Environmental Effects Monitoring Coordination Framework

Developed by:
Canada-Nova Scotia Offshore Petroleum Board
Department of Fisheries and Oceans
Environment Canada

April 12, 2005

Table of Contents

1.0 Background

1.1 Purpose

This Environmental Effects Monitoring (EEM) framework has been developed by the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB), Department of Fisheries and Oceans (DFO) and Environment Canada (EC).

The framework is designed to encourage closer government, regulator, and industry cooperation and coordination in designing, implementing and reviewing EEM programs relating to oil and gas activities offshore Nova Scotia. In addition, it is designed to encourage efficient and timely reviews. It outlines the expected interactions and roles of applicable regulators, government departments and industry in EEM programs in the Nova Scotia offshore.

It is not the intent of this document to provide details on the design elements of an EEM program. In addition to existing documents, specific EEM guidance documents may be developed for each general category of offshore oil and gas activities, including EEM relating to production and decommissioning, exploration drilling, seismic testing and spill response.

1.2 Scope

It is recognized that a number of monitoring and reporting requirements may be attached to authorizations associated with the conduct of oil and gas activities offshore Nova Scotia, under the jurisdiction of the CNSOPB.

It is further acknowledged that EEM comprises one of many components of a follow-up program, as defined under the Canadian Environmental Assessment Act.

This framework is applicable only to environmental effects monitoring programs associated with oil and gas activities in the offshore area under the authority of the CNSOPB.

1.3 Definitions

EEM can be defined as the collection and documentation of scientific data on existing environmental conditions and any changes in these conditions over time as a result of a specified change in the environment (e.g. project or activity). For offshore petroleum activities, EEM represents iterative scientific evaluations of the effects of petroleum activities on identified components of the surrounding environment.

To maintain consistency in terminology, the following definitions will apply when dealing with EEM for oil and gas activities offshore Nova Scotia:

“adaptive management” – actions taken to reduce the environmental impact of a project on the basis of new information.

“effect” - a change in the measured variable which is outside the range of the natural variation observed at a reference area, unless there is an effect size defined for that variable.

“environment” - the components of the Earth, including a) land, water and air, including all layers of the atmosphere, b) all organic and inorganic matter and living organisms, and c) the interacting natural systems that include components referred to (a) and (b) above, as defined under section 2(1) of the Canadian Environmental Assessment Act..

“follow-up program” - a program for a) verifying the accuracy of the environmental assessment of a project, and b) determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

“monitoring” - a sequence of measurements over space and time, for the purpose of characterizing environmental conditions.

“operator” – the company that has been granted authorization to undertake a project or activity.

“program”, - a single EEM effort in relation to one given project or activity.

“regulators” - CNSOPB, DFO and EC, all of which have regulatory requirements for EEM included in permits, authorizations and/or approvals to conduct activities in the Nova Scotia offshore.

1.4 EEM Goals and Objectives

EEM programs for offshore oil and gas activities are designed to serve the following purposes:

- To enhance the knowledge of environmental effects stemming from the oil and gas industry offshore Nova Scotia;
- To provide an early warning of undesirable change in the environment;
- To identify and quantify environmental effects stemming from the oil and gas industry offshore Nova Scotia;
- To verify the predictions made in a project environmental assessment;
- To evaluate the effectiveness of mitigation activities and help identify the need to improve or alter mitigation;
- To assist in identifying research and development needs;

- To determine whether changes to guidelines or operation restrictions/limitations (e.g. discharge criteria) are needed; and,
- To improve the quality of future prediction and mitigation efforts associated with offshore oil and gas activities.

Good EEM design addresses public concerns, regulatory requirements, and scientific issues. According to the National Research Council[1], defensible EEM program design and implementation depend on the following factors:

- The goals and objectives of the monitoring program need to be clearly articulated in terms that it addresses environmental concerns of both regulators and the public and that the process is scientifically sound;
- Not only must data be gathered, but attention must also be paid to their management, synthesis, interpretation and analysis;
- Procedures for quality assurance are needed, including scientific review;
- Because a well-designed monitoring program results in unanswered questions about the environmental processes or human impacts, support for complementary research should be provided;
- Adequate resources are needed not only for data collection but also for detailed analysis and evaluation over the long term;
- Programs should be sufficiently flexible to allow for their modification where changes in conditions or new information suggests the need;
- Provision should be made to ensure that monitoring information is made available to all parties in a form that is useful to them.

EEM, as it pertains to offshore activities, can be applied by an operator to support future decision-making, by applicable regulators as a condition of approval, by scientists as part of research programs, or by law through the Canadian Environmental Assessment Act (CEAA) or other pieces of federal legislation.

1.5 Historical Context

The CNSOPB has required EEM for the Sable Offshore Energy Project (SOEP) production activities since the onset of the project and for the Cohasset Panuke Oil Project. More recently, EEM programs associated with some seismic activities have been required by the CNSOPB.

To date, EEM programs for the NS offshore have focused on individual projects, due in part to the low level of offshore activity requiring EEM programs. In some instances, it may be beneficial to combine EEM studies when operators are working in close proximity to each other either on the same or different activities.

[1] National Research Council, 1990. Managing Troubled Waters: The role of marine environmental monitoring. Prepared by the Committee on a Systems Assessment of Marine Environmental Monitoring, Marine Board, Commission on Engineering and Technical Systems, National Research Council. National Academy Press, Washington, D.C.

2.0 Legislative Responsibilities for EEM

2.1 Canada-Nova Scotia Offshore Petroleum Board

The CNSOPB is responsible for the regulation of oil and gas activities offshore Nova Scotia. Pursuant to the federal *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and its provincial mirror the *Canada-Nova Scotia Petroleum Resources Accord Implementation (Nova Scotia) Act* (reference to sections herein will be to the federal Accord Act) the Board may require that EEM programs be carried out in association with a given activity. This would entail that an EEM program must be conducted as a condition for the issuance of a work or activity authorization under section 142 or as part of the approval of a development plan under section 143 of the Accord Act. As an RA, the CNSOPB has responsibilities relating to federal environmental assessments under section 79 (2) of the *Species at Risk Act* (SARA) which requires monitoring of all predicted adverse effects on listed species and critical habitat.

It is the policy of the CNSOPB to seek external advice with respect to the plans and outcomes of EEM. In the majority of cases, the CNSOPB will be the only regulator and will seek expert advice from other government departments.

2.2 Canadian Environmental Assessment Agency

Activities that require authorization by the CNSOPB under sections 142(1)(b) or 143(4)(a) of the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, as specified in Paragraph 19.1 or 19.2 of the Inclusion List Regulations of the *Canadian Environmental Assessment Act* (CEAA) require assessment under the *Canadian Environmental Assessment Act*. In accordance with section 38 of the CEAA, every screening (section 38(1)) and comprehensive study, mediation or assessment by a review panel (section 38(2)) must consider the need for, and the requirements of, any follow-up program in respect of the project. In decisions arising from comprehensive study, mediation or assessment by a review panel where a project is permitted to be carried out in whole or in part, Responsible authorities (RAs) or the Minster of Environment must design or approve a follow-up program for the project and ensure its implementation. Federal authorities (FAs) shall provide assistance as requested by the RA, where they have agreed on the implementation of such a program, in accordance with s.38(4) of the CEAA. The CNSOPB is a FA pursuant to CEAA, and would be a RA for any projects requiring the 142(1)(b) or 143(4)(a) authorization.

2.3 Department of Fisheries and Oceans

The DFO can require EEM plans and reports as part of section 35 of the *Fisheries Act* (Harmful Alteration, Disruption or Destruction of Fish Habitat – HADD). DFO can also require monitoring as part of section 73 permits and agreements under the *Species at Risk Act* (SARA). DFO also has responsibilities relating to federal environmental assessments under section 79 (2) of the *Species at Risk Act* (SARA) which requires monitoring of all predicted adverse effects on listed species and critical habitat.
Responsibilities may also apply from the *Oceans Act* with respect to marine environmental quality guidelines and/or regulations associated with marine protected areas.

2.4 Environment Canada

Offshore activities subject to the Disposal at Sea provisions of the *Canadian Environmental Protection Act* allow EC to require monitoring programs be undertaken in order to determine the effects of the disposal on the environment and human life (section 129). In addition, EC conducts its own monitoring at selected sites used under the authority of a Disposal at Sea permit. EC's monitoring costs are funded through a fee based on volumes of dredged and excavated materials disposed of at sea and paid for by permit holders.

EC has permitting responsibility under the Migratory Birds Convention Act that may result in follow-up monitoring requirements in the offshore environment. EC can also require monitoring as part of section 73 permits and agreements under the *Species at Risk Act* (SARA). As with other federal departments, EC has responsibilities under section 79 (2) of the *Species at Risk Act* (SARA) which requires monitoring of all predicted adverse effects on listed species and critical habitat.

2.5 Other Departments and Agencies

In some cases, other departments and/or agencies may have responsibilities for the implementation of offshore oil and gas activities. For example, the National Energy Board may hold responsibility for EEM relating to pipelines and Transport Canada for matters relating to the *Navigable Waters Protection Act*. Industry Canada is responsible for approving sites on which radio apparatus may be located, as well as erection of towers and masts. These departments also have monitoring requirements under section 79 (2) of the Species at Risk Act. Provincial governments may have responsibilities related to shore-based components of a project.

3.0 Roles in EEM

The design and implementation of EEM programs requires the commitment and cooperation of industry, regulatory bodies, various government departments, and others with an interest in the activity or the potential effects of the activity being conducted.

3.1 Role of Industry

3.1.1 Preparation of Environmental Assessment

In accordance with CEAA, offshore oil and gas activities that could trigger an EEM require that an environmental assessment be completed prior to an activity. Although it is the responsibility of the applicable regulator(s) to ensure an EA is prepared, its completion is oftentimes delegated to the operator. Where EEM will be conducted, either by way of legislative requirements, conditions to authorizations, or through operator commitment, plans for the EEM program should be outlined within the EA. The EA should provide the direction for the program and should describe actions that will be taken if monitoring reveals that impact predictions are inaccurate.

3.1.2 Submission of Study Design

In cases where an EEM program is deemed appropriate, the operator shall prepare a study design. Operators are encouraged to work with the EEM review committee established by applicable regulators (see section 3.2.1) during the design stage of the EEM program to minimize delays that could result from the submission of incomplete or poorly designed studies. This study design must be submitted to the applicable regulator prior to conducting field work and within a suitable time frame to allow for regulatory and governmental review prior to proceeding with the study. A timeframe of several months may be required from design submission to final approval. The EEM program design should reflect the design criteria outlined in the appropriate EEM guidance documents.

3.1.3 Submission of Interim and Final Reports

Depending on the duration of the EEM program and the type of program being implemented, operators may be required to submit interim reports outlining the progression of the EEM program. The content of the reports and the number required will vary with each given program. A final report will be required for each EEM program. These program-specific factors will be determined by the EEM Review Committee.

3.2 Role of Applicable Regulators and Government Departments

Applicable regulators and government departments are responsible for ensuring that EEM programs are appropriately designed and implemented by the operators, and that accurate reporting of approved EEM activities occurs. The exception is Environment Canada, who currently designs and implements monitoring requirements associated with approved Disposal at Sea sites.

3.2.1 Establish EEM Review Committee

To assist applicable regulators and government departments in working collaboratively and effectively on EEM programs with the operator, an EEM Review Committee will be established. This committee will consist of a core group of members that will sit on the committee for all EEM program, as well as additional advisors with project specific expertise.

The core group of members will be permanent and consist of the CNSOPB, DFO, EC and the CEA Agency. Project advisors will be added to the committee on a case by case basis and will remain on the committee for the duration of the project. It is anticipated that government experts asked to serve on the review committee would have participated in the earlier review of the impacts of the project and the predictions made relative to their significance. Project-specific advisors will supplement the expertise of the core group members with technical knowledge relevant to the project or the project site.

The EEM review committee will be chaired by the CNSOPB and the committee's responsibilities are:

i) to review and make recommendations to the applicable regulator(s) regarding the appropriateness of the design elements of the EEM program as submitted by the operator;
ii) to review the monitoring results of the approved EEM program and to advise the applicable regulator(s) as to their appropriateness with respect to conclusions made;
iii) to recommend changes to the EEM program, prior to and during its implementation, based on new issues that may emerge during the life of the project;
iv) to recommend to the applicable regulator(s) changes to existing policies and guidelines based on monitoring results;
v) to periodically provide a synopsis report of each active EEM program to senior management and the public.

3.2.2 Setting Common EEM Objectives and Design Principles

For EEM to be effective for the offshore oil and gas industry common objectives are needed. The review committee will work with the operator to refine these objectives for the region of concern. A review of performance standards and

quality requirements will be used to assist in this task. Common objectives and design principles should be reviewed at the onset of each specific EEM program. Following each specific EEM program, lessons learned should be reviewed and objectives and design principles modified accordingly.

3.2.3 Review of EEM Design

One of the roles of the applicable regulators and government departments is the review of the design of EEM programs. This review will be undertaken by the review committee. The EEM study design, as provided by the operator will be distributed by the CNSOPB to the review committee. In an effort to encourage collaboration, promote environmental research and reduce costs and workload in developing the scope of the EEM design, committee members may recommend additional experts or knowledgeable individuals from government agencies, academia, industry and non-governmental organizations to join the committee. The study design will also be forwarded to these members for review.

3.2.4 Implementation

Operators should report on the progress of the EEM program to the applicable regulator(s), at intervals specified in the approved EEM program. Where appropriate, members of the EEM review committee may actively participate in the EEM program. The CNSOPB routinely audits environmental practices offshore; EEM programs may be audited as part of this process. The EEM committee will provide advice to the applicable regulator(s).

3.2.5 Review of EEM Results and Follow-up

EEM reports will be prepared by the operator and submitted to the applicable regulator(s). The CNSOPB will distribute the documents to the EEM review committee, specifying a timeline for the review. A time frame of several months may be required, depending on the EEM program being undertaken.

Comments from the EEM review committee will be submitted to the applicable regulators. The applicable regulator(s) will provide the operator with a formal response to the submitted EEM reports, including any requirements to make modifications and re-submit reports.

Where additional follow-up activities (e.g. mitigation, studies or modification to the EEM program) are identified, the applicable regulator(s) shall ensure that follow-up is carried out. Additional or modified reports from such follow up

activities will be provided to the review committee for opinion, within a time period specified at the study design stage.

The EEM review committee will review the overall results of EEM programs and produce a synopsis report. This report will include a summary of studies conducted, an overview of the data collected, and results summaries. This report would also include the review committee's recommendations and follow-up actions required by the operator. It will demonstrate to the public that EEM is being done to the satisfaction of the applicable regulators, the results to date, as well as indicate how results are being used. The frequency of the reports will be established by the review committee.

3.2.6 Regulatory and Operational Requirements

In addition to ensuring the objectives of the EEM program are met, the results obtained will be used by the review committee to provide advice to the applicable regulator(s) on the adequacy of regulations, guidelines and conditions of authorizations.

4.0 Data Sharing

EEM data that are submitted as part of a CEAA follow-up program, pursuant to sections 55 through 55.6 of CEAA, must be made available through the Canadian Environmental Assessment Registry.

Under such arrangements, follow-up information emanating from CEAA environmental assessments (EAs) will be available to the public and other offshore operators, and may be used by other operators in their EAs.

4.1 Establish and Maintain an EEM database

EEM data pertaining to oil and gas activities in the offshore areas under the jurisdiction of the CNSOPB will be maintained at the CNSOPB's Core Laboratory. An important opportunity to consider in the development and maintenance of such a database is the integration of all reported EEM data pertaining to oil and gas activities, regardless of source (i.e. data could have arisen as a result of CNSOPB-driven requirements, EC-driven requirements, DFO-driven requirements, etc.).