

# Geophysical, Geological, Environmental and Geotechnical Program Guidelines

**June 2019**

***ISBN 978-1-927098-83-7***

CNLOPB

## PREFACE

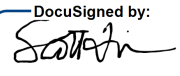
The *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* require that before issuing an authorization for work or activity in the Canada-Newfoundland and Labrador Offshore Area, the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) shall:

- i) consider the safety of the work or activity;
- ii) ensure that the applicant provides proof of financial responsibility; and
- iii) approve a Canada-Newfoundland and Labrador Benefits Plan, unless the C-NLOPB determines that such a requirement need not be complied with.

Before issuing an authorization or approval, the C-NLOPB must also assess the proposed work or activity to determine its potential environmental effects.

For authorizations and approvals relating to geophysical, geological, environmental and geotechnical programs, these objectives are achieved by a review of information submitted in support of the application for authorization or approval. This document provides guidance on the information required from Applicant's applying for such authorizations and approvals and replaces the Guidelines previously published in January 2012.

### Approved:

DocuSigned by:  
  
CFD41ADA354F4FA...

**CEO**

**Canada-Newfoundland and Labrador Offshore Petroleum Board**

# Table of Contents

	<u>Page No.</u>
PREFACE.....	i
Table of Contents .....	ii
List of Tables .....	iv
List of Figures.....	v
List of Acronyms .....	vi
1.0 INTRODUCTION .....	1
2.0 AUTHORIZATION APPLICATION FEE STRUCTURE .....	2
3.0 PROGRAM DESIGN .....	3
3.1 Geohazard Surveys.....	3
3.1.1 Wellsites .....	4
3.1.1.1 Survey Design .....	4
3.1.1.2 Existing Geohazards Survey .....	7
3.1.1.3 Reprocessed 3-D Seismic Data.....	7
3.1.2 Bottom-founded Installations .....	7
4.0 OPERATING LICENCE .....	8
5.0 AUTHORIZATIONS.....	8
5.1 Programs with Fieldwork .....	8
5.1.1 Program Description.....	9
5.1.2 Safety of Operations.....	10
5.1.2.1 Marine Programs .....	12
5.1.2.2 Airborne Programs .....	19
5.1.2.3 Programs using a Mobile Offshore Drilling Unit (MODU).....	20
5.1.3 Canada-Newfoundland and Labrador Benefits .....	20
5.1.4 Environmental Protection .....	21
5.1.4.1 Environmental Assessment .....	21
5.1.4.2 Environmental Protection Measures and Reporting .....	22
5.1.5 Financial Requirements .....	22
5.2 Programs without Fieldwork.....	22
6.0 AUTHORIZATION AMENDMENTS .....	23
6.1 Data Acquisition .....	23
6.2 Program Duration Extensions .....	23
7.0 REPORTING REQUIREMENTS DURING FIELDWORK.....	24
7.1 Weekly Reports .....	24
7.2 Reporting of Incidents and Incident Statistics.....	25
7.3 Reporting of Workplace Committee Meeting Minutes.....	25
8.0 FINAL REPORTING REQUIREMENTS.....	25
8.1 All Programs: Common Reporting Requirements .....	25
8.2 Programs with Fieldwork .....	26
8.2.1 Geophysical and Geological Programs: Specific Reporting Requirements.....	26
8.2.1.1 Operations Report .....	26
8.2.1.2 Processing Report .....	27
8.2.1.3 Interpretation Report (Not Required for Non-Exclusive Programs) .....	28
8.2.1.4 Maps and Enclosures .....	28
8.2.1.5 Data Submission Requirements.....	29
8.2.2 Environmental Programs: Specific Reporting Requirements .....	39
8.2.3 Geotechnical Programs: Specific Reporting Requirements .....	39
8.3 Programs without Fieldwork.....	39

9.0 ALLOWABLE EXPENDITURES.....42

10.0 RELEASE OF DATA.....43

Appendix 1 - List of Appliation Forms.....44

Appendix 2 - Environmental Planning, Mitigation and Reporting.....46

Appendix 3 - The SEG-Y Format .....53

## List of Tables

	<u>Page No.</u>
Table 1.0: Objectives and Typical Methodology for Geohazard Surveys .....	3
Table 2.0: Required Submission Dates for Supporting Documentation .....	9
Table 3.0: Geohazard Survey - Data Submission Requirements .....	32
Table 4.0: 2-D Seismic - Data Submission Requirements .....	33
Table 5.0: 3-D Seismic - Data Submission Requirements .....	34
Table 6.0: Geological Program - Data Submission Requirements .....	35
Table 7.0 Controlled Source Electromagnetic - Data Submission Requirements* .....	36
Table 8.0: Gravity/Magnetics - Data Submission Requirements .....	37
Table 9.0 Other - Data Submission Requirements .....	38
Table 10.0: Reprocessed Seismic - Data Submission Requirements .....	41
Table 11.0: Required Documentation for Allowable Expenditure .....	42
Table 12.0: Information Release Periods .....	43

# List of Figures

	<u>Page No.</u>
Figure 1.0: Example of a MODU Geohazard Survey Pattern .....	5
Figure 2.0: Example of a Jack-up Drilling Installation Geohazard Survey Pattern .....	6

## List of Acronyms

2-D/3-D/4-D	Two-, Three- and Four-Dimensional
2-DHR	Two-Dimensional High Resolution
3-DHR	Three-Dimensional High Resolution
ADW	Approval to Drill a Well
AGC	Automatic Gain Control
AVO	Amplitude Versus Offset
BST	Basic Survival Training
CAD	Canadian Dollars
CDP	Common Depth Point
CEO	Chief Executive Officer
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
CSEM	Controlled Source Electromagnetic
CSRC	Core Storage and Research Centre
CWS	Canadian Wildlife Service
DFO	Fisheries and Oceans Canada
E&T	Education & Training
EA	Environmental Assessment
ECSAS	Eastern Canada Seabirds at Sea
EL	Exploration Licence
EM	Electromagnetic
ESRF	Environmental Studies Research Funds
FFAW	Fish, Food and Allied Workers Union
FLIR	Forward Looking Infrared Radar
FLO	Fisheries Liaison Officer
HUEBA	Helicopter Underwater Escape Breathing Apparatus
HUET	Helicopter Underwater Escape Training
IAGC	International Association of Geophysical Contractors
IMCA	International Marine Contractors Association
IMO	International Maritime Organization
ISM	International Safety Management
MED A1	Marine Emergency Duties A1
MODU	Mobile Offshore Drilling Unit
MSDS	Material Safety Data Sheets
MVO	Magnitude Versus Offset
NAD	North American Datum
OHS	Occupational Health and Safety
OO	One Ocean
PSDM	Pre-stack Depth Migration
PSTM	Pre-stack Time Migration
PVO	Phase Versus Offset
R&D	Research & Development
RMS	Root Mean Square



RQ	Regulatory Query
SAR	Search and Rescue
SBP	Sub-bottom Profiler
SIMOPS	Simultaneous Operations
SOLAS	Safety of Life at Sea
SP	Shotpoint
SPOC	Single Point of Contact
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
VSP	Vertical Seismic Profile

# 1.0 INTRODUCTION

The Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) is the authority responsible for the administration of the regulations pertaining to all exploration for, and production of, hydrocarbons in the Canada-Newfoundland and Labrador Offshore Area (“the offshore area”). These Guidelines have been prepared to assist Applicants who wish to conduct geophysical, geological, geotechnical or environmental programs within the offshore area. They replace those issued by the C-NLOPB in January 2012. The Guidelines are based on:

1. *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* (collectively the “*Accord Acts*”);
2. *Newfoundland Offshore Area Oil and Gas Operations Regulations*;
3. *Newfoundland Offshore Area Petroleum Geophysical Operations Regulations*;
4. *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations*;
5. *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Occupational Health and Safety Transitional Regulations* (the *Transitional OHS Regulations*); and
6. Newfoundland and Labrador Social Legislation referenced in the *Accord Acts*.

For greater certainty, all references made within these Guidelines are to the federal versions.

These Guidelines also incorporate the May 2007 *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* and Items # 2, 7, 9, 10, and 11 from the *Additional Health and Safety Requirements in the Canada-Newfoundland and Labrador Offshore Area*.

**Geophysical Programs** are described as those involving the indirect measurement of physical properties of the earth. This includes, but is not limited to 2-D, 3-D and 4-D seismic surveys, geohazard surveys (wellsite or seabed), controlled source electromagnetic (CSEM), airborne/marine gravity and magnetic surveys. In the case of vertical seismic profiles (VSPs), where the seismic source is activated from a vessel (walk-away or walk-above) rather than suspended directly from the drilling unit (zero-offset), they are also considered a geophysical program and must be authorized.

**Geological Programs** are described as those involving the collection of samples from the offshore area or the use of samples from the Core Storage and Research Centre (CSRC). This includes but is not limited to seep/slick samples, lithological (seafloor, shallow core) samples, paleontological, geochemical materials, core/cuttings, etc.

**Geotechnical Programs** are described as those involving the measurement of physical and mechanical properties of seabed and subsoil, primarily related with foundation design, construction, maintenance and decommissioning of man-made structures.

**Environmental Programs** are described as those involving the study of physical, chemical and biological elements of the lands, oceans or coastal zones.

Within these Guidelines, geophysical, geological, geotechnical or environmental programs will be referred to as **programs**, and the personnel responsible for collecting the data relating to these programs as the **technical crew**.

**Commencement Date** of a program is established as the date of authorization.

**Completion Date of Fieldwork** is established as the date that acquisition is complete and all equipment is onboard.

Applicants who propose to employ a foreign vessel and/or personnel to conduct their programs should be aware that additional federal legislation applies and the relevant federal government departments should be consulted if such use is contemplated.

In general, information related to the C-NLOPB review and authorization of programs must be submitted at 4 stages:

- 1) prior to application submission (environmental assessment and any applications for substitutions or equivalencies);
- 2) at the time of application submission (program assessment);
- 3) during field operations (weekly reporting); and
- 4) after completion of the program (final reports and data submission).

Additional information may be obtained from the C-NLOPB using the contact information provided at <https://www.cnlopb.ca/contact/>.

Forms are available on the C-NLOPB website.

## 2.0 AUTHORIZATION APPLICATION FEE STRUCTURE

In 2016, amendments to the *Acts* and *Canada-Newfoundland and Labrador Offshore Petroleum Cost Recovery Regulations (Cost Recovery Regulations)* came into force that will increase the transparency and predictability of cost recovery for regulatory activities. These amendments allow the C-NLOPB to recover from industry the costs associated with regulating offshore oil and gas activity.

The C-NLOPB and CNSOPB have jointly developed *Cost Recovery Guidelines* April 2016 to provide assistance and guidance to industry and Applicants in understanding the new legislative and regulatory requirements respecting cost recovery and how those requirements are expected to be met. This guidance may be amended from time to time to reflect the Board's expectations and best industry practices.

Applicants should refer to the *Cost Recovery Regulations*, the *Cost Recovery Guidelines* and the C-NLOPB's website for further information about cost recovery and the current applicable cost recovery fees for program and activities.

With respect to geophysical, geological, environmental or geotechnical programs, Applicants should note that these will be subject to Formula Fees, which are payable at the time an application for an authorization is submitted. The C-NLOPB will publish the established Formula Fees for these programs on its website on or about March 31 of each year. Applicants should note that the fees for Geophysical Operations Authorizations (with fieldwork) will vary based on the number of primary vessels (or aircraft) in the program.

Questions regarding the cost recovery process can be submitted to [costrecovery@cnlopb.ca](mailto:costrecovery@cnlopb.ca).

## 3.0 PROGRAM DESIGN

Geophysical, geological, environmental and geotechnical programs, both exclusive and non-exclusive, are generally designed by the program Applicant. This allows for maximum flexibility to create a survey tailored to the specific program objectives. However, in the instance where an Applicant proposes to drill a well in the offshore area, the submission of an application for Approval to Drill a Well (ADW) must be preceded or accompanied by a geohazard report. As a result, geohazard surveys have specific program design requirements (see Sections below).

### 3.1 Geohazard Surveys

Geohazard surveys employ a multi-disciplinary approach using geophysical, geological and geotechnical methods to determine the nature of the seabed and underlying sediments. As such, they may be required to assist with the positioning of wells, pipelines or production facilities. The objectives and typical methodology for geohazard surveys are shown in Table 1.0.

**Table 1.0: Objectives and Typical Methodology for Geohazard Surveys**

Objectives	Typical Methodology
Identification of shallow geological hazards. For example: slump scars, channels, faulting, gas, gas hydrates, shallow gas, etc	High resolution seismic using sparker, small airgun array, or sleeve exploder; supplemented with 3-D seismic, if available. Reprocessed 3-D high resolution (3-DHR) may replace a conventional 2-D high resolution (2-DHR) dataset in deepwater (>500 m)
Detailed bathymetry	Multibeam echosounder
Identification of surficial geology, boulder till, channel fill, slumping, faulting, gas-charged sediments	Sub-bottom profiler and/or side scan sonar
Nature and characteristics of seabed sediments	Side scan sonar, grab samples and/or gravity/piston cores of the seabed and near-surface sediments, seabed photographs
Identification of iceberg scours, morphology of depositional units, shipwrecks, seabed obstructions, bedforms indicative of seabed sediment dynamics	Multibeam echosounder, side scan sonar, seabed photographs and sub-bottom profiler

Engineering data on seabed deformation, bearing capacity and stability (if required)	Borehole core samples, in situ and laboratory tests
Location and identification of seabed installations, wrecks and cables	Side scan sonar (magnetometer survey as required)

### 3.1.1 Wellsites

An Applicant who proposes to drill a well in the offshore area must ensure that such an operation is conducted safely. The submission of an ADW application must be preceded or accompanied by a geohazard report to show that the Operator has investigated the immediate area of the proposed location to identify any possible hazards to drilling on the seabed and subsurface prior to the setting of surface casing. This submission should include the 2-DHR and/or the 3-DHR SEG-Y seismic data, if not already submitted to the C-NLOPB.

A geohazard survey should be conducted to achieve these objectives. Existing 3-D seismic data should also be used to assist in the interpretation for all areas where available. The C-NLOPB may inform other Operators working in the area if any significant hazards to drilling are detected during a geohazard investigation.

#### 3.1.1.1 Survey Design

It is mandatory that a geohazard survey, including high-resolution seismic data be conducted for all well locations in accordance with section 75 of the *Newfoundland Offshore Petroleum Drilling and Production Regulations*. The geohazard survey must have sufficient density and areal extent to identify hazards and tie regional geology. It is recommended the survey be large and dense enough to allow for changes in well location due to identification of surficial or subsurface hazards and changes to well planning. Survey design will be specific to the intended drilling rig. Figures 1 and 2 represent C-NLOPB minimum guidance for MODU and Jack-up drilling installations, respectively. Applicant's specialists should design a program to best suit their given conditions and equipment.

**All proposed well locations must be positioned on a high-resolution seismic line.** In deepwater (>500 m) it is acceptable to use reprocessed 3-DHR in lieu of 2-DHR seismic data for identification of shallow drilling hazards (see Section 3.1.1.3).

If the 2-DHR seismic line spacing is greater than 250 m, the well can only be drilled if there is conventional 3-D seismic available to supplement interpretation over the surrounding area. In this case, the Applicant must additionally submit the following with the ADW: three inlines and three cross-lines, no more than 250 m apart, with two passing through the proposed well location.

#### 1) MODU Specific Requirements

The geohazard survey should cover a radius of the anchor limit plus 1 km, allowing for potential changes in location and identification of any regional features such as slump deposits. A maximum primary line spacing of 250 m with tie lines at 500 m is recommended (Figure 1).

#### 2) Jack-Up Specific Requirements

The geohazard survey should have a line spacing of 50 m, recorded within a radius of 200 m of the proposed well location, with additional lines spaced at 100 m out to 500 m for both primary and tie lines. In addition, two orthogonal lines should be acquired through the proposed location to a distance of 2 km from the well location to allow for interpretation of the local/regional geological setting (Figure 2).

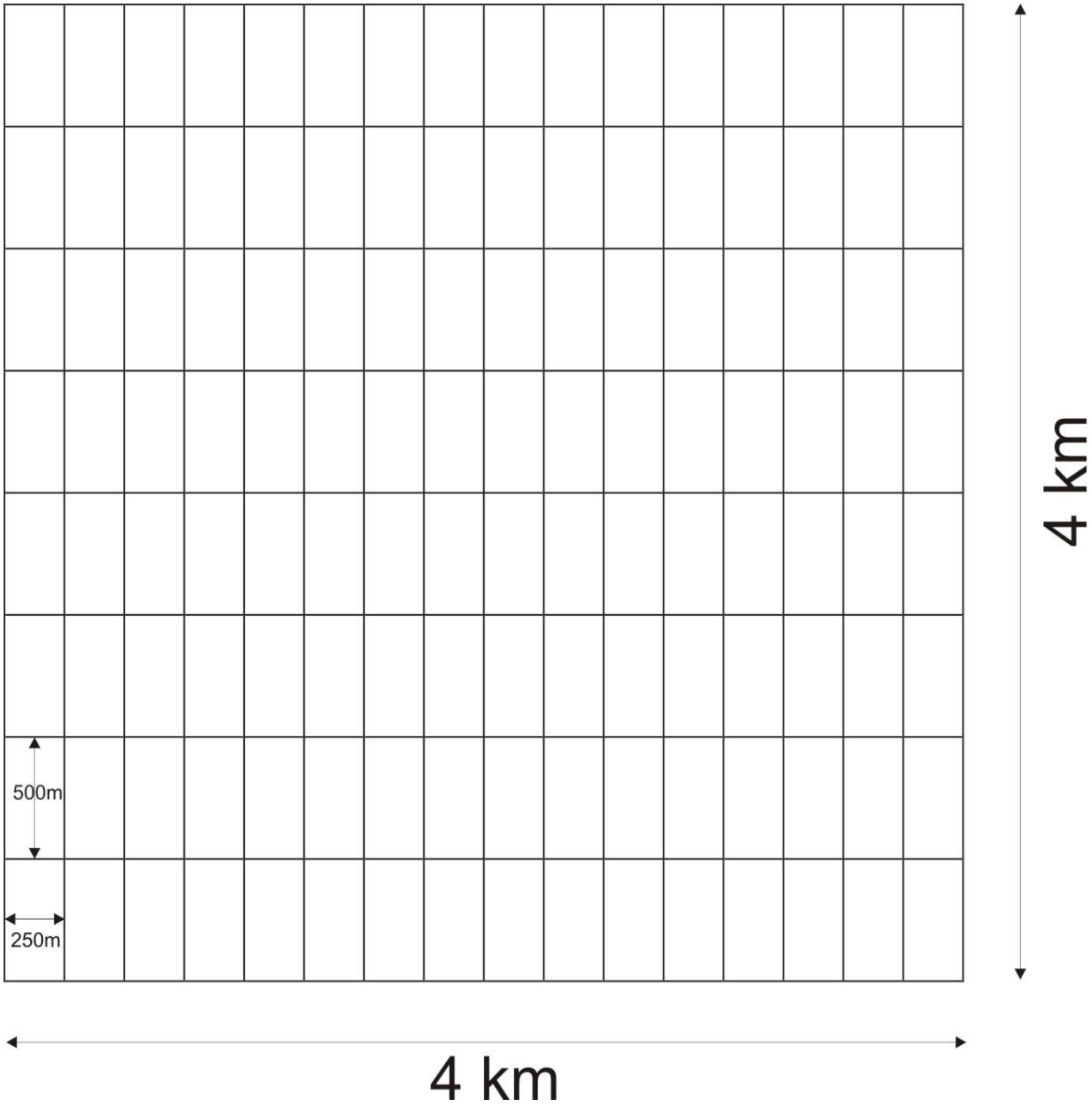
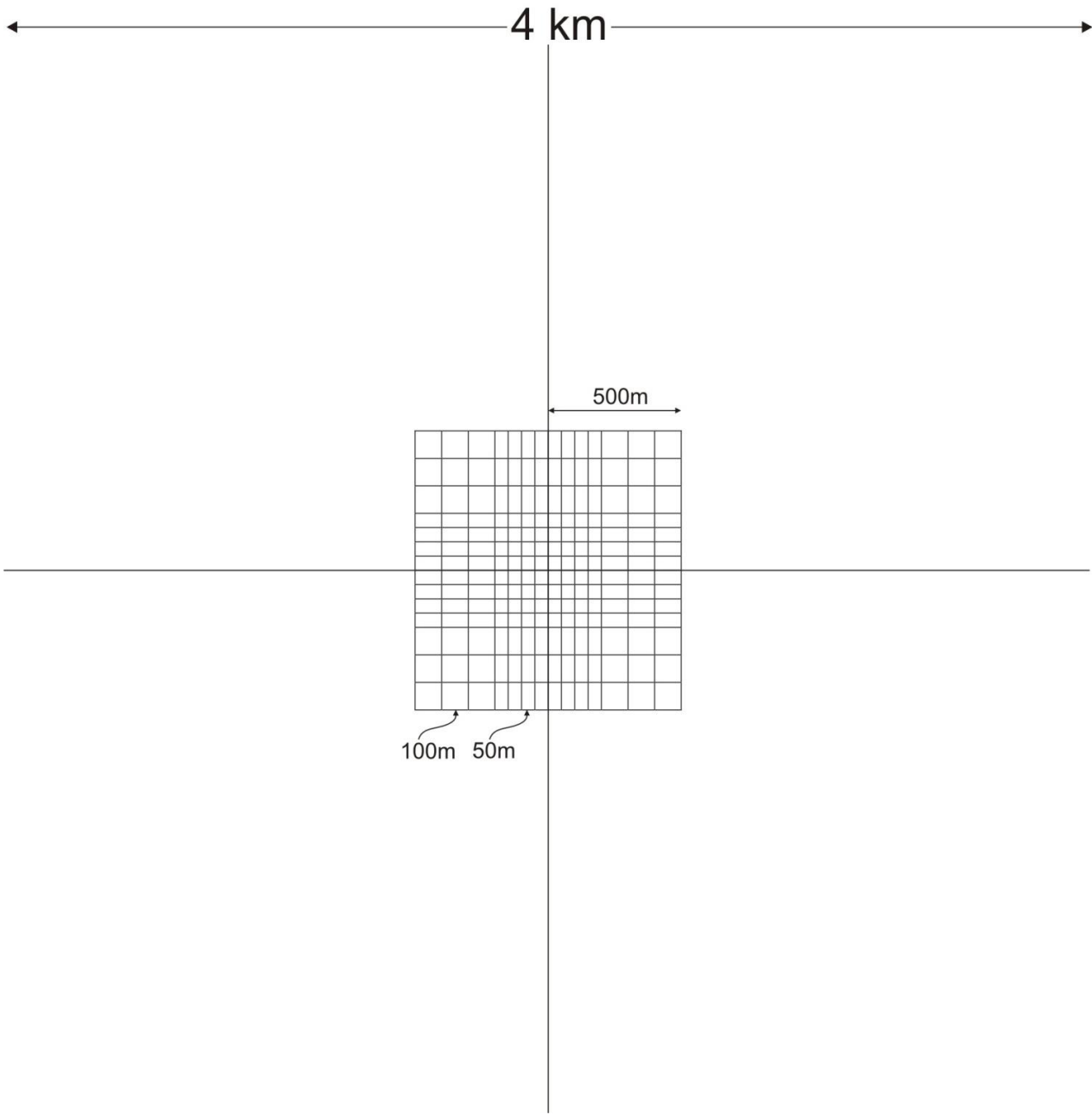


Figure 1.0: Example of a MODU Geohazard Survey Pattern



**Figure 2.0: Example of a Jack-up Drilling Installation Geohazard Survey Pattern**

### 3.1.1.2 Existing Geohazards Survey

The C-NLOPB may accept the use of a pre-existing geohazard survey if:

- 1) the area covered by the earlier survey is adequate, except in areas where movement of hydrocarbons due to drilling activity is suspect;
- 2) existing data is available and submitted in SEG-Y format to the C-NLOPB for assessment and analysis; and
- 3) if the surficial data is more than two years old, an inspection of the seabed in the vicinity of the well and anchor pattern is carried out prior to spud.

Applicants desiring to use pre-existing geohazard surveys should contact the C-NLOPB.

### 3.1.1.3 Reprocessed 3-D Seismic Data

The use of conventional 3-D seismic data reprocessed to 3-DHR seismic data is acceptable for replacement of 2-DHR wellsite seismic data in deepwater settings. Currently, the C-NLOPB defines deepwater as greater than 500 m water depth. The reprocessing of 3-D seismic data for geohazard use is expected to maximize the sampling rate and frequency content of the original 3-D seismic data. Applicants desiring to use reprocessed 3-D seismic for geohazard identification should contact the C-NLOPB prior to reprocessing.

## 3.1.2 Bottom-founded Installations

Prior to positioning a jack-up, gravity-based structure, or any other bottom-founded installation a geotechnical seabed survey may be required as outlined below:

### 1) Jack-Up Drilling Installations

Prior to preloading the jack-up at a wellsite, an independent geotechnical engineering consultant shall evaluate the geotechnical and foundation characteristics of the seabed. In most cases, at least one geotechnical borehole (drilled no further than 100 m from the proposed wellsite) will be required to be drilled to a depth of the anticipated spud-can penetration plus 1½ times the maximum spud-can diameter. In some cases, the consultant may have sufficient information to assess the foundation characteristics without the benefit of a borehole. The depth, sampling interval and number of boreholes in the program shall be at the discretion of the consultant in consultation with the Applicant.

### 2) Platforms, Artificial Islands and Caissons

Where a platform, artificial island or caisson-type structure is to be used to support a drilling rig or production facility, the geotechnical and foundation characteristics of the seabed at the proposed site and/or of the fill material, must be evaluated before any excavation, fill placement or installation of the structure occurs.

Refer to sections 45 to 48 of the *Newfoundland Offshore Petroleum Installations Regulations* for requirements for site investigations, geotechnical parameters, soil deformation and erosion. These regulations extensively reference sections of Canadian Standards Association CAN/CSA-S472-92, *Foundations, Offshore Structures* which has been



withdrawn and replaced by CAN/CSA-ISO standards. Please contact the Canadian Standards Association for information on how the information in CAN/CSA-S472-92 has been updated in the various replacement standards.

## 4.0 OPERATING LICENCE

No activity involving fieldwork will be authorized by the C-NLOPB unless the applicant holds a valid operating licence. Any individual or corporation may apply to the C-NLOPB for an operating licence. The following documentation is required to be submitted with each application:

- 1) completed *Operating Licence* application form;
- 2) if the licensee is a corporation, written evidence that the corporation is in good standing, or if the licensee is an individual, a valid birth certificate verifying that the individual is at least 18 years of age.

Renewal of operating licences is required annually. Operating licences are valid from their issuance date, to March 31<sup>st</sup> of the following year. An operating licence is not transferable.

## 5.0 AUTHORIZATIONS

### 5.1 Programs with Fieldwork

Any program involving fieldwork in the offshore area must be authorized by the C-NLOPB prior to its commencement. The authorization application requires a variety of supporting documentation which will require different review periods by C-NLOPB staff. Table 2.0 lists the minimum required submission dates for documentation in support of the application. The Environmental Assessment project description must be submitted at least **six (6) months** in advance of the proposed commencement date for the program. The Environmental Assessment report for a proposed program must be submitted at least **90 days** in advance of the proposed commencement date, while the remaining information requested in Sections 5.1.1 to 5.1.5 is required at least **45 days** prior to program commencement (for the use of chemical explosives as the proposed seismic energy source, information must be submitted **90 days** before).

In addition, if there are any equivalencies, exemptions or substitutions proposed in lieu of what is specified in the *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations* or the *Transitional OHS Regulations*, an application is required to be submitted to the C-NLOPB's Chief Safety Officer as specified by sections 205.069 and 205.07 of the *Act*. This application must contain the information specified in the *Act* and is required to be posted by the Applicant at any existing workplace as well as made available to the public by the Chief Safety Officer for a period of **30 days** or any shorter period fixed by him or her with the agreement of the applicable workplace committee. Further, if the Applicant is proposing the use of an equivalent standard or an exemption from what is specified in the *Newfoundland Offshore Area Petroleum Geophysical Operations Regulations* on the basis that it provides an equivalent or acceptable level of safety than that in the regulations, an application to the Chief Safety Officer is required in accordance with section 151 of the *Act*. The C-NLOPB has set a filing requirement, a Regulatory Query (RQ) form, for these applications.

Any such applications should be approved by the Chief Safety Officer before the program may be authorized. Therefore, Applicants are encouraged to submit any such applications as soon as possible in advance of the proposed commencement of the program. While the application for program authorization should be submitted a minimum of **45 days** prior to program commencement as indicated in the table below, the processing time for RQ applications may exceed this time frame depending on the number of applications submitted, the completeness of the applications and the complexity of the proposed substitution, equivalency or exemption.

Accordingly, the timely submission of RQ's is necessary to avoid delays in processing the application for program authorization. Applicants should also be aware that any non-conformances identified during the pre-operations safety inspection of the proposed vessel may necessitate a RQ application. Such applications will also need to be approved prior to authorizing any program.

**Table 2.0: Required Submission Dates for Supporting Documentation**

Document	Required Submission Date
Environmental Assessment Project Description	6 months prior to program start
Environmental Assessment Report	90 days prior to program start
Application and remaining documentation	45 days prior to program start 90 days before if the use of chemical explosives as the proposed seismic energy source.

During the review of an application for authorization, the C-NLOPB will address the following matters:

- 1) program description;
- 2) safety of operations and health and safety of employees;
- 3) Canada-Newfoundland and Labrador benefits;
- 4) environmental protection; and
- 5) financial requirements.

The information pertaining to these matters that must be submitted with the application for authorization is outlined in Sections 5.1.1 to 5.1.5 below.

Once all concerns have been satisfactorily addressed by the Applicant, the work or activity may be authorized by the C-NLOPB. Programs will be assigned a unique program number by the C-NLOPB. **This unique program number should be quoted on all subsequent correspondence.**

#### **5.1.1 Program Description**

In accordance with section 134 of the *Act*, a full description of the proposed fieldwork should be submitted and include the following information:

- 1) **three (3)** completed and signed forms;

- 2) a detailed description of the aims and objectives of the proposed program and any relevant supporting documentation: for example, for geophysical programs, relevant documentation would include descriptions of source and receiver equipment, including geometry and configuration, peak pressure and rise time of source and acquisition parameters;
- 3) one copy of a page-size location map detailing the proposed program and its relationship to the land interests in the area (PDF);
- 4) one copy of a page-size map showing the relationship between the proposed program and neighbouring coastlines, provincial or territorial boundaries, and other pertinent geographic features (PDF); and
- 5) a digital shapefile containing the proposed survey (outline for 3-D programs/all lines and sample locations for any other program) for all operations, as well as the outline of the EA project area. Data should reference NAD83.

### 5.1.2 Safety of Operations

For all programs involving fieldwork, the *Act* (section 139.1) requires Applicants to submit a duly executed “Declaration of Fitness”. This document attests that the Applicant has ensured that, in addition to meeting all the specific requirements of applicable legislation:

- 1) the equipment, installation and/or vessel(s) (including the “marine installation or structure” and any associated support vessel) that are to be used in the work or activity are fit for the purposes for which they are to be used;
- 2) the operating procedures are appropriate;
- 3) the personnel are qualified and competent; and
- 4) a Declaration of Fitness shall be maintained for the duration of the program.

Prior to authorizing the program, the C-NLOPB requires that the Applicant demonstrate that it has taken, and will continue to take, all reasonable measures to ensure the continued validity of this “Declaration”. In this regard and pursuant to subsections 138(3.1) and section 205.068 of the *Act*, Applicants are required to submit their safety plan for the proposed activity, to demonstrate compliance with sections 205.015 of the *Act* and the safety plan should consolidate the following information:

- 1) the Applicant’s policies and procedures as they relate to the management of health and safety for the type of activity defined in the application for all employees;
- 2) the Applicant’s hazard identification and associated risk assessment for the program;
- 3) if the scope of work includes activity occurring simultaneously in close proximity to other marine installations or structures or other vessels, information is to be submitted to demonstrate that activities ongoing in the field will be properly coordinated and that affected parties have agreed documented protocols to manage the coordination of activities. If concurrent work is planned, simultaneous procedures

between all Operators and marine installation or structure or vessel owners who may be affected is to be provided;

- 4) the Applicant's contingency plans;
- 5) the Applicant's policies and procedures as they relate to selection and integration of employers, providers of service and suppliers within the program;
- 6) summary of safety related clauses in contracts;
- 7) description of and reference to all applicable policies and procedures for the program, including any interfaces in place with passenger craft and other support craft for the program;
- 8) summary and results of the Applicant's verification activities (pre-contractual or pre-operational inspections, surveys or audits) onboard the marine installation or structure, passenger craft and other support vessel(s) which verify the state of equipment, implementation of procedures and personnel competency for the proposed program;
- 9) confirmation of compliance to all sections of the *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations*, the *Transitional OHS Regulations* and the *Newfoundland Offshore Area Petroleum Geophysical Operations Regulations*. If a section of the regulations cannot be complied with, refer to Section 5.1 of these guidelines (NOTE: In addition to meeting the legislation noted above, all vessels are required to ensure continued compliance to flag state and class requirements);
- 10) summary of the Applicant's and employer's arrangements for monitoring compliance during program execution;
- 11) summary of plans for communicating program specifics to all employees; and
- 12) the name, address, work history and safety record of the principal employer(s).

The details requested in Sections 5.1.2.1, 5.1.2.2 and 5.1.2.3 listed below should also be included and/or referenced in this plan rather than submitted as separate details.

The following lists are provided to give Applicants and employers guidance on the type of information to be described, submitted and/or referenced as appropriate. The lists are not intended to limit the Applicant's and employer's overview of a project. Applicants and employers have the responsibility to assess and ensure appropriate management of all hazards and compliance to the *Act* and the regulations. Submission of the information listed below is expected to be submitted prior to a C-NLOPB safety audit, if an audit is required.

If the C-NLOPB requires a safety audit prior to commencement of the program, the Applicant and/or employer must make the appropriate arrangements. If items do not comply with the legislation or stated policies during the safety audit, these will have to be corrected prior to issuing the authorization. This safety audit shall be arranged after the C-NLOPB has received all information referred to in Section 5.1.2. A pre-approval safety audit may take up to 12 hours onboard the marine installation or structure to complete.

As the authorization is based on the information submitted with the application, if a change in the equipment, procedures or personnel to be utilized in the program is required, the Applicant shall notify the C-NLOPB of the change and provide appropriate details. Approval of the C-NLOPB is required before the change is implemented. The application should clearly articulate the Applicant's processes to ensure approval is obtained before the change is implemented.

#### 5.1.2.1 Marine Programs

In accordance with Subsections 138.2 and 205.068 of the *Act*, the Board shall, before issuing an authorization for a work or activity, consider the safety of the work or activity by reviewing, in consultation with the Chief Safety Officer, the system as a whole and its components, including its structures, facilities, equipment, operating procedures and personnel. For programs that propose to use vessel(s), the following information and/or documentation is required to be submitted or described/referenced in the program specific safety plan, as appropriate:

- 1) the employer(s) safety policy and procedures manuals as they relate to both normal operations and emergencies (if not already described/referenced in the program specific plan or Applicant's contingency plans) in accordance with section 205.02 of the *Act*. The safety plan(s) should also take into consideration guidance from the IAGC Safety Manual for Geophysical Operations, as amended from time to time, and as referenced in paragraph 22(1)(c) of the *Geophysical Operations Regulations* and other industry best practice in relation to the type of activity being undertaken;
- 2) vessel specifications and associated arrangement drawings to demonstrate that the vessel(s) (including marine installation or structures, passenger craft or other support craft) are suitable for its intended purpose;
- 3) operating history of each marine installation or structure, passenger craft and other support craft;
- 4) the Applicant's evaluation of the employer(s) accident history;
- 5) the owner of the marine installation or structure or Applicant to obtain a written exemption from the Minister as required by paragraph 22(3)(c) of the *Newfoundland and Labrador Labour Standards Act* to propose an alternate working hour and shift schedule. The proposal sent to the Minister should take into consideration the requirements of section 21 of the *Geophysical Operations Regulations* and Part III of the *Labour Standards Act*;
- 6) ISM Certificate for each vessel (including the marine installation or structure, passenger craft or other support craft (seismic chase and guard vessels));
- 7) Safety Inspection Certificates to be provided for each marine installation or structure, passenger craft and other support craft to be utilized in the program either issued by flag state or class [note: for Canadian flag vessels operating beyond 25 nautical miles, a Near Coastal 1 certificate is required, beyond 200 nautical miles an unlimited certificate is required]. The following certificates are required to be submitted for all vessels (Canadian flag or foreign flag):
  - a) Cargo Ship Safety Construction Certificate;
  - b) Cargo Ship Safety Equipment Certificate (including Form E);

- c) Radio Inspection Certificate;
  - d) Loadline Certificate (if required by class/flag for the type/size of vessel); and
  - e) Minimum Manning Certificate (if required by class/flag for the type/size of vessel);
- 8) potable water to be tested and verified to meet the requirements of the *Guidelines for Canadian Drinking Water Quality* prior to the commencement of the program to ensure that it meets sections 97 to 102 of the *Transitional OHS Regulations*;
- 9) sufficient information to show that all pressure systems used by the technical crew have been designed, constructed, certified, installed and inspected in accordance with sections 41 to 51 of the *Transitional OHS Regulations*;
- 10) information to confirm the following with respect to the training and competency of personnel:
- a) personnel required to operate and maintain components of the seismic energy source, if used, are adequately trained and demonstrated to be competent in accordance with Section 22 of the *Geophysical Operations Regulations*;
  - b) all employees have received training and instruction regarding any hazardous substances or conditions to which they may be exposed in accordance with section 132 of the *Transitional OHS Regulations*;
  - c) the number of Physicians and First aid Attendants meet the requirements listed in sections 271 to 276 of the *Transitional OHS Regulations*;
  - d) completion of an approved survival course (Marine Emergency Duties A1 (MED A1), Basic Survival Training (BST), or equivalent) in accordance with Section 22 of the *Geophysical Operations Regulations* and subsection 205.013(k) and paragraph 205.019(1)(p) of the *Act*;
  - e) if helicopter transport is to be used, completion of BST or Helicopter Underwater Escape Training (HUET) and the Helicopter Underwater Escape Breathing Apparatus (HUEBA) module is required in accordance with paragraph 205.014(3)(b) of the *Act* and Section 22 of the *Geophysical Operations Regulations*; and
  - f) all personnel have received a valid seafarers medical that is acceptable to the flag state of the vessel.
- 11) the Applicant is required to submit information (e.g. training matrix) to demonstrate that all employees onboard the marine installation or structure (inclusive of the technical crew, marine crew, Applicant representatives, observers, physicians, etc) meet the requirements. If there is a crew change during the course of the program, updated information (e.g. training matrix) is to be provided and acknowledged prior to the crew change occurring;
- 12) documentation verifying that all fixed (cranes, winches, a-frames, etc.) and loose (wire ropes, slings, chains, fittings, etc.) lifting gear to be used in the program onboard the marine installation or structure have been certified by a qualified third party inspector within the past 12 months in accordance with section 229 to 233 of the *Transitional OHS Regulations*. In addition, if there are any changes affecting certification of the marine installation or structure (e.g. adding equipment to deck), confirmation that flag state or class have reviewed and approved any changes is to be provided;
- 13) where temporary equipment or structures have been installed onboard the marine installation or structure for the purposes of the program, documentation to show that the sea fastening has been properly designed, installed and certified by a qualified third party is to be provided. In addition, if there are any changes

affecting certification of the marine installation or structure (e.g. adding equipment to deck), confirmation that flag state or class have reviewed and approved any changes is to be provided;

- 14) if explosives are to be used, details of their storage, handling and use is to be submitted in accordance with sections 138 and 139 of the *Transitional OHS Regulations*;
- 15) licences for all radioactive sources and sufficient information to show that such sources will be stored, handled and used in accordance with the requirements of the *Radiation Health and Safety Act* in accordance with section 205.007 of the *Act* and section 140 of the *Transitional OHS Regulations* is to be provided;
- 16) permit to work procedures (e.g. confined space entry, hot work (Interpretation Note 14-01), isolation/lock out of equipment, etc.) to be provided. If a common procedure is not being utilized, provisions to ensure coordination between all employers onboard is to be provided. (Refer to section 205.013 of the *Act* and part 8, 10, 11 and 13 and section 288 of the *Transitional OHS Regulations*);
- 17) details of the program to ensure that hazardous substances are properly stored, handled, labeled, warning signs posted and that Material Safety Data Sheets (MSDS) are available onboard the vessel in accordance with section 205.022 of the *Act* and Part 10 of the *Transitional OHS Regulations*;
- 18) confirmation that First Aid Kits meet the requirements of section 279 of the *Transitional OHS Regulations*, will be maintained onboard during the program;
- 19) confirmation that appropriate fall protection systems are being utilized in accordance with section 176 of the *Transitional OHS Regulations*;
- 20) if the complement onboard the marine installation or structure will be more than 30 persons in an “isolated workplace” (as defined by section 269 of the *Transitional OSH Regulations*) or more than 60 persons in a workplace that is not considered an “isolated workplace”, information to show that the vessel has a first aid room that meets the requirements of section 281 and 282 of the *Transitional OHS Regulations*. If a marine installation or structure is planning to operate in a remote location, consideration should be given to placing additional medical equipment onboard;
- 21) details of arrangements for the marine installation or structure and passenger craft to maintain regular communications with a shore base during operations, including procedures to be followed in the event of an overdue contact with the marine installation or structure or passenger craft in accordance with Section 16 of the *Geophysical Operations Regulations*;
- 22) details of arrangements to ensure a physician, who has specialized knowledge in the treatment of the health and safety problems that may be encountered in an oil and gas industry, is available to the marine installation or structure and passenger craft at all times for medical consultation in accordance with section 271 of the *Transitional OHS Regulations*;
- 23) confirmation that immersion suits have been provided in accordance with section 2 of the *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations*, along with confirmation that suits have been appropriately sized to fit all personnel;



- 24) confirmation that firefighting equipment is provided in the workplace to meet section 3 of the *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations* and section 182 of the *Transitional OHS Regulations* is to be provided;
- 25) as most evacuation systems were designed to IMO SOLAS standards, they have been designed using an average per passenger weight of 75 kg. The Applicant and the owner of the marine installation or structure are required to evaluate the evacuation capacity of enclosed survival craft and inflatable life rafts based upon an average individual weight of 100 kg or on the actual average individual weight of personnel plus the weight of an average immersion suit. Based on the results, the equipment is required to be rated accordingly and associated evacuation procedures and lifesaving plans updated to reflect the new capacity;
- 26) information to show that procedures and equipment are in place to prevent person overboard situations and deal with person overboard situations should they occur in accordance with section 18 of the *Geophysical Operations Regulations* and subsection 178(2) of the *Transitional OHS Regulations*;
- 27) if helicopters are to be used as passenger craft during the program, the Applicant is expected to submit the following information in accordance with section 15 of the *Geophysical Operations Regulations* and Part III.I of the *Accord Acts* as it relates to passenger craft:
- verification by both the Applicant and the owner of the marine installation or structure that the helicopter deck onboard the marine installation or structure meets the requirements of TP4414 and CAP 437 and is suitable for the type of helicopter to be used from class;
  - verification that the equipment and procedures onboard the marine installation or structure have been reviewed by the helicopter services provider, and that there is an appropriate level of coordination between the vessel crew and the helicopter services provider;
  - certificate of airworthiness for the helicopter(s);
  - details of pre-flight briefings, including the individuals right to refuse transportation on the helicopter in accordance with the Part III.I of the *Accord Acts*;
  - confirmation of availability of approved and appropriately sized helicopter transportation suits (CAN/CGSB-65.17);
  - description of flight following procedures;
  - procedures to be followed in the case of a missing or overdue helicopter;
  - provisions related to redundancy for long over-water flights;
  - the helicopter's ability to land on water in various sea states;
  - the helicopter's ability to communicate with the shore base, the installation, other support craft and lifeboats;
  - the rapid and effective deployment of life rafts and other emergency equipment in the event of an emergency landing on water or a capsized;
  - the configuration and design of aircraft interiors (e.g., doors, windows, upper torso passenger restraints, etc.) to protect passengers and allow the most efficient emergency egress of passengers considering both landings on water and helicopter capsized;
  - offshore operational requirements e.g., weather effects on helicopter load limits, flying at night, the transport of passengers and freight at the same time and any other factor that could affect operational requirements;
  - the amount of reserve helicopter fuel kept onboard the marine installation or structure and the rationale used to arrive at this amount;



- o) the provision of suitable equipment to assist in underwater escape (e.g., goggles, appropriate breathing escape devices, etc.) and how this may impact helicopter design and maintenance;
- p) maintenance systems and the incorporation of automated usage and monitoring systems or other methods to ensure the continued suitability of the aircraft;
- q) procedures pertaining to helicopter deck operations as developed in consultation with the helicopter services provider and owner of the marine installation or structure to ensure compatibility;
- r) helicopter flight crews experience with the type of helicopter and with offshore operations in the environmental conditions which may be expected for the area(s) of operation; and
- s) flight time allocated for first-response practice and drills;

**Note:** *In the offshore area, Applicants using helicopters for transport of passengers are expected to maintain a dedicated SAR helicopter on a 24-hour per day basis in support of helicopter operations. This helicopter should be capable of being airborne within 20 minutes. Equipment should include auto-hover, forward looking infrared radar (FLIR), a search-light, rescue-winch and survival equipment suitable for deployment from the helicopter. The functional specification of the helicopter should be submitted to the C-NLOPB. Helicopter SAR crews must receive adequate training, practice and drills to achieve and maintain proficiency in their respective roles.*

- 28) crew changes at sea between vessels should be avoided if at all possible. First preference should always be given to performing crew changes in port. In the event it is required, there are only three types of transfers that are accepted by the C-NLOPB:
- purposely designed and class approved gangway or bridge between the vessel and passenger craft;
  - personnel transfer via approved personnel transfer crane and personnel transfer device between the vessel and passenger craft; and
  - small boat transfer between the vessel and passenger craft via davit to davit or other approved launching device (i.e. personnel embark and disembark the small boat onboard the vessel/passenger craft, no usage of ladders or pilot ladders).

Other types of personnel transfers utilizing davit to ladder, davit to swing rope, etc. are not permitted.

If a vessel is to be used for crew changes during the program, Applicant's and vessel owner's should also take into consideration requirements from section 6.2.1 and 6.3 of the *IAGC Safety Manual for Geophysical Operations*, as amended from time to time, the *IMCA Guidance on the Transfer of Personnel to and from Offshore Vessels and Structures*, as amended from time to time, and requirements for a "passenger craft" as defined and discussed in Part III.1 of the *Accord Acts*.

For personnel transfers utilizing a crane and personnel transfer device, Applicant's and owner's of marine installations and structures shall take into consideration requirements for personnel rated cranes and personnel transfer devices from Part 4 and Part 14 of the *Transitional OHS Regulations* and consider guidance in Section 2.0, 5.0 and 6.4 of the *Atlantic Canada Offshore Petroleum Industry: Safe Lifting Practices*. In addition, the following should be taken into consideration:

- the type and size of marine installation structure and associated passenger craft being used and the equipment required to conduct the transfer safely (height of transfer, fenders, etc.) and the suitability of disembarkation/embarkation points. Equipment must be designed and certified for its purpose and must be approved by the classification society for that purpose;

- local environmental conditions and visibility requirements (should only be undertaken in daylight with low sea states, light winds, light currents and clear visibility and with sufficient time to conduct a rescue during daylight hours);
- fast rescue craft to be used to rescue personnel in the event of an emergency should be self-righting and equipped with a diesel engine;
- training and preparedness of personnel in both normal and emergency operations (e.g. conduct a dry run of the transfer operation without personnel to be transferred and conduct routine emergency response drills);
- the wearing of immersion suits and personnel locator beacons at all times; and
- the time required to conduct the transfer to be reduced to as low as reasonably practicable.

The following information would be submitted by the Applicant for personnel transfers being undertaken at sea to satisfy the CSO that such operations are as low as reasonably practicable:

- a) confirmation of the types of personnel transfers that will be undertaken, taking into consideration the risk associated with conducting a transfer in the environmental conditions which may be expected for the area(s) of operation;
- b) certification for the equipment being used in the transfer to be provided to demonstrate that it has been designed, certified and approved for that purpose by both the manufacturer and classification society;
- c) procedures in place for each type of transfer planned to be undertaken during the program which have been approved by both the Applicant, the owner of the marine installation or structure and the owner of the passenger craft which clearly defines the following:
  - i. roles, responsibility and authority of all personnel involved in the transfer;
  - ii. refusal procedures;
  - iii. physical and mental condition of personnel being transferred (fatigue, stress, illness, etc.);
  - iv. weather and sea state limitations;
  - v. limitations on the number of personnel that can be transferred at the same time taking into consideration weight limitations of the davit and limitations of rescue equipment;
  - vi. equipment requirements, including immersion suits, lifejackets, head protection, personnel locator beacons, radio communication, work boat, fast rescue craft, rescue equipment, requirements for secondary retention;
  - vii. communication requirements between the masters of both the marine installation or structure and passenger craft and all personnel involved in carrying out the transfer (e.g. the masters and coxswain, fast rescue craft crew and vessel deck crews);
  - viii. training and drill requirements;
  - ix. emergency response procedures, including the requirement to have a fast rescue craft, with a suitable trained crew and rescue equipment, deployed while the transfer is being undertaken;
  - x. requirement for documented pre-use inspection of all equipment prior to use, including emergency response equipment;
  - xi. requirement to have a passenger manifest for each transfer; and
  - xii. requirement to conduct the activity under permit, to conduct a specific risk assessment for that transfer and to hold documented toolbox meetings with all personnel involved in the transfer to discuss the procedures and equipment and to identify if there are any other hazards which need to be considered;
- d) the following information is to be provided for passenger craft engaged in transfer operations:

- i. reference to applicable policies and procedures for the passenger craft as per section 5.1.2(7) of these guidelines, including the requirement to provide employers and passengers with any information and instruction necessary for their health and safety;
  - ii. summary and results of the Applicant's and/or employer's verification activities (pre-contractual or pre-operational inspections, surveys or audits) onboard the passenger craft as per section 5.1.2(8) of these guidelines;
  - iii. ISM certificate as per section 5.1.2.1(6) of these guidelines;
  - iv. safety inspection certificates as per section 5.1.2.1(7) of these guidelines;
  - v. transfer vessel's certification as a passenger vessel;
  - vi. information to show that the passenger craft is equipped with any equipment, devices and materials necessary to ensure the health and safety of employees and passengers;
  - vii. details of arrangements for the passenger to maintain regular communications with a shore base as per section 5.1.2.1(21) of these guidelines;
  - viii. details of arrangements to ensure a physician is available to the passenger craft as per section 5.1.2.1(22) of these guidelines; and
  - ix. refusal procedures have been communicated to personnel onboard a passenger craft as per section 5.1.2.1(30) of these guidelines.
- 29) information to be submitted to demonstrate that for programs with proposed duration of greater than six months, a "workplace committee" has been established in accordance with sections 205.043 and 205.044 of the *Act*. If the program is less than six months duration, information to be submitted to demonstrate that either a workplace committee that meets the requirements of sections 205.044(1), (2) & (6) of the *Act* or an occupational health and safety coordinator to meet the requirements of section 205.045 of the *Act* has been established;
- 30) information showing that an employee's right to refuse dangerous activities at a workplace or transport on a passenger craft if they have reasonable cause or belief that it is a danger to them is known to supervisors, employers and employees pursuant to sections 205.05, 205.051, 205.052, 205.053, 205.054 and 205.055 of the *Act*;
- 31) confirmation that procedures to handle dangerous work refusals have been established in accordance with sections 205.05, 205.051, 205.052, 205.053, 205.054 and 205.055 of the *Act*;
- 32) details of how the Applicant has ensured that language differences will not affect the safety of operations in accordance with subsection 205.013(p) and paragraph 205.019(1)(n) of the *Act*;
- 33) confirmation that all employees have been provided with information in accordance with subsection 205.037(2) of the *Act* and Section 23 of the *Geophysical Operations Regulations*, including:
- a) *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* (the *Act*);
  - b) *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act*;
  - c) *Newfoundland Offshore Area Petroleum Geophysical Operations Regulations*;
  - d) *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Transitional Regulations*;
  - e) *Canada-Newfoundland and Labrador Offshore Marine Installations and Structures Occupational Health and Safety Transitional Regulations*;

- f) any applicable Newfoundland and Labrador Social Legislation as referenced in the definition in section 205.001 of the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act*;
- g) the document describing the Applicant's occupational health and safety management system;
- h) any code of practice required by the Chief Safety Officer  
[\(https://www.cnlopb.ca/legislation/codesofpractice/\)](https://www.cnlopb.ca/legislation/codesofpractice/);
- i) information pertaining to any substitutions that have been approved by the Chief Safety Officer;
- j) C-NLOPB "*Incident Reporting and Investigation Guidelines*";
- k) items # 2, 7, 9, 10, and 11 from the *Additional Health and Safety Requirements in the Canada-Newfoundland and Labrador Offshore Area*; and
- l) these guidelines.

**Note:** *Applicants are expected to ensure that their personnel and their contractor's personnel are familiar with the applicable legislation and guidance.*

#### 5.1.2.2 Airborne Programs

In accordance with Subsections 138.2 and 205.068 of the *Act*, the Board shall, before issuing an authorization for a work or activity, consider the safety of the work or activity by reviewing, in consultation with the Chief Safety Officer, the system as a whole and its components, including its structures, facilities, equipment, operating procedures and personnel. If the proposed fieldwork is to be conducted using an aircraft, the following information/documentation is expected to be submitted:

- 1) the name, address, work history and safety record of the aircraft Applicant/owner;
- 2) a general description of the aircraft to include the following:
  - a) registration, designation and call sign;
  - b) dimensions;
  - c) fuel capacity;
  - d) range;
  - e) safety equipment;
  - f) communications and navigation equipment;
  - g) operating history; and
  - h) safety record;
- 3) a copy of a valid Certificate of Airworthiness for the aircraft; and
- 4) a description of:
  - a) the flight following procedures; and
  - b) the procedures to be followed in the event of a missing or overdue aircraft. If the aircraft is not registered in Canada, additional information may be requested.

### 5.1.2.3 Programs using a Mobile Offshore Drilling Unit (MODU)

If the proposed program is to be conducted using a MODU, additional information/documentation may be required.

### 5.1.3 Canada-Newfoundland and Labrador Benefits

The C-NLOPB's *Canada-Newfoundland and Labrador Exploration Benefits Plan Guidelines* are applicable to all programs. The Guidelines can be found on the C-NLOPB website. Applicants should review these Guidelines in detail prior to submission of a Canada-Newfoundland and Labrador Exploration Benefits Plan.

A Canada-Newfoundland and Labrador Exploration Benefits Plan must be submitted by the Applicant for approval by the C-NLOPB. The Canada-Newfoundland and Labrador Exploration Benefits Plan should include, at a minimum, the following information:

- 1) an overview of the proposed program, including project applicant, main contractor(s), program location, duration, proposed marine vessels etc;
- 2) confirmation of the Applicant's commitments to the statutory requirements of Section 45 of the legislation, in particular:
  - a) before carrying out any work or activity in the offshore area, any Applicant submitting a benefits plan shall establish in the Province an office where appropriate levels of decision-making are to take place. In the case of any exploration activity, this will apply to the company applying for the authorization to conduct the program;
  - b) consistent with the *Canadian Charter of Freedoms*, employment of Canadians and residents of the Province, giving first consideration to residents of the Province of Newfoundland and Labrador for employment and training during the program; and
  - c) provisions to ensure companies in the Province and other parts of Canada are given a full and fair opportunity to participate on a competitive basis in the supply of goods and services for the proposed program, with first consideration to goods and services from the Province;
- 3) a description of the Applicant's employment strategy for the program, including provision of an employment plan for the crewing of marine vessels (see Marine Crewing Guidance, Appendix 3, *Canada-Newfoundland and Labrador Benefits Plan Guidelines* for more detail);
- 4) a description of the Applicant's contracting strategy for goods and services, including a summary of the estimated expenditures to conduct the programs, a listing of all contracts greater than \$100,000, and the name and address of the successful vendor(s); and
- 5) an annual Benefits Report, summarizing the Canada-Newfoundland and Labrador benefits related to the program is required, as discussed in the C-NLOPB's *Canada-Newfoundland and Labrador Exploration Benefits Plan Guidelines*.

#### 5.1.4 Environmental Protection

##### 5.1.4.1 Environmental Assessment

As part of its environmental protection responsibilities under the Act, the C-NLOPB must ensure that an environmental assessment of all proposed programs with fieldwork (e.g. seismic survey, geohazard survey, VSP program, CSEM survey, geotechnical survey, etc.), in the offshore area is conducted.

At least **six (6) months** prior to the planned commencement of a program with fieldwork, the Applicant should submit to the C-NLOPB Environmental Affairs Department a project description that describes the activities to be undertaken, the schedule of those activities, and the location.

Based on the information provided in the project description, the Environmental Affairs Department will confirm the environmental assessment requirements and provide the Applicant with a scoping document that describes the scope of the assessment to be conducted, including the scope of the factors to be included in the assessment.

Following receipt of the scoping document, the Applicant will be responsible for submission of an environmental assessment report that:

- 1) describes its assessment of the potential environmental effects associated with the proposed program, in a manner that satisfies the requirements of the scoping document;
- 2) reports on consultations with interested parties who may be affected by program activities. Such parties include, but are not limited to, Fisheries and Oceans Canada (DFO), One Ocean (OO), the Fish, Food and Allied Workers Union (FFAW) and fishing industry representatives. The One Ocean documents, [\*Fact Sheet for Non-One Ocean Petroleum Members\*](#) and [\*One Ocean Protocol for Consultation Meetings: Recommendations for the Fish and Petroleum Industries in Newfoundland and Labrador\*](#), can assist in planning these consultations. The report should identify specific areas of concern that were raised in these consultations and the proposed means by which valid concerns will be addressed;
- 3) includes a table that lists all of the environmental commitments and mitigation measures made by the Applicant during the environmental assessment and that is suitable for tracking the subsequent status of those commitments and measures. Thirty days prior to commencement of the project, the Applicant shall submit the tracking table identifying the status of each of the environmental commitments and mitigation measures; and
- 4) is suitable for public release.

**The environmental assessment report should be submitted to the C-NLOPB at least 90 days prior to the planned commencement of activities.**

#### 5.1.4.2 Environmental Protection Measures and Reporting

In May 2008 the C-NLOPB adopted the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (DFO 2007) (the SOCP), which, in its entirety, is contained in Appendix 2 of these Guidelines. Applicants should implement the mitigations listed in the Statement when planning and undertaking marine seismic surveys, in addition to any other project-specific measures that may be identified during the environmental assessment process.

Appendix 2 also describes recommended practices for interaction with other ocean users, particularly fisheries interests, and recommended reporting formats for marine mammal and seabird observations.

A report on mitigation and monitoring identified in the EA and undertaken during programs with fieldwork should be submitted to the C-NLOPB within **six (6)** months of completion of the fieldwork in a format that is suitable for public release (e.g. searchable PDF). The report should include a description of the mitigation and monitoring measures identified in the EA and including those described in the SOCP, implemented during the program and assessment of effectiveness of these measures.

#### 5.1.5 Financial Requirements

An Applicant applying for any authorization from the C-NLOPB is required to submit proof of financial requirements (both financial resources per section 162.1 (federal Accord Act) / 157.1 (provincial Accord Act) and financial responsibility per section 163 (federal Accord Act) / 158 (provincial Accord Act) for approval by the C-NLOPB. For all programs, the form, amount and scope of coverage is dealt with in the *Guidelines Respecting Financial Requirements 2016*, available from the C-NLOPB office or on our website. The Applicant should submit the required information and documentation with the *Proof of Financial Requirements for Work Authorization Form* (at Appendix 11) and completed *Statement of Net Assets and Funding Arrangements* (at Appendix 2) contained in the *Guidelines Respecting Financial Requirements 2016* which can be found on the C-NLOPB website. For further information, please contact the C-NLOPB's Legal Services at (709) 778-4265.

### 5.2 Programs without Fieldwork

If an Applicant wishes to use any of the material curated by the C-NLOPB at the CSRC (cuttings, core, fluids, etc.), an application for a program without fieldwork must be approved by the C-NLOPB. In addition, any program not involving fieldwork in the offshore area for which an Applicant plans to claim allowable expenditures against security deposit or rental commitments for an exploration licence, must be approved by the C-NLOPB as a program without fieldwork. Programs which may be eligible for such credits include, but are not limited to, the purchase and/or reprocessing of seismic data.

Documentation describing the purpose and objectives of the program and addressing the Canada Newfoundland and Labrador Benefits concerns, as described in Sections 5.1.1 and 5.1.3 respectively, should be included with a completed copy of the *Geophysical Program Authorization Application* or *Geological Program Approval Application (Programs without Fieldwork)* form, which is available on the C-NLOPB website.

Subject to the review and approval of an application, each program will be assigned a unique program number by the C-NLOPB. **This unique program number should be quoted on all subsequent correspondence and data submission.**



## 6.0 AUTHORIZATION AMENDMENTS

Any request to amend an authorized program must be forwarded to the C-NLOPB for approval prior to implementation. Any request to modify a program (other than duration) shall be submitted at least **fifteen (15)** days before start of the original operation or the start of the modified operation. Any request to extend the authorized duration of a program shall be submitted at least **fifteen (15)** days before the end of the period being extended or the new commencement date. Significant amendments may require an additional authorization to be issued with fees and additional reviews by relevant C-NLOPB departments. The C-NLOPB may also place additional program specific conditions on an authorization.

An authorization may only be amended if the fieldwork is in progress at the time of the expiry date of the authorization.

### 6.1 Data Acquisition

If an Operator would like to increase the authorized program size with additional data acquisition, the Operator should provide written notification to the C-NLOPB and include the following information:

- 1) description of the request;
- 2) a map showing additional lines (shown in different color from original lines);
- 3) a revised shapefile of line coordinates (original plus additional);
- 4) confirmation that the additional lines fall within the assessed EA Project Area;
- 5) confirmation that the amendment will be carried out with policies and procedures already approved under the authorization (environment, safety of operations, emergency response, SIMOPS, etc.); and
- 6) confirmation that there is no change to the approved Financial Responsibility or Benefits Plan.

The C-NLOPB will review the submitted documentation and notify the Operator of the acceptance or rejection of the requested data acquisition amendment.

### 6.2 Program Duration Extensions

Operators should note that the authorization expiry dates typically align with the temporal scope of the approved environmental assessment. Any request to extend the expiry date of the authorization past the temporal scope of the Environmental Assessment (EA) may require an amendment to the EA. Operators should consult with the Environmental Affairs Department at the C-NLOPB if such an amendment is required.

Also, any request for extensions of authorizations into the late fall months may require additional information by the C-NLOPB Safety Department with respect to the winterization of the vessel. Operators should consult with the Safety Department if this is the case to discuss any additional expectations or requirements. The things to be considered include winterization, environmental operating limitations for inclement weather, sea ice and icebergs and personnel fatigue. An updated labour exemption order may be required from the Minister and in addition, if a



program is planned for greater than six months, a workplace committee is required to be established in accordance with the Act. Refer to Section 5.1.2 for additional details.

## 7.0 REPORTING REQUIREMENTS DURING FIELDWORK

### 7.1 Weekly Reports

The Operator is responsible for ensuring that reporting of the authorized program is forwarded to the C-NLOPB. Weekly reports must be submitted on a weekly basis by 1200 Monday with the reporting period being considered to be 0000 (UTC) Monday to 2400 (UTC) Sunday. A program is considered to have started immediately upon authorization. Program reporting shall commence the day the C-NLOPB authorizes the program, with submission of the first weekly report on the upcoming Monday, continuing every Monday until the completion or suspension of the fieldwork. Weekly reports should include the following information:

- 1) name of Operator;
- 2) name of vessel;
- 3) latest known position of the vessel;
- 4) description of program activity for the week, e.g. number of line kilometres of data recorded per survey instrument, names of lines recorded;
- 5) map outlining acquisition completed during reporting period (previous week), total acquisition completed to date and the remaining uncompleted program, with the relationship to the EA project area;
- 6) details of any significant downtime and causes;
- 7) any significant dates, for example: mobilization, suspension, crew change, etc.;
- 8) projected upcoming weeks activities, including a map outlining planned acquisition;
- 9) description of all communications, including interaction with fishers/fishing gear and their relevant organizations;
- 10) marine mammal, sea turtle and seabird observations, including details of shut downs; and
- 11) any additional information as specified in the authorization.

Operators should consult with the C-NLOPB regarding the weekly reporting template. The required reports should be forwarded by e-mail or by another mutually agreed method to the C-NLOPB.

The principal contractor for the survey may submit the required reports on behalf of the Operator; however the C-NLOPB must be informed of the person responsible for the reporting prior to commencement of the survey.

## 7.2 Reporting of Incidents and Incident Statistics

It is the Operators responsibility to be aware of, and make its Contractors aware of, all relevant Legislation/Regulations/Guidance with respect to program operations and reportable incidents. Any accident or hazardous occurrence as specified by Section 27 of the *Geophysical Operations Regulations* or sections 262 to 266 of the *Transitional OHS Regulations* shall be reported to the C-NLOPB. Guidance on the reporting and investigation of incidents is provided in the *C-NLOPB / CNSOPB Incident Reporting and Investigation Guidelines*.

Quarterly Statistics Reports and Annual Safety Reports must also be provided to the C-NLOPB. Guidance and forms for the reporting of statistics have been provided in the *C-NLOPB / CNSOPB Incident Reporting and Investigation Guidelines*.

## 7.3 Reporting of Workplace Committee Meeting Minutes

Meeting minutes from workplace committee meetings must be submitted to the C-NLOPB as soon as practicable following each meeting in accordance with section 205.016 and paragraph 205.043(4)(d) of the Act.

# 8.0 FINAL REPORTING REQUIREMENTS

For all geophysical, geological, environmental or geotechnical programs, the final reports and data must be submitted to the C-NLOPB within **one (1) year** of completion of the fieldwork. For programs in which no fieldwork is involved, the final reports must be submitted to the C-NLOPB within **one (1) year** of the estimated completion date shown on the approval form. Operators are responsible for all costs (fees, duty, etc.) related to the shipping of materials (reports, data, core, cuttings, etc.) to the Information Resources Centre and the Core Storage and Research Centre. Any charges incurred by the C-NLOPB will be invoiced to the Operator.

One copy of Interpretation, operations and processing reports must be submitted in a searchable PDF format on USB, SFTP or other medium approved by the C\_NLOPB. Final reports submitted to the C-NLOPB should be created with sufficiently high resolution such that the enclosures original quality will be maintained if reprinted.

Any correction to, or omission from the report that is made or discovered after its submission must be reported to the C-NLOPB and a full updated replacement pdf provided.

## 8.1 All Programs: Common Reporting Requirements

The following is defined as a minimum, but is not meant to limit what the Operator may submit to enhance the overall completeness of the final report.

- 1) Title page containing:
  - a) program number, as assigned by the C-NLOPB;
  - b) Operator's report name;
  - c) type of survey;
  - d) survey locality;

- e) year of fieldwork;
  - f) name of program Operator (or legal representative or agent) and participants;
  - g) names of principal contractors;
  - h) interest owners;
  - i) name of author or person responsible for the report; and
  - j) report date;
- 2) table of contents and list of enclosures;
  - 3) introduction;
  - 4) locality map, page-size, showing the location of the survey with respect to the licences involved and latitude/longitude coordinates;
  - 5) statistical summary, including:
    - a) mobilization/demobilization dates;
    - b) significant dates such as commencement, suspension, recommencement and termination;
    - c) number of technical and marine personnel and their nationality;
    - d) production data, time lost and daily production;
    - e) summary of conditions pertaining to weather, ice conditions or sea state; and
    - f) summary of factors which caused significant down time;
  - 6) description of the data acquisition equipment and field procedures, including, where appropriate:
    - a) all vessels or aircraft, including ownership and flag of registry; and
    - b) all components of the navigation system, with estimates of accuracy and repeatability.

## 8.2 Programs with Fieldwork

### 8.2.1 Geophysical and Geological Programs: Specific Reporting Requirements

Any final report submitted to fulfill the reporting requirements of a geophysical or geological program with fieldwork authorization, should be signed by a professional geoscientist and include the following information, in addition to that detailed in Section 8.1. **The following is defined as a minimum, but is not meant to limit what the Operator may submit to enhance the overall completeness of the final report.** Maps and enclosures should not depend on colour to impart information (e.g. contour values).

Per section 25(4) of the *Newfoundland Offshore Area Petroleum Geophysical Operations Regulations*, with respect to non-exclusive programs, if the operator ceases to make the data available for purchase by the public, or the C-NLOPB becomes aware that the data is not being made fully publicly available, the Operator must submit the information and materials listed in Sections 8.2.1.3 and 8.2.1.4 of these Guidelines, as appropriate, within **12 months** of the date which the operator ceased to make the data available.

#### 8.2.1.1 Operations Report

Additional information on the data acquisition equipment and field procedures shall include:

- 1) the energy source parameters, including pressure/time plots and signal design;
- 2) the detector equipment, including detector array geometry;
- 3) the navigation system;
- 4) the recording system;
- 5) line naming convention;
- 6) the onboard processing facility;
- 7) recording parameters, such as shotpoint interval, station interval, sampling rate, recording filter(s) settings, gain control, polarity, fold, aircraft elevation, etc.; and
- 8) the fathometer used.

#### **8.2.1.2 Processing Report**

A description of the data processing and displays, including:

- 1) for seismic reflection data:
  - a) each type of processing for which sections were generated, including the processing procedures applied to the data;
  - b) survey line list documenting lines that were processed; and
  - c) final processed bin (grid) coordinates.
- 2) for gravity data:
  - a) all corrections applied;
  - b) method of correcting discrepancies at line intersections;
  - c) method of spatial filtering, residual mapping and second derivative mapping;
  - d) method of gravity modeling;
  - e) loop closure maps for elevation control; and
  - f) file format documentation.
- 3) for magnetic data:
  - a) all corrections applied to the total field data;
  - b) correction for diurnal;
  - c) correction with regional field;
  - d) method of spatial filtering, residual mapping and second derivative mapping;
  - e) method of correcting discrepancies at line intersections;
  - f) method of magnetic modeling; and
  - g) file format documentation.
- 4) for electromagnetic data:
  - a) all corrections applied to field and metadata;
  - b) all processing procedures applied to the final data;

- c) discussion of methods and processing for all 2-D and 3-D modeling and inversion; and
- d) file format documentation.

#### **8.2.1.3 Interpretation Report (Not Required for Non-Exclusive Programs)**

- 1) All interpretation reports should include a written discussion of:
  - a) all interpreted seismic horizons;
  - b) the maps and sections, including:
    - i. the correlation between the geophysical and geological events; and
    - ii. correlations between gravity, magnetic, CSEM (resistivity) and seismic data;
  - c) details of corrections or adjustments applied to the data during interpretation;
  - d) examples of correlated seismic sections which illustrate the interpretative technique for structural and stratigraphic interpretation; and
  - e) any velocity information used for time-to-depth conversion.
- 2) Geological program reports should include a written discussion of the results of the project and tie the project into the regional geological framework. Illustrations should include:
  - a) measured sections;
  - b) correlation or structural cross-sections;
  - c) core or sample descriptions;
  - d) geotechnical and other analyses;
  - e) micropaleontology and palynology; and
  - f) interpretative maps such as paleogeographic, facies and isopach.
- 3) In addition to the items noted in points 1) and 2) above, geohazard survey reports should also include:
  - a) a description of the surficial geology, including maps;
  - b) results of side scan sonar surveys, including side scan mosaics;
  - c) a description and discussion of the distribution and morphology of sedimentary units, pock marks, seabed photographs, seabed features such as sediment distribution, and, where appropriate, a discussion of ice scours, with an analysis of scour density, cross-sectional shape, depth of sediment disturbance and dimensions;
  - d) descriptions of seabed photographs and their locations;
  - e) location and description of samples and cores;
  - f) results of any geotechnical investigations or other studies carried out during the survey;
  - g) identification of man-made obstacles; and
  - h) a description of the features considered to be drilling hazards including a compilation map showing type, depth and extent of features.

#### **8.2.1.4 Maps and Enclosures**

**All map scales should be selected by the Operator to appropriately present the data at a workable level of detail.**

- 1) Seismic shotpoint maps, gravity station maps, magnetic survey maps, CSEM source/receivers maps, track plots and flight lines with numbered fiducial points, which are on a working scale and show the data in relation to the Operator's previous data in the area.
- 2) Bathymetry maps.
- 3) Interpretative maps appropriate to the type of survey, which indicate the interpretation of data from the survey and integration with previous surveys recorded by the Operator in the same area, for example:
  - a) for seismic reflection surveys: all maps displaying time structure, depth structure, isopach, isochron, velocity, seismic amplitude and character change;
  - b) for gravity surveys: all maps displaying Bouguer gravity, residual gravity field, derivative maps (if maps were not made, individual gravity profiles with sufficient annotation for interpretation);
  - c) for magnetic surveys: all maps displaying total magnetic intensity, corrected total field, residual magnetic field and derivative maps (if maps were not made, individual profiles with sufficient annotation for interpretation); and
  - d) for electromagnetic surveys: MVO and PVO curves, 2-D receiver line resistivity cross sections and 3-D model resistivity cross sections and maps.
- 4) Any other information, used or produced during the interpretation, such as synthetic seismograms, seismic modeling and/or attribute analyses, etc.

#### 8.2.1.5 Data Submission Requirements

- 1) Geohazard Surveys (Table 3.0)
  - a) digital images (TIFF format) of each 2-D high resolution (2-DHR) seismic section (fully annotated – including side legend with processing and acquisition parameters, horizontal annotation with CDP and SP numbering) are required. Images must be of the final processing output (relative amplitude and automatic gain control (AGC) scaled stack sections). Where no migrated sections were prepared, copies of the last processing of non-migrated sections should be submitted. For 3-D reprocessed high resolution (3-DHR) seismic, inline and cross-line TIFF images at 500 m spacing through the cube are required.
  - b) one copy of each, relative amplitude and AGC scaled digital 2-DHR or 3-DHR seismic traces is required. Submission must be final processing, either migrated or non-migrated as described previously. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.
  - c) a digital copy of final processed sub-bottom profiler (SBP) seismic traces. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.
  - d) a digital copy of the shotpoint location with time stamp (final processed) data is required for 2-DHR/3-DHR and SBP. All location data should reference the NAD83 datum and identify the appropriate UTM zone.
  - e) digital images of representative seabed photographs and/or a copy of the video.
  - f) any material remaining after analysis of seabed samples or geotechnical test hole material. *(Need to be submitted only if the Operator plans to destroy the data. If, at any future date, the Operator plans to destroy these data, prior approval must be obtained from the C-NLOPB).*
  - g) digital prints of borehole photographs (if obtained).
  - h) a digital copy of the final processed bathymetric data in x, y and z (depth) format.

- i) a digital copy of the final processed side scan sonar line and mosaic data in XTF, JSF or other suitable format.
- j) data should be submitted on USB, SFTP or other medium approved by the C-NLOPB.
- k) copies of other versions of the processed seismic data may be requested.

2) 2-D Seismic (Table 4.0)

- a) digital images (TIFF format) of each seismic section (fully annotated – including side legend with processing and acquisition parameters, horizontal annotation with CDP and SP numbering) are required. Images must be of the final processing output, pre-stack time migration (PSTM) and pre-stack depth migration (PSDM) if generated. Where no migrated sections were prepared, copies of the last processing of non-migrated sections should be submitted. For 2-D data the lines should be displayed at approximately 1:100000 or 50 traces per inch horizontal scale, and either 2½” per second or 5 cm per second vertical scale.
- b) one copy of the digital seismic traces is required. Submission must be final processing, both migrated PSTM and PSDM, or non-migrated as described previously. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.
- c) one copy of the digital seismic traces for each of the angle stacks processed (e.g. near, near-mid, mid, far-mid, and far angle stacks) are required. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.
- d) a digital copy of the shotpoint location with time stamp (final processed) data is required. All location data should reference the NAD83 datum and identify the appropriate UTM zone.
- e) a digital copy of the velocity data is required. All appropriate location data should be included with the time and velocity data.
- f) data should be submitted on USB, SFTP or other medium approved by the C-NLOPB.
- g) copies of other versions of the processed seismic data may be requested.

3) 3-D Seismic (Table 5.0)

- a) any 3-D seismic surveys collected in support of 4-D studies have the same submission requirements as listed below and in Table 5.0.
- b) digital images (TIFF format) of inlines and cross-lines (fully annotated – including side legend with processing and acquisition parameters, horizontal annotation with CDP and SP numbering) are required. Images must be of the final processing output, pre-stack time migration and pre-stack depth migration (when generated). Where no migrated sections were prepared, copies of the last processing of non-migrated sections should be submitted. For 3-D data, all lines should be displayed at approximately 1:100000 or 50 traces per inch for horizontal scale, and either 2½” per second or 5 cm per second vertical scale. The spacing for inlines and cross-lines should be 500 m and time slices at 500 milliseconds (ms).
- c) grid information, line and trace location information must be provided such that the data grid can be produced in C-NLOPB software.
- d) one copy of the digital seismic traces is required. Submission must be final processing, both migrated PSTM and PSDM, or non-migrated as described previously. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.
- e) one copy of the digital seismic traces for each of the angle stacks processed (e.g. near, near-mid, mid, far-mid, and far angle stacks) are required. The data should be in SEG-Y format with header information in SEG Standard as shown in Appendix 3.



- f) a digital copy of the shotpoint location with time stamp (final processed) data is required. All location data should reference the NAD83 datum and identify the appropriate UTM zone.
  - g) a digital copy of the velocity data is required. All appropriate location data should be included with the time and velocity data.
  - h) data should be submitted on USB, SFTP or other medium approved by the C-NLOPB.
  - i) copies of other versions of the processed seismic data may be requested.
- 4) Geological Surveys (Table 6.0)
- a) track plot location data with time stamp for all systems.
  - b) processed field data for each system, such as sub-bottom profiler (SBP) seismic traces in SEG-Y format, bathymetric data in x, y and z (depth) format, heat flow measurements in ASCII format, etc.
  - c) digital images of representative seabed photographs and/or a copy of the video (if obtained).
  - d) digital prints of core photographs and core logging.
  - e) any material remaining after analysis of seabed samples or core material. *(Need to be submitted only if the Operator plans to destroy the data. If, at any future date, the Operator plans to destroy these data, prior approval must be obtained from the C-NLOPB).*
  - f) any results of recovered samples and studies conducted on recovered samples in a suitable format.
  - g) any other information used or produced during the interpretation of the data.
  - h) data should be submitted on USB, SFTP or other medium approved by the C-NLOPB.
- 5) Controlled Source Electromagnetic Surveys (Table 7.0)
- a) track plot location data with time stamp.
  - b) final processed data (2-D and 3-D models if generated), SEG-Y or equivalent format.
  - c) amplitude/magnitude vs. offset (AVO/MVO) curves from all receivers (all harmonics).
  - d) phase vs. offset (PVO) curves from all receivers (all harmonics).
  - e) resistivity cross sections (TIFF format, fully annotated) – on all receiver lines, 2-D vertical and horizontal slices through the 3-D resistivity model at 500 m intervals (x, y and z (depth)), if generated.
- 6) Gravity Surveys (Table 8.0)
- a) track plot location data with time stamp.
  - b) one copy of digital records of processed gravity data in ASCII format, containing latitude/longitude, water depth, observed absolute value of gravity, Bouger anomaly and Free-air anomaly, for all data points.
- 7) Magnetic Surveys (Table 8.0)
- a) track plot location data with time stamp.
  - b) one copy of digital records of processed magnetic data in ASCII format containing latitude/longitude, total field value corrected for diurnal variation and residual magnetic field for all readings.
- 8) Other Surveys (Table 9.0)
- a) any other surveys that have not been included in the previous points are required to submit equivalent electronic data, interpretation, operations and processing information.

Operators are advised that data submitted to the C-NLOPB may be provided to the Geological Survey of Canada, Government of Canada or Government of Newfoundland and Labrador. The data remains subject to the Release of Data Disclosure provisions described in Section 10.



**Table 3.0: Geohazard Survey - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Shotpoint location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information – see Section 8
Digital seismic traces - final stack or migrated sections, relative amplitude and AGC scaled versions	1 digital (each)	SEG-Y (SEG Standard)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Applies to 2-DHR, reprocessed 3-DHR (acceptable for deepwater only, >500 m) and SBP data See Appendix 3 for SEG Standard
Digital images of seismic sections - fully annotated, final processed data.	1 digital (each)	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	For 2-DHR – all lines For 3-DHR reprocessed – inlines and cross-lines at 500 m intervals
Digital images or video of seabed imagery and boreholes (if obtained)	1 digital	TIFF/AVI/MP4/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Processed bathymetric data	1 digital	ASCII/equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Processed side scan sonar line and mosaic data	1 digital	XTF/JSF/ Equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Interpretation Report Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content

**Table 4.0: 2-D Seismic - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Shotpoint location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information – see Section 8
Digital seismic traces* - final migrated PSTM and PSDM (last processing where not available)	1 digital (each)	SEG-Y (SEG Standard)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital seismic traces – processed angle stacks	1 digital (each)	SEG-Y (SEG Standard)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital images of seismic sections - fully annotated, final processed data (PSTM and PSDM)	1 digital (each)	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	1:100000 or 50 traces per inch horizontal scale, 2.5 inches per second or 5 cm per second vertical scale
Velocity data	1 digital	ASCII	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including line number, shotpoint, time, RMS pairs for both stacked and migrated velocities
Interpretation Report** Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content  Report to reference time and depth surfaces where applicable

\* Copies of other versions of the processed seismic data may be requested.

\*\*Interpretation report is not required for non-exclusive 2-D seismic surveys.

**Table 5.0: 3-D Seismic - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Shotpoint location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information – see Section 8
Polygonal position data (full fold outline)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Survey inflection points describing the corner points in inline/cross-line, lat/long and UTM coordinates
Digital seismic traces* - final migrated PSTM and PSDM (last processing where not available)	1 digital	SEG-Y	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital seismic traces – processed angle stacks	1 digital (each)	SEG-Y	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital images of seismic sections - fully annotated, final processed data (PSTM and PSDM)	1 digital (each)	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	1:100000 or 50 traces per inch horizontal scale, 2.5 inches per second or 5 cm per second vertical scale
Velocity data	1 digital	ASCII/SEG-Y	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including line number, shotpoint, time, RMS pairs for both stacked and migrated velocities
Interpretation Report** Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content Report to reference time and depth surfaces where applicable

\* Copies of other versions of the processed seismic data may be requested.

\*\* Interpretation report is not required for non-exclusive 3-D seismic surveys.

**Table 6.0: Geological Program - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Track plot location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information
Processed data	1 digital	ASCII/SEG-Y/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including final navigation and calculated field data (e.g. multibeam, SBP, heat flow measurements, geochemistry, biostratigraphy, etc.)
Digital images or video of seabed imagery (if obtained)	1 digital	TIFF/AVI/MP4/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Digital prints of core photographs and core logging	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Digital images of interpretation maps	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Include all maps from the interpretation report as separate geo-referenced TIFF images
Interpretation Report* Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content

\*Interpretation report is not required for non-exclusive geological programs.

**Table 7.0 Controlled Source Electromagnetic - Data Submission Requirements\***

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Track plot location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information
Final processed data, 2-D and 3-D model data	1 digital	SEG-Y/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Amplitude/Magnitude and Phase vs. Offset data (AVO/MVO and PVO) (all harmonics)	1 digital (each)	PDF/TIFF/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Fully annotated images of final processed data	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Resistivity cross-sections on all receiver lines and inline/cross-line/depth slices through the 3-D model  See Section 8.2.1.5 for further details
Interpretation Report** Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content

\*Other electromagnetic surveys must submit equivalent data to CSEM requirements where applicable.

\*\*Interpretation report is not required for non-exclusive CSEM surveys.

**Table 8.0: Gravity/Magnetics - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Track plot location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information
Processed data	1 digital	ASCII/SEG-Y/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including final navigation and calculated field data Gravity specific – see Section 8.2.1.5 Magnetic specific – see Section 8.2.1.5
Digital images of interpretation maps	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Include all maps from the interpretation report as separate geo-referenced TIFF images
Interpretation Report* Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content

\*Interpretation report is not required for non-exclusive gravity/magnetic programs.

**Table 9.0 Other - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Track plot location data with time stamp (final navigation data)	1 digital	UKOOA	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information
Processed data	1 digital	ASCII/SEG-Y/ equivalent	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including final navigation and calculated field data
Fully annotated images of final processed data	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	
Interpretation Report* Operations Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.1 to 8.2.1.4 for required content

\*Interpretation report is not required for non-exclusive other programs.

### 8.2.2 Environmental Programs: Specific Reporting Requirements

Final reports for environmental field programs should include the following, in addition to the items described in Section 8.1:

- 1) a general overview of the data or samples which were acquired during the program, and of any analyses which were performed upon them;
- 2) a description of quality control and quality assurance procedures which were in place during the field program and, where appropriate, which were in place at facilities where sample handling and analysis were performed;
- 3) the data or information which was collected during the program. The scope of this reporting will be determined on a case-by-case basis, and may take the form of a data appendix to the report, or a digital data storage medium accompanying the report; and
- 4) the results of any analyses which were performed upon the data collected during the program.

### 8.2.3 Geotechnical Programs: Specific Reporting Requirements

Final reports for geotechnical programs should be signed by a professional engineer or geoscientist and should include the following information in addition to that mentioned in Section 8.1:

- 1) location maps at a working scale;
- 2) a description of the boring and geotechnical equipment that was used during the program;
- 3) a description of sample handling procedures, storage, onboard measurements and results;
- 4) a description of the laboratory procedures, measurements and results;
- 5) correlations between borehole data and available geophysical data;
- 6) interpretative maps showing distribution and thickness of relevant geological/geotechnical units; and
- 7) any other information, such as bathymetry, used or produced during the interpretation of the data.

### 8.3 Programs without Fieldwork

All Operators of geological programs without fieldwork pertaining to the sampling and borrowing of well material from the C-NLOPB's CSRC must submit one digital copy of any reports or other materials produced as a result of these studies. These must be submitted to the C-NLOPB within **one (1)** year of the estimated completion date shown on the application form.

Any final report submitted to fulfill the reporting requirements of a program without fieldwork, should be signed by a professional geoscientist. In addition to that detailed in Section 8.1, specific reporting requirements mirror that of programs with fieldwork (see Section 8.2).

Purchasers of non-exclusive data who wish to have the cost of the purchase offset against work expenditure commitments for an exploration licence, must submit an interpretation report covering Sections 8.2.1.3 and 8.2.1.4



above, in addition to having completed and had approved a *Geophysical or Geological Program Approval Application (Programs without Fieldwork)* form as detailed in Section 5.2.

Purchasers and/or Operators who wish to have reprocessing of seismic data count as an allowable expenditure are required to submit processing and interpretation reports for any reprocessing as well as submission of the SEG-Y data (Table 10.0).

**Table 10.0: Reprocessed Seismic - Data Submission Requirements**

<b>Data Required</b>	<b>Report</b>	<b>Format</b>	<b>Date for Submission</b>	<b>Submission Media</b>	<b>Remarks</b>
Shotpoint location data with time stamp (final navigation data)	1 digital	ASCII	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	P1/90 or equivalent information
Digital seismic traces* - final migrated PSTM and PSDM (last processing where not available)	1 digital (each)	SEG-Y	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital seismic traces – near, near-mid, mid, far-mid and far angle stacks	1 digital (each)	SEG-Y	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Appendix 3 for SEG Standard
Digital images of seismic sections - fully annotated, final processed data (PSTM and PSDM)	1 digital	TIFF (300 DPI minimum)	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	1:100000 or 50 traces per inch horizontal scale, 2.5 inches per second or 5 cm per second vertical scale
Velocity data	1 digital	ASCII	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	Including line number, shotpoint, time, RMS pairs for both stacked and migrated velocities
Interpretation Report Processing Report	1 digital (each)	Searchable PDF	12 months after completion of program	USB, SFTP or other medium approved by the C-NLOPB	See Sections 8.2.1.2 to 8.2.1.4 for required content

\* Copies of other versions of the processed seismic data may be requested.

## 9.0 ALLOWABLE EXPENDITURES

All Allowable Expenditure Applications should be submitted to the C-NLOPB along with the appropriate Cost Recovery fee. Processing of the Allowable Expenditure Application will not begin until Cost Recovery fees are paid.

Allowable expenditures may be claimed by an interest owner for credit against the security deposit for any permitted expenses incurred in the pre-licence award period and/or during Period I. That pre-licence period extends from the date of initial announcement of the Call for Nominations (Area of Interest) for that scheduled round, up to and including the effective date of an exploration licence (EL) issued from that round. Work expenditures incurred after Period I **cannot be claimed** as allowable expenditures against the security deposit, but may be credited against rentals in accordance with the terms and conditions of the EL. Conversely, allowable expenditures incurred in Period I cannot be brought forward and claimed against rentals in Period II.

It is the responsibility of the licence representative to submit the allowable expenditure application on behalf of all interest holders for the licence. The C-NLOPB may consider any allowable expenses incurred by an individual interest holder provided the amount is submitted as part of the allowable expenditure application by the licence representative to be credited against the total outstanding security deposit and not the proportionate share of that interest holder. For clarity, such independent expenditures could include the individual purchase of speculative seismic data that qualify as allowable expenditures in accordance with the licence terms.

Applicants for allowable expenditure should consult the terms and conditions of the licence for which the allowable is to be claimed. The applicant may only submit R&D/E&T expenses for either allowable expenditure or against their R&D/E&T credit, **NOT** both. Allowable expenditures for authorized or approved work programs will only be processed when all data associated with the program(s) have been submitted to the C-NLOPB as per data submission guidelines.

Allowable expenditure forms, which are available on the C-NLOPB website, must be accompanied with a breakdown of financial expenditures (Excel format) and proof of expenditure in the form of invoices and supporting documentation. The C-NLOPB may request additional information as required to process the allowable expenditure application (Table 11.0). **Claims associated with licences awarded post 2009 must be accompanied by a cost statement prepared and certified by an external auditor satisfactory to the C-NLOPB, pursuant to the terms and conditions of the EL.**

**Table 11.0: Required Documentation for Allowable Expenditure**

Document	Details
Allowable Expenditure Form	<ul style="list-style-type: none"> <li>Submitted original, signed by Operator</li> </ul>
Proof of Expenditure	<ul style="list-style-type: none"> <li>Invoices and/or corresponding proof of payment as defined by the terms and conditions of the licence</li> </ul>
Summary of Expenditures	<ul style="list-style-type: none"> <li>Spreadsheet in Excel format</li> </ul>
Percentage Qualification	<ul style="list-style-type: none"> <li>Sample calculations demonstrating percentage allowable for a particular licence</li> </ul>
Digital Information	<ul style="list-style-type: none"> <li>Examples: survey map, corner points of survey*, survey navigation*, etc.</li> </ul>

\* A 4 km buffer around licences may be added for seismic data submitted as an allowable expenditure.

## 10.0 RELEASE OF DATA

Under the Acts, reports and data resulting from most technical programs in the Canada-Newfoundland and Labrador Offshore Area, cease to be privileged **five (5)** years following completion of the program. However, the C-NLOPB has extended the confidentiality period for non-exclusive programs to **ten (10)** years following program completion. The additional five (5) years of confidentiality protection is contingent upon the program data remaining available to the public for purchase during this extension period. For greater certainty if at any time the data respecting the non-exclusive program becomes unavailable, such data will be released after the five (5) year statutory privilege period.

The completion date for geophysical, geological, environmental and geotechnical programs involving fieldwork is established as six months following the completion date of fieldwork. For geophysical, geological, environmental and geotechnical programs without fieldwork the program completion date is that which is listed on the application. A detailed breakdown of specific data confidentiality periods is available in Table 12.0.

Geophysical and geological program inventories can be found on the C-NLOPB website in the Geoscience Information section. These inventories are searchable Excel documents that contain such pertinent information such as program number, program type, land tenure region(s) and data release date.

**Table 12.0: Information Release Periods**

Data Classification	Information Type	Information Release Period (from completion date)
Exclusive	Reports (Interpretation, Processing, Operations)	5 years
Exclusive	Seismic* Data	5 years
Exclusive	CSEM, Gravity, Magnetics	5 years
Exclusive	Reprocessed Seismic** (program without fieldwork)	5 years
Exclusive	Other***	5 years
Non-Exclusive	Reports (Processing, Operations)	10 years
Non-Exclusive	Seismic*	10 years
Non-Exclusive	CSEM, Gravity, Magnetics	10 years
Non-Exclusive	Other***	10 years

\* Seismic includes any program using an acoustic source.

\*\* Reprocessed Seismic includes any reprocessed data approved as a Geophysical Program without Fieldwork.

\*\*\* Other – given rapid changes in technology, this category includes any form of data acquisition not covered explicitly.

# **Appendix 1**

## **List of Application Forms**

Below is a list of C-NLOPB forms, in word/PDF format, available on the website:

- Operating Licence Application
- Geophysical Program Authorization Application (2-D Seismic, 3-D Seismic, CSEM, Geohazard, etc.)
- Geological/Geotechnical/Environmental Program Authorization Application
- Vertical Seismic Profile Program Authorization Application
- Electromagnetic Program Authorization Application
- Geophysical Program Approval Application (Program Without Fieldwork)
- Geological Program Approval Application (Program Without Fieldwork)
- Proof of Financial Requirements for Work Authorization
- Indemnity Agreement
- Declaration of Fitness Form
- Quarterly Statistics Report
- Incident Notification Form
- Incident Investigation Report
- Allowable Expenditure Application for Credit Against a Security Deposit or Rentals
- Schedule "A" Form

Originals of these forms may be obtained from the C-NLOPB by using the contact information provided at <https://www.cnlopb.ca/contact/>.

## Appendix 2

### Environmental Planning, Mitigation and Reporting

This Appendix contains recommended environmental planning, mitigation and reporting measures for marine seismic surveys in the offshore area. Section I contains verbatim the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* that describes measures for the planning and conduct of marine seismic surveys that are intended to prevent or minimize potential effects upon the natural environment. Section II contains recommended practices for interaction with other ocean users, particularly fisheries interests, during the conduct of surveys. Finally, Section III contains recommended reporting formats for marine mammal and seabird observations during surveys.

## **I. STATEMENT OF CANADIAN PRACTICE WITH RESPECT TO THE MITIGATION OF SEISMIC SOUND IN THE MARINE ENVIRONMENT**

### **Context**

The *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* specifies the mitigation requirements that must be met during the planning and conduct of marine seismic surveys, in order to minimize impacts on life in the oceans. These Requirements are set out as minimum standards, which will apply in all non-ice covered marine waters in Canada. The *Statement* complements existing environmental assessment processes, including those set out in settled land claims. The current regulatory system will continue to address protection of the health and safety of offshore workers and ensure that seismic activities are respectful of interactions with other ocean users.

### **Definitions:**

- Cetacean: means a whale, dolphin or porpoise.
- Critical habitat: means the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy, or in an action plan for the species.
- Marine Mammal Observer: means an individual trained to identify different species of marine mammals and turtles that may reasonably be expected to be present in the area where the seismic survey will take place.
- Marine mammals: means all cetaceans and pinnipeds.
- Passive Acoustic Monitoring: means a technology that may be used to detect the subsea presence of vocalizing cetaceans.
- Pinniped: means a seal, sea lion or walrus.
- Ramp-up: means the gradual increase in emitted sound levels from a seismic air source array by systematically turning on the full complement of an array's air sources over a period of time.
- Seismic air source: means an air source that is used to generate acoustic waves in a seismic survey.
- Seismic air source array(s): means one or a series of devices designed to release compressed air into the water column in order to create an acoustical energy pulse to penetrate the seafloor.
- Seismic survey: means a geophysical operation that uses a seismic air source to generate acoustic waves that propagate through the earth, are reflected from or refracted along subsurface layers of the earth, and are subsequently recorded.
- Statement: means the Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment.
- Whale: means a cetacean that is not a dolphin or porpoise.



## Application

- 1) Unless otherwise provided, the mitigation measures set out in this Statement apply to all seismic surveys planned to be conducted in Canadian marine waters and which propose to use an air source array(s).
- 2) The mitigation measures set out in this Statement do not apply to seismic surveys conducted
  - a) on ice-covered marine waters; or
  - b) in lakes or the non-estuarine portions of rivers.

## Planning Seismic Surveys

### Mitigation Measures

- 3) Each seismic survey must be planned to:
  - a) use the minimum amount of energy necessary to achieve operational objectives;
  - b) minimize the proportion of the energy that propagates horizontally; and
  - c) minimize the amount of energy at frequencies above those necessary for the purpose of the survey.
- 4) All seismic surveys must be planned to avoid:
  - a) significant adverse effect for an individual marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act*; and
  - b) a significant adverse population-level effect for any other marine species.
- 5) Each seismic survey must be planned to avoid:
  - a) displacing an individual marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act* from breeding, feeding or nursing;
  - b) diverting an individual migrating marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act* from a known migration route or corridor;
  - c) dispersing aggregations of spawning fish from a known spawning area;
  - d) displacing a group of breeding, feeding or nursing marine mammals, if it is known there are no alternate areas available to those marine mammals for those activities, or that if by using those alternate areas, those marine mammals would incur significant adverse effects; and
  - e) diverting aggregations of fish or groups of marine mammals from known migration routes or corridors if it is known there are no alternate migration routes or corridors, or that if by using those alternate migration routes or corridors, the group of marine mammals or aggregations of fish would incur significant adverse effects.

## Safety Zone and Start-up

### Mitigation Measures

- 6) Each seismic survey must:
  - a) establish a safety zone which is a circle with a radius of at least 500 m as measured from the center of the air source array(s); and
  - b) for all times the safety zone is visible:
    - i. a qualified Marine Mammal Observer must continuously observe the safety zone for a minimum period of 30 minutes prior to the start up of the air source array(s); and
    - ii. maintain a regular watch of the safety zone at all other times if the proposed seismic survey is of a power that it would meet a threshold requirement for an assessment under the *Canadian Environmental Assessment Act*, regardless of whether the Act applies.

- 7) If the full extent of the safety zone is visible, before starting or restarting an air source array(s) after they have been shut down for more than 30 minutes, the following conditions and processes apply:
  - a) none of the following have been observed by the Marine Mammal Observer within the safety zone for at least 30 minutes:
    - i. a cetacean or sea turtle;
    - ii. a marine mammal listed as endangered or threatened on Schedule 1 of the *Species at Risk Act*; or
    - iii. based on the considerations set out in sub-section 4(b), any other marine mammal that has been identified in an environmental assessment process as a species for which there could be significant adverse effects; and
  - b) a gradual ramp-up of the air source array(s) over a minimum of a 20 minute period beginning with the activation of a single source element of the air source array(s), preferably the smallest source element in terms of energy output and a gradual activation of additional source elements of the air source array(s) until the operating level is obtained.

### **Shut-down of Air Source Array(s)**

#### **Mitigation Measures**

- 8) The air source array(s) must be shut down immediately if any of the following is observed by the Marine Mammal Observer in the safety zone:
  - a) a marine mammal or sea turtle listed as endangered or threatened on Schedule 1 of the *Species at Risk Act*; or
  - b) based on the considerations set out in sub-section 4(b), any other marine mammal or sea turtle that has been identified in an environmental assessment process as a species for which there could be significant adverse effects.

### **Line Changes and Maintenance Shut-Downs**

#### **Mitigation Measures**

- 9) When seismic surveying (data collection) ceases during line changes, for maintenance or for other operational reasons, the air source array(s) must be:
  - a) shut down completely; or
  - b) reduced to a single source element.
- 10) If the air source array(s) is reduced to a single source element as per sub-section 9(b), then
  - a) visual monitoring of the safety zone as set out in Section 6 and shut-down requirements as set out in Section 8 must be maintained; but
  - b) ramp-up procedures as set out in Section 7 will not be required when seismic surveying resumes.

### **Operations in Low Visibility**

#### **Mitigation Measures**

- 11) Under the conditions set out in this section, cetacean detection technology, such as Passive Acoustic Monitoring, must be used prior to ramp-up for the same time period as for visual monitoring set out in Section 6. Those conditions are as follows:
  - a) the full extent of the safety zone is not visible; and
  - b) the seismic survey is in an area that:

- i. has been identified as critical habitat for a vocalizing cetacean listed as endangered or threatened on Schedule 1 of the *Species at Risk Act*; or
  - ii. in keeping with the considerations set out in sub-section 4(b), has been identified through an environmental assessment process as an area where a vocalizing cetacean is expected to be encountered if that vocalizing cetacean has been identified through the environment assessment process as a species for which there could be significant adverse effects.
- 12) If Passive Acoustic Monitoring, or similar cetacean detection technology, is used in accordance with the provision of Section 11, unless the species can be identified by vocal signature or other recognition criteria,
- a) all non-identified cetacean vocalizations must be assumed to be those of whales named in Section 8(a) or (b); and
  - b) unless it can be determined that the cetacean(s) is outside the safety zone, the ramp-up must not commence until non-identified cetacean vocalizations have not been detected for a period of at least 30 minutes.

### **Additional Mitigation Measures and Modifications**

#### **Mitigation Measures**

- 13) Persons wishing to conduct seismic surveys in Canadian Marine waters may be required to put in place additional or modified environmental mitigation measures, including modifications to the area of the safety zone and/or other measures as identified in the environmental assessment of the project to address:
- a) the potential for chronic or cumulative adverse environmental effects of
    - i. multiple air source arrays (e.g., two vessels on one project, multiple projects); or
    - ii. seismic surveys being carried out in combination with other activities adverse to marine environmental quality in the area affected by the proposed program or programs;
  - b) variations in sound propagation levels within the water column, including factors such as seabed, geomorphologic, and oceanographic characteristics that affect sound propagation;
  - c) sound levels from air source array(s) that are significantly lower or higher than average; and
  - d) species identified in an environmental assessment process for which there is concern, including those described in sub-section 4(b).
- 14) Variations to some or all of the measures set out in this Statement may be allowed provided the alternate mitigation or precautionary measures will achieve an equivalent or greater level of environmental protection to address the matters outlined in Sections 6 through 13 inclusive. Where alternative methods or technologies are proposed, they should be evaluated as part of the environmental assessment of the project.
- 15) Where a single source element is used and the ramping up from an individual air source element to multiple elements is not applicable, the sound should still be introduced gradually whenever technically feasible.

## **II. INTERACTION WITH OTHER OCEAN USERS**

- 1) For any geophysical, geological, environmental and geotechnical program authorized in the offshore area:
- a) The Operator should implement operational arrangements to ensure that the Operator and/or its survey contractor and the local fishing interests are informed of each other's planned activities. Communication throughout survey operations with fishing interests in the area should be maintained.

The One Ocean document [One Ocean Protocol for Seismic Survey Programs in Newfoundland and Labrador](#) is a useful reference in this regard.

- b) The Operator should publish a Canadian Coast Guard “Notice to Mariners” and a “Notice to Fishers” via the CBC Radio program Fisheries Broadcast.
- c) Operators should implement a gear and/or vessel damage compensation program, to promptly settle claims for loss and/or damage that may be caused by survey operations. The scope of the compensation program should include replacement costs for lost or damaged gear and any additional financial loss that is demonstrated to be associated with the incident. The Operator should report on the details of any compensation awarded under such a program.
- d) Procedures must be in place on the survey vessel(s) to ensure that any incidents of contact with fishing gear are clearly detected and documented (e.g. exact time and location of initial contact and loss of contact, description of any identifying markings observed on affected gear, photo). As per Section 7.2 of these Guidelines, any incident should be reported as per Section 6.19 of the *C-NLOPB / CNSOPB Incident Reporting and Investigation Guidelines*.

## 2) 2-D, 3-D and 4-D Seismic Programs

In addition to the measures indicated in Section 1 above, the following mitigation measures should also be implemented:

- a) Surveys should be scheduled, to the extent possible, to reduce potential for impact or interference with Fisheries and Oceans Canada (DFO) science surveys. Spatial and temporal logistics should be determined with DFO to reduce overlap of seismic operations with research survey areas, and to allow an adequate temporal buffer between seismic survey operations and DFO research activities.
- b) Seismic activities should be scheduled to avoid heavily fished areas, to the extent possible. The Operator should implement operational arrangements to ensure that the Operator and/or its survey contractor and local fishing interests are informed of each other’s planned activities.
- c) Communication throughout survey operations with fishing interests in the area should be maintained. The use of a “Fisheries Liaison Officer” (FLO) onboard the seismic vessel is considered best practice in this respect. The use of a standby/picket/guard/chase vessel is also considered best practice in this respect.
- d) Where more than one survey operation is active in a region, the Operator(s) should arrange for a “Single Point of Contact” (SPOC) for marine users to facilitate communication.

### III. SEABIRD AND MARINE MAMMAL MONITORING AND REPORTING

Operators are expected to implement a seabird and marine mammal observation program throughout all C-NLOPB authorized program activities. Such a program should involve a designated observer trained in marine mammal and seabird observations.

For marine mammal monitoring, the monitoring protocol outlined in ESRF Report #156 *Recommended Seabird and Marine Mammal Observation Protocols for Atlantic Canada* (2004) should be implemented. The report is available on the internet at the following link:

<http://www.esrfunds.org/sites/www.esrfunds.org/files/pdf/publications/Report156.pdf>

Monitoring reporting forms are available in Appendix B of the ESRF Report #156.

For seabird monitoring, the Canadian Wildlife Service (CWS) has developed a pelagic seabird monitoring protocol that should be used when undertaking seabird observations. Copies of the [\*Eastern Canada Seabirds at Sea \(ECSAS\) standardized protocol for pelagic seabird surveys from moving and stationary platforms\*](#) (Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. Vi + 36pp) reporting forms, and a guide sheet to the pelagic seabirds of Atlantic Canada, are available by contacting the Canadian Wildlife Service office in Mount Pearl, NL.

The results of the marine mammal and seabird monitoring program should be included in the EA mitigation and monitoring report, as per Section 5.1.4.2, and submitted to the C-NLOPB no later than **six (6) months** after termination of the fieldwork. Data on the marine mammal and seabird observations must be submitted to the C-NLOPB.

## **Appendix 3**

**The SEG-Y format in which seismic trace data should be submitted is described herein**

### Pure SEG-Y Format Description

Trace Header Item	Byte Location	Format	Trace Header Item	Byte Location	Format
trace number within line	1	integer	correlated, 1=no, 2=yes	125	short
trace number within reel	5	integer	sweep frequency at start	127	short
original trace number	9	integer	sweep frequency at end	129	short
trace number in field record	13	integer	sweep length in ms	131	short
shot point	17	integer	sweep type, 1=linear	133	short
cdp number	21	integer	sweet trace taper length at	135	short
cdp ensemble number	25	integer	sweet trace taper length at	137	short
id code	29	short	taper type	139	short
number of vertically stacked	31	short	alias filter frequency	141	short
number of horizontally stacked	33	short	alias filter slope	143	short
data use, 1=production, 2=test	35	short	notch frequency	145	short
shot to receiver distance	37	integer	notch slope	147	short
receiver elevation	41	integer	low cut frequency	149	short
source elevation	45	integer	high cut frequency	151	short
source depth	49	integer	low cut slope	153	short
receiver datum elevation	53	integer	high cut slope	155	short
source datum elevation	57	integer	year recorded	157	short
water depth at source	61	integer	day of year	159	short
water depth at group	65	integer	hour of day	161	short
scalar for elevations	69	short	minute of hour	163	short
scalar for coordinates	71	short	second of minute	165	short
source coordinate x	73	integer	time basis code, 1=local	167	short
source coordinate y	77	integer	trace weighting factor	169	short
group coordinate x	81	integer	geophone group number of	171	short
group coordinate y	85	integer	geophone group number of	173	short
coordinate units, 1=length	89	short	geophone group number of	175	short
weathering velocity	91	short	gap size	177	short
sub-weathering velocity	93	short	overtravel associated with	179	short
uphole time at source	95	short	optional 1	181	integer
uphole time at rx	97	short	optional 2	185	integer
source static correction	99	short	optional 3	189	integer
group static correction	101	short	optional 4	193	integer
total static correction	103	short	optional 5	197	integer
lag time A	105	short	optional 6	201	integer
lag time B	107	short	optional 7	205	integer
delay recording time	109	short	optional 8	209	integer
start mute	111	short	optional 9	213	integer
end mute	113	short	optional 10	217	integer
number of samples in this trace	115	short	optional 11	221	integer
sampling interval	117	short	optional 12	225	integer
gain type of field instruments	119	short	optional 13	229	integer

gain constant for instruments	121	short		optional 14	231	integer
initial or early gain (db)	123	short		optional 15	237	integer