

**Scoping Document for the Strategic Environmental
Assessment for the Western Scotian Shelf and Slope**

Canada-Nova Scotia Offshore Petroleum Board

August 2013

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE WESTERN SCOTIAN SHELF AND SLOPE

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1.0 Introduction

This document describes the scope of two strategic environmental assessments (SEAs) for offshore petroleum exploration activities in the marine area on the Western Scotian Shelf and Slope. The Phase 3A SEA will address seismic and exploratory drilling on the Western Scotian Shelf (west of Sable Island Bank to Browns Bank) out to water depths of 2000 m, and the Phase 3B SEA will address seismic and exploratory drilling on the adjacent Western Scotian Slope in water depths in excess of 4,500 m (refer to Figure 1 for the SEA Proposed Project Areas). This Scoping Document outlines the factors to be considered in the SEAs, the scope of those factors, and guidelines for the preparation of the SEA reports.

The Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) has the responsibility pursuant to the *Canada-Nova Scotia Offshore Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Resources Accord Implementation Act (Nova Scotia)* (the Accord Acts) to ensure that offshore oil and gas activities proceed in an environmentally responsible manner. The CNSOPB conducts SEAs in those areas offshore Nova Scotia that may have the potential for offshore petroleum exploration activity but that were not subject to a recent SEA nor to recent and substantial project-specific environmental assessments. In addition, the CNSOPB endeavours to review SEAs within five years of completion to determine validity.

This scoping document has been prepared by the CNSOPB, and will be subject to regulatory and stakeholder review before finalization.

2.0 Background

SEA incorporates a broad-based approach to environmental assessment (EA) that proactively examines the environmental effects that may be associated with a plan, program or policy proposal and that allows for the incorporation of environmental considerations at the earliest stages of program planning. SEA typically involves a broader-scale (*i.e.*, regional, sectoral) assessment that considers the larger ecological setting, rather than a project-specific EA that focuses on site-specific issues with defined boundaries.

In this particular case, information from these SEAs will assist the CNSOPB in its determination in respect to the potential issuance of future exploration rights within the Western Scotian Shelf and Slope SEA areas and may identify general restrictive or mitigative measures that should be considered for application to consequent exploration activities.

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An exploration license confers:

- The exclusive right to explore, drill and test for petroleum;
- The exclusive right to develop those portions of the offshore area in order to produce petroleum; and
- The exclusive right, subject to compliance with the other provisions of the Accord Acts, to apply for a production license.

Activities associated with exploration licenses may include: conduct of seismic surveys, other geophysical surveys and geotechnical surveys; drilling of wells (either exploration or delineation); and well abandonment.

Each of these activities requires the specific approval of the CNSOPB, including a project-specific assessment of its associated environmental effects, and may also be subject to review by Federal Government Departments, such as Fisheries and Oceans Canada and Environmental for compliance with applicable legislation and/or regulations. The SEA does not replace this requirement for a project-specific EA. However, the SEA assists in focusing these EAs by providing an overview of the existing environment, discussing in broader terms the potential environmental effects associated with offshore oil and gas exploration activities in a large area or region, identifying knowledge and data gaps, highlighting issues of concern, and making recommendations for mitigation and planning.

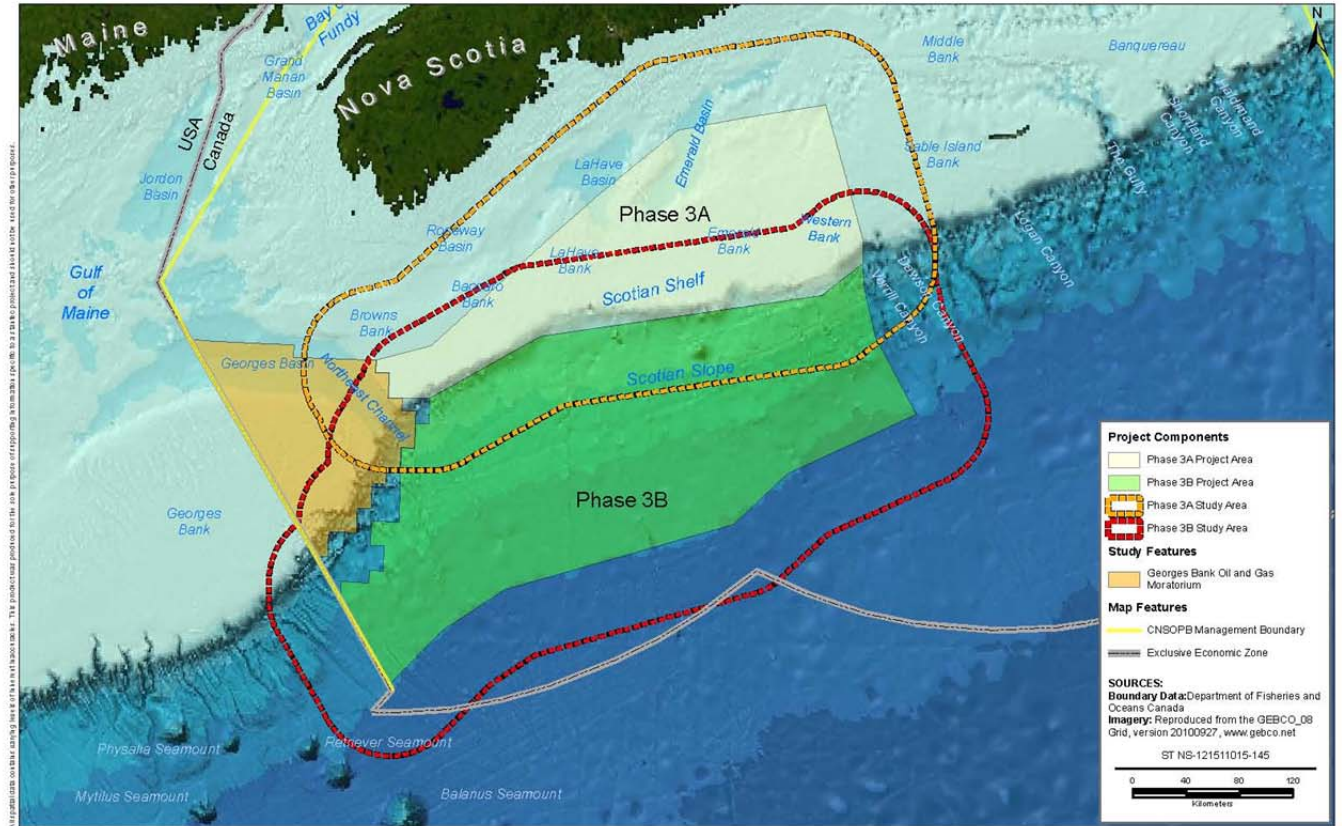
3.0 Geographic Scope

The SEA proposed project areas encompass the areas shown on Figure 1. Projects areas shown could be included in any potential Call for Bids lands or resulting Exploration Licence lands. As per guidance from the Canadian Environmental Assessment Agency¹, the spatial domain of the SEA study areas may extend beyond the boundaries of the project areas where relevant, to include potential project interactions with the Valued Environmental Components (*i.e.*, within zones of influence of certain project discharges/emissions). Within the entire Phase 3 SEA study areas, water depths range from 50 m to over 4500 m. The Phase 3A SEA encompasses portions of the Western, Emerald, LaHave, Baccaro, and Browns Banks on the Western Scotian Shelf. The Phase 3B SEA focuses on the Western Scotian Slope, encompassing Dawson and Verrill Canyons and extending approximately to the western and southern boundaries of Canada's Exclusive Economic Zone (EEZ). The Phase 3B study area extends beyond the boundary of the EEZ into US waters.

¹ Operational Policy Statement entitled "The Process for Defining the Spatial Boundary of a Study Area During an Environmental Assessment of Offshore Exploratory Drilling Projects" (CEA Agency 2003).

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Figure 1 SEA Proposed Study Areas for Phase 3A and Phase 3B



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CLIENT: Canada - Nova Scotia Offshore Petroleum Board

Western Scotian Shelf - Slope Strategic Environmental Assessment

Strategic Environmental Assessment Proposed Project Area

FIGURE NO.: 1
DATE: Jun 19, 2013
 Stantec <small>Stantec Consulting Ltd. © 2013</small>

File Path: V:\1215\active\121510\121511015_cnsopb_sea\geomatics\mapping\mxd\report\Phase3\ST NS_121511015-145_overview_map_Phase3A and B.mxd

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4.0 Objectives

Each SEA will:

- Provide an overview of the existing environment;
- Generally describe typical offshore oil and gas exploration activities (production activities are excluded);
- Describe and evaluate potential adverse environmental effects associated with offshore oil and gas exploration, including cumulative effects from existing production projects near the study areas, if any;
- Identify knowledge and data gaps;
- Identify species of special status and special areas that may interact with exploration activities;
- Identify fisheries and other ocean users that may interact with future exploration programs;
- Make recommendations for general mitigation measures that should be employed during offshore petroleum exploration activities;
- Identify, where appropriate, activities/areas requiring enhanced levels of mitigation; identify, if feasible, the level of enhanced mitigation required;
- Identify follow-up measures (*i.e.*, environmental effects monitoring), as appropriate, that may be required to verify environmental assessment predictions related to future offshore petroleum exploration activities; and
- Assist the CNSOPB in its determination in respect to the potential issuance of future exploration rights within the SEA areas of the Western Scotian Shelf and Slope.

5.0 Past and Current Petroleum Activity

In 2012, Shell Canada Limited (Shell) and BP Exploration Operating Company Limited (BP) acquired Exploration Licenses (ELs) on the western Scotian Slope, committing to exploratory work programs on these licenses. Shell is currently conducting a three-dimensional (3D) Wide Azimuth (WAZ) seismic survey in and near ELs 2423, 2424, 2425, 2426, 2429 and 2430. A map is available on the CNSOPB Offshore Project webpage: <http://www.cnsopb.ns.ca/offshore-activity/offshore-projects/shell-shelburne-seismic-program>.

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This survey utilizes a four-vessel fleet of two streamer vessels and two additional source vessels. It is anticipated that the 3D WAZ seismic survey will be at least 65 days in duration and occur during the period from mid-May to mid-September 2013. Data acquisition is not expected to take longer than 120 days². BP has indicated that it will likely propose a seismic exploration program in and near ELs 2431, 2432, 2433, and 2434 in 2014, although an application has not been filed as of the time of preparation of this document. There are no parcels associated with the NS13-1 Call for Bids within the Phase 3 SEA study areas.

Several exploration wells have been drilled on the Western Scotian Bank and Slope, all of which have been plugged and abandoned. At the western extent of the Phase 3A and Phase 3B study areas is the Georges Bank Prohibited Zone, within which a moratorium currently exists for petroleum exploration..

6.0 Scope of SEA

6.1 SCOPE OF THE PROJECT

The SEAs (for Phases 3A and 3B) will describe all foreseeable offshore oil and gas exploration activities in the study area. It will examine potential environmental interactions associated with these petroleum exploration activities. Exploration activities to be considered in the SEA include exploratory and delineation drilling, seismic survey activities (2D, 3D, wide angle azimuth (WAZ), vertical seismic profiling, geohazard surveys), geotechnical surveys, and wellsite abandonment. The focus of the SEA will be on offshore exploration activities (and interactions with the environment of those activities) which are under the jurisdiction of the CNSOPB. The SEA will describe where data and information are lacking, or limited. Suggestions for strategies to address data gaps will be identified.

6.2 SPATIAL AND TEMPORAL BOUNDARIES

The spatial boundary for exploration activities to be considered in the Phase 3A and Phase 3B SEAs is shown in Figure 1. The boundaries for the study areas will take into consideration the Operational Policy Statement entitled “The Process for Defining the Spatial Boundary of a Study Area During an Environmental Assessment of Offshore Exploratory Drilling Projects” (CEA Agency 2003).

The SEAs will include the offshore petroleum exploration activities, as described in the preceding section, which may occur within the SEA Project Area as a result of future Call for Bids. The SEAs will be reviewed in at least five years to determine validity.

² CNSOPB Offshore Activity Report. Shell Shelburne Seismic Program. <http://cnsopb.ns.ca/offshore-activity/offshore-projects/shell-shelburne-seismic-program>

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6.3 FACTORS TO BE CONSIDERED

This section outlines the Valued Environmental Components (VECs) to be assessed in the SEAs and includes rationale for the inclusion of each of these components. Appendix A describes those components that will not be considered in the SEA because experience and research has shown that they are unlikely to be significantly adversely affected by petroleum exploration activities. Rationale for the exclusion of these components, and specific mitigation that must be implemented to allow for their exclusion in the SEAs, are also included in Appendix A. These exclusions are considered outside the scope of the SEAs and do not require assessment.

6.3.1 Valued Environmental Components

Each VEC (including components or subsets thereof) will be identified and the rationale for its selection provided. VECs could include “Species of Special Status”, “Special Areas”, “Fisheries”, and “Other Ocean Uses” in the vicinity of the study areas since these categories appear to cover environmental components to be potentially adversely affected by offshore hydrocarbon exploration activities.

Species of Special Status

Species of Special Status includes consideration of the following species and their critical habitat which may be present in the SEA study areas and determined to be potentially affected during exploration activities: species designated as at-risk under the *Species at Risk Act* (SARA); species assessed as endangered, threatened, or of special concern by the Committee on the Status of Endangered Wildlife of Canada (COSEWIC) and/or migratory birds protected by the *Migratory Birds Convention Act, 1994*. These are expected to include, but may not be limited to, leatherback and loggerhead turtle, North Atlantic right whale, fin whale, northern bottlenose whale, blue whale, Sowerby’s beaked whale, coral/sponges, and migratory birds.

Special Areas

Designated areas of special interest due to their ecological and/or conservation sensitivities (*i.e.*, marine protected areas, existing or future coral conservation zones, critical habitat, fish conservation areas, *etc.*) could be potentially affected by exploration activities in the SEA study areas. At a minimum, this discussion will include consideration of coral and sponge conservation areas, fisheries conservation areas, the Roseway Basin Area to be Avoided, and ecologically and biologically significant areas (EBSAs)). The Georges Bank Moratorium Area will also be discussed. The scope of the VEC also includes the inhabitants of the special area which may not be covered under the Species of Special Status VEC.

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Fisheries

Commercial, recreational and aboriginal fisheries (including relevant fish species) that could be affected by exploration activities in the SEA study areas will be considered. The focus of the assessment of this VEC is on potential interactions with commercial fishing activities, including aboriginal fisheries interests as applicable, through environmental effects on fisheries resources, displacement from current or traditional fishing areas, or gear loss or damage resulting in a demonstrated financial loss to commercial fishing interests. Key fisheries on the Shelf within the study areas to consider are primarily, but not limited to, groundfish including cusk, cod, haddock, pollock, halibut, hake (white, red, silver), monkfish, and redfish. Inshore and offshore lobster will also be considered as relevant within the study areas. Key fisheries on the Slope consist primarily of large pelagics including tunas, swordfish, and sharks.

Other Ocean Uses

Other ocean uses that could be affected by exploration activities in the SEA study areas (*i.e.*, marine shipping, military use, research surveys, and other petroleum development activities, *etc.*) will also be considered.

6.3.2 Scope of the Factors to be Considered

Each SEA will include the following:

- Historical overview of offshore petroleum exploration activities in the study areas and a discussion of regional offshore oil and gas activities in the Nova Scotia offshore area;
- Overview of typical offshore petroleum exploration activities (well site surveys, vertical seismic profiling, 2D/3D/3D WAZ seismic, geotechnical programs, exploration drilling and well abandonment) and methods to carry out these activities (including a brief description of various types of rigs and vessels);
- Overview of the physical and biological environments in the SEA study areas based on existing information and data, with data gaps highlighted. This section will include a broad overview that clearly describes the biological communities that may be encountered in the study area;
- Overview of other marine activities in the SEA study areas (*e.g.*, commercial, recreational and Aboriginal fisheries, marine transportation);
- Identification and qualitative assessment of potential environmental interactions of the VECs with petroleum exploration activities;
- Identification of mitigation measures and monitoring that might be considered in project-specific EAs for offshore activities to minimize adverse residual environmental effects, highlighting specific or enhanced mitigation that may be required to address specific

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concerns especially those proposed for any Species of Special Status or Special Areas identified within or adjacent to the SEA study areas;

- Discussion of potential planning implications/considerations (*i.e.*, need for additional data, special mitigation) which may have to be considered in project-specific EAs within the SEA study areas;
- General discussion of effects and mitigation of potential accidental events and malfunctions associated with offshore oil and gas exploration activity; and
- General discussion of potential cumulative environmental effects associated with multiple offshore human use activities in the study areas based on past, present and an estimate of potential future human use activity.

The SEAs will consider the environmental factors and issues outlined in Sections 6.3.3-6.3.5, as a minimum, with emphasis upon factors unique to the SEA study areas. Sufficient supporting information will be provided, or referenced and summarized if it already exists in publicly available publications. Substantive uncertainties or information gaps will be identified.

6.3.3 Potential Exploration Activities - Environment Interactions

For each of the identified VECs, a description of the interactions of petroleum exploration activity with the environment will be presented. Proposed activities include:

- Seismic surveying;
- Seabed surveying (*i.e.*, geophysical, geotechnical data collection);
- Vertical seismic profiles (VSPs);
- Exploratory/delineation drilling (*e.g.*, mobile offshore drilling unit (semi- submersible or drill ship)) and ancillary activities;
- Vessel traffic (*e.g.*, supply vessels, seismic vessels, helicopters); and
- Well abandonment operations.

Potential project interactions include, but are not limited to the following:

- Underwater noise (*e.g.*, during seismic surveying, seabed surveying, drilling) issues (*e.g.*, hearing loss, behavioural effects, *etc.*) on Species of Special Status and harvestable fish species;
- Effects (*e.g.*, smothering, toxicity) of operational discharges (*i.e.*, drill wastes) on Species of Special Status and harvestable fish species, particularly bottom-dwelling fish and shellfish species, and special areas;

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- Interference with fisheries and other ocean uses during routine operations (*i.e.*, seismic surveying, seabed surveying, drilling) and/or accidental events (*e.g.*, large oil spill, blow-out);
- Attraction (due to lights and/or flares) of migratory birds to platform structures or support vessels; and
- Effects of accidental events (*e.g.*, large condensate spill) on all VECs.

6.3.4 Cumulative Exploration Activities - Environment Interactions

Cumulative environmental effects will be examined in consideration of the past, present and potential future petroleum activities in the SEA study areas and mitigation measures identified. Planned and reasonably foreseeable exploration activities will be included in the cumulative environmental effects assessment and it will also consider other non-petroleum activities ongoing in the SEA study areas (and adjacent Shelf and Slope areas) such as commercial fishing, marine traffic, and fisheries research surveys.

6.3.5 Effects of the Environment on the Project

For exploration activities identified, the SEA will include a discussion of the physical environmental conditions which could potentially affect exploration activities, including earthquakes, tsunamis, turbidity currents, and significant storm (severe winds and waves) events within the SEA study areas.

7.0 Conclusions and Recommendations

Based on the information presented in the physical and biological environment overview, the description of potential exploration activities-environment interactions and the application of mitigation measures, conclusions will be presented and planning approaches recommended for the CNSOPB to consider in the issuance of exploration licenses in the SEA study areas. Data gaps with the potential to affect the validity of these conclusions will be highlighted. Should project-specific EAs be conducted in areas where data gaps are identified in this, or other, studies, these data gaps will need to be addressed at the project-specific EA level. Sensitive issues, particularly those of public concern identified during the SEA process, will also be highlighted.

8.0 Consultations

Throughout the development of the SEAs, the CNSOPB and its contractor will consult with federal government departments, fisheries and other ocean users, and local non-governmental

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organizations. Information on the SEA process will be provided and stakeholders will be encouraged to discuss issues and concerns that are relevant to the SEA study areas and SEA objectives. SEA documents will be posted on the CNSOPB Public Registry.

It is anticipated that the final SEAs will be published for public/stakeholder review and comment for a 6-week period commencing mid-November 2013. Comments received will be considered by the CNSOPB, and the SEAs revised as appropriate, with final SEA documents published no later than April 2014.

APPENDIX A

Components and Activities Outside of the Scope

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Appendix A

These SEAs will include an overview of the biological communities in the SEA study areas in order to provide a detailed description of which species may be anticipated, and when they are likely to occur. This includes all marine birds, marine mammals, sea turtles, marine benthos and fish populations that potential future operators may encounter during their programs. The assessment of potential environmental effects within the SEAs for identification of recommended mitigation measures will be focused on the VECs identified above, however, as mitigation measures beyond standard mitigation are unlikely to be required for species considered to be not at-risk or for conventional areas within the study area. The following components are therefore excluded from the scope of the SEA process that is focused on the assessment of potential effects.

I) Air Quality

Emission sources from the proposed project are seismic and other survey/support vessels and drilling rigs. It is anticipated that emissions from routine exploration-related operational activities will not cause an exceedence(s) of applicable air quality standards or guidelines. Since there are limited emissions sources and few receptors (if any) in the SEA study areas, and given the short duration of exploration projects, assessment of potential effects on air quality can be excluded from the SEA and EAs provided that future license holders/operators adhere to:

- MARPOL Annex VI, Regulations for the Prevention of Air Pollution from Ships; and
- Air Emissions provisions of the Offshore Waste Treatment Guidelines, including submissions of greenhouse gas emissions.

However, malfunctions and accidental events (*i.e.*, blow-out) may have an environmental effect on air quality. An environmental assessment of the potential effects of air quality as a result of a blow-out on VECs proposed in Section 6.3 (*i.e.*, Species of Special Status, Special Areas, Fisheries) is the appropriate focus for this assessment rather than “Air Quality” per se. Assessment of the environmental effects of malfunctions and/or accidental events is required as is stated in Section 6.3.

II) Water Quality

Assessment of the potential environmental effects of discharges from platforms/vessels on water quality during routine exploration activities can be excluded from the SEA and EAs provided that future leaseholders/operators adhere to:

- Nova Scotia Offshore Area Petroleum Geophysical Regulations;
- Offshore Waste Treatment Guidelines; and
- *Fisheries Act* (Section 36).

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Compliance with the above requirements involves implementation of standard mitigation and will prevent adverse environmental effects on water quality for routine operations. However, malfunctions and accidental events (*i.e.*, oil spills) may have an environmental effect on water quality. An environmental assessment of the potential effects on water quality as a result of oil spills on VECs proposed in Section 6.3 (*i.e.*, Species of Special Status, Special Areas, Fisheries) is the appropriate focus for this assessment rather than Water Quality per se. Assessment of the environmental effects of malfunctions and/or accidental events is required as is stated in Section 6.3.

III) Fish

Fish species of special status, important feeding, nursery, and/or spawning grounds for fish, and commercial, recreational and Aboriginal fisheries resources are addressed under relevant VECs (Species of Special Status, Special Areas, and Fisheries VECs) and assessed as stated in Section 6.3. Fish species which are not species of special status, don't support fishery resources or other fish species of special status, and are not present in such abundance for a special area to be designated for that species, are excluded from the effects assessment section of the SEA provided that future licenses holders/operators adhere to:

- Statement of Canadian Practice with Respect to the Mitigation of Seismic Noise in the Marine Environment (SOCP).

The SOCP was developed as a result of an extensive review by federal and provincial government advisors and scientific experts of the most effective and appropriate mitigation measures used world-wide to minimize adverse environmental effects on marine life. Compliance with the SOCP will result in minimization and/or avoidance of adverse residual environmental effects on marine fish and other marine life.

IV) Marine Benthos

Discharges of drilling mud and rock cuttings during exploration drilling can result in burial or toxic effects on the marine benthos. Based on past environmental effects monitoring results and other research studies, these effects are understood to be limited spatially and temporally. However, in recognition of sensitive and/or commercially important benthic species that may occur within the SEA study areas (*e.g.*, sponges, corals, scallops, clams, quahogs, crabs, shrimps, and sea cucumbers), these effects will be assessed in the Special Areas and Fisheries VECs, respectively, as stated in Section 6.3. No further assessment of marine benthos is required at this time.

V) Marine Mammals and Sea Turtles

As stated in Section 6.3, the potential for environmental effects on marine mammal and/or sea turtle Species of Special Status that may occur within the SEA study area, as well as those species that may occur in nearby designated environmentally sensitive areas will be assessed under the Species of Special Status VEC and Special Areas VEC respectively. Provided that

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appropriate mitigation is applied for species of special status, it is not anticipated that exploration activities will have an adverse environmental effect at the population level for secure populations of marine mammals or sea turtles.

No further assessment beyond that stated in Section 6.3 will be required provided that:

- The proponent adheres to mitigation measures outlined in the Statement of Canadian Practice with Respect to the Mitigation of Seismic Noise in the Marine Environment for marine mammals and sea turtles.

As stated in Section 6.3, the proponent should note that additional mitigation may be required following the conduct of a project-specific EA.

VI) Seabirds

It is recognized that the attraction of any avian species to lights on platforms/vessels or to flares during drilling operations/well testing, may cause injury or death from collisions or may disrupt migrations. An environmental assessment of the potential adverse environmental effects on avian species of special status (including migratory birds) will be carried out under the Species of Special Status VEC, as outlined in Section 6.3. Population level effects on seabirds, however, are not anticipated.

As stated in Section 6.3, the proponent should note that additional mitigation may be required following the conduct of a project-specific EA.

No further assessment of environmental effects on seabirds not assessed in Section 6.3 shall be required, provided that:

- The SEA and EAs consider the potential impacts of vessel lights/flares on avian species of special status (including migratory birds) and identify any necessary mitigation measures (*i.e.*, should birds land on vessels involved with the project, then implementation of the Williams and Chardine handling protocol brochure entitled “The Leach’s Storm Petrel: General Information and Handling Instructions” should be carried out. A permit is required from the Canadian Wildlife Service of Environment Canada to implement this protocol).