Seismic Exploration Best Management Practices

Objectives

- Reduce net footprint persistence of corridors on the landscape;
- Reduce creation of new public access and associated impacts on wildlife;
- Reduce surface disturbance and soil erosion thereby reducing reclamation needs and promoting natural regeneration;
- Reduce creation of travel corridors for predators (i.e., wolves);
- Manage the access needs of industrial, commercial, recreational and subsistence users;
- Reduce timber fibre loss;
- Ensure Fish and Wildlife and Habitat Management needs are met;
- Control the introduction of invasive and foreign plant species;
- Ensure heritage resources are identified, avoided and protected;
- Allow access to areas for geophysical exploration which cannot tolerate the impact of conventional seismic.

photo: Lorrnel Consultants

Best Management Practices

- Low Impact Seismic practices can help reduce the immediate and cumulative effects of seismic exploration practices on the landscape and are recommended for all geophysical exploration activity in Yukon.
- For much of the Yukon underlain by permafrost or discontinuous permafrost and/or saturated conditions, winter only activity is recommended. Disturbance of the soil and ground cover can also be minimized through helicopter transport of seismic drilling equipment, the use of vehicles with low ground pressure to reduce duff/topsoil disturbance and seasonal timing that avoids wet or soft ground conditions.
- When resource values at risk are present in the area such as caribou, recommended line widths should be as narrow as possible with meanders and offsets utilising hand cleared or mulching techniques and existing roads and trails. Other mitigation tools include creating barriers at regular intervals on the line to prevent wildlife and human movement.

- Because vehicles and machinery may carry exotic seeds and animals, vehicles and machinery that have been used in areas outside of project sites should be cleaned prior to commencement of work.
- Careless disposal of garbage or treatment feeding of wildlife by seismic and survey crews can lead to habituated bears and other scavengers that may cause potentially deadly consequences for future wildlife and human interactions in the region. Ensuring that crews receive bear awareness certification and providing reusable lunch and drink containers to reduce the chances of littering are recommended practices.

- Ensure temporary camps are managed in such a way as to discourage wildlife interest and reward (strict camp rules regarding feeding wildlife, managing cooking facilities and food wastes, electric fences, deterrent guidelines etc.)
- Air traffic and flight plans should be designed to recognize ecologically sensitive times and habitats and other land and resource users in the area such as wilderness tourism operators, outfitters and trappers.

This is not a comprehensive list of Best Management Practices for Seismic Exploration. For more information see the Best Management Practices web page on www.yukonoilandgas.com.

Context

In northern Canada evidence of seismic exploration remains from the 1960's. Although some studies have been carried out on the regeneration of these lines, the reason they remain varies with the conditions under which the lines were constructed and the type of use they may have had since construction.

In jurisdictions where exploration activity is high, the cumulative effects of seismic exploration lines are particularly apparent where certain species, such as caribou, are more sensitive to habitat disturbance or human presence. Avoidance can often be measured in terms of the footprint itself (e.g., camps and seismic lines) as well as a distance from that footprint. Human presence creates both direct and indirect harm and changes to the landscape can result in the movement of humans and wildlife into an area not previously accessed or utilized.

Rationale

The movement of oil and gas exploration and development activity into basins with little to no exploration activity, especially away from existing infrastructure such as the Dempster and Alaska Highway corridors, will demand some creative thinking about how to move heavy loads across the landscape without creating roads or linear footprints.

Moving equipment across large expanses of the landscape where no road access exists includes a responsibility, not only to avoid direct ecological effects but to also prevent indirect effects such as induced human access.

Definitions:

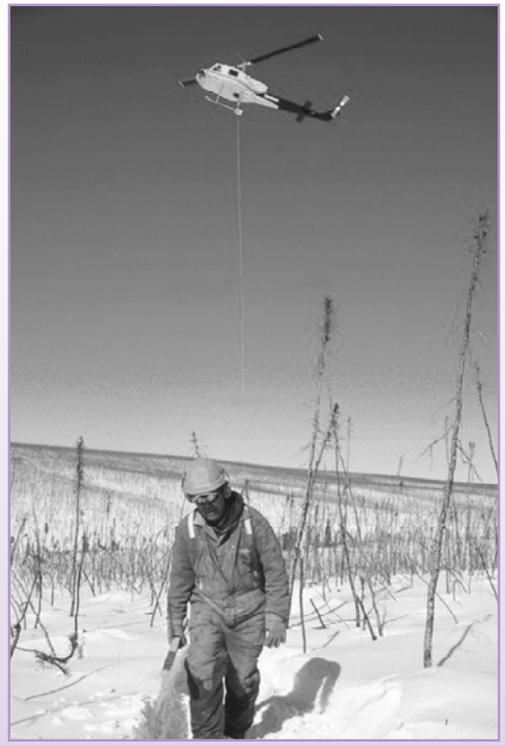
Seismic (or geophysical) exploration is used to identify and map oil and gas deposits prior to drilling. The technique is based on analyzing how sound waves are reflected from subsurface structures. Seismic surveying involves sending sound waves underground and measuring how long it takes subsurface rocks to reflect them back to the surface. These waves are made by pounding the earth with a truck-mounted vibrator or by exploding small charges on land. As the waves are reflected back, they're collected by listening devices called geophones and processed by computers.

Historically, conventional seismic exploration has involved the clearing of a long wide linear corridor, up to 6-8 m in width. This clearing method was done for two reasons, first to enable an optically surveyed straight line and second, to bring in the large heavy equipment needed for this type of exploration.

Low Impact Seismic (LIS) refers to approaches that reduce the footprint and effect of seismic exploration activity. Changes in both survey methods and type of equipment available has allowed a change in approaches to seismic exploration over the past 30 years. While conventional survey required a line of sight, GPS technology can accurately produce survey lines and locations without having line of sight.

Light weight low ground pressure mulcher for narrow seismic lines, soft (muskeg) and hilly terrain fitted with 1.75 metre rotovator drum. Photo: Bear Slashing

www.yukonoilandgas.com



For more Information on these and other Best Management Practices contact our office at:

212 Main Street, Suite 209
Whitehorse, Yukon Y1A 2B2
Phone: (867) 667-3427
Toll free 1-800-661-0408 ext. 3427
Fax: (867) 393-6262
E-mail: oilandgas@gov.yk.ca

Yukon
Energy, Mines and Resources

OIL & GAS BEST MANAGEMENT PRACTICES

Seismic Exploration Best Management Practices

photo: Lorrnel Consultants