

# Dangerous Tree Control

**GUIDELINE**

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# About Energy Safety Canada

Energy Safety Canada is the oil and gas industry's advocate and leading resource for the continuous improvement of safety performance. Our mission is to help companies achieve their safety goals by providing practices, assessment, training, support, metrics and communication.

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## ACKNOWLEDGEMENT

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# Preface



## HOW TO USE THIS GUIDELINE

The purpose of this document is to provide a framework to aid in ensuring safe working conditions exist for workers conducting upstream oil and gas activities where workers may be at risk of being exposed to dangerous trees. As well, this document will provide strategies and alternatives to exposing workers to the risk of felling dangerous trees while in the workplace. After identifying dangerous trees, either eliminating or controlling them is appropriate for any upstream oil and gas worksite where there are free-standing trees at the boundaries of the worksite, including but not limited to: camp sites, facilities, pipeline, roads, line of sight/seismic lines, aircraft landing. This document is intended for application in Canadian petroleum industry activities, where dangerous trees may pose a risk to workers, zones, and well sites.

## PROJECT SCOPE AND LIMITATIONS

This document contains guidance notes to assist employers, prime contractors, and owners in developing programs that properly identify dangerous trees, and minimize the risks associated with such trees.

The information contained herein is intended for use by a full cross-section of workers in the petroleum industry.

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# 1.0 Legislated Requirements

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If any of the references/regulations below have changed or been amended, the more recent version shall apply.

**NOTE:** When referencing legislation make sure to refer to the legislation rather than quoting or pasting the legislation into the document. *Use italics for any sections quoted directly.*

## 1.1 OIL & GAS INDUSTRY FALLER TRAINING STANDARD

Note: Industry has adopted the BC Faller Standard:

- See [www.worksafebc.com](http://www.worksafebc.com) - resources/health-safety/books-guides/
- BC Faller Training Standard Parts 1 and 2 (Updated April 2012):
  - Part 1
  - Part 2

## 1.2 ALBERTA (OHS ACT, REGULATION, & CODE)

- Prime Contractor Regulations:
  - AB OHS s. 1(x), 3
- AB OHS Reg. 62, 2003
- Part 25 - Tools and Equipment
- Part 22 - Protection from Falling Objects
- Part 18 - Personal Protective Equipment

## 1.3 BRITISH COLUMBIA (WORKERS COMPENSATION ACT & OHS REGULATION)

- Prime Contractor Regulations:
  - BC WCA s. 106, 118(1,2,3)
- Part 8 - Personal Protective Clothing & Equipment
  - 8.21 - Leg Protection
  - 8.24 - High Visibility Apparel
- Part 12 - Tools, Machinery, and Equipment
  - 12.72(1) - Chainsaw Standards
- Part 26 - Forestry Operations
- Wildlife/Danger Tree Assessor's Course Workbook, Harvesting and Silviculture.

## 1.4 MANITOBA (WORKPLACE SAFETY AND HEALTH ACT & REGULATIONS)

- Prime Contractor Regulations:
  - MB WSHA ch. W210, s. 7
- Forestry, Logging, and Log Hauling Regulation (1988)
- Sections 27, 29, and 36

## 1.5 SASKATCHEWAN (OCCUPATIONAL HEALTH AND SAFETY REGULATIONS)

- Prime Contractor Regulations:
  - SK OHSD
- Section 95 - Lower Body Protection
- Section 146, Chainsaws
- Part XXVIII - Forestry and Mill Operations

## 1.6 YUKON (OCCUPATIONAL HEALTH AND SAFETY ACT & REGULATIONS)

- Prime Contractor Regulations
- Personal Protective Equipment (PPE) Sections 5 to 10
- Chainsaw Section 4.3
- Forestry Operations Sections 11.6 - 11.8

## 2.0 Roles and Responsibilities

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### 2.1 PRIME CONTRACTOR

The prime contractor is responsible for ensuring the applicable Occupational Health and Safety Act and Regulations are complied with at the work site by establishing and maintaining a system or process that will ensure compliance with the regulations.

The client or owner is the prime contractor unless the responsibility is assigned, in writing, to another qualified party. As the prime contractor is charged with the overall responsibility for the health and safety of all workers at the worksite, the prime contractor must ensure contractors and employers comply with applicable legislation. Supervisors share the responsibility of complying with legislation in conjunction with any others who may direct workers.

The role of the prime contractor, as it pertains to dangerous tree control, is to initiate the development and implementation of a site-specific falling plan that is communicated to all affected workers at the site. The prime contractor is responsible to plan and design the operation to avoid working in the vicinity of dangerous trees to the greatest extent practicable. Early and proactive engagement with sub-contractors is critical to ensure collaboration in the development of falling plans where stakeholders have unique control over work processes and associated hazards. Where avoidance is not possible, the prime contractor will coordinate dangerous tree control operations using the lowest risk method practicable. If a dangerous tree is encountered, follow the recommendations of a dangerous tree assessment to manage the hazards. Generally, the following methods are used: remove the hazard with properly guarded mechanical felling equipment

- avoid the hazardous area of the dangerous tree by creating a “no work zone” (hazard avoidance)
- Assess the tree, and if it safe to do so conduct the work in the vicinity of the assessed tree, within the allowable standards of a Wildlife Danger Tree Assessment

If a dangerous tree must be removed, the prime contractor will decide the safest process of removal. Two of the recognized approaches for dangerous tree removal are:

- mechanical felling with a properly guarded piece of felling equipment
- manual felling by a properly qualified, certified Faller

When project planning, the prime contractor should give appropriate consideration to worker safety and environmental sustainability when selecting a means of falling dangerous trees.

### 2.2 EMPLOYERS

Employers are responsible to develop a work process that will ensure compliance with this guideline, which should include:

- providing adequate supervision
- ensuring active supervision occurs
- ensuring the level of disturbance created on a project does not unnecessarily expose workers to risk from dangerous trees
- conducting a site-specific hazard assessment to identify all dangers associated with the task of cutting trees
- implementing a hierarchy of controls for dangerous tree elimination or control
- collaborating with prime contractors to develop and implement a site-specific falling plan that is communicated to all affected workers at the site

- ensuring fallers meet, and are following, the requirements of the oil and gas faller training standard
- conducting an in-field competency assessment of all fallers employed at the project
- ensuring that all hand falling operations are supervised by qualified falling supervisors, and that supervision of all fallers mitigates the risks associated with hand falling
- ensuring all fallers and buckers hold a valid industry and government recognized chainsaw safety training certificate

### 2.3 FALLING SUPERVISORS FOR GEOPHYSICAL OPERATIONS

Falling Supervisors for geophysical operations are responsible to:

- have knowledge of the applicable Oil and Gas operations
- actively supervise and engage workers
- participate in the site hazard assessment, and in the development of the site-specific falling plan
- ensure safe work procedures are utilized on site
- ensure a hierarchy of controls is implemented for each hazard identified in the hazard assessment
- ensure additional crews subsequently entering the work area are not at risk from danger trees
- ensure the competency of every faller on site has been verified
- communicate the contents of the falling plan to affected workers
- ensure that all fallers are inspected on a frequency appropriate to the risk associated with their work assignments and skill level
- keep records of all inspections conducted, with copies available at the worksite

### 2.4 WORKERS

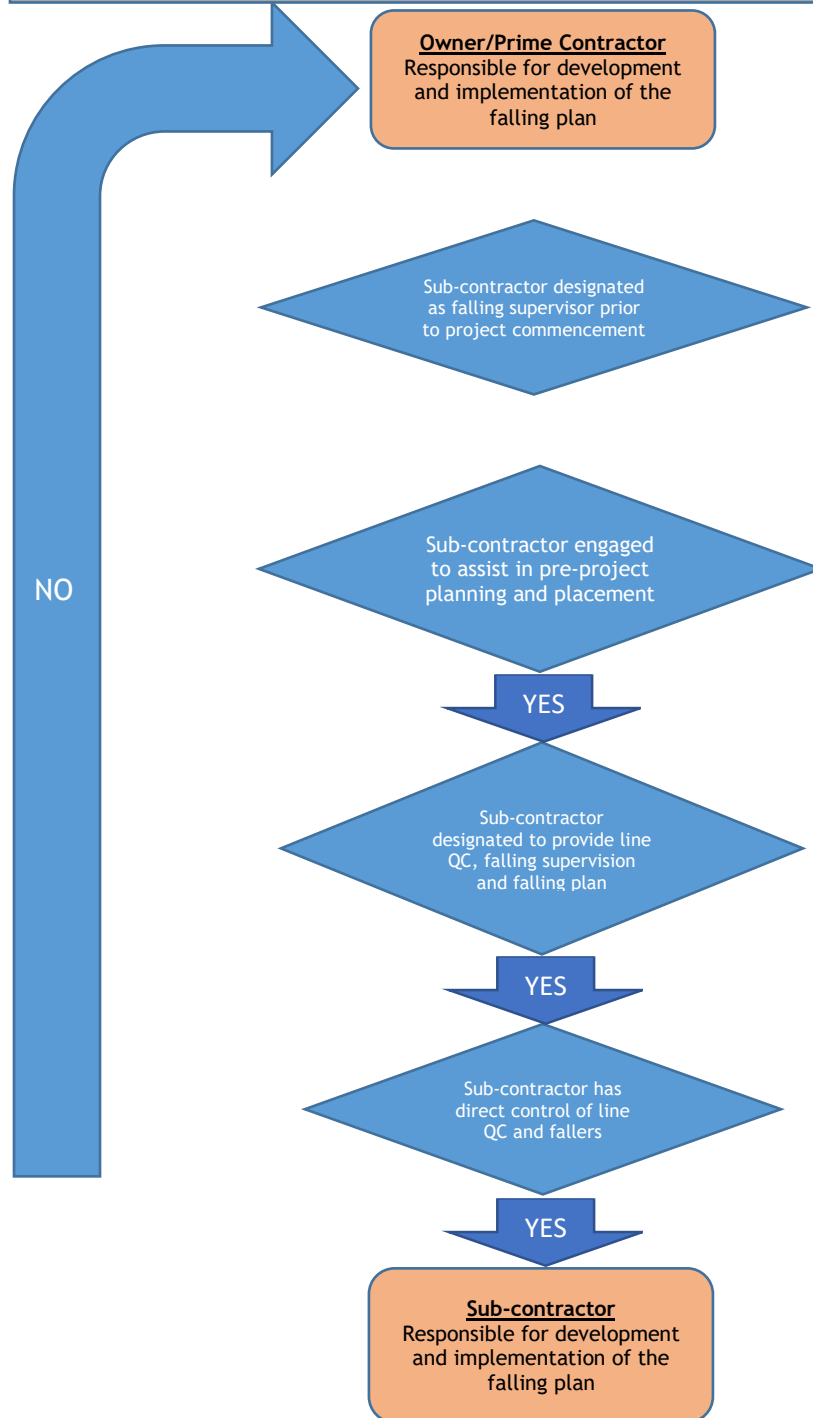
Workers are responsible to:

- take reasonable care to protect themselves and others
- assist their employers in the identification of hazards, and implementation of hazard controls
- follow safe work procedures
- work in compliance with the dangerous tree guideline and the site-specific falling plan
- perform their work to the level to which they have been trained and certified
- report any unsafe conditions or unsafe acts

**NOTE:** For further responsibilities, refer to applicable legislation for the jurisdiction in which the work is being carried out.

Although each client/contractor relationship is unique, the following decision tree example may assist organizations to identify and assign elements of the falling plan between client/contractor and clarify responsibilities of each stakeholder.

## Example Falling Plan Responsibility Decision Tree





## 3.0 Tree Falling Operations in Oil and Gas

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The identification and assessment of hazards inherent to dangerous trees requires training and competency that is beyond the scope of this guideline. Should operations require fallers to control dangerous trees, the tasks of hazard identification, hazard assessment, and hazard control need to be carried out in a systematic fashion with supervision by a Qualified Falling Supervisor (QFS). Creation and maintenance of a Falling Plan is required (available under “Resources” at [www.EnergySafetyCanada.com](http://www.EnergySafetyCanada.com)).

Assessing dangerous trees risk is a complex process requiring experience and expertise, which includes assessing the forest stand type, age, and condition as they relate to the level of disturbance caused by active operations. The additional factors of wind, rain, and snow load must also be included in any assessment of risk from dangerous trees. Accurate and up-to-date data affecting conditions noted above is required for each particular type of operation. Validating the data is the responsibility of the prime contractor.

### 3.1 HAZARD IDENTIFICATION, ASSESSMENT, AND CONTROL

Dangerous tree assessment and control must only be undertaken by trained and competent workers. A key element in dangerous tree assessment is understanding and applying the Levels of Disturbance (LOD) criteria to the activities occurring throughout the duration of the project. The overarching goal in dangerous tree assessment is to minimize the risks associated with the unnecessary falling of dangerous trees. Some circumstances will require dangerous tree removal as the most practicable action for worker safety. When dangerous trees need to be removed, they should be removed by the most practicable method without creating additional hazards.

To reduce exposure to workers and minimize the number of dangerous trees that need to be felled, the role of the assessor and faller may be combined in order to complete the process of assessment and control in a single pass.

Current OHS regulation in BC requires an employer to ensure that all dangerous trees within one and one half (1.5) tree lengths of a work area are removed, or are assessed as being safe to work near based upon a WDTA assessment process. The number of dangerous trees required to be felled may be reduced by advanced planning, and by employing appropriate imaging and mapping technology. If a tree is deemed safe by a WDTA, no action with respect to tree removal is required. However, there are additional considerations in the application of the BC OHS regulation.

Key considerations:

- Level of Disturbance (LOD)
- alternate actions to tree removal (i.e. avoidance, moving the line)
- exceptions to tree removal (critical habitat trees may require additional planning to maintain the dangerous tree, and avoid any high risk exposure to workers)
- slope (the 1.5 tree length danger zone is extended down-hill as the slope increases)
- terrain type
- damaged or weakened trees
- wildlife trees

See Technical Documents: Hazard Identification, Assessment and Control (available under “Resources” at [www.energysafetycanada.com](http://www.energysafetycanada.com))

## 4.0 Education, Training, and Competency

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The employer must ensure:

- all workers conducting work in areas where dangerous trees may exist are conversant with dangerous tree awareness, identification, and supervisory notification procedures
- training meets the requirements of the applicable jurisdictions where the work is being conducted (e.g., pictures, diagrams, flow charts, etc) should be introduced in the text of the document

### 4.1 FALLER TRAINING

- See “Legislated Requirements” (Section 1.0 of this guideline)
- See “Oil and Gas Faller Training Standard” (Section 1.1 of this guideline)
- NOTE: Industry has adopted BC Faller Standard:
  - See [www.worksafebc.com](http://www.worksafebc.com) - Publications/Health and Safety/Forestry
  - BC Faller Training Standard Parts 1 and 2 (Updated April 2012)

### 4.2 JOB RISK ASSESSMENT

Prior to falling a tree, complete the Tree Assessment Procedure:

- recognize the hazard
- evaluate the situation/hazard
- avoid the hazardous area of the dangerous tree by creating a “no work zone” (hazard avoidance)
- assess the tree, and if it is found to be safe, conduct work in the vicinity of the assessed tree, within the allowable standards of a Wildlife Danger Tree Assessment

If it appears a dangerous tree must be felled, then the prime contractor should make every reasonable and practicable effort to modify the particular aspect of the operation impacting the decision to fell a dangerous tree. In order to eliminate the hazard, either the workplace will be redesigned, or the hazard will be controlled. If the dangerous tree still must be felled but there is a concern that the falling work cannot be done safely, the work should be stopped, and concerns should be reported to their direct supervisor.

## 5.0 Falling Plan

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Communication, planning, and ongoing responsiveness are keys to a successful Falling Plan. The goal of a Falling Plan is to reduce the dangerous levels of high-risk tasks to ensure the safety of workers. The Falling Plan will define the responsibilities of individuals on site to ensure conformance with the Dangerous Tree Guideline. The Falling Plan shall be completed prior to onsite activities to identify potential dangers. The Falling Plan will ensure adequate job preparation and may be supplemented and supported by existing Safe Operating Procedures and additional guidelines. Continuous reassessment of the workplace and the hazards of dangerous trees is a key component of ensuring compliance. As a minimum, reassessment of the work area should be conducted after events that affect the forest. To ensure continual safety of workers, the Falling Plan should be continually updated. All activities of the forestry, or similar operation are to be planned and conducted in a manner that adheres to Safe Work Practices.

The Falling Plan must:

- include identification of any work activities or conditions at the workplace where there is a known risk, or reasonably foreseeable risk to workers

- be completed before work commences on the relevant activity
- be documented at the time of planning

If, after any planning referred to above, there is a change in the workplace circumstances, including the work activities and the conditions of the workplace, and the change poses or creates a known risk, or reasonably foreseeable risk, to workers that was not previously identified, then:

- the Falling Plan must be amended to identify and address the risk and provide for the health and safety of the workers at the workplace
- the amendment must be documented as soon as is practicable.

Please refer to Falling Plan Checklist available under resources at [www.energysafetycanada.com](http://www.energysafetycanada.com). The Falling Plan Checklist has been designed to identify the Act, Code and Regulation that must be adhered to, as well as to provide a checklist to identify requirements that would be applicable to site work area and activities. The Falling Plan Checklist is provided as a framework to develop a Falling Plan that is applicable to the site conditions. There is a provision for the user(s) to amend, delete, and change sections of the Falling Plan, as there is an ongoing process for planning and hazard recognition throughout the project. It is understood and expected that the Falling Plan will be reviewed and revised throughout the length of the project, as dictated by changes in site conditions.

# Glossary

TERM	DESCRIPTION
<b>Active Supervision</b>	<p>Active Supervision is defined as providing a physical presence in the work area at intervals suitable to the risks at hand, and to be physically available to provide guidance. Active Supervision includes taking all reasonable care to prevent the occurrence of an incident or event. Active Supervision includes providing information, instruction, training, supervision, verification of knowledge, and correction of all known hazards.</p> <p>A designated, competent Qualified Falling Supervisor (QFS) must be assigned to all falling/bucking operations. Additionally, operations involving dangerous tree control may require a higher degree of supervision. It is acceptable for one QFS to be assigned to multiple falling crews, but where the risk to workers is very high, ratios of one QFS per falling crew may be required.</p>
<b>Bucker</b>	<p>Certified chainsaw operators capable of cutting trees on the ground and restricted to falling brush under 10 cm in diameter at breast height (dbh).</p>
<b>Dangerous Tress Assessor</b>	<p>A person who has completed a Wildlife Danger Tree Assessors (WDTA) Course acceptable to regulators, can complete a risk assessment, and can make recommendations for managing dangerous trees.</p>
<b>Dangerous Tree</b>	<p>A dangerous tree (refer to tree definition below) is any tree that is dangerous to workers due to:</p> <ul style="list-style-type: none"><li>• location or lean</li><li>• physical damage</li><li>• overhead hazards</li><li>• deterioration of limbs, stem, or root system</li><li>• “replantation” as a result of mechanical operations</li><li>• any combination of the above</li></ul>
<b>Employer</b>	<p>Any person, business, or organization that employs people in or about an industry, through either a hiring contract, or an apprenticeship contract. The contract can be written, oral, expressed, or implied, as identified by provincial legislation, regulations, and code.</p>
<b>Faller</b>	<p>Certified fallers capable of falling trees (refer to tree definition below) semi unsupervised, after being assessed and deemed competent in the timber type and terrain on that particular worksite.</p>
<b>Falling Plan</b>	<p>Refer to Section 5.0 of this guideline.</p>

<b>Level of Disturbance</b>	In addition to wind, disturbances that have taken place in the worksite can impact the level of risk presented by dangerous trees. Various types of disturbances that may increase the risk presented by potentially dangerous trees are outlined and classified in Hazard Identification, Assessment and Control according to the equivalent risk presented by wind (available under “Resources” at <a href="http://www.energysafetycanada.com">www.energysafetycanada.com</a> ). The cumulative effect of both wind and disturbance should be considered when identifying, assessing, and controlling dangerous tree hazards.
<b>Prime Contractor</b>	Refer to Section 2.1 of this guideline.
<b>Qualified Falling Supervisor - QFS</b>	A person who has training and/or experience in the recognition, evaluation and control of hazards associated with falling operations, and is assigned overall responsibility for administration of the falling activities. The QFS is required to ensure competency checks are completed on each member of the falling crew.
<b>Qualified Supervisor/Trainer - QST</b>	A certified faller who has been trained and approved to teach the BC Faller Training Standard, to evaluate new and existing fallers and to certify fallers as set out in the BC Faller Training Standard.
<b>Safe Work Procedure (SWP)</b>	Provides specific, documented, step-by-step information to workers, recognized as the most effective approach to minimize injuries, incidents, and other negative outcomes.
<b>Supervisor</b>	A person who instructs, directs, and controls workers in the performance of their duties.
<b>Terrain Types</b>	Please refer to the CAGC Terrain Assessment Guideline.
<b>Tree</b>	A woody plant having one erect perennial stem (trunk) at least 10 centimeters in diameter at breast height or 1.5 meters above the ground, and over 3 meters tall.
<b>Wildlife Tree</b>	<p>A wildlife tree is any tree standing dead or alive with special qualities that provide valuable habitat for wildlife. Whether a tree is valuable as wildlife habitat depends upon the tree’s:</p> <ul style="list-style-type: none"> <li>• size</li> <li>• age</li> <li>• physical condition</li> <li>• proximity to other wildlife trees</li> <li>• species</li> <li>• location</li> <li>• environment</li> </ul> <p>NOTE: In British Columbia, extensive work has been done to examine actions that can be taken with a tree that is a dangerous tree, as well as a wildlife tree (habitat). A multi-stakeholder group has created the “Wildlife Danger Tree Assessors Course” for this purpose. For further details, go to: <a href="http://www.for.gov.bc.ca/">http://www.for.gov.bc.ca/</a>.</p>

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**Work Area**

The work area is any upstream oil and gas worksite where there are free-standing trees at the boundaries of the worksite, including but not limited to: camp sites, leases, facilities, pipelines, roads, line of sight/seismic lines, aircraft landing zones, and well sites.

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**Worker**

Any person who is in a contract of service or apprenticeship, written or oral expressed or implied.

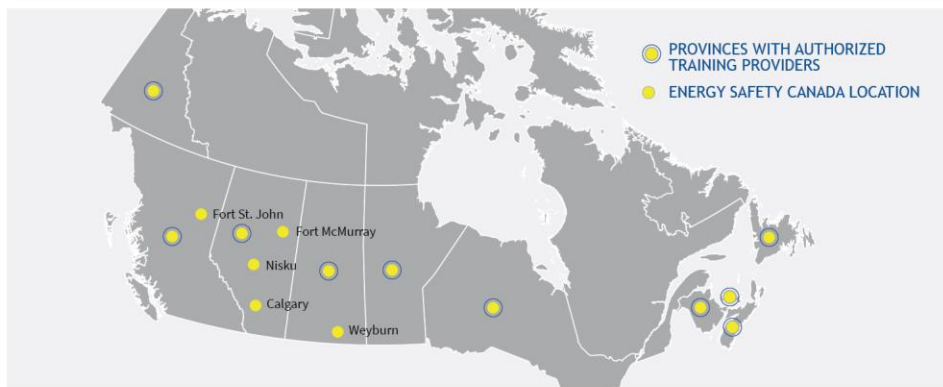
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