

### 24 Hour Operations

Recording, explosive detonation and vibrating can sometimes occur at night to overcome weather disturbance problems such as wind, or to expedite the job.

*Who do I contact in the case of a problem, query or complaint?*

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### The Party Manager

The Party Manager is responsible for all field recording crew activity. The Party Manager will often establish a crew office at a local motel from where operations are coordinated.



### Crew Supervisors (Permittee / Licensee)

#### Permittee

The Crew Supervisor can be contacted at the Geophysical Company's head office (normally in Calgary, Alberta).

#### Licensee

The Company Representative can be contacted at the Resource Company's head office.

It is the aim of the Geophysical industry to conduct safe seismic operations in a careful, diligent and responsible manner in accordance with all applicable laws, exploration regulations and Government approval conditions.

This information pamphlet is provided to improve communication and understanding with local communities throughout Alberta.

**THE FOLLOWING ARE DETAILS OF THE SEISMIC PROGRAM BEING CONDUCTED IN YOUR AREA**

**Program Name:**

**Licensee:**  
**(Resource Co.)**

**Contact Name:**

**Telephone:**

**Permittee:**  
**(Geophysical Co)**

**Contact Name:**

**Telephone:**

**Operation Type:** 2D  3D

**Energy Source:** Dynamite   
Vibrators

**Approximate Dates:**

**Commencement:**

**Completion:**



**Endorsed by**

  
 Small Explorers & Producers  
 Association of Canada

  
 Canadian Association of  
 Geophysical Contractors

  
 Alberta Sustainable Resource  
 Development

  
 Canadian Association of  
 Petroleum Producers

  
 Office of the  
 Farmers' Advocate

### Any Crew Member

All crew members will have an "ERP" (emergency response plan) that will contain contact numbers for supervisors and management.

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### The Certified Permit Agent

The certified permit agent who represents the Resource Company, for whom the work is being conducted, should be informed of any problems.

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### Geophysical Inspectors

Inspectors in Alberta are employees of Alberta Sustainable Resource Development; they inspect geophysical (seismic) operations to ensure compliance with the Alberta Exploration Regulations.

**Telephone:**

(780) 427-3932

Toll Free by Dialing 310-0000

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### Office of the Farmers' Advocate

This is an organization that will moderate in a dispute and will represent the interests of farmers & landowners.

**Telephone:**

(780) 427-3932

(780) 427-2433

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A seismic survey is a method of determining sub-surface information by analyzing sound waves originating from an energy source, which is typically either a small amount of explosive in a shot hole, drilled to depths up to about 60 feet / 20 metres or, vibrations generated from a series of "vibroseis" trucks.

The reflected sound waves are detected by listening devices called geophones attached to cables that are laid out along the seismic line. The cables connect into a recording truck / dog-house that contain computers for recording the data.

2D seismic lines are single lines of regularly spaced geophone stations (e.g. every 20 metres), with energy source points established along the line typically at every 3rd or 4th station.

3D seismic programs are generally a uniform and evenly spaced grid of lines. Receiver lines, containing the recording devices (geophones) are usually perpendicular to the direction of source lines comprised of regularly spaced source points (e.g. at 50 or 60 metre intervals).

After the appropriate permission has been granted by landowners and Government agencies, the following operations will usually occur;

#### 1. Permitting

The Permit man establishes with the landowner and/or the renter, a fair rate of compensation for access and damages. He will complete a permit package outlining the extent of the seismic work to be done and record all conditions and terms and develop a sketch on a permit plat.

#### 2. The seismic line's position will be established as per the program map

The line will be tracked-out and marked with lath or survey stakes. Signs and flagged arrows will indicate access routes to be used and safety hazards.

#### 3. Cutting, Mulching and /or snowplowing

Cats, Mulchers or chainsaws may be used for Receiver lines that usually require a continuous straight-line path for cable and geophone layout.

Source points can be "offset" to avoid cutting bush and soft or wet areas. When snowplowing is required, cats or 4 wheel drive tractors are utilized.

#### 4. Buried Facilities located

Survey stakes, lath or pin flags typically marked with yellow flagging or the buried facility company's logo, will be placed along the route of the buried facilities (e.g. pipelines, telephone cable, etc) by the facility owner's representative or a locating company.

#### 5. Chaining, surveying and marking of points

Different colored flags, stakes or tags will indicate either a receiver or source point position. Points will be offset away from obstacles or structures to comply with the Alberta Exploration Regulation (AR 214/98).

#### 6. GPS or INS layout and mapping

Survey crews will accurately determine co-ordinates and elevations for each point using conventional survey methods with survey instruments, or with GPS or INS techniques.

GPS (Global Positioning System) receivers record and process signals from a network of satellites that enable them to resolve an accurate position and height.

INS (Inertial Navigation Systems) use accurate movement sensing devices to establish coordinates and elevations of points referenced to a known starting point.

Some of these crews may also collect cultural information for mapping (e.g. fences, waterbodies, powerlines, etc.).

#### 7. Shot holes will be drilled

When dynamite is the energy source, each source point will be drilled and then an explosive charge, detonator/ blasting cap will be loaded to the required depth. Capwire will connect the charge to the surface for later detonation by a certified Shooter. In areas of difficult drilling, patterns with 2 to 5 shallower holes containing smaller charges, may replace the normal single hole. Some drills require water, so on-line travel may occur more than once. In some cases a water truck will ferry water to the drills as required. All shot holes will be abandoned in accordance with the Alberta Exploration Regulation (AR 214/98).

#### 8. Recording cable and phones will be laid out

Cable will be spooled out from line trucks and, geophones (jugs) and recording devices (boxes) will be connected to the cable at the prescribed locations. When layout is completed, the recorder connects to the cable and the line is ready to be recorded.

**Note:** On some jobs, helicopters are used to transport; personnel, or cables, geophones and recording devices in heli-bags to planned locations, from where the line crew manually position them.

#### 9. Shooting & Vibrating

Where dynamite is the energy source, a shooter will sequentially visit each shot hole and detonate the charge. Where the seismic line is to be vibrated, typically 2 to 4 vibrator units mounted on trucks or buggies, will lower their pads and simultaneously vibrate the ground for a few seconds at each source point location. Often vibrators will vibrate over several locations on either side of each source point.

#### 10. Equipment pick-up & Cleanup

##### *Unfrozen ground conditions*

On completion of recording, the seismic lines will be completely cleared of all recording equipment, survey material and debris.

##### *Frozen ground conditions*

A clean-up crew will return to the seismic program when ground conditions are suitable, (non-frozen). They will ensure that all debris has been removed.

All shot holes will be abandoned in accordance with the Alberta Exploration Regulation 214/98.

