Yukon
Energy, Mines and Resources
Oil and Gas Resources

Guidelines: Reporting of Surface Activities Related to Seismic Operations

Updated July 21, 2015

1 FIELD SEISMIC SURVEY INFORMATION

This document provides details regarding digital submissions of data related to surface locations of seismic surveys. (Locations of ground traverses along which seismic surveys have been carried out as part of geophysical exploration for petroleum resources).

The submission includes attributed lines, points, and associated files.

Map and Cover letter

Submitted spatial data should be accompanied by a map (in PDF format) and cover letter (in PDF, or DOCX format).

The map should show the following:

a. The location of roads, trails, and cutlines that were used to gain access to the project area.
b. The locations of existing cutlines that were used to acquire data.
c. The location of new cut lines that were cut to acquire data.

The cover letter should include basic program information (like Licence number and program name, type of survey, survey locality, time period and year of field work, etc.); and a list of submitted spatial files with all relevant information such as coordinate system, horizontal and vertical datum, spheroid, UTM zone, units of measurement, etc.

In addition, the following information should be reported in the cover letter:

a. The total length in kilometers of all existing cutlines that were used to acquire data.
b. The total length in kilometers, and width in meters, of all new cutlines that were cut to acquire data.
c. The total length in kilometers, and width in meters, of all new cutlines that were cut to gain access.
d. A table showing ground disturbance (in hectares) for each of a new cut source, receiver, and access lines.

Spatial files

Files may be submitted in compressed form in ZIP format. The name of the ZIP file should incorporate the program name and Exploration Seismic Licence number. Within each compressed ZIP file, individual submission files are named with the ZIP file name appended with the file type separated by an underscore ("_").

The following files should be contained within the ZIP:

- Program Lines Spatial Data (lin) - seismic and access lines associated with a program.
- Source Points Spatial Data (source) – Source locations.
- Receiver Points Spatial Data (receiver) – Receiver locations.

Example:

Submission file	**Content**
field_data_seismic_XYZ_1010.zip	field_data_seismic_XYZ_1010_lin.* field_data_seismic_XYZ_1010_source_pnt.* field_data_seismic_XYZ_1010_receiver_pnt.*

The preferred format is a shapefile format.

A shapefile format is a native ESRI format for storing the geometric location and attribute information of geographic features.

The data must be submitted in Geographic coordinate system or Universal Transverse Mercator (UTM) projection in NAD83. Datum, spheroid, and UTM zone should be stated in the cover letter together with other relevant information. The preferable format for geographic coordinates is Decimal Degrees.

1.1.1. Program Lines Spatial Data (*_lin.*)

Seismic and access lines associated with a program are recorded here. If data submitted are in shapefile format, the spatial information will be stored together with attribute information. For some other formats separate spatial (line coordinates) and attribute files may be needed. Line ID must be a unique value. Lines are broken up by a unique set of attribute values. Each line object in the spatial data file is referenced by the ID record in the textual attribute file. The textual attribute records are defined in Table 1.

Table 1 – Program Line Attribute File Record Layout

Field Name	Data type	Valid Values	Validation
ID	Integer (10)	Any number	Required for all features.
LINE_NAME	String(16)	Free text	Required for all seismic features. Optional for non seismic features.
LINE_TYPE	String (1)	S- Source R – Receiver C – Combination A – Access	Required for all features.
CLEARING	String(1)	N – New Clearing E – Existing Clearing X – No Clearing	Required for all features.
METHOD	String (1)	S – Survey Line of Sight L – Low Impact C – Conventional Z – Minimal Impact	Required for all features.
CUT_TYPE	String(1)	H – Hand Cut M – Mechanical Cut *Null for existing clearings and no clearings*	Required for New clearing (N) features. Existing clearings (E) and No Clearings (X) are null.
WIDTH	Decimal(8,2)	Any number	Required for all features. Minimal Impact (Z) features are 0.
COMMENTS	String (80)	Free Text	Optional.

Source: Government of Alberta. Lands – Digital Geophysical Submission Specifications. December 28, 2012. Table 6—Program Line attribute File Record Layout. Page 22. Downloaded from http://esrd.alberta.ca/forms-maps-services/industry-online-services/adept/documents/DigitalGeoSubmissionSpecs-Dec28-2012.pdf. Used with permission.

1.1.2.Program Lines Definitions

Table 2 – Program Line Attribute File Record Layout Definitions

ID	Unique record identifier. It is usually system generated.
LINE_NAME	An alphanumeric string assigned by the company, which uniquely identifies each seismic line in a program.
LINE_TYPE	Describes the function or purpose of a feature.
CLEARING	The state of a line, which determines whether or not vegetative cover was removed.
METHOD	The technique used on the line.
CUT_TYPE	An indication of how a new line was cleared.
WIDTH	Width of line in meters.
SOURCE	A line on which energy source points are established for the purpose of generating seismic waves. No geophones are placed along the line.
RECEIVER	A line used in a program solely for the purpose of stringing geophones. No source points are permitted on the line.
COMBINATION	A line on which energy source points and geophones are located.
ACCESS	Access road.
NEW CLEARING	The removal of any forest growth 1.5 meters or greater in height.
EXISTING CLEARING	The removal of any forest growth less than 1.5 meters in height or where there is a visible linear disturbance pattern, e.g. cutline or trail. NOTE: A line is no longer considered existing if natural regeneration is greater than 1.5 m (height).
NO CLEARING	Where there is no surface disturbance on the lands (such as tundra, forest fires clearings, muskeg…).

SURVEY LINE OF SIGHT	A survey line of sight is generally seen as a requirement for the industry to locate shot points, etc. The primary purpose is to provide line of sight between stations, and should be kept to a minimum width of 0.5 meters.
LOW IMPACT SEISMIC	The objective of low impact seismic (also referred to as the "path of least resistance") is to create a narrow, continuously meandering line. This method reduces the line of sight to less than 200 m, avoids larger standing trees (meandering avoidance), and leaves the soil and ground cover generally undisturbed. The line width can range from 1.0 – 4.5 m, and be a hand or mechanically cut line. Note: Conventional (straight) lines with a 200 m line-of-sight pattern are not LIS lines.
CONVENTIONAL	A conventional seismic line is a straight line that can either be hand or mechanically cut, and ranges in width from 1.0-6.0 m. The maximum width cannot exceed 6.0 m. A "Survey Line of Sight" is not considered a conventional line.
MINIMAL IMPACT	Minimal impact lines are those lines where no forest growth is cut other than to create a walking trail for foot access. There is no cutting of standing trees and little if any cutting of shrubs. May include existing lines.
HAND CUT	No mechanical equipment, other than a chainsaw, may be used to cut the line.
MECHANICAL CUT	The line has been cut by some type of mechanical equipment. Examples include a dozer and a hydro-axe.

Source: Government of Alberta. Lands – Digital Geophysical submission Specifications. December 28, 2012. Table 7 – Program Line Attribute File Record Layout Definitions. Page 23. Downloaded from http://esrd.alberta.ca/forms-maps-services/industry-online-services/adept/documents/DigitalGeoSubmissionSpecs-Dec28-2012.pdf. Used with permission.

1.1.3. Source and Receiver Coordinates (*_source_pnt.*, *_receiver_pnt.*)

These files contain location information of the shot and receiver points for the program area (including elevation data).

Table 3 – Shot/Receiver Point Coordinates/Attribute File Record Layout

Field Name	Data Type	Valid Values	Validation
ID	Integer (10)	Any number	Required for all features.
LINE_NAME	String(16)	Free text	Required for all features.
STATION	Integer(8)	Any number	Required for all features.
X_Coordinate	Integer	Any number	Required for all features.
Y_Coordinate	Integer	Any number	Required for all features.
ELEVATION	Integer	Any number	Required for all features.

Source: Government of Alberta. Lands – Digital Geophysical submission Specifications. December 28, 2012. Taken in part from Table 8 – Program Line RDS Coordinates File Record Layout. Page 25. Downloaded from http://esrd.alberta.ca/forms-maps-services/industry-online-services/adept/documents/DigitalGeoSubmissionSpecs-Dec28-2012.pdf. Used with permission.

Table 4 – Shot/Receiver Point Coordinates/Attribute File Record Layout Definitions

ID	Unique record identifier. It is usually system generated.
LINE_NAME	An alphanumeric string assigned by the company, which uniquely identifies each seismic line in a program.
SHOTPOINT	The unique number of the shot point.
X_Coordinate	A coordinate whose value is determined by measuring parallel to an x-axis.
Y_Coordinate	A coordinate whose value is determined by measuring parallel to an y-axis.
ELEVATION	Elevation above mean sea level of natural ground level.

Source: Government of Alberta. Lands – Digital Geophysical submission Specifications. December 28, 2012. Taken in part from Table 9 – Program Line RDS Spatial File Record Layout Definitions. Page 26. Downloaded from http://esrd.alberta.ca/forms-maps-services/industry-online-services/adept/documents/DigitalGeoSubmissionSpecs-Dec28-2012.pdf. Used with permission.