BEST PRACTICE GUIDELINES

Safe retreat positions in breaking out

JULY 2014

New Zealand Government

WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

DISCLAIMER

WorkSafe New Zealand has made every effort to ensure the information contained in this publication is reliable, but makes no guarantee of its completeness. WorkSafe NZ may change the contents of this guideline at any time without notice.

This document is a guideline only. It should not be used as a substitute for legislation or legal advice. WorkSafe NZ is not responsible for the results of any action taken on the basis of information in this document, or for any errors or omissions.

ISBN: 978-0-478-41715-9 (print)

ISBN: 978-0-478-41718-0 (online)

Published: JULY 2014. Current until: 2017

INTRODUCTION

This guideline has been developed for principals and contractors involved in cable harvesting operations. The guideline offers recommendations to help work out safe retreat positions when breaking out, focusing on the key areas of risk.

Input into the development of this resource has been received from industry stakeholders, including Competenz, Forest Owners Association (FOA) and Forest Industry Contractors Association (FICA). Employee participation was gained from a number of focus groups to test the material for its value and accessibility.

This guideline is a practical way of meeting the requirements of the Health and Safety in Employment Act 1992 (the Act), and the recommendations in the Approved Code of Practice for Safety and Health in Forest Operations (ACoP).

TABLE OF CONTENTS

THE GUIDELINE HAS BEEN SPLIT INTO TWO PARTS.

Part one – principal and contractor

Part one is for principals and contractors, and deals mostly with pre-harvest planning. It includes guidance on how a principal and contractor can communicate hazards and determine safe retreat position zones within the harvest area.

Part two – contractor and crew

Part two is for the contractor and crew members involved in breaking out and extraction.

01/

PLANNING – PRINCIPAL AND CONTRACTOR

ACOP	**Rule 12.2.21** Before harvesting commences the principal and contractor shall agree on a system to determine the safe retreat position for each block and/or setting.

1.1 HARVEST PLANNING

The principal should develop a plan, or job prescription, before harvesting starts. The principal should give the plan, which includes information on the area to be harvested, to the contractor.

The principal has an obligation to do more than just provide information on the hazards. The ACoP states that the principal and the contractor (or employer) shall jointly determine measures to manage the hazards.

The job prescription contains information on known hazards on the site, and should include a map of the area showing the terrain. This is where the principal and contractor should come to an agreement about how to determine safe retreat positions in the block being harvested.

The intention is for the principal to understand how the contractor will determine safe retreat positions. The contractor should use information in the job prescription (including hazardous areas and mean tree height) to determine the safe retreat positions for breaking out.

The principal may set some guidance or minimum standards that could be applied across a number of contractors. For example, they may require the contractor to use range finders, or to have a specific way of recording changes to the safe retreat position.

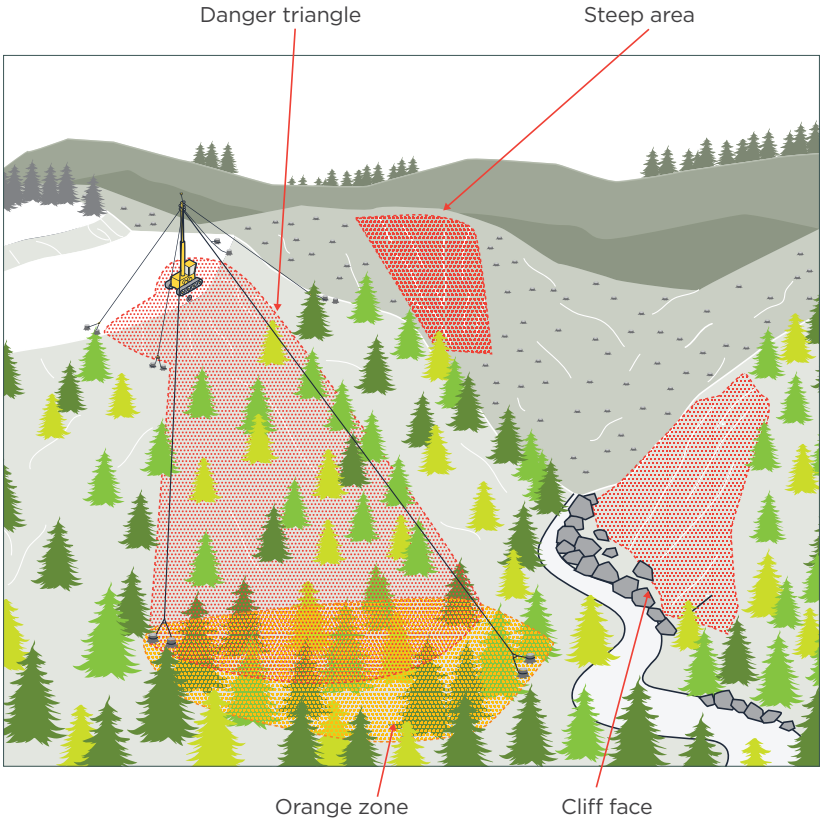

Figure 1: Example of a map showing the terrain and hazardous areas shown using a zone system.

1.2 HEALTH AND SAFETY SYSTEM

ACOP	**Rule 2.4.1** The principal shall verify that the employer has in place a documented safety management system before commencing operations and shall periodically audit the effectiveness of this system.

Before any work begins, the principal is required to verify that the contractor (or employer) has a documented health and safety system in place. When a WorkSafe NZ Inspector visits, they will want to see evidence of that system, and will look for the following things:

> proof of competence for each breaker-out, including
  - training records
  - proof of experience, and
  - record of assessment

> maps and/or information identifying high risk-areas within the site, including
  - windthrown and toppled trees
  - bluffs
  - danger triangle
  - moving ropes

> agreement, signed off by the principal, of the contractor's safe retreat position system

> evidence that the "mean tree height" has been established for the stand

> the contractor's calculation of the safe retreat position

> standard operating procedures to manage line shifts, fouled drags, rope failure, and other issues

> records of daily tailgate meetings.

The system can be customised by the contractor (or employer) for their operations, and should be reflected in their training records and hazard register. All processes should be known to, understood and followed by, the breaker-outs. There should also be a system to record any on-the-job deviation from the planned processes.

1.3 AUDITING

The principal should periodically audit the contractor's system for determining the safe retreat position. This is specified in rule 2.4.1 of the ACoP. Constant auditing of any safe retreat position system can ensure it works and provide opportunities to improve the system.

02/

BREAKING OUT – CONTRACTOR/ EMPLOYEE

2.1 OPERATIONAL PLANNING

The contractor must have a safety management system.

The contractor should also have day-to-day planning in place. This includes more detailed processes governing rigging systems, communication systems, line shift directions, safe areas and markers. This should also include daily crew meetings (tailgate meetings) where the day's work, change management processes, and new hazards can be communicated.

ACOP	**Rule 12.2.8**
	One person shall be designated the head breaker-out and shall be on the break-out face and responsible for: > controlling the break-out operation > ensuring the safety of breaker-outs.

Choosing the right person for the job is a key part of operational planning. The head breaker-out must be deemed competent for the job; that is, they must have enough training, skill, experience, and knowledge to control the break-out and oversee the other breaker-outs. NZQA Unit Standard 1258 can provide some of the knowledge and training required, but not all.

Contractors should have records of the process by which the head breaker-out (and all other extraction crew members) has been deemed competent, including training records, assessments, and records of past experience.

2.2 SAFE RETREAT POSITION

ACOP

Rule 12.2.22

The contractor/employer shall have a documented process to determine and identify the safe retreat position for each line or day's work taking into account:

> any swinging or upending log or stem

> mean tree height

> obstacles that may restrict movement or obscure vision

> material likely to be dislodged during extraction

> overhead hazards that may fall into the work area

> any rope bight.

If the above process is not in place then the following default process shall apply.

The safe retreat distance shall be a horizontal distance (not slope distance) a minimum of 1.5 tree lengths based on the mean tree height for the block measured at right angles to the line of extraction.

The safe retreat distance shall be clearly marked with flags or other visible markers.

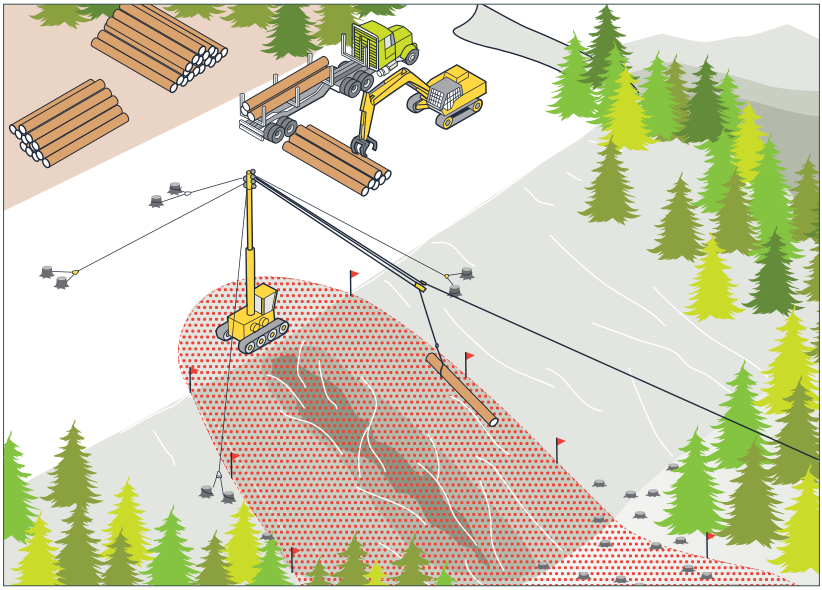

Figure 2: Example of safe retreat distance flags.

SAFE RETREAT POSITION SYSTEMS

Some contractors and extraction crews have their own process for determining the safe retreat position. In some cases these have been running successfully for some time. Contractors are encouraged to learn from what others are doing. Develop a system that works for you, but also pick up ideas from others.

Make sure that you consider the environment and how to fit your system to it. The system you choose must be as good as, or better than, the default system. Ensure the system is known and understood by your extraction crew, and that it includes change and documentation processes.

Here are two examples of systems used to determine safe retreat positions. One is the default system outlined in ACoP rule 12.2.22, and the other is the zone system.

The default system

The default system sets a safe retreat position at a distance of 1.5 tree lengths (based on the mean tree height) at a right angle to the drag. It takes into account other hazards (ACoP rule 12.2.22), and requires visible markers like flags.

The zone system

Zone systems identify different areas of the block as safe, changeable or hazardous, and assign colours and rules to each. This system starts when the principal identifies and maps significant hazards on the block. Further detail is added when the contractor assesses the block, as the harvest progresses and when hazards change.

For example, the danger triangle below the landing would be a red zone, and breaker-outs should maintain a distance of 1.5 tree lengths (or whatever the agreed distance is) at all times.

Another red zone could be a deep ravine, or directly below moving ropes. When the drag is stopped and the landing cleared, the head breaker-out may allow the extraction crew to enter it to clear slash.

Green zones are generally safe, but an established safe retreat position or minimum distance is still used during a drag. When breaking out commences, the head breaker-out controls any change to the zones. This can be to change green zones to red when a new hazard is identified, or to reduce the orange to green if a hazard is eliminated. When changes are made, the head breaker-out should communicate this to the breaking out team and hauler operator, and document it.

Some contractors include orange zones, where additional hazards may be present. A pre-set minimum distance is established, based on mean tree height and other variables, and the head breaker-out controls any entry within that zone.

Zones can be confirmed in the morning, and changes decided drag by drag by the head breaker-out.

Putting your system into action

1. Calculate it

Whether the contractor uses a zone system, the ACOP default system, or something else, it's useless unless that system is put into practice. Before breaking out commences, no-go areas and safe distances should be calculated, and safe retreat positions decided and documented.

2. Identify it

Under the default system, safe retreat positions are identified with flags or other markers, but under any system, it's important to identify them clearly, so the extraction crew knows where the safe retreat positions are.

3. Communicate it

ACOP	**Rule 12.2.23** The contractor/employer and head breaker-out shall ensure the process is understood, agreed and carried out by the extraction crew.

The key to safe retreat positions is that everyone is aware of them, and of any changes that are made. Every member of the extraction crew, including the hauler operator, person clearing the chute, and foreman, should identify where their safe retreat positions are, and understand the process for determining them.

4. Use it

Once breaking out is underway, the safe retreat positions should be used during every drag.

Inhaul

1. The extraction crew hooks up the drag.

2. The crew falls back to the agreed safe retreat position.

3. The head breaker-out signals to break out.

Outhaul

1. The hauler operator signals outhaul.
2. Breaker-outs can approach to 15m (and no closer).
3. The stop signal is given.
4. Breaker-outs can approach to hook on the next drag:
   - after the carriage or rigging has stopped moving, and
   - after the swinging strops can be safely controlled, and
   - when the head breaker-out gives the word.

Note: when the rigging is moved forward to attach an additional log, the head breaker-out can judge whether a full retreat is needed.

Changes to the safe retreat position

It is important that there is active management of the worksite. Many hazards will not be able to be assessed until the breaker-outs are down the hill. The head breaker-out should assess each drag and decide if the safe retreat position is still appropriate. The rest of the extraction crew should have a say.

The actual safe retreat position for each drag will depend on:

> how it is hooked on, e.g. butt hook, head hook, gut hook

> which rigging configuration is used, e.g. skyline, scab

> deflection and clearance below the stems

> the terrain, e.g. uphill pull, downhill pull, bluffs, restricted areas

> the potential for stems or logs to upend or swing

> any obstacles that may restrict movement or vision

> any material that may become dislodged and roll into the break-out area or safe retreat position

> any rope bight

> the length and size of the stems in the drag.

Changes to the safe retreat position should be communicated to the extraction crew, and documented.

Other methods and tools

Some tools being used in breaking out include:

> flags or other visible markers in the cutover to mark the safe retreat position

> range finders or hip chains to check the distance from the ropes

> GPS to track the location of the breaker-outs

> flags or flashing lights on the landing/hauler to show the landing operators which zone the breaker-outs are in

> recording systems in the hauler to document changes in zone or safe retreat distances

> mechanized carriages with cameras

> cameras or tablets for taking daily photos of the setting and showing safe retreat zones.

2.3 HOOKING ON

ACOP	**Rule 12.2.13** Breaker-outs shall not enter the hook-on area until: > the "stop" signal has been given > the carriage or rigging has stopped moving > swinging strops can be safely controlled.

Entering the hook-on area before everything has stopped moving is very hazardous. Strops and ropes move unpredictably, and can easily strike a breaker-out. The rigging must have stopped moving and the "stop" signal given before anyone approaches.

Note: where motorised carriages are being used, lowering strops from the carriage can be done after breaker-outs have approached to hook on, but they should be aware of swinging strops.

When hooking on, no one should approach stems suspected to be unstable.

2.4 BREAKING OUT

The key to safe breaking out is clear communication. The hauler operator and head breaker-out need to control their respective sides of the break-out, and signal any problems clearly and promptly. The entire crew needs to be familiar with all signals.

PREPARATION

Before the drag commences, hazards (such as material likely to be dislodged during extraction) should be eliminated or otherwise managed. Chute clearing and other activities posing a risk to breaker-outs below should not be carried out when breaker-outs are in the danger triangle below the landing. The hauler operator should communicate clearance to re-enter the danger triangle to the head breaker-out.

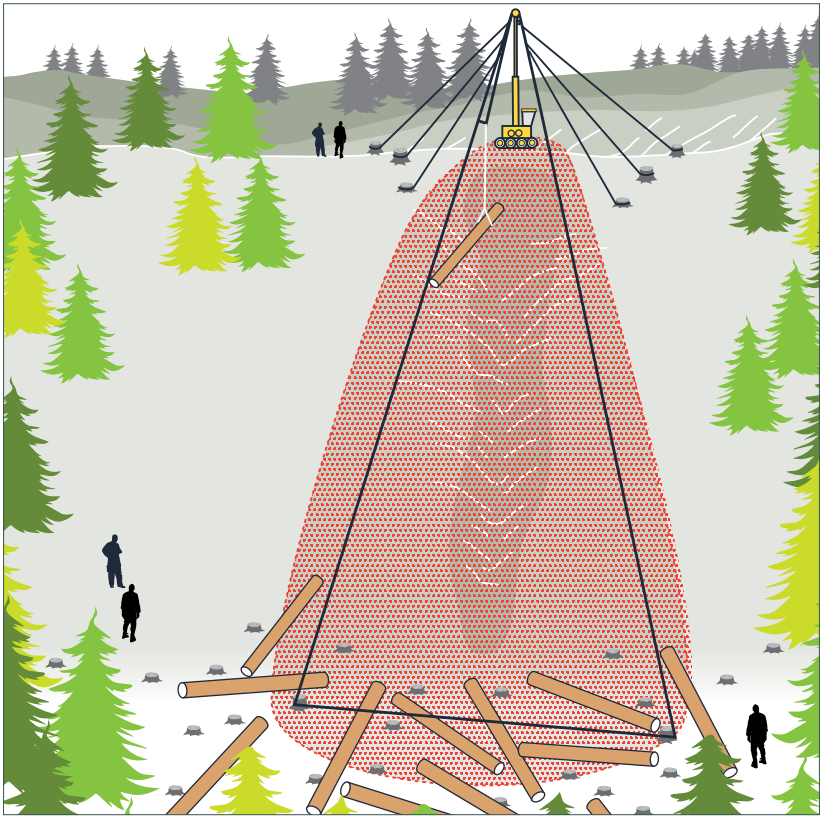

Figure 3: Keep clear of the chute when the drag is moving.

BREAKING OUT

ACOP	**Rule 12.2.10**
	The head breaker-out shall watch the lines and drag until either: > the drag is out of sight > the yarder operator takes over control > another competent breaker-out is assigned to monitor the lines and drag

The breaker-out should watch the lines and drag, and control all rope movements until the drag is out of sight or the hauler operator takes control. The person monitoring the drag must have their hand on the radio mike or tooter signaling device ready to transmit an instantaneous stop signal if required.

Breaker-outs should never stand under any moving ropes or rigging.

LANDING THE DRAG

Landing activity must be controlled to prevent stems and other debris being sent back down the face. If stems can't be landed with two thirds on the flat landing area, they should be cleared immediately before breaker-outs walk back into the danger triangle.

2.5 FOULED DRAGS

ACOP	**Rule 14.1.1** A competent person shall check daily that guyline anchors and rigging are secure when under load. If the working ropes have been subjected to shock loading or failure, guyline anchors and rigging shall be inspected before operations recommence.

The hauler operator should assess when the working ropes are being subjected to shock loading or failure, and determine if the guy line anchors and the rigging need to be inspected and/or re-set.

The head breaker-out is the only member of the breaking out team that can assess a fouled drag. The other breaker-outs should stay in the safe retreat position until it has been assessed and a course of action has been decided.

Tension must be released in the main and tail rope (and skyline or slack pulling ropes if used) before the drag is approached (see ACoP rule 12.2.20). The only rope movement should be to slack (main, tail or sky) when undoing or repositioning chokers on logs.

The head breaker-out assesses options and communicates requirements to the hauler driver. These may include:

> release strops from fouled stems

> attach strops to effect stem movement (roll, jump, kick)

> cut stem or stump with a chainsaw

> move drag using tailrope or lift to free the stem.

Note: If the drag is going to be moved, the breaker-outs must retreat to the pre-determined safe position before giving any signal to the hauler driver.

2.6 REPOSITIONING THE RIGGING

No stems attached:

1. Breaker-outs can stand in the hook-on zone while rigging is repositioned, provided there is no risk of stems being moved or dislodged by ropes, rigging or snagged strops.
2. Breaker-outs should not stand under any moving ropes or rigging.

Where attached stems will move:

1. All breaker-outs should move to the pre-determined safe retreat position before any repositioning of the rigging is signaled.
2. All breaker-outs should face the rigging when rope repositioning occurs.

For more information, visit **www.worksafe.govt.nz**

Approved Code of Practice for Safety and Health in Forest Operations
(WorkSafe New Zealand)

Best Practice Guidelines for Cable Harvesting
(Competenz)

WorkSafe New Zealand
56 The Terrace
PO Box 165
Wellington 6140

Phone: +64 4 897 7699
Fax: +64 4 415 4015
0800 030 040
www.worksafe.govt.nz
@WorkSafeNZ

ISBN: 978-0-478-41715-9 (print)
ISBN: 978-0-478-41718-0 (online)

New Zealand Government

WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA