associated with seismic and exploration drilling in the area (Buchanan et al. 2004, 2006, 2007; LGL 2009) and the SEAs include the Laurentian Sub-basin Strategic Environmental Assessment (JWEL 2003), and most recently the Southern Newfoundland Strategic Environmental Assessment (LGL in progress). A summary of the physical and biological environments, based on recent EAs and SEAs as well as any new information, will be provided in the EA for this Project.

2.4.2 Physical Environment and Effects on the Project

The physical environmental conditions that will be encountered within the Project Area will be within the range of conditions described in the recent EAs and SEAs described above. Effects of the physical environment on the Project will include those caused by wind, ice, waves, and currents. A summary of expected effects of the physical environment on the Project, based on information in the recent EAs and SEAs as well as any new information, will be provided in the EA for this Project.

2.4.3 Fish and Fish Habitat

The fish species that inhabit the Project Area and the other species (e.g., invertebrates) and habitats that support them have been discussed in the recent EAs and SEAs described above. These components of the ecosystem will be summarized in the EA for this Project, based on these relevant documents and any new information.

2.4.4 Species at Risk

The Project Area is not known to contain any sensitive areas or critical habitats for species listed on Schedule 1 of the *Species at Risk Act (SARA)* but this issue will be examined in the EA. Notwithstanding this, 12 species (five marine mammals, four fishes, two birds and one reptile) listed on Schedule 1 of *SARA* as *endangered*, *threatened* or *special concern* could occur in the Project Area (see LGL 2009). In addition, the potential environmental effects on species currently under assessment by the Committee on the Status of Endangered Species in Canada (COSEWIC) (such as Atlantic Cod) that occur in within the Project Area will be included in the EA.

2.5 Other Users

2.5.1 Commercial Fisheries

The area of the Laurentian Sub-basin that contains the Project Area supports a variety of commercial fisheries that will be described in the EA based on latest available DFO catch landings data. Some of the most important fisheries in and adjacent to the Project Area, include those for Atlantic cod, redfish, whelk and snow crab.

Plans will be developed to avoid or lessen any potential effects on the commercial fishery. These plans will include mitigations such as good communications (e.g., fishery broadcast notifications), the presence of a dedicated FLO on the vessel(s), avoidance of areas during times of heavy fixed gear use, and a fishing gear damage compensation program. Consultations with the fishing industry will be undertaken through the established ONE OCEAN mechanism and the Fish, Food and Allied Workers (FFAW) and directly with relevant fishing interests as necessary.

2.5.2 Navigable Waters

Other than fishery vessels, other users of the navigable waters in the Laurentian Sub-basin include cargo and passenger vessels, other oil industry-related vessels, transport and military vessels and the occasional private yacht.

2.5.3 Consultations

During the course of the assessment, ConocoPhillips Canada will consult with stakeholders with an interest in the Project. Those consulted and the results of those consultations will be compiled in the EA report.

In order to assist in scoping the effects assessment and mitigation plan, and to aid in addressing any issues of concern, ConocoPhillips Canada and consultants will undertake a consultation program with the interested parties including but not limited to:

- Fisheries and Oceans Canada (DFO);
- Environment Canada;
- ONE OCEAN;
- FFAW;
- Study Area fishers;
- Newfoundland and Labrador Natural History Society;
- Ocean Choice International (OCI);
- Icewater Fisheries;
- Association of Seafood Producers (ASP);
- Groundfish Enterprise Allocation Council (GEAC);
- Clearwater Limited Partnership (Nova Scotia);

- Seafood Producers of Nova Scotia (SPANS);
- C-NSOPB Fisheries Advisory Committee (Halifax); and
- Other Nova Scotia fisheries industry stakeholders as identified.

2.6 Effects of the Project on the Environment

The proposed Project will be well within the range of other programs routinely conducted on the Grand Banks and elsewhere, and is not expected to produce any adverse significant environmental effects on the marine environment in or adjacent to the Project Area. Nonetheless, potential environmental effects will be examined in detail with focus on the commercial fishery, *SARA* species, marine mammals, and cumulative environmental effects with other users of the area, particularly other seismic programs.

2.6.1 Spatial Boundaries

The regional scale study area boundaries will be addressed in the EA and will take into consideration the information compiled in recent ConocoPhillips' EAs and SEAs.

2.6.2 Temporal Boundaries

The temporal boundaries for the Project are 2010 to 2013 inclusive, with the timing of actual survey activities between 1 May and 31 October within any particular year.

2.6.3 Valued Ecosystem Components

The valued ecosystem components (VECs) will encompass, but may not be limited to fish and fish habitat, commercial fishery, marine birds, marine mammals, sea turtles, Species at Risk and sensitive areas.

Accidental events (such as an unplanned hydrocarbon release) associated with Project activities will also be assessed in the EA. The EA will also include an analysis of cumulative environmental effects.

2.6.4 Environmental Monitoring

As noted previously, MMO(s) will be on board the vessel(s) to provide proper identification of marine mammals and species at risk for mitigation purposes and to collect opportunistic data on marine mammal behaviours and distribution with and without airguns operating. Information on marine bird occurrence and distribution will also be collected during the seismic surveys.

3.0 References

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