Seismic Operations and the Landowner

What are your rights as a landowner?

OIL AND GAS COMMISSION

Seismic Operations and the Landowner

This brochure is intended to provide the surface owner or occupant with general information and an understanding of their rights regarding seismic operations. The information is a general guide and may not cover all situations.

The seismic avoidance technique protects harvestable timber and provides refuge for wildlife, balancing protection of our environment with development of our resources.

SEISMIC OPERATIONS

What are your rights?

Landowners have rights regarding seismic operations. A seismic operator may not enter onto property without first obtaining the approval of the landowner. It is up to the landowner to negotiate the terms of the contract.

How is the project regulated?

Seismic project operators are required to follow legislation under the Petroleum and Natural Gas Act, Part 4 (www.qp.gov.bc.ca/statreg/stat/P/96361_01.htm) and the Geophysical Exploration Regulations (www.qp.gov.bc.ca/statreg/reg/P/PetNatGas/361_98.htm) as well as guidelines under the Oil and Gas Handbook, Part 4, (available from Crown Publications*). The Oil and Gas Commission (OGC) is responsible for regulating oil and gas activities in British Columbia.

* Crown Publications, 250-386-4636, www.crownpub.bc.ca

What is the sequence of events typical of a seismic operation?

❶ The landowner and the seismic company or their agent negotiates a written agreement. Although there are no standard agreements, companies generally follow standard corporate compensation guidelines. A stream crossing agreement may also be required, in conjunction with an approval by the OGC, as the company must have your consent to cross streams on your land. The landowner should ensure details are fully explained and specifics of the entire project are written into the agreement from project commencement to cleanup to reinspection.

❷ Proposed seismic lines and access routes are established.

❸ Vegetation and/or snow may be cleared across the land marked for study.

❹ Markers are placed along the length of each seismic line.

❺ If dynamite is used, the standard method is to drill shot holes, load the dynamite charge, and plug the holes according to government regulations.

❻ Seismic instrumentation is placed on the ground surface to record vibrations from the energy source (dynamite or “vibroseis” truck) reflected back from the subsurface formation.

❼ Upon completion of the seismic project the company or its agent pays the landowner any outstanding fees and compensation for damage according to terms of the agreement. The landowner is asked to sign a release form. The company is responsible for damage that becomes evident after the release has been signed. It is recommended that the landowner ensures that cleanup is completed or will be completed under non-frozen conditions.

❽ The OGC requires company representatives to reinspect all lands for refuse and slash control to ensure government standards are met. This is usually done in the spring or summer following projects. It is in the landowner’s best interests to allow entry for reinspection.

SEISMIC OPERATIONS

What is a seismic operation?

Seismic operations are conducted to determine if there are suitable underground formations that contain petroleum or natural gas. This is done by analyzing the reflected vibration waves originating from an energy source created near the surface. Energy sources are generally either dynamite or "vibroseis" trucks which generate vibrations.

There are two types of seismic operations:

- The 2D seismic method uses single lines of regularly spaced geophone stations with energy source points established along the lines.
- The 3D seismic method uses a uniform and evenly spaced grid of lines.

Vibroseis 3D seismic method

Key steps:

❶ *Surveyors use satellite-based global positioning system (GPS) to find precise locations for vibration source and geophones.*

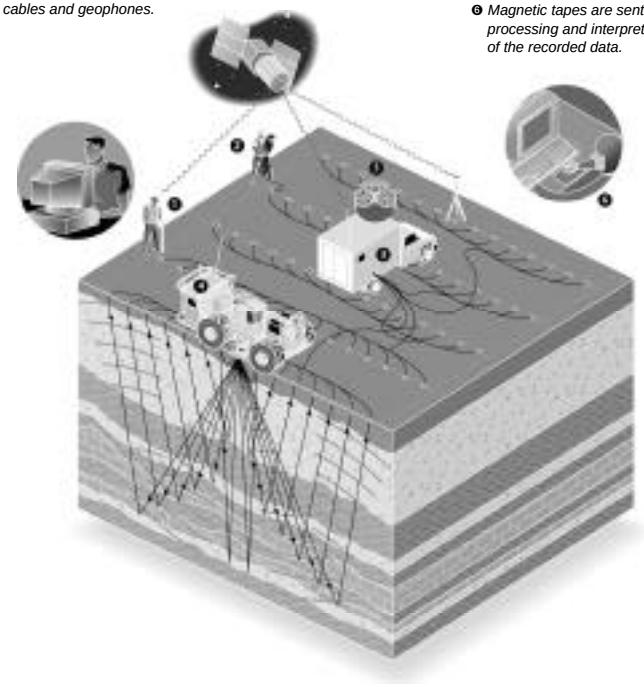
❷ *Seismic crew lays out cables and geophones.*

❸ *Cables are attached to recording system.*

❹ *Vibrator trucks generate a controlled vibration force of up to 32 tonnes at each source point.*

❺ *Underlying geologic structures reflect some of the vibrations back to the surface where the geophones convert them into electrical impulses that are recorded on magnetic tape.*

❻ *Magnetic tapes are sent for processing and interpretation of the recorded data.*



Courtesy of the Petroleum Communication Foundation

What are the minimum distances a project should be from structures or residences?

Shot hole drilling must be a minimum distance from farm structures or residences. The following minimum distances are defined in the Geophysical Exploration Regulations:

Facility	Non-explosive Method *(metres)*	Explosive Method	
		Charge weight in kilograms	Distance *(metres)*
Residence or place of public concern	50	All	180
Water well	100 *(vibroseis)* 50 *(other than vibroseis)*	All	180
Driveway, gateway or buried water pipelines	5	All	10
Survey monument or buried telephone or tele communication line	1	All	1
Oil or gas pipeline *(measured from the center line of the pipeline)* and an oil or gas well	15	0 2 >2 <4 >4 <6 >6 <8 >8 <10 >10 <20 >20 <40	32 45 55 64 72 101 143

Questions or concerns?

Please see the contact information panel at the end of this brochure for who to contact if you have questions or concerns.

Questions you may want to ask when negotiating an agreement for a seismic project:

- What is the resource company name, contact person's name, and phone number?
- What is the company representative's name and phone number.
- Where exactly will the project line(s) be placed and where will access be?
- What is the anticipated commencement date and the expected completion date?
- Will water flow or sample tests be done on water wells before and after construction?
- If a water well is impacted, what measures are the company prepared to take?
- What are the cutline widths and methods?
- Will a change in the proposed seismic line and access routes mitigate potential damage?
- Will livestock, crops, buildings and/or fences be affected?
- If a flowing hole becomes evident, what happens next?
- Will a preliminary cleanup be done immediately following the project's completion?
- When will reinspection and final clean-up be done?
- What are the restoration plans?
- How will the post-project damage be dealt with?

Who to contact if you have questions or concerns

Your first contact should be the resource company's representative (eg.: referral agent). In most cases, the company representatives do their best to ensure they have satisfied your requests and concerns. If you are not satisfied you should contact the company directly.

The Oil and Gas Commission encourages companies and landowners to resolve their concerns. If resolution is not possible, assistance is available from the Oil and Gas Commission's Geophysical Program Manager, the Compliance and Enforcement Branch or the Stakeholder Relations and Communications Branch.

For further information, please contact:

OIL AND GAS COMMISSION

Stakeholder Relations and Communications Branch
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