



## THREE R'S OF MECHANIZED HARVESTING: REGULATIONS, RISKS, AND RESOURCES

In August of 2013, a licensee approached WorkSafeBC to talk about bringing a piece of tethered equipment for steep-slope harvesting to BC for the first time. They had seen it in operation in New Zealand—and were sold on the equipment’s promise to improve worker safety—but they needed input on how it could fit into BC’s regulatory framework.

We reviewed our existing requirements and came up with a list of features the equipment would need, including guarding and a larger alternate means of escape. The licensee then worked directly with the manufacturer in New Zealand to modify the equipment, and a few months later it was inspected and is now operating successfully on our local hillsides.

Today, less than five years later, there are an estimated 40 tethered machines working in the province. In a short time,

tethered equipment has transformed the face of steep-slope logging, directly reducing the exposure of forestry workers to felling hazards.

Currently, BC has about 2,000 active hand fallers, an occupation with an injury rate of 27.3, compared to an average of 2.21 for all workers in the province. Tethered equipment represents the next step in worker protection.

This technology puts workers in guarded cabs, high off the ground, physically removed from the hazards they would otherwise face. According to a 2017 report by FPInnovations, “Mechanized Harvesting, a Safer Alternative to Manual Tree Falling,” the highest accident rates with mechanized logging stem from maintenance and repair activities, not from tree felling itself. So it makes sense to utilize mechanized fall-

ing wherever possible as an alternative to hand falling.

### Regulatory Requirements

How does tethered equipment work within our existing regulatory framework? Two general, broad regulations allow for the operation of tethered equipment within the province.

Regulation 26.12.1 says that any equipment designed or adapted for use in a forestry operation must be capable of safely performing the functions for which it’s being used. This regulation recognizes that loggers are ingenious and have a long history of innovation, providing flexibility within certain parameters.

Regulation 26.16 addresses slope limitations, specifying that if the equipment manufacturer’s slope limit is known, the equipment must be operated within that

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limit. This regulation also sets limits for equipment when the manufacturer's slope limit is not known—between 35 and 50 per cent depending on the variety of machine.

But there's a caveat: If a qualified person conducts a risk assessment of the operation, and if written safe-work practices are developed and implemented to ensure equipment stability during operation, that equipment may be operated beyond those limits. The overarching directive, however, is that this latitude only exists if stability can be assured.

Obtaining that assurance is the role of the employer in consultation with the operator. If conditions are too wet or otherwise hazardous on a given day, the equipment must not be operated, even if slopes are not overly steep.

Regulation requirements pertaining to de-energization, lockout, cable inspection and rigging have been familiar to those in the industry for years. Cable inspection and rigging are of particular importance; when you're tethering a machine to a cable and it breaks, you can get a flopper, or worse, a rollover down the hill.

Originally, some of the guarding requirements were difficult to meet, but

most have now been retrofitted with the WCB G600 Standard or the equivalent.

Finally, one of the most important requirements is the planning of an operation. There's a need to design blocks slightly differently for this equipment, and to take advantage of natural features of the landscape in the slope assessment and layout phases. FPInnovations has developed a guide to best management practices for winch-assist equipment, available online.

### Reducing risks in the field

Some of the biggest challenges we're seeing are related to rigging failures, cable breaks, or breaks in the attachment points. It's critical that workers and operators are trained in cable inspection. We've also seen alarm systems being improperly installed or purposely deactivated, owing to their tendency to over-alarm. But alarms are an important feature that must be used.

Stump selection can be a particular issue in the Interior, where timber types are different and trees aren't as deeply rooted as on the coast. But the single biggest issue for employers and contractors is scarcity of workers; this equipment requires a

large investment in training, and trained workers are hard to retain.

The technology is so new that we don't yet have answers to some health and safety questions. Ergonomics, for example, are a concern. How does it affect an operator to sit suspended in a six-point harness for eight hours or more a day? Studies have been done but the data is still being compiled.

Then there's the used-equipment market. The first generation of tethered equipment is now three or four years old, but we don't know its lifespan. Typically when you buy a machine new, the manufacturer will come in and train your team. If the equipment is resold, the purchaser may not have that same benefit. How do they train and work safely? These issues must be addressed as we move forward.

### New Resources for Employers

To help employers better understand health and safety requirements and responsibilities when importing mobile logging equipment into BC, WorkSafeBC developed a guide, available on our website: "Understanding the Requirements

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for Mobile Logging Equipment in British Columbia.”

WorkSafeBC also developed an inspectional checklist, “Traction-Assist Logging Equipment Inspection Checklist,” for our occupational safety officers, which is also available on our website so employers can know what to expect.

FPInnovations, in addition to their guide to best management practices, have produced a guide for conducting a basic cable inspection: “A guide to wire rope handling and inspection for machine operators.”▲

*John Ligtenberg participated in the panel “Steep Slope: Climbing Higher” at the January TLA Convention & Trade Show. This report is drawn from his presentation.*

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In sum, timberland-owning firms and investors may work with sufficiently long time horizons—typically 10 years or more—to mitigate log price exposure by adjusting harvest levels with log price levels. However, these same firms may require short-term regular cash flows or wood

flows, and WSAs can support these objectives. This is especially true for wood procurement operations, where daily, weekly and monthly wood material needs drive the schedule.▲

*Brooks Mendell is President and CEO of Forisk Consulting, which conducts research of timber markets and forest operations. This article includes data from the Forisk Research Quarterly (FRQ), which includes forest industry analysis and timber price forecasts for North America.*

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