



## I&O EAST COAST

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## 1.0 Introduction

Offshore oil and gas exploration and production programs generally encompass long periods of time and multiple, successive, operational steps. As a consequence of this, environmental assessments of these programs address a variety of activities undertaken over a number of years.

This document is one of a series of reviews of the status and ongoing validity of the environmental assessments currently in place for Suncor's activities in the Newfoundland and Labrador Offshore Area. These reviews are intended to assist the C-NLOPB in fulfilling its responsibilities under the CEA Act by ensuring that the scope of the assessment(s) and the mitigations committed to therein remain technically valid.

The following lists Suncor's environmental assessments that have been approved by the C-NLOPB under which Suncor will be conducting offshore operations during the coming year – 2010 as described in this update.

**Table 1: Environmental Assessment Approvals in Force for Suncor - January 2010**

Screening Determination Reference <sup>1</sup>	Temporal Scope	EA Report Title	Suncor Document Number
<a href="#">CEAR No. 06-01-17492</a>	May 1 - Dec 31 of 2007 through 2010	<i>Environmental Assessment of Petro-Canada's Jeanne d'Arc Basin Seismic Program</i> (March 2007) & Addendum (June 2007)	PES-CNO-OTH-0406-003
<a href="#">CEAR No. 08-01-42400</a>	Year round 2009 through 2017	<i>Environmental Assessment of Petro-Canada Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017</i> (December 2008) & Addendum (April 2009)	PES-CNO-OTH-0406-0015
<a href="#">CEAR No. 06-01-18277</a>	Year round for life of Terra Nova Project	<i>Environmental Assessment of Petro-Canada's Vertical Seismic Profiling Program at the Terra Nova Development</i> (June 2006) & Addendum (November 2006)	GEN-PES-YER-1103A-0002

The following sections are organized by the specific, above-listed individual environmental assessments and provide the necessary information to confirm the ongoing validity of the assessment in question or note any changes that need to be addressed.

<sup>1</sup> Follow the links to C-NLOPB public registry to view the environmental assessments, amendments and regulatory determinations.

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## **2.0 Environmental Assessment of Suncor's Jeanne d'Arc Basin Seismic Survey Program (March 2007) & Addendum (June 2007)**

### **2.1 Project Description and Scope**

#### **2.1.1 Activities Covered**

This assessment encompasses the conduct of 3-D seismic surveys and, through its addendum, geo-hazard surveys in the Jean d'Arc Basin area.

Typically, up to two 5085 to 5800 in<sup>3</sup> air gun arrays of 24 Bolt airguns each operating at 2000 to 2500 psi could be employed, firing alternately with sound source characteristics of 109.9 bar-m (i.e., ~255 dB re 1 $\mu$ Pa (0 p)). The arrays will typically be towed at a depth of 6 to 8 meters and operated with a shotpoint interval of 18 to 25 metres. The assessment also considers the need for a picket vessel(s) to accompany the survey vessel.

Streamer configurations will vary from 8 to 10 streamers of 5000 to 6000 metres in length towed, as noted above, at a depth of 6 to 8 meters. Streamers may be either solid core floatation type or use Isopar M, an iso-paraffinic hydrocarbon (C12 to C15) fluid, for floatation at a volume of approximately 12 litres per 100 meters of streamer length.

Geophysical site surveys (i.e., geo-hazard surveys), using smaller sound sources and other necessary survey equipment are needed to conduct a site survey for a drilling location. For this type of survey, typically four or more sleeve airguns of approximately 160 in<sup>3</sup> in total volume operating at 2000 psi are used. The maximum output from this array has a peak to peak value of 17.0 Bar-metres equating to 244.6 dB (peak to peak)/1 $\mu$ Pa@1m, or 238 dB (zero to peak)/1 $\mu$ Pa@1m.

Mitigation procedures for the seismic surveys undertaken pursuant to this environmental assessment will follow those defined in Appendix 2 of the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines, May 2008* (C-NLOPB), including ramp-up (i.e., soft start) of the airgun arrays, the use of dedicated Marine Mammal Observer(s) (MMOs) to monitor marine mammals and turtles and implement shut downs of the surveys when appropriate, and the use of a fisheries liaison officer (FLO) and communication procedures to avoid conflicts with the fishery. Fisheries liaison measures will, in part, be governed by risk management measures developed by the oil and gas and fishing industries under the auspices of One Ocean. Seabird observations will also be carried out by qualified personnel as required in the above-referenced guidelines.

## 2.1.2 Geographic Scope

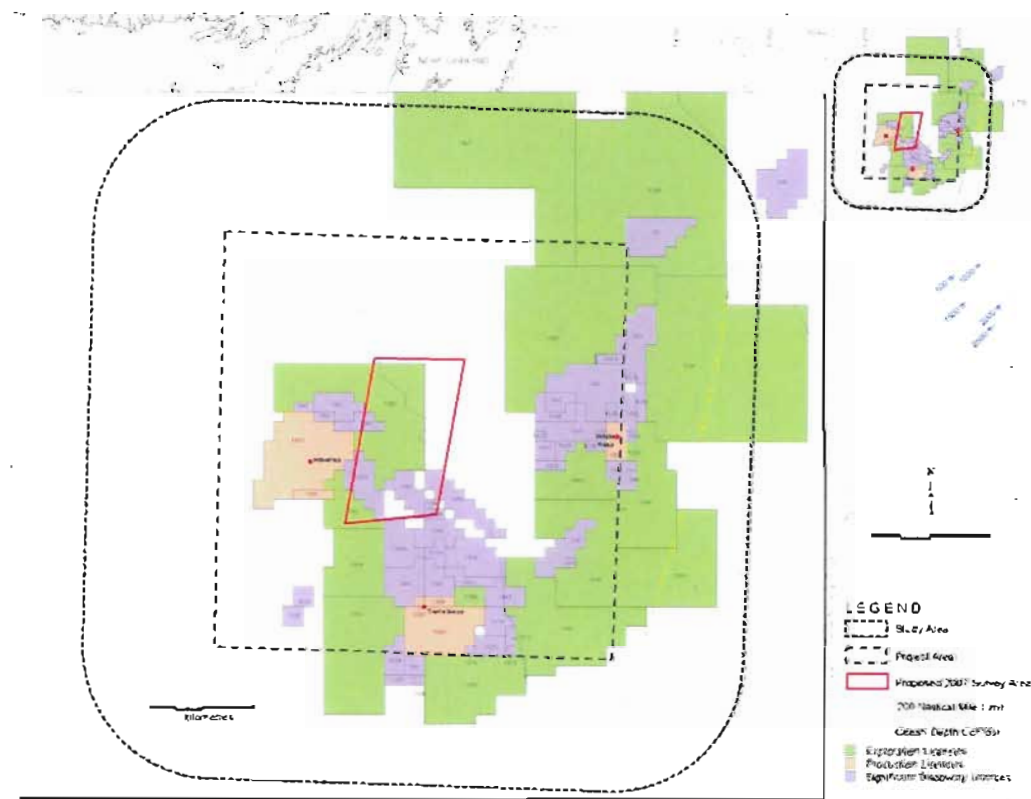


Figure 2.1: Geographic Scope of Project Area for [CEAR No. 06-01-17492](#)

The geographic scope of the assessment is portrayed in Figure 2.1. This area encompasses sufficient area to conduct seismic surveys over Suncor's land interests in the Jean d'Arc Basin area and allow for end of survey line turn around for the seismic vessel. The NAD 83 Zone 22 corner coordinates of the Project Area are:

Table 2: Coordinates of Project Area for [CEAR No. 06-01-17492](#)

	X coordinate	Y coordinate
NW Corner	47.143° N	48.995° W
NE Corner	47.121° N	47.994° W
SW Corner	46.432° N	49.022° W
SE Corner	46.411° N	48.033° W

### **2.1.3 Temporal Scope**

This assessment covers the years 2007 through 2010. Within any one year 3D seismic surveys could be anticipated to occur from May through to the end of December. Geo-hazard surveys could be conducted at any time of year generally in response to need but also contingent on weather and logistical constraints.

### **2.1.4 Planned Activities for 2010**

Suncor has no plans to conduct either 3-D seismic surveys or geo-hazard surveys within the geographic scope of this environmental assessment during 2010. See also Section 4.1.4 of this update

## **2.2 Environmental Aspects**

### **2.2.1 Fisheries**

Fishing activities in the study area have not changed significantly since the environmental assessment report cited in Table 1 was accepted and the program approved.

Recent environmental assessments by other offshore operators that overlap the geographic and temporal scope of Suncor's (see Section 6.2) reflect the same patterning for fishing activity on the Grand Banks as derived from Fisheries and Oceans data bases including research vessel and underutilized species information. While the general patterning of fishing is generally the same, the following paragraphs note some issues and developments of relevance to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

Consultations specific to this update were undertaken in June 2010 with Fish Food and Allied Workers Union and One Ocean to discuss 2010 activities. As a result a follow-up discussion was held with Ocean Choice International with respect to specific comments received on American Plaice. The following paragraphs summarize the key points arising from both consultations.

A directed fishery for American plaice (yellow tail) has not existed for some time however consultation with the fishing industry indicates that a directed fishery for this species may be permitted as early as 2011. If that happens previous fishing patterns for that species may be re-established in areas near the Jeanne d'Arc basin. Future updates will need to take this into account.

In general consultation with the fishing industry indicates that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by Fisheries and Oceans data. For example, in 2009, snow crab harvesters explored many new areas as the resource seemed to have moved further inshore. In 2010, harvesters are also reporting fishing in shallower depths for crab. This



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kind of change requires that the operator should continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

Since the approval of the aforementioned environmental assessment, the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters, offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators should employ a Fisheries Liaison Officer and/or a guide vessel in support of certain oil and gas operations that have a potential to interact with fisheries activities offshore.

### 2.2.2 Species at Risk

An updated summary of SARA listed and COSEWIC assessed species for the Grand Banks area of relevance to this environmental assessment is provided in Appendix 1. SARA listed species with final recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action plan in place. Appendix 1 also provides a listing of COSEWIC candidate species under consideration, for completeness.

No new species have been added to the SARA Schedule 1 listing since the original assessment was completed; however, nine (9) species have received new designations from COSEWIC<sup>2</sup>, as noted in Appendix 1. Of these species, two (*Roundnose Grenadier* and *Loggerhead Sea Turtle*) are deemed by COSEWIC to be endangered, three (*American Plaice*, *Acadian Redfish* and *Deepwater Redfish*) are deemed threatened and four others (*Killer Whale*, *Roughhead Grenadier*, *American Eel* and *Spiny Dogfish*) are deemed of special concern. Thirteen other new species are under consideration as "candidates" for future COSEWIC and potentially SARA designations.

None of the recovery plans in place for SARA listed species materially change the mitigation measures currently committed to by Suncor for the scope of the operations addressed by the environmental assessment.

### 2.2.3 Mitigations

Suncor regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to [CEAR No. 06-01-17492](#) as still valid and re-commits to implementing these mitigation measures for any activities to be carried out under the scope of this assessment in this year.

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<sup>2</sup> i.e., threatened, endangered and special concern categories



### **3.0 Environmental Assessment of Suncor's Vertical Seismic Profiling Program at the Terra Nova Development (June 2006) & Addendum (November 2006)**

#### **3.1 Project Description and Scope**

##### **3.1.1 Activities Covered**

This project involves the conduct of Vertical Seismic Profiling (VSP) surveys in support of the Terra Nova Development Project.

Terra Nova VSP surveys may range from a zero-offset VSP with the source deployed from the rig, to a walk-away VSP carried out from a supply vessel at uniform intervals up to 5.0 km from the rig. For each well, the survey would be a one-time event, carried out over an 8 to 36 hour period.

The sound source to be used will typically include a four sleeve-airgun tuned array comprised of 2 x 100 in<sup>3</sup> and 2 x 150 in<sup>3</sup> airguns, for a total volume of 500 in<sup>3</sup>. The array's airguns will be charged with nitrogen or compressed air, suspended at a constant depth of 4 to 7 metres, depending on sea-state, and operated at 2,000 psi pressure. The 0-to-peak source level is 8.45 Bar-m which converts to 238.5 dB re 1  $\mu$ Pa 0-P @ 1 m; maximum output occurs between 20 and 140 Hz (R. Dugal, Petro-Canada, pers. comm.).

Mitigation procedures for vertical seismic profiles undertaken pursuant to this environmental assessment will follow those defined in Appendix 2 of the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines, May 2008* (C-NLOPB), including ramp-up (i.e., soft start) of the airgun arrays, the use of dedicated Marine Mammal Observer(s) (MMOs) to monitor marine mammals and turtles and implement shut downs of the surveys when appropriate, and the use of a fisheries liaison officer (FLO) and communication procedures to avoid conflicts with the fishery. Fisheries liaison measures will, in part, be governed by risk management measures developed by the oil and gas and fishing industries under the auspices of One Ocean. Seabird observations will also be carried out by qualified personnel as required in the above-referenced guidelines.

### 3.1.2 Geographic Scope

The geographic scope of the assessment is confined to the Terra Nova Field, which is portrayed in Figure 3.1.

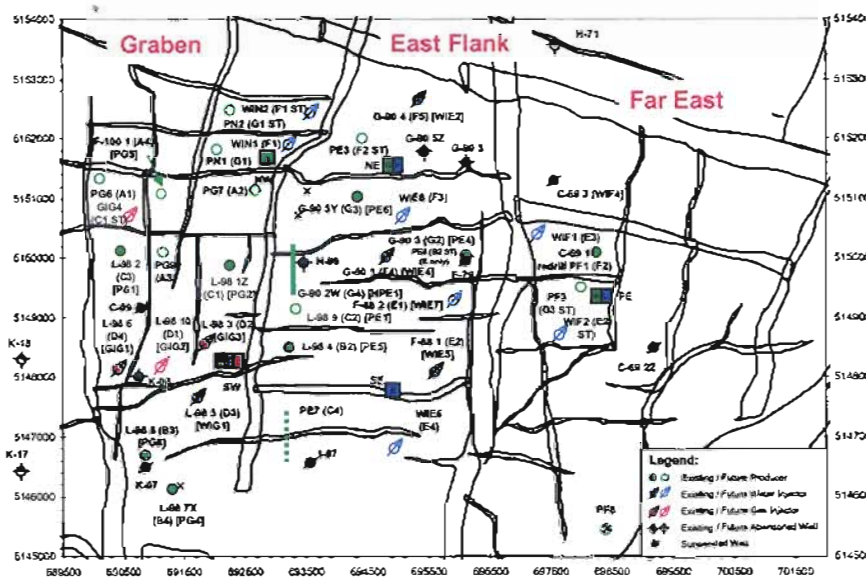


Figure 3.1: Geographic Scope of Project Area for [CEAR 06-01-18277](#)

### 3.1.3 Temporal Scope

Vertical Seismic Profiling (VSP) surveys will typically take place during the summer season but may be conducted at any time during the year. VSP surveys will be carried out on an as-needed basis for the life of the Terra Nova Development project. In any one year there would be a maximum of two surveys.

### 3.1.4 Planned Activities for 2010

There are no VSP surveys planned within the geographic scope of this environmental assessment during 2010.

## 3.2 Environmental Aspects

### 3.2.1 Fisheries

Fishing activities in the study area have not changed significantly since the environmental assessment report cited in Table 1 was accepted and the program approved.

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Recent environmental assessments by other offshore operators that overlap the geographic and temporal scope of Suncor's (see Section 6.2) reflect the same patterning for fishing activity on the Grand Banks as derived from Fisheries and Oceans data bases including research vessel and underutilized species information. While the general patterning of fishing is generally the same the following paragraphs note some issues and developments of relevant to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

Consultations specific to this update were undertaken in June 2010 with Fish Food and Allied Workers Union and One Ocean to discuss 2010 activities. As a result a follow-up discussion was held with Ocean Choice International with respect to specific comments received on American Plaice. The following paragraphs summarize the key points arising from both consultations.

A directed fishery for American plaice (yellow tail) has not existed for some time however consultation with the fishing industry indicates that a directed fishery for this species may be permitted as early as 2011. If that happens previous fishing patterns for that species may be re-established in areas near the Jeanne d'Arc basin. Future updates will need to take this into account.

In general consultation with the fishing industry indicates that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by Fisheries and Oceans data. For example, in 2009, snow crab harvesters explored many new areas as the resource seemed to have moved further inshore. In 2010, harvesters are also reporting fishing in shallower depths for crab. This kind of change requires that the operator should continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

Since the approval of the aforementioned environmental assessment the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters and offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators should employ either or both a Fisheries Liaison Officer or a guide vessel in support of certain oil and gas operations that have a potential to affect fisheries activities offshore.

### **3.2.2 Species at Risk**

An updated summary of SARA listed and COSEWIC assessed species for the Grand Banks area of relevance to this environmental assessment is provided in Appendix 1. SARA listed species with final recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action plan in place. Appendix 1 also provides a listing of COSEWIC candidate species under consideration for completeness.

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Since the original assessment was completed no new species were added to the SARA Schedule 1 listing. However, nine (9) species have received new designations from COSEWIC<sup>3</sup> as noted in Appendix 1. Of these species, two (*Roundnose Grenadier* and *Loggerhead Sea Turtle*) are deemed by COSEWIC to be endangered, three (*American Plaice*, *Acadian Redfish* and *Deepwater Redfish*) are deemed threatened and four others (*Killer Whale*, *Roughhead Grenadier*, *American Eel* and *Spiny Dogfish*) are deemed of special concern. Thirteen other new species are under consideration as “candidates” for future COSEWIC and potentially SARA designations.

None of the recovery plans for SARA listed species in place materially change the mitigation measures currently committed to by Suncor for the scope of the operations addressed by the environmental assessment.

### 3.2.3 Mitigations

Suncor regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to [CEAR 06-01-18277](#) as still valid and re-commits to implementing these mitigation measures for any activities that may be carried out under the scope of this assessment this year.

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<sup>3</sup> i.e., threatened, endangered and special concern categories

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## **4.0 Environmental Assessment of Suncor's Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017 (December 2008) & Addendum (April 2009)**

### **4.1 Project Description and Scope**

#### **4.1.1 Activities Covered**

This environmental assessment addresses the potential for drilling 18 delineation and/or exploration wells from semi-submersible or jack-up mobile drilling units or drill ships. It also assesses the effects of geo-hazard surveys and vertical seismic profiles associated with the drilling program.

#### **4.1.2 Geographic Scope**

The geographic scope of the drilling program is depicted in . The project area is depicted by the red rectangle. The coordinates of the project area are as follows: 48° North and 49.5° West, 48° North and 47° West, 46° North and 49.5° West; and, 46° North and 47° West.

Mitigation procedures for geo-hazard surveys pursuant to this environmental assessment will follow those defined in Appendix 2 of the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines, May 2008* (C-NLOPB), including ramp-up (i.e., soft start) of the airgun arrays, the use of dedicated Marine Mammal Observer(s) (MMOs) to monitor marine mammals and turtles and implement shut downs of the surveys when appropriate, and the use of a fisheries liaison officer (FLO) and communication procedures to avoid conflicts with the fishery. Fisheries liaison measures will, in part, be governed by risk management measures developed by the oil and gas and fishing industries under the auspices of One Ocean. Seabird observations will also be carried out by qualified personnel as required in the above-referenced guidelines.

#### **4.1.3 Temporal Scope**

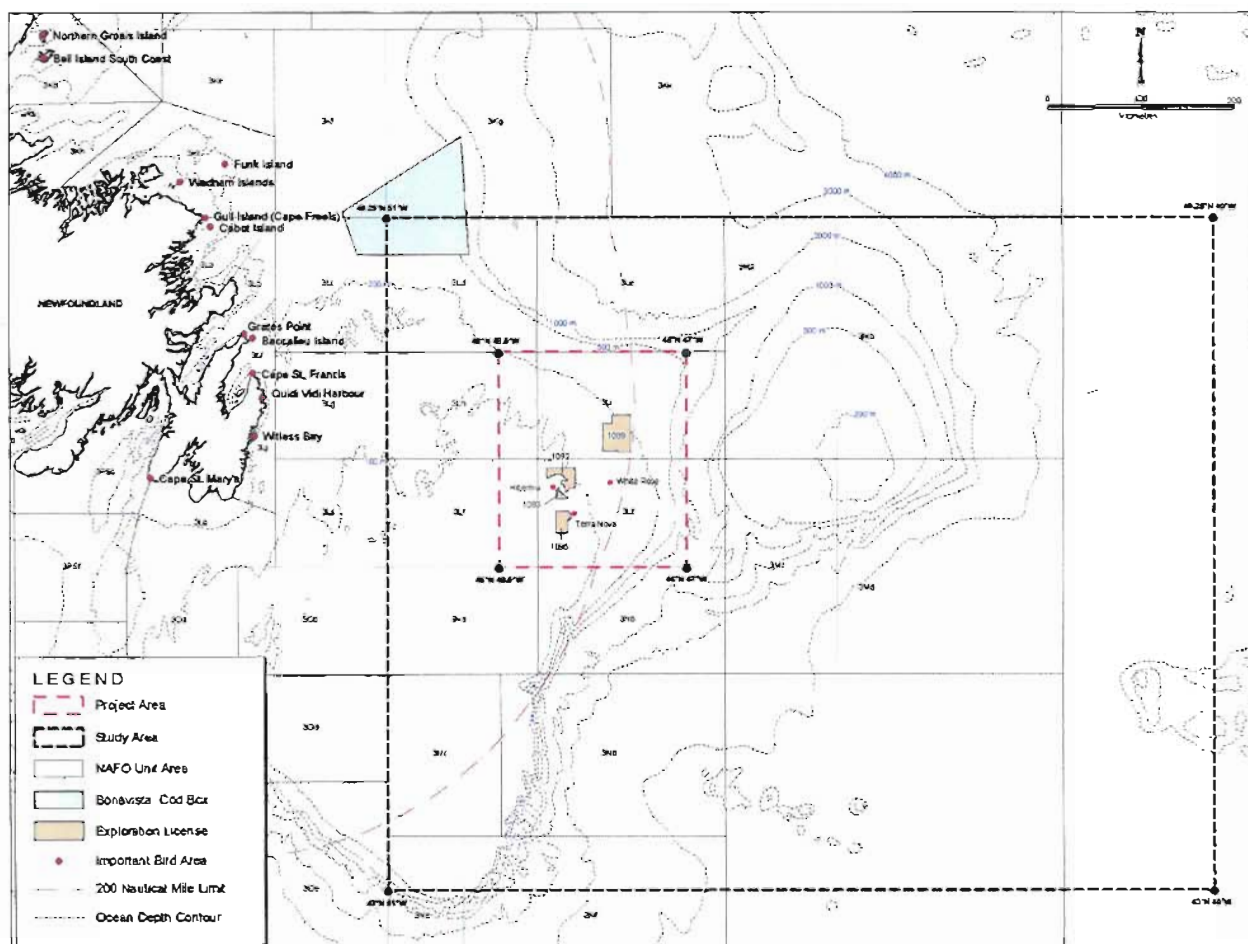
Exploration and delineation drilling activities as outlined above will be carried out year round from 2008 through 2017.

#### **4.1.4 Planned Activities for 2010**

Suncor plans to drill an exploration well at the *Ballicatters* site during the fall of 2010 with a semi-submersible drilling platform. A geo-hazard survey in support of the *Ballicatters* drilling operation was carried out in 2008 and hence no further geo-hazard surveys are planned for this year nor are any other geo-hazard surveys anticipated within the geographic scope of this assessment in 2010.

Additional exploration wells may be drilled in 2011 through 2017 as drilling prospects are identified. Geo-hazard surveys will be conducted as required to support those operations.





**Figure 4.1: Geographic Scope of Project Area CEAR No. 08-01-42400**

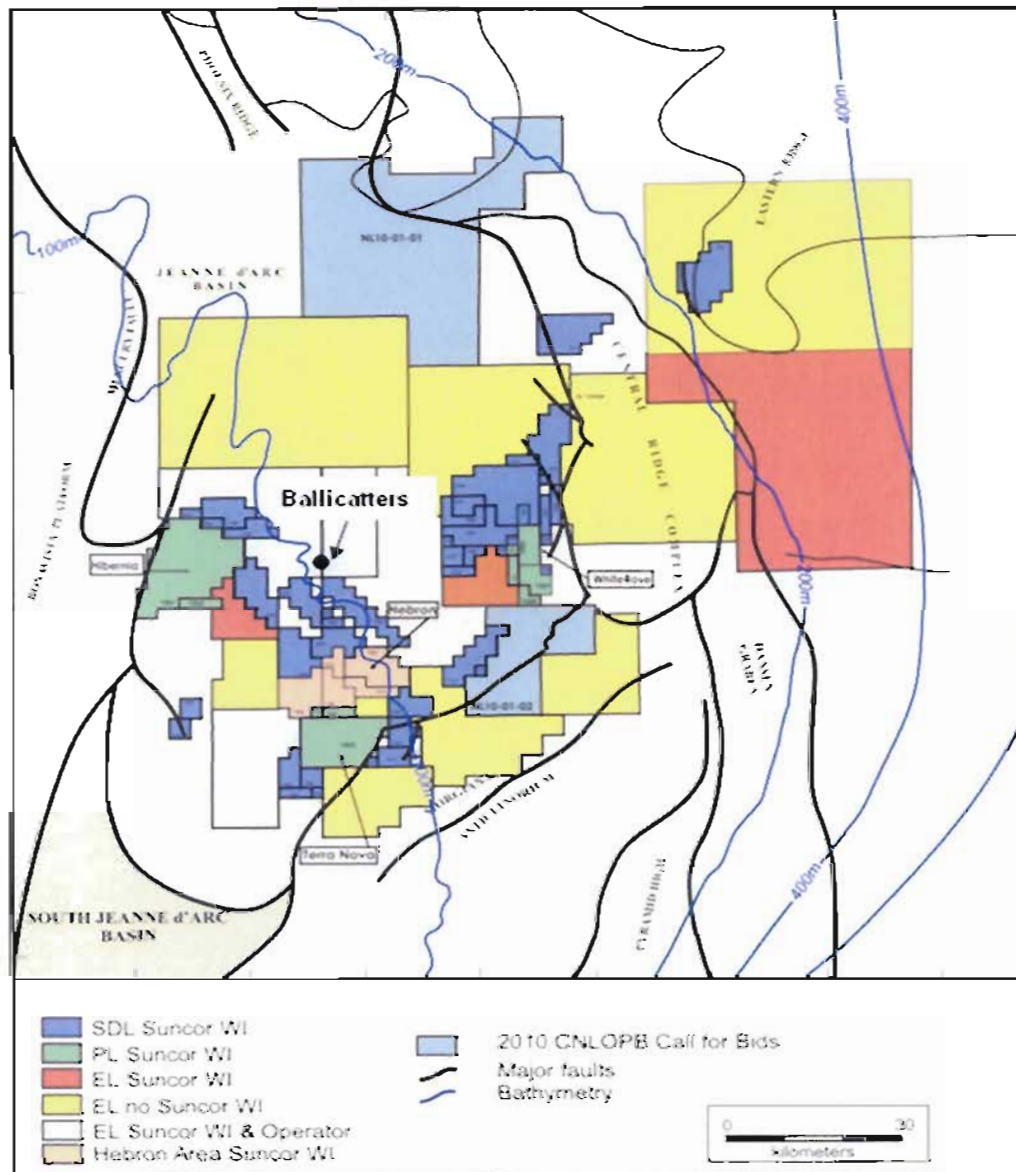


Figure 4.2: General Location of Ballicatters Drill Site

#### 4.1.5 Fisheries

Fishing activities in the study area have not changed significantly since the environmental assessment report cited in Table 1 was accepted and the program approved.

Recent environmental assessments by other offshore operators that overlap the geographic and temporal scope of Suncor's (see Section 6.2) reflect the same patterning for fishing activity on the Grand Banks as derived from Fisheries and Oceans data bases



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including research vessel and underutilized species information. While the general patterning of fishing is generally the same the following paragraphs note some issues and developments of relevant to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

Consultations specific to this update were undertaken in June 2010 with Fish Food and Allied Workers Union and One Ocean to discuss 2010 activities. As a result a follow-up discussion was held with Ocean Choice International with respect to specific comments received on American Plaice. The following paragraphs summarize the key points arising from both consultations.

A directed fishery for American plaice (yellow tail) has not existed for some time however consultation with the fishing industry indicates that a directed fishery for this species may be permitted as early as 2011. If that happens previous fishing patterns for that species may be re-established in areas near the Jeanne d'Arc basin. Future updates will need to take this into account.

In general consultation with the fishing industry indicates that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by Fisheries and Oceans data. For example, in 2009, snow crab harvesters explored many new areas as the resource seemed to have moved further inshore. In 2010, harvesters are also reporting fishing in shallower depths for crab. This kind of change requires that the operator should continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

Since the approval of the aforementioned environmental assessment the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters and offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators should employ either or both a Fisheries Liaison Officer or a guide vessel in support of certain oil and gas operations that have a potential to affect fisheries activities offshore.

#### **4.1.6 Species at Risk**

An updated summary of SARA listed and COSEWIC assessed species for the Grand Banks area of relevance to this environmental assessment is provided in Appendix 1. SARA listed species with final recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action plan in place. Appendix 1 also provides a listing of COSEWIC candidate species under consideration for completeness.

Since the original assessment was completed no new species were added to the SARA Schedule 1 listing. However, nine (9) species have received new designations from

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COSEWIC<sup>4</sup> as noted in Appendix 1. Of these species, two (*Roundnose Grenadier* and *Loggerhead Sea Turtle*) are deemed by COSEWIC to be endangered, three (*American Plaice*, *Acadian Redfish* and *Deepwater Redfish*) are deemed threatened and four others (*Killer Whale*, *Roughhead Grenadier*, *American Eel* and *Spiny Dogfish*) are deemed of special concern. Thirteen other new species are under consideration as "candidates" for future COSEWIC and potentially SARA designations.

None of the recovery plans for SARA listed species in place materially change the mitigation measures currently committed to by Suncor for the scope of the operations addressed by the environmental assessment.

#### 4.1.7 Mitigations

Suncor regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to [CEAR No. 08-01-42400](#) as still valid and re-commits to implementing these mitigation measures for the activities to be carried out under the scope of this assessment this year.

## 5.0 Concluding Statement

The activities Suncor plans to carry out in 2010 have been reviewed and assessed to be within the scope of the environmental assessments currently approved for these activities.

The environmental effects predicted in the currently approved assessments are still valid. Suncor reaffirms its commitment to implement the mitigation measures proposed in these assessments and in the various Screening Decisions made with respect to the environmental assessments described therein by the C-NLOPB.

## 6.0 References

### 6.1 Original Suncor Environmental Assessments

1. LGL Limited. 2007. Environmental assessment of Petro-Canada's Jeanne d'Arc Basin 3-D Seismic Program. LGL Rep. SA882. Rep. by LGL Limited, Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for Petro-Canada, St. John's, NL. 230 p. + appendices.
2. LGL Limited. 2007. **Addendum** to the environmental assessment of Petro-Canada's Jeanne d'Arc Basin 3-D Seismic Program. LGL Rep. SA940-1. Rep. by LGL Limited, St. John's, NL, for Petro-Canada, St. John's, NL. 42 p. + appendices.
3. Christian, John R. 2008. Environmental Assessment of Petro-Canada Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017. LGL Rep. SA993. Prepared by LGL, St. John's, NL prepared for Petro-Canada, St. John's, NL 258 p. + Appendix.

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<sup>4</sup> i.e., threatened, endangered and special concern categories

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4. Christian, John R. 2009. Environmental Assessment of Petro-Canada Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017 **Addendum**. LGL Rep. SA993. Prepared by LGL, St. John's, NL prepared for Petro-Canada, St. John's, NL 22 p.
  5. LGL Limited. 2006. Environmental assessment of Petro-Canada's vertical seismic profiling program at the Terra Nova Development. LGL Rep. SA890a. Rep. by LGL Limited, St. John's, NL, for Petro-Canada, St. John's, NL. 92 p + appendix.

## 6.2 Recent & Relevant Environmental Assessments Reviewed

1. LGL Limited. 2007. Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017, Environmental Assessment. LGL Rep. SA935. Prepared by LGL, St. John's, NL, in association with Canning & Pitt Associates, Inc., Oceans Ltd., and PAL Environmental Services. Prepared for Husky Energy Inc., Calgary, AB. 231 p. + Appendices.
2. LGL Limited, 2008, Environmental Assessment of StatoilHydro Canada Ltd. Exploration and Appraisal/Delineation Drilling Program for Offshore Newfoundland, 2008-2016. LGL Rep. SA947. by LGL Limited, Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for StatoilHydro Canada Ltd., St. John's, NL. 174 p. + appendices.
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4. Stantec. 2010. Hebron Project Comprehensive Study Report. Prepared by Stantec Ltd. on behalf of ExxonMobil Canada Properties

## 6.3 Species at Risk Recovery Strategies

1. Atlantic Leatherback Turtle Recovery Team 2006. Recovery Strategy for Leatherback Turtle (*Dermochelys coriacea*) in Atlantic Canada. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa, vi + 45 pp.
2. Kulka, D., C. Hood and J. Huntington. 2007. Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. x + 103 pp.
3. DFO (Fisheries and Oceans Canada). 2008. *Recovery Strategy for the Atlantic walrus (Odobenus rosmarus rosmarus), Northwest Atlantic population, in Canada. Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa, ON. x + 11 pp.
4. Beauchamp, J., Bouchard, H., de Margerie, P., Otis, N., Savaria, J.-Y., 2009. Recovery Strategy for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada [FINAL]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. 62 pp.

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5. Brown, M.W., Fenton, D., Smedbol, K., Merriman, C., Robichaud-Leblanc, K., and Conway, J.D. 2009. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters [Final]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada. vi + 66p.

## 7.0 Appendices

**Appendix 1** - Current [SARA](#) Listed and [COSEWIC](#) Assessed Species in the Suncor Project Areas

Appendix 1: Current **SARA** Listed and **COSEWIC** Assessed Species in the Suncor Project Areas<sup>5</sup>

Species		Original EAs			SARA Schedule 1					COSEWIC		
		Drill	Seismic	Geohaz	Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate	
Birds												
Ivory Gull								X				
Manx Shearwater			N <sup>6</sup>	N								Under review <sup>7</sup>
Marine Fish												
Northern wolffish						X			X			
Spotted wolffish						X			X			
Atlantic wolffish							X			X		
Atlantic cod (Newfoundland & Labrador population)								X				
Porbeagle shark								X				
White shark								X				
Roundnose Grenadier		N	N					X				
Cusk									X			Mid-priority
American Shad		N	N									Mid-priority
Alewife		N	N									Mid-priority
Capelin		N	N									Mid-priority
Haddock		N	N									Mid-priority
Shortfin mako shark									X			
Blue shark										X		
American Eel		N	N							X		
Roughhead grenadier		N	N							X		
Bluefin Tuna		N	N									Under review <sup>8</sup>
Spiny eel		N	N									Mid-priority

<sup>5</sup> Green Shade means a final Recovery Strategy is in place but no critical habitat has been identified nor have actions plans been finalized for these species. Note that two other species that have recovery strategies, the Atlantic Walrus and Grey Whale, have been extirpated from Eastern Canadian waters and therefore are not listed in the above table.

<sup>6</sup> N: X Indicate new species added to either SARA or COSEWIC lists since the original environmental assessments were approved

<sup>7</sup> Species Status report in preparation or under review; not on current public lists but SARA secretariat confirms under review status

<sup>8</sup> Species Status report in preparation or under review; not on current public lists but SARA secretariat confirms under review status



Species		Original EAs			SARA Schedule 1				COSEWIC			
		Dili	Selismic	Geohaz	Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate	
	Common Name	Scientific Name										
	Pollock	<i>Pollockius virens</i>		N	N						Mid-priority	
	Spinytail Skate	<i>Bathyraja spinicauda</i>		N	N						Mid-priority	
	Atlantic salmon	<i>Salmo salar</i>									High priority	
	Ocean pout	<i>Zoarces americanus</i>		N	N						High priority	
	American Plaice (Newfoundland & Labrador Population)	<i>Hippoglossoides platessoides</i>		N	N				X			
	Acadian Redfish	<i>Sebastes fasciatus</i>	N	N	N				X			
	Deepwater Redfish	<i>Sebastes mentella</i>	N	N	N				X			
	Spiny Dogfish	<i>Squalus acanthias</i>	N	N	N					X		
Marine Mammals *												
	Blue whale	<i>Balaenoptera musculus</i>			X			X				
	North Atlantic right whale	<i>Eubalaena glacialis</i>			X			X				
	Fin whale (Atlantic population)	<i>Balaenoptera physalus</i>					X			X		
	Killer Whale (NW Atlantic & Eastern Arctic Populations)	<i>Orcinus orca</i>		N	N					X		
	Sperm whale	<i>Physeter macrocephalus</i>		N	N						Low priority	
	Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>		N	N						Mid-priority	
	Sowerby's beaked whale	<i>Mesoplodon bidens</i>								X		
	Harbour porpoise	<i>Phocoena phocoena</i>								X		
	Hooded seal	<i>Cystophora cristata</i>		N	N						Low priority	
	Harp seal	<i>Phoca groenlandica</i>									Low priority	
Reptiles												
	Leatherback sea turtle	<i>Dermochelys coriacea</i>			X			X				
	Loggerhead sea turtle	<i>Caretta caretta</i>	N	N	N			X				
Number of Species Added to SARA & COSEWIC Lists* since original EAs approved and status												
			4	22	22	0	0	0	2	3	4	
											13	

<sup>9</sup> The Atlantic walrus (Northwest Atlantic population) is listed on Schedule 1 of SARA as extirpated however the Recovery Strategy for this species concludes that it's recovery neither technically or biologically feasible at this time (DFO 2008a).

<sup>10</sup> Including COSEWIC "candidate species"