ENERGY
SAFETY
CANADA

Dangerous Tree Control Guideline

How to Build and Use a Dangerous Tree Control Guide

National Safety Association
for Canada's Energy Industry

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Disclaimer

This document is intended to be flexible in application and provide guidance to users rather than act as a prescriptive solution. Recognizing that one solution is not appropriate for all users and situations, it presents generally accepted guidelines that apply to industry situations, as well as recommended practices that may suit a company's needs. While we believe that the information contained herein is reliable under the conditions and subject to the limitations set out, Energy Safety Canada does not guarantee its accuracy. The use of this document or any information contained will be at the user's sole risk, regardless of any fault or negligence of Energy Safety Canada and the participating industry associations.

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ENERGY SAFETY CANADA

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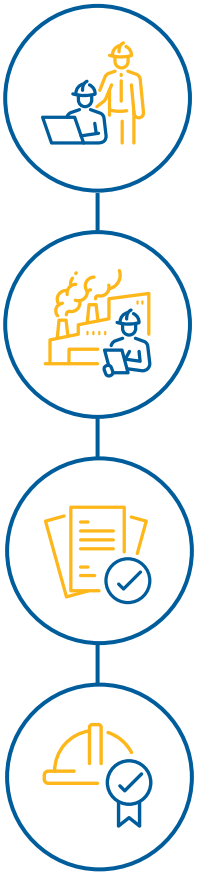

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Preface

Purpose

The purpose of this document is to provide a framework to ensure safe working conditions exist for workers engaged in upstream oil and gas activities, particularly where there is a risk of exposure to dangerous trees.

This document will provide strategies and alternatives to exposing workers to the risk of felling dangerous trees in the workplace. After identifying dangerous trees, eliminating or controlling them is appropriate for any upstream oil and gas worksite with free-standing trees, including but not limited to:

- Campsites
- Facilities
- Pipelines
- Roads,
- Line of sight/seismic lines and 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 them.

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

Table Of Contents

1.0 Legislated Requirements

The most recent version shall apply if any of the references/regulations below are changed or amended.

1.1 Energy Industry Faller Training Standard

The industry has adopted the BC Faller Training Standard.

BC Faller Training Standard Parts 1 and 2 (Updated April 2012):

- Part 1: WorkSafeBC.com/en/resources/health-safety/books-guides/bc-faller-training-standard/part-1
- Part 2: WorkSafeBC.com/en/resources/health-safety/books-guides/bc-faller-training-standard/part-2

1.2 Alberta (OHS Act, Regulation and Code)

- Prime Contractor Regulations:
  - » AB OHSA 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 and OHS Regulation)

- Prime Contractor Regulations:
  - » BC WCA s. 106, 118(1,2,3)
- Part 8 - Personal Protective Clothing and 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 and 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 and 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

2.1 Prime Contractor

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

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 are responsible for complying with legislation in conjunction with any others who may direct workers.

As it pertains to dangerous tree control, the prime contractor's role 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 for planning and designing the operation to avoid working in the vicinity of dangerous trees to the greatest extent practicable.

Early and proactive engagement with subcontractors is critical to ensure collaboration in developing the falling plans, and 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 feasible. If a dangerous tree is encountered, follow the recommendations of a dangerous tree assessment to manage the hazards.

Generally, the following methods are used to 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 safe to do so, conduct the work in the vicinity of the assessed tree within the allowable standards of a Wildlife Danger Tree Assessment.

The prime contractor will decide the safest removal process if a dangerous tree must be removed. Two recognized approaches for dangerous tree removal include:

- Mechanical felling with a properly guarded piece of felling equipment.
- Manual felling by a qualified and certified Faller.

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

2.2 Employers

Employers are responsible for developing a work process that will ensure compliance with this guideline, including:

- 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 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 follow the requirements of the energy faller training standard.
- Conducting an in-field competency assessment of all fallers employed at the project.
- Ensuring that qualified falling supervisors supervise all hand falling operations 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 responsibilities include:

- Knowledge of the applicable energy operations.
- Actively supervising and engaging workers.
- Participating in the site hazard assessment and developing the site-specific falling plan.
- Ensuring safe work procedures are utilized on-site.
- Ensuring a hierarchy of controls is implemented for each hazard identified in the hazard assessment.
- Ensuring additional crews subsequently entering the work area are not at risk from dangerous trees.
- Ensuring the competency of every faller on site has been verified.
- Communicating the contents of the falling plan to affected workers.
- Ensuring all fallers are inspected on a frequency appropriate to the risk associated with their work assignments and skill level.
- Keeping records of all inspections conducted, with copies available at the worksite.

2.4 Workers

Worker responsibilities include:

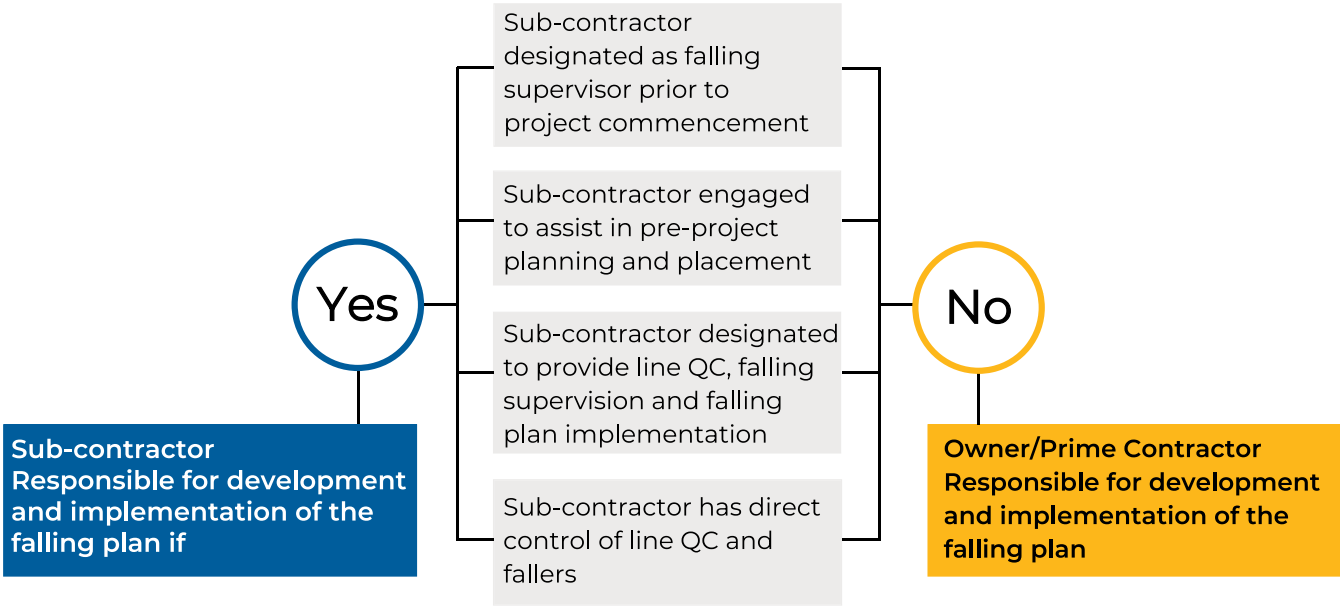
- Taking reasonable care to protect themselves and others.
- Assisting their employers in identifying hazards and implementing hazard controls.
- Following safe work procedures.
- Working in compliance with the dangerous tree guideline and the site-specific falling plan.
- Performing their work to the level they have been trained and certified.
- Reporting any unsafe conditions or unsafe acts.

Note:

For further responsibilities, refer to applicable legislation for the jurisdiction where the work is being carried out.

Although each client/contractor relationship is unique, the following decision tree example may assist in identifying and assigning elements of the falling plan between client/contractor and clarify the responsibilities of each stakeholder.

Example Falling Plan Responsibility Decision Tree



3.0 Tree Falling Operations in Energy

Identifying and assessing hazards associated with dangerous trees requires training and competency beyond the scope of this guideline. Should operations require fallers to control dangerous trees, hazard identification, assessment and control must be carried out systematically with supervision by a Qualified Falling Supervisor (QFS).

Creation and maintenance of a falling plan is required and can be found at EnergySafetyCanada.com/Resources.

Evaluating the risks posed by dangerous trees is a complex process that requires experience and expertise. This involves assessing the type, age and condition of the forest stand, particularly in relation to the disturbances caused by active operations. Wind, rain and snow loads should be considered when assessing the risks of dangerous trees. It is essential to have accurate and current data related to these factors for each specific operation. The prime contractor is responsible for validating this data.

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 project. The overarching goal of dangerous tree assessment is to minimize the risks associated with the unnecessary felling of dangerous trees. Some circumstances will require

dangerous tree removal as the most feasible action for worker safety. When dangerous trees need to be removed, they should be removed by the most feasible 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 to complete the process of assessment and control in a single pass.

Current OHS regulation in B.C. requires employers to remove all hazardous trees within one and a half tree (1.5) tree lengths of a work area or assess them for safety using the 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 for tree removal is required.

However, there are additional considerations in the application of the B.C. OHS regulation.

Key considerations:

- 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 downhill as the slope increases)
- Terrain type
- Damaged or weakened trees
- Wildlife trees

For technical documents on Hazard Identification, Assessment and Control, visit EnergySafetyCanada.com/Resources.

4.0 Education, Training and Competency

The employer must ensure:

- All workers working 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.

4.1 Faller Training

- See: Legislated Requirements (Section 1.0)
- See: Oil and Gas Faller Training Standard (Section 1.1)
- The industry has adopted the BC Faller Standard.
  - » BC Faller Training Standard Parts 1 and 2: WorkSafeBC.com
  - » CAGC Basic Chainsaw Program FAQ: CAGCLearns.ca/pages/chainsaw-program
  - » CAGC Fallers Program FAQ: CAGCLearns.ca/pages/faq

4.2 Job Risk Assessment

Before felling 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 safe, conduct work in the vicinity of the assessed tree within the allowable standards of a Wildlife Danger Tree Assessment.

If a dangerous tree must be felled, 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.

Either the workplace will be redesigned or the hazard will be controlled to eliminate the hazard. 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 the direct supervisor.

5.0 Falling Plan

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 before on-site 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 to ensure compliance. At a minimum, the work area should be reassessed after events that affect the forest. The falling plan should be consistently updated to maintain the ongoing safety of workers. All forestry or similar operation activities must be planned and conducted according to safe work practices.

The falling plan must:

- Be documented at the time of planning.
- Be completed before work commences.
- Include identification of any work activities or conditions at the workplace with a known or reasonably foreseeable risk to workers.

If there is a change in the workplace circumstances, work activities or conditions of the workplace where the change poses a foreseeable risk or creates a risk to workers:

- 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.

5.1 Job Risk Assessment

The Falling Plan Checklist is designed to identify the relevant acts, codes, and regulations that must be adhered to and provide a checklist for determining requirements applicable to the site work area and activities.

The checklist provides a framework for developing a falling plan that applies to the site conditions. The user(s) can amend, delete and change sections of the falling plan, as there is an ongoing process for planning and hazard recognition throughout the project. The falling plan should be reviewed and revised throughout the duration of the project, as dictated by changes in site conditions.

The Falling Plan Checklist is available at: EnergySafetyCanada.com/Resources.

GLOSSARY

Term	Description
Active Supervision	Providing a physical presence in the work area at intervals suitable to the risks and being 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. 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.
Bucker	Certified chainsaw operators capable of cutting trees on the ground and restricted to falling brush under 10 centimetres in diameter at breast height (dbh).
Dangerous Trees Assessor	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.
Dangerous Tree	A dangerous tree (refer to tree definition below) is any tree that is dangerous to workers due to: • Location or lean • Physical damage • Overhead hazards • Deterioration of limbs, stem, or root system • “Replantation” as a result of mechanical operations • Any combination of the above.

Employer	Any person, business, or organization that employs people in or about an industry through a hiring or apprenticeship contract. The contract can be written, oral, expressed or implied, as identified by provincial legislation, regulations and code.
Faller	Certified fallers capable of felling trees (refer to tree definition below) semi-unsupervised, after being assessed and deemed competent in the timber type and terrain on that particular worksite.
Felling	The process of cutting down a tree until the tree falls to the ground. Felling is alternatively referred to as “Falling”.
Falling Plan	Refer to Section 5.0 of this guideline.
Level of Disturbance (LOD)	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 (For more information, visit EnergySafetyCanada.com/Resources). The cumulative effect of both wind and disturbance should be considered when identifying, assessing, and controlling dangerous tree hazards.
Prime Contractor	Refer to Section 2.1 of this guideline.
Qualified Falling Supervisor (QFS)	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 the administration of the falling activities. The QFS is required to ensure competency checks are completed on each member of the falling crew.
Qualified Supervisor/Trainer (QST)	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.
Safe Work Procedure (SWP)	Provides specific, documented, step-by-step information to workers, recognized as the most effective approach to minimize injuries, incidents, and other negative outcomes.
Supervisor	A person who instructs, directs, and controls workers in the performance of their duties.
Terrain Types	Please refer to the CAGC Terrain Assessment Guideline.
Tree	A woody plant with one erect perennial stem (trunk) at least 10 centimetres in diameter at breast height or 1.5 meters above the ground, and over 3 meters tall.

Wildlife Tree	TA wildlife tree is any tree standing dead or alive with special qualities that provide valuable habitat for wildlife. Whether a tree is valuable as a wildlife habitat depends upon the tree's: • Size • Age • Physical condition • Proximity to other wildlife trees • Species • Location • Environment NOTE: In B.C., extensive work has been done to examine actions that can be taken with a dangerous tree and a wildlife tree (habitat). A multi-stakeholder group has created the "Wildlife Danger Tree Assessors Course" for this purpose. For further details, go to: for.gov.bc.ca.
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: campsites, leases, facilities, pipelines, roads, line of sight/seismic lines, aircraft landing zones and well sites.
Worker	Any person who is in a contract of service or apprenticeship, written or oral expressed or implied.

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