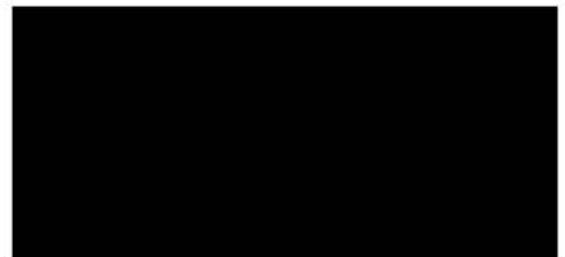




E&P – EAST COAST

Document Number: OD-PE-EV03-X00-004		
Document Type: Procedure		
Document Title: Suncor Energy's Eastern Newfoundland Offshore Area 2D/3D/4D Seismic Program, 2014-2024, Project Description		
System 00	Review Cycle Annual	Next Scheduled Review Date: October 2014

M1	11-October-13	Issued for Use				
Revision	Date	Description	Originator	Checked By	Checked By	Approved By





E&P – EAST COAST

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REVISION SUMMARY FORM		
Current Revision	Revision Description / Purpose	Pages Revised
M1	New document	All

STANDARD DISTRIBUTION LIST			
Position	Name	Company	Location
		Suncor	St. John's Office
		Suncor	St. John's Office
		Suncor	St. John's Office
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		Suncor	St. John's Office
		Suncor	St. John's Office
		Suncor	St. John's Office
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		Suncor	St. John's Office
		Suncor	St. John's Office
		Suncor	St. John's Office
		Suncor	St. John's Office
		Suncor	St. John's Office
Manager, Environmental Affairs	Dave Burley	C-NLOPB	St. John's Office
Environmental Assessment Officer	Elizabeth Young	C-NLOPB	St. John's Office

MANAGEMENT OF CHANGE FORM FOR PROCEDURAL DOCUMENTS		
1. Change Category / Description	Y	N
a. Is this a new document (not previously issued) or are major changes being made (examples of major changes include changes in process, responsibilities, requirements, frequency, type)?	✓	
b. If Major Change or New, provide a description of the purpose of the changes/document: Project Description for Suncor Energy's Eastern Newfoundland Offshore Area 2D/3D/4D Seismic Program, 2014-2024.		
c. Are minor changes being made (examples of minor changes include clarifying intent, correction of terminology or format with no change to the process)?		✓
d. Are the changes being made as a result of facility/design modifications? If yes provide the MOC notification number: _____		✓
2. Assessment of Change		
a. Do the changes have the potential to introduce new hazards or impact Safety or Environmentally Critical processes?		✓
b. Do the changes impact regulatory requirements (e.g. documents under the License to Operate, documents in the East Coast Management System, SAP routines)?	✓	
c. If YES to a or b , have representatives of those responsible for processes impacted by the change reviewed and accepted the proposed changes?	✓	
d. Is a Risk Assessment (RA) required prior to issue? If yes provide reference: _____		✓
3. Training Requirements		
a. Do the proposed changes require formal training, orientation, or roll-out?		✓
b. If YES , provide details: _____		
4. Communication Requirements		
a. Are all changes clearly identified / marked and summarized in the Revision Summary?	✓	
b. Did the review/issue processes include all those impacted by the changes?	✓	
c. Is the Standard Distribution List up to date?	✓	
Completed by: <u>Greg Janes</u> <u>Team Lead – Environment, ER and Security</u> Name Position		

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1.0 PURPOSE

Suncor Energy (Suncor) is proposing to conduct 2D/3D/4D seismic survey program(s) in offshore Newfoundland and Labrador (the Project) in an area that includes portions of the Jeanne d'Arc Basin, the Flemish Pass and the Orphan Basin (Figure 1). The Project will also include well site surveys (i.e., geohazard surveys) and Vertical Seismic Profiling (VSP). The Project is proposed for an eleven-year period 2014-2024.

2.0 SCOPE

This document is Suncor's Project Description and is intended to allow the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) to fulfill its responsibilities under Section 138 (1) (b) of the Canada-Newfoundland Atlantic Accord Implementation Act and Section 134(1) (b) of the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (Accord Acts). This Project Description, combined with the technical and scoping advice received from the C-NLOPB, other federal agencies and stakeholder groups to be consulted by Suncor, will guide the preparation of a screening level Environmental Assessment (EA).

3.0 ABBREVIATIONS AND ACRONYMS

ASP	Association of seafood Producers
bar	Unit of pressure
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
DFO	Fisheries and Oceans Canada
E&P	Exploration and Production
EA	Environmental Assessment
EC	Environment Canada
EH&S	Environment, Health and Safety
EL	Exploration License
FFAW	Food, Fish and Allied Workers
FLO	Fisheries Liaison Officer
GEAC	Groundfish Enterprise Allocation Council
in ³	Cubic inches
m	Meter
MMO	Marine Mammal Observer
OCI	Ocean Choice International
PL	Production License
psi	Pounds per square inch
SARA	Species At Risk Act
SDL	Significant Discovery License
SEA	Strategic Environmental Assessment

VECs	Values Ecosystem Components
VSP	Vertical Seismic Profiling

4.0 ROLES AND RESPONSIBILITIES

4.1 Manager, Exploration

Responsible for ensuring the mitigation measures outlined in the environmental assessment are effectively implemented during the project.

4.2 Asset Manager, Terra Nova

Responsible for ensuring the mitigation measures outlined in the environmental assessment are effectively implemented during the projects within the Terra Nova Field.

4.3 Team Lead – Environment, Emergency Response and Security

Responsible for ensuring the environmental assessment review is submitted to the C-NLOPB and that environmental mitigation measures are communicated to personnel responsible for the planning and execution of the project.

5.0 PROGRAM OVERVIEW

5.1 Relevant Legislation and Regulatory Approvals

An Authorization to Conduct a Geophysical Program will be required from the C-NLOPB. The C-NLOPB is mandated as a regulator by the Canada-Newfoundland Atlantic Accord Implementation Act and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act. Pursuant to the Accord Acts, the C-NLOPB is responsible for seeking to identify the federal departments or agencies that may have expertise required in the completion of the assessment. Because seismic survey activities have the potential to affect fish and fisheries, marine mammals, sea turtles and seabirds, Fisheries and Oceans Canada (DFO) and Environment Canada (EC) are the agencies that will have most involvement in the EA process. Legislation that is relevant to the environmental aspects of the Project includes:

- Canada-Newfoundland Atlantic Accord Implementation Act;
- Oceans Act;
- Fisheries Act;
- Navigable Waters Act;
- Canada Shipping Act;
- Migratory Bird Convention Act; and
- Species at Risk Act.

Suncor will follow guidelines issued by the C-NLOPB, the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2012). It outlines mitigation and monitoring requirements for marine mammals and sea turtles for seismic programs. The Project will also be guided by DFO's Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment, and other advice received during the consultations for this Project.

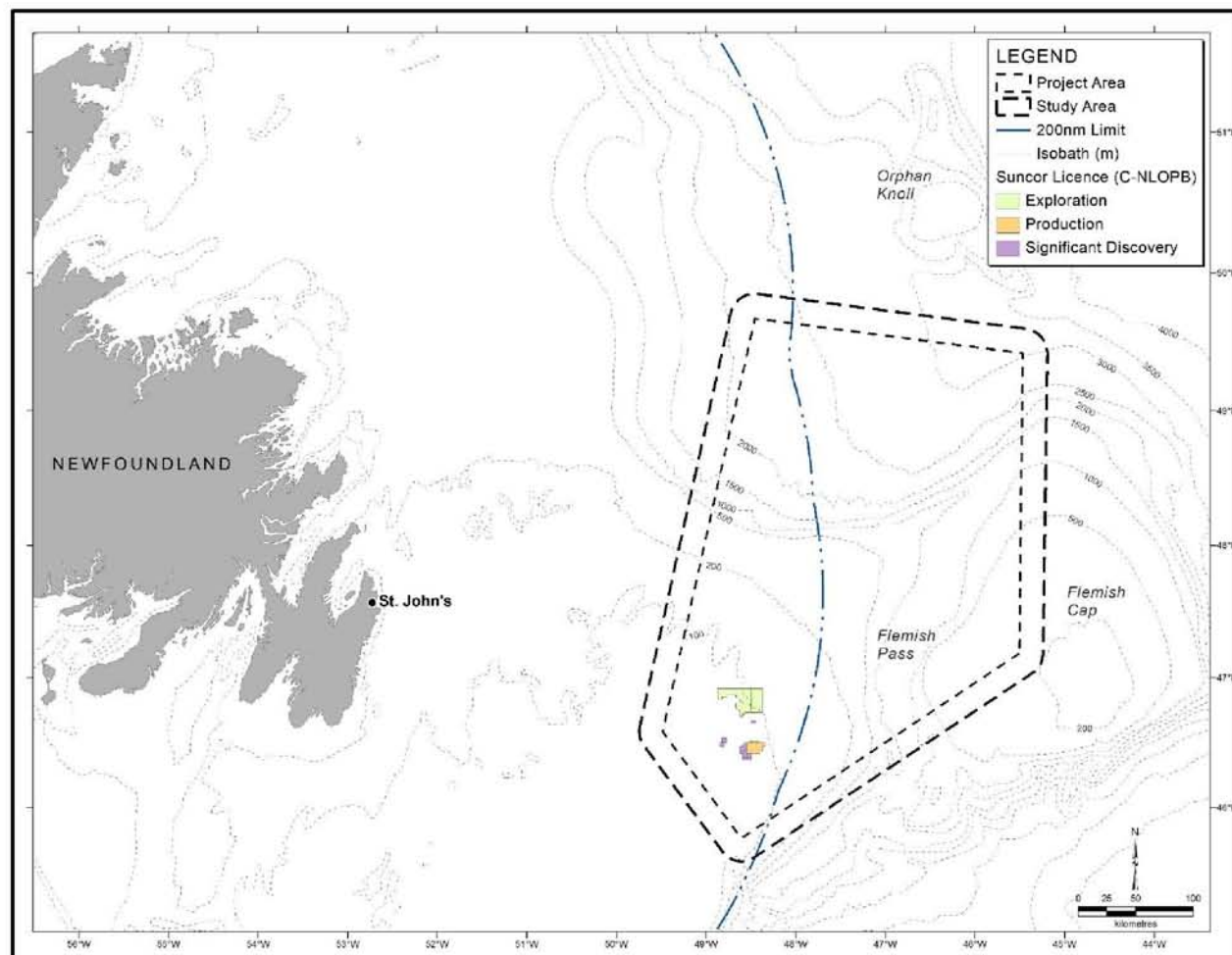


Figure 1 Locations of the Project Area and Study Area for Suncor's Proposed 2D/3D/4D Seismic Program, 2014 to 2024.

5.2 The Proponent: Suncor Energy

Suncor Energy, the Operator, is one of the largest integrated oil and gas companies in Canada. Headquartered in Calgary, Alberta, Suncor is a Canadian-based integrated energy company serving global customers and

committed to conducting its offshore oil and gas operations in an environmentally responsible manner.

Suncor is the management and operating company for ten Significant Discovery Licenses, three Production Licenses, and two Exploration Licenses on the northern Grand Banks (Table 1) (http://www.cnlopb.nl.ca/land_infotables.shtml). The Terra Nova field, the largest of the Operator's Significant Discovery Areas, is estimated to contain approximately 500 million barrels of recoverable reserves. Suncor is also a major partner in the Hibernia, White Rose and Hebron developments.

Table 1 Current Suncor Interests on the Northern Grand Banks

Exploration Licenses	Significant Discovery Licenses	Production Licenses
EL1092 EL1113	SDL1004 SDL 1035 SDL 1036 SDL 1037 SDL1038 SDL1039 SDL208A SDL1050 SDL1051 SDL1052	PL1002 PL1003 PL1004

5.3 Newfoundland and Labrador Benefits

An important aspect of the C-NLOPB's mandate is the administration of provisions in the Accord Acts relating to industrial and employment benefits from the development of oil and gas resources in the Newfoundland and Labrador Offshore Area for Canada in general, and for Newfoundland and Labrador in particular.

The Accord Acts require that before any work or activity is authorized in the offshore area, a Canada-Newfoundland and Labrador Benefits Plan must be approved by the Board. In general, a benefits plan must describe the Proponent's plan for the employment of Canadians and, in particular, members of the labour force of the province. It also contains plans for providing manufacturers, to Canada is outlined in the Terra Nova Development Application Canada-Newfoundland Benefits Plan.

Suncor manages East Coast operations from its St. John's office. Canadian, and in particular, Newfoundland Labrador individuals and organizations are provided with full and fair opportunity to participate in Suncor's activities on the East Coast. Suncor 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 subcontractors working for Suncor on its East Coast operations must also subscribe to and apply these principles in their own operations.

Consultants, contractors and service companies in the province and other parts of Canada with a full and fair opportunity to participate on a competitive basis in the supply of goods and services.

Suncor is committed to bringing maximum benefits associated with East Coast operations to Canada, in particular Newfoundland and Labrador, where commercially achievable in accordance to their operating philosophy and legislative requirements. In the spirit of the Atlantic Accord, Suncor actively seeks to enhance the participation of Canadian and Newfoundland and Labrador individuals and organizations in offshore oil and gas activity on the East Coast. Suncor's commitment to delivering benefits to Newfoundland and Labrador and

5.4 Contacts

Relevant contacts at Suncor for the proposed Project are provided below.



Exploration & Production, East Coast Canada
Suite 201, Scotia Centre, 235 Water Street
St. John's, NL A1C 1B6



Exploration & Production, East Coast Canada
Suite 201, Scotia Centre, 235 Water Street
St. John's, NL A1C 1B6



Exploration & Production, East Coast Canada
Suite 201, Scotia Centre, 235 Water Street
St. John's, NL A1C 1B6



6.0 PROJECT DESCRIPTION

The official name of the Project is Suncor Energy's Eastern Newfoundland Offshore Area 2D/3D/4D Seismic Program, 2014-2024. Suncor is proposing to conduct 2D/3D/4D seismic surveys in an area of the eastern Newfoundland offshore area that includes portions of the Jeanne d'Arc Basin, the Flemish Pass and the Orphan Basin (Figure 1). Seismic surveying would normally be conducted between 1 May and 31 December during the proposed eleven-year period. At this time, it is uncertain whether Suncor will conduct seismic surveys in 2014. Other seismic activities, including well site surveying and VSP, may also be carried out during this period. Well site surveys would normally be conducted between 1 March and 31 December during any year between 2014 and 2024. Vertical Seismic Profiling could be conducted at any time during the year.

6.1 Spatial and Temporal Boundaries

6.1.1 Spatial

The Study Area includes the Project Area plus a 25 km buffer around the Project Area to account for the propagation of seismic survey sound that could potentially affect marine biota (Figure 1). The Project Area includes all survey activities including sufficient room for seismic vessel turning and streamer deployment.

The coordinates of the extents of the Study Area are as follow:

- North: 49.850°N;
- East: 45.196°W;
- South: 45.579°N; and
- West: 49.748°W

The areas of the Study Area and Project Area are 117,899 km² and 92,268 km², respectively.

6.1.2 Temporal

The temporal scope of the proposed 2D/3D/4D surveys is typically between 1 May and 31 December, 2014-2024. As indicated above, it is uncertain whether Suncor will conduct seismic surveys in 2014. The duration of a 2D/3D/4D survey is estimated at 30 to 120 days in any given year.

The temporal scope of proposed well site surveys is typically between 1 March and 31 December, 2014-2024. The duration of a typical well site survey is estimated at 7 to 14 days in any given year.

The temporal scope of proposed VSP is any time of the year, 2014-2024. The duration of a typical VSP survey is estimated at a few days in any given year.

6.2 Project Overview

The objective of the Project is to determine the presence and likely locations of geological structures that might contain hydrocarbon deposits. This is typically done in a stepwise fashion. In general, 2D surveys are used to determine areas where precise and detailed 3D surveys should be done. The 3D data provide higher resolution and quality images than are available from 2D surveys which use more widely spaced seismic lines. Results of 3D surveys are then used to find potential locations for exploration drilling. The 4D surveys (i.e., 3D seismic surveys over an area previously imaged by 3D) would be used to monitor fluid and pressure changes in the reservoirs and also to aid in optimization of future development well locations. The 4D data would become part of a reservoir management plan.

Well site surveys involve the acquisition of high resolution seismic, sub-bottom profile, side scan sonar and bathymetric data over a proposed drill site. Seismic data collected during well site surveys are typically acquired over survey lines spaced closer together (e.g., 250 m spacing), and data are acquired using smaller equipment with lower source levels and over a shorter time period (several days vs. months) relative to 2D and 3D seismic surveys.

Surficial data are collected using a broadband boomer or sparker as a sound source which provides information in the shallow sediments of the seabed. A single or multi beam echo sounder provides bathymetric data and a side scan sonar (dual frequency) is used to obtain seabed imagery. Seabed video and/or grab samples permit ground-truthing of the characteristics of the seabed and sediments.

Vertical Seismic Profiling is normally conducted once some drilling has been completed. These programs use hydrophones suspended in the well at intervals (closer intervals than "checkshots") which receive signals from external sound sources, usually airgun (s) suspended from the drill rig or a nearby supply vessel. Data are used to aid in determining the structure of a particular petroleum-bearing zone.

The seismic survey vessel(s) used during the proposed program will be approved for operation in Canadian waters and will be typical of the worldwide survey fleet. Specific vessels have not yet been selected as Suncor currently does not have a seismic program planned. The 2D seismic survey vessel will tow one or two sound sources (airgun arrays) and a single streamer with receiving hydrophones. The 3D seismic survey vessel will tow two sound sources and multiple streamers. The streamers will be up to several kilometers in length. The 4D seismic survey will involve one or two vessels which will also tow two sound sources and multiple streamers.

The C-NLOPB's *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2012) will be used as the basis for the marine mammal monitoring and mitigation program for the seismic surveys. Dedicated marine mammal observers (MMOs) will monitor for marine mammals (and sea turtles if present) and implement mitigation measures as appropriate. The airgun array will be ramped up, and ramp ups will be delayed if a marine mammal is detected within the appropriate safety zone (minimum of 500 m as noted in Fisheries and Oceans Canada *Statement of Canadian Practice*). The airgun array will be shut down any time an *endangered* or *threatened* (as listed on Schedule 1 of the *Species at Risk Act*, SARA) marine mammal (or sea turtle) is detected within the safety zone. These measures are designed to minimize disturbance to marine life, particularly marine mammals and species considered at risk under the SARA. In addition, the MMOs will conduct seabird observations as per the guidelines (C-NLOPB 2012) and a release program for seabirds which may strand on board the seismic vessel. As required, a fisheries liaison officer (FLO) will be on board to ensure implementation of communication procedures intended to minimize conflict with the commercial fishery.

6.2.1 Alternatives to the Project and Within the Project

Suncor has made commitments to pursue exploration activities on its exploration licenses in the Study Area. The 2D/3D seismic surveys are standard precursors to offshore exploratory drilling. The 3D surveying better defines the target subsurface geological formations believed to contain hydrocarbon resources, lessens the chances of expending resources "drilling dry holes" and increases the overall safety of the drilling activity. Accordingly, there is no alternative to the proposed 3D survey program other than to incur the financial penalties attendant on not fulfilling Suncor's exploration commitments and to explore for oil and gas elsewhere.

Viable alternatives within the program's surveys are essentially the choices between different contractor's ships and survey equipment which will be evaluated through the bid evaluation process.

6.2.2 Project Scheduling

The proposed 2D/3D/4D surveys will normally be conducted between 1 May and 31 December, 2014-2024. The duration of a 2D/3D/4D survey is estimated at 30 to 120 days in any given year.

Proposed well site surveys will normally be conducted between 1 March and 31 December, 2014-2024. The duration of a typical well site survey is estimated at 7 to 14 days in any given year.

Proposed VSP will be conducted at any time of the year, 2014-2024. The duration of a typical VSP survey is estimated at a few days in any given year.

6.2.3 Site Plans

The survey line orientations for the proposed 2D/3D/4D seismic surveys have not yet been determined. The Project Area proposed for the 2014-2024 seismic program is shown in Figure 1. Water depths in the Project Area range from <100 m to >3,000 m.

6.2.4 Personnel

A typical seismic vessel can accommodate approximately 50-100 personnel. Personnel on a seismic vessel typically include ship's officers and marine crew as well as technical and scientific personnel. The seismic vessel used for 2D/3D/4D surveys may also have a MMO and FLO on board. Well site surveying and VSP will also include a MMO but not necessarily a FLO. All project personnel will have all of the required certifications as specified by the relevant Canadian legislation and the C-NLOPB.

6.2.5 Seismic Vessels

Specifics of seismic vessels will be provided in subsequent document submissions once the vessels have been identified. The selected ships will be fully equipped and suited to the environment and task, and will meet applicable legal and certification requirements.

6.2.6 Seismic Energy Source Parameters

The proposed 2D/3D/4D survey sound sources will likely consist of one or two airgun arrays, 3,000 to 6,000 in³ in total volume, which will operate at towed depths between 6 m and 15 m. The airguns will be operated with compressed air at pressures of 2,000-2,500 psi, and produce approximate peak-to-peak pressures of 100 to 150 bar-m.

Detailed specifications of the airgun arrays will be provided once the survey designs are completed and parameters are selected.

6.2.7 Seismic Streamers

The 2D/3D/4D seismic surveys will use towed streamers with an approximate length of 8,000 m and deployed at depths ranging from 5 to 80 m.

Streamer equipment specifications will be provided when survey designs are complete.

6.2.8 Logistics/Support

Vessels

The seismic survey vessel(s) used during the proposed program will be approved for operation in Canadian waters and will be typical of the worldwide fleet. Specific vessels have not yet been selected.

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 a mitigation measure for any 2D/3D/4D seismic surveying. This vessel would be used as an additional method to obtain information on commercial fishing activity in the area and to warn other vessels in order to avoid gear losses for all parties involved. It would also be used to scout ahead of the seismic vessel for hazards such as ice and floating debris.

Offshore supply vessels will re-supply the seismic vessel with water, food, equipment parts, fuel, etc. throughout the duration of the Project. The supply vessels will be typical of those that regularly service the Newfoundland offshore.

Helicopters

The seismic vessel may be equipped with a helicopter deck and helicopters are often used for crew changes and light re-supply. It is not known at this time whether helicopters will be used for crew changes during the proposed seismic program(s). Once the final extents of the 2D/3D/4D seismic surveys are determined, the necessity for and feasibility of helicopter support for crew changes will be determined.

Shore Base, Support and Staging

Suncor will maintain operational offices and use existing shore facilities in St. John's. No new shore base facilities will be established as part of the Project.

6.2.9 Waste Management

Waste management will be consistent with industry best practices in offshore Newfoundland and Labrador. Wastes produced from the seismic and picket vessels, including grey and black water, bilge water, deck drainage, discharges from machinery spaces and hazardous and non-hazardous waste material will be managed in accordance with applicable legislation and with Suncor's East Coast Waste Management Plan (OD-PE-EV03-X00-001). The contracted vessels' policies and procedures will be reviewed against the Suncor Plan. Suncor's East Coast Waste Management Plan is currently on file with the C-NLOPB.

6.2.10 Air Emissions

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

6.2.11 Accidental Events

In the unlikely event of an emergency, including the accidental release of hydrocarbons during the Project, the Operator and its seismic contractor will implement the measures outlined in Suncor's various emergency response plans which are on file with the C-NLOPB.

6.3 Mitigations

Project mitigations will follow the guidelines outlined in the *Statement of Canadian Practice*. Mitigation procedures will include ramp-ups, implementation of ramp up delays and airgun array shutdowns for designated marine mammal and sea turtle species, use of dedicated MMOs and a FLO, and a fisheries compensation program. The Operator recognizes that the fisheries have a long tradition off Newfoundland and Labrador and that both industries are important users of the sea and seabed.

6.3.1 Project Site Information

Project location is in the eastern Newfoundland offshore area (see Figure 1).

6.3.2 Environmental Features

The physical and biological environments of the general area have been described in recent EAs for the northern Grand Banks and Flemish Pass (e.g., LGL 2011a,b, 2012a,b, 2013a,b). A summary of the physical and biological environments, based on the previous EAs plus any new information, will be provided in the EA for this Project.

6.3.3 Physical Environment and Effects on the Project

A description of the general physical environment of the area is contained in recent EAs for the northern Grand Banks and Flemish Pass (e.g., LGL 2011a,b, 2012a,b, 2013a,b) and is briefly summarized here. The survey will be conducted in water depths ranging from <100 m to >3000 m. The northern Grand Banks are influenced by the Labrador Current and Gulf Stream, and physical conditions (e.g., weather and ice conditions) from an operating perspective are not unlike those that would be encountered in Orphan Basin. Extreme wind, wave and ice conditions can slow or even halt survey operations, and accidents (e.g.,

accidental releases of flotation fluids, if they are used) are more likely to occur than during calm conditions.

A summary of expected effects of the physical environment on the Project, based on information in the SEA for Orphan Basin (LGL 2003) and previous EAs, as well as any new information, will be provided in the EA for this Project.

6.3.4 Fish and Fish Habitat

Fish and fish habitat, including marine invertebrates and physical attributes, have been discussed in previous EAs for the Jeanne d'Arc Basin and the Flemish Pass. These components of the ecosystem will be summarized in the EA for this Project, based on these EAs and other relevant documents and any new information.

6.3.5 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 potential issue will be examined in the EA. Several species listed on Schedule 1, including the blue whale, fin whale, North Atlantic right whale, leatherback sea turtle, Ivory Gull, the white shark and three wolfish species may occur in the Project Area. In addition, the potential environmental effects on species currently listed as *threatened* or *endangered* by the Committee on the Status of Endangered Species in Canada (COSEWIC) that occur within the Study Area will be included in the EA.

6.4 Other Users

6.4.1 Commercial Fisheries

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 northern shrimp, snow crab, and Greenland halibut.

Plans will be developed to avoid or lessen any potential effects on the commercial fisheries. These plans will include mitigations such as good communications (e.g., fishery broadcast notifications), the presence of a FLO on the vessel for 2D/3D/4D seismic surveys, and a fishing gear damage compensation program. Consultations with the fishing industry (e.g., Fish, Food and Allied Workers (FFAW), Association of Seafood Producers (ASP), etc.) will be undertaken through the established One Ocean mechanism and directly with relevant fishing interests as necessary.

6.4.2 Navigable Waters

In addition to fishery vessels, potential users of the navigable waters in the offshore North Grand Banks regional area may include cargo and passenger vessels, other oil industry-related vessels, transport and military vessels, or other commercial work.

6.4.3 Consultations

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

In order to assist in scoping the effects assessment and mitigation plan, and to aid in addressing any issues of concern, Suncor will undertake a consultation program with the interested parties, which may include, but are not limited to:

- Fisheries and Oceans Canada;
- Environment Canada;
- One Ocean;
- Fish, Food and Allied Workers Union (FFAW);
- Nature Newfoundland and Labrador;
- Association of Seafood Producers (ASP);
- Ocean Choice International (OCI);
- Groundfish Enterprise Allocation Council (GEAC);
- Clearwater Seafoods;
- Icewater Seafoods;
- Newfound Resources Ltd.; and
- Other stakeholders as required

6.5 Effects of the Project on the Environment

The proposed Project will be well within the range of other programs routinely conducted offshore Newfoundland and elsewhere in eastern Canada, 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 any other potential seismic programs.

6.5.1 Spatial Boundaries

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

6.5.2 Temporal Boundaries

The temporal boundaries for the proposed project are 2014 to 2024 inclusive, with the timing of 2D/3D/4D seismic survey activities are normally between 1 May and 31 December within any particular year. Well site surveys would normally be conducted between 1 March and 31 December and VSP at any time within any particular year.

6.5.3 Valued Ecosystem Components

The Valued Ecosystem Components (VECs) will encompass, but may not be limited to fish and fish habitat, the 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. It will also include an analysis of cumulative environmental effects.

6.5.4 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 behaviour and distribution both during and outside of airgun operations. Information on marine bird occurrence and distribution will also be collected during the seismic surveys.

7.0 REFERENCES

- C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). 2010. Offshore Waste Treatment Guidelines, December 2010. 24 p. + appendices.
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