2. Overall Project Objectives

Phase I. Broad-scale basin characterization

Creation of initial broad scale maps and petroleum system models for Hecate Strait showing definition and categorization of potential hydrocarbon generation areas of Queen Charlotte Basin.

Phase II. Detailed basin delineation

Creation of Petroleum System Model for Queen Charlotte Basin. This will show assessments of basin evolution, including the histories of tectonics, geology, sedimentation, geochemistry and maturation.

Creation of detailed maps / profiles for QCB, showing features such as

1. Potential source rock types
2. Recent maturities
3. Probable migration fairways
4. Probable traps

This study seeks to define the most probable sectors of petroleum formation in the Queen Charlotte Basin (QCB), underlying Hecate Strait and Queen Charlotte Sound. The purpose is to integrate the available geophysical, geologic and geochemical information for the region into a unified assessment using our Petroleum Systems Modeling.

This 12-month, 2-phase study provides an initial delineation of the Queen Charlotte Basin as to its degree of petroleum formation. It provides assistance in the definition of the possible location and timings of accumulations of hydrocarbons. One goal of this study is to assist in reducing the footprint of likely interest in Hecate Strait and Queen Charlotte Sound. This work will identify sectors in there that may require follow-up work, i.e., surface sediment/geochemical surveys, 2-D or 3-D seismic, etc.

2.1 Phase I Objectives (Broad-Scale Basin Characterization)

Phase I will provide a preliminary collation and synthesis of existing information for the Queen Charlotte Basin region. This will include an analysis of the regional geophysical and geochemical information to map the potentially hydrocarbon prospective generative areas in the basin. The output will be a "first-cut" mapping of the petroleum generation. Due to the lack of reliable information on Mesozoic sequences in the QCB, Phase I will concentrate more on the Paleogene and Neogene sequences of the basin. Although marine units are described for limited sections in the Cenozoic, most of the potential source rocks are comprised of Type III kerogens, and hence largely gas prone. We recognize that older units in the basin, such as the late Triassic and Jurassic, may have suitable marine source rocks (Type II kerogen) for the substantial generation of oil and gas. As such, they are important to the petroleum situation of the QCB and therefore we include these units in our Petroleum Systems Model. However, these Mesozoic units have not been drilled in the basin and are only known from small outcrops on the Queen Charlotte Islands (QCI). Furthermore, the seismic, stratigraphic and lithologic information on the Mesozoic available to us at this point is limited. As a consequence our assessment of the Cenozoic sequences will be more reliable than for the Mesozoic.

2.2 Phase II Objectives (Detailed Basin Delineation)

Phase II will provide detailed assessments of the areas of interest defined in Phase I. This includes smaller-scale tectonics, geology, sedimentology, geochemistry and hydrodynamics to estimate:

a) Source rock deposition – e.g., types, areal extent
b) Hydrocarbon generation
c) Timing of migration– probable migration fairways (2D)
d) Types and location of petroleum plays expected (2D*)*

The work will be conducted in close consultation with the Offshore Oil and Gas Branch to ensure that the needs, goals and formats of the Ministry of Energy and Mines are considered on an ongoing basis. In addition, this project will identify questions, aspects or issues that may need addition resources or effort to resolve.